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Pastoralism 100 Ways: Navigating Different Market Arrangements in Sardinia



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Pastoralism, Uncertainty and Resilience: Global Lessons from the Margins

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Author's declaration

I hereby declare that this thesis has not been submitted, either in the same or different form to this or any other University for degree.

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Abstract

This thesis examines how different Sardinian pastoral producers engage with markets and market uncertainties. Starting from three sites (mountain, hill and plain), the data were collected with a qualitative methodology combining semi-structured interviews, participatory observation, ethnography and photo elicitation through 12 months of fieldwork. In this thesis I argue that when we look at 'real markets' the industrial and artisanal market arrangements are not as separated and antagonistic. Market engagement and responses to market uncertainties are not determined simply by supply and demand and by 'the market', nor are they only a matter of individual choices or 'efficient'/'inefficient' farm management. Instead, by grounding the analysis in fourteen in-depth case studies, I argue that, when we look at how pastoralists engage in markets and respond to uncertainties, we should think of production, creation of livelihood and market engagement as co-produced, intertwined, and embedded. I show how pastoralists' engagement with markets is influenced by livelihood needs, asset ownership, access to resources, labor availability, social networks, relationships with institutions and a sense of identity. If we look at the different ways in which these factors interact, there are a hundred and more ways in which pastoralists navigate market uncertainties. Despite this great diversity, there are important similarities that deserve attention: I identify five types of market arrangement that emerge out of different social, material and political factors, both exogenous and endogenous. Market engagement is thus relational, is co-constituted with production and livelihoods, embedded in society and institutions, and governed by social rules and regulations, allowing uncertainties to be confronted. By looking at actual market engagement – and how livelihoods, class relations and social identities are related with this – I therefore challenge the simplistic and often ideologically-framed distinction between industrial and artisanal markets. By looking at real markets and diverse, hybrid engagements around milk and cheese production, important implications for the design of policies and advocacy strategies emerge, which are rooted in better understandings of how livestock producers engage with markets.

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This experience will remain etched in my mind and in my life forever. Finishing a PhD in three years and two months, with a global pandemic in the middle. It was not always easy, but I am forever grateful for this unique, wonderful, and humbling opportunity. Thanks to this ERC scholarship, I was able to go back to my region, to further research on a field that is close to my heart and part of my origins.

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Chapter 1 - Commodification of Pastoralism, Market Uncertainty, and Market Arrangements in Sardinia

Multiple intersecting uncertainties and vulnerabilities have arisen from the subordination of producers to global commodity chains and the liberalization of agricultural markets, with serious repercussions for farmers' and pastoralists' lives, livelihoods, and well-being (Farinella, 2018; McMichael, 2013). The distance between producers and consumers has widened as a result of adverse inclusion in global commodities chains, while the power held by input and distribution companies has grown and consolidated, leaving producers squeezed (Friedmann, 1992; Isakson, 2014), and increasing the uncertainties that characterize agriculture and pastoralism-climate and environment, policies and institutions, and animal diseases (Nori and Scoones, 2019; Nori, 2021). These dynamics are global, yet they have also restructured the social, economic, and ecological landscapes of Sardinia. This pastoral island, located at the center of the Mediterranean Sea, is the focus of this thesis.

As a response to these dynamics, a widespread call for food system transformation with alternative economies and markets has emerged (Holt Giménez and Shattuck, 2011; IPES-Food, 2018; Alonso-Fradejas et al., 2015; Schiavoni, 2017; Transnational Institute, 2014). The examples of alternatives are numerous: increased attention to local economies; the favoring of short chains over long ones; and the prioritization of local markets over 'the market'. Movements such as the food sovereignty coalition advocate transforming production systems, and embedding them within local communities and localized markets (Robbins, 2015). New arrangements have emerged such as community-supported agriculture, local farmers' markets and critical consumerism (Gunderson, 2014). Scholars, especially feminist political economists, also have increasingly unveiled the plethora of diverse economies, relations, and markets that exist beyond mainstream capitalist ones (Gibson-Graham, 2008; Nelson and Power, 2018). As argued in numerous cases, these alternative market arrangements are more equitable, diverse, and embedded in local economies and local cultures; they are characterized by less volatility, while producers who engage in them are less vulnerable to the vagaries of global capital (Kloppenburg et al., 1996; Starr et al., 2003).

The argument goes that when market arrangements are more local as opposed to global, and more 'peasant-like' as opposed to 'capitalist', then small scale producers will benefit more (van der Ploeg, 2008). However, scholars have also started to look at the localization of markets with a critical eye, pointing out that local is not always and necessarily better for the environment, producers, and

consumers (DuPuis and Goodman, 2005; Robbins, 2015). Such alternative market arrangements may give producers more bargaining power, but a few questions do arise. Industrial agriculture and commodity chains will not disappear any time soon. So what happens to the millions of producers – pastoralists and farmers – who are included in global commodity chains and face uncertainties and vulnerabilities in their daily life? What types of market arrangements emerge, and how do these help navigate uncertainty?

In my thesis, I explore these broad questions in the context of Sardinia, Italy. In Sardinia, debates about crisis, transformation of the pastoral system, and uncertainty are particularly centered on markets. Reliance on the long commodity chain of Pecorino Romano – a cheese produced through industrial processing and exported mainly to North America – has increased vulnerability to market uncertainty. This has resulted in strong protests being organized by the Movimento Pastori Sardi (MPS) against the most powerful industrial actors in the chain (dairy industries and distribution industries) and the state. But overt protest is only one of the ways that pastoralists respond to uncertainty. While I will talk about five different typologies of how pastoralists engage with markets, there are many variations within each category creating 100 and more variations to how pastoralists navigate uncertainties.

In this chapter, I start by contextualizing how pastoralism in Sardinia has changed throughout the last decades. I then introduce my research problem and my research question by contextualizing it in the current academic debates around commodification and delinking from commodity chains. I then explain the conceptual framework employed to carry out my research, and lastly, I provide a brief overview on how the thesis is organized.

1.1. Changing livelihoods, production, and market engagements with the beginning of industrial dairy production

Sardinia's economy is mainly based on the tertiary sector and services, although industry and the agropastoral sector play an important role. In 2019, about 23.9 % of active enterprises were engaged in agriculture, against a national average of 14.2 %. The estimated number of active enterprises in 2019 is 143,000. Of these, 26 % were engaged in commerce, 20 % in other services, 14 % of the enterprises were engaged in construction, 9 % were hotels and catering enterprises, and 7 % of the enterprises engage in industrial activities (excluding the construction industry). In

general, we are talking about micro and small enterprises, many of them family-run, 96% of the enterprises have less than 10 employees. The island exports a value of EUR 5.65 billion in 2019. Of this total, 82.8% are exports of refined petroleum products, and 1.8% are dairy products. Approximately 8% of exports are chemical products and metals (Crenos, 2020).

Sardinia is one of the most critical regions for sheep milk production in Europe. In the last fifty to seventy years, the island transitioned into a milk monoculture. Almost 70% of Italian sheep milk is produced in Sardinia, and Pecorino Romano, the third most exported Protected Designation of Origin (PDO) mature cheese in Italy (after Parmigiano Reggiano and Grana Padano), is made mainly from Sardinian milk (Ismea, 2019), even if its name could suggest otherwise. More than half of Sardinian milk is processed into Pecorino Romano, an industrial and low-cost cheese¹, widely used in the food industry to flavor food.

It is estimated that there are around 12,000 sheep farms² and 300 dairies³ of different size (varying according to the quantity of milk produced) and character (industrial or artisanal⁴) that process milk in Sardinia (Ismea, 2018; Farinella, 2018; Sardegna Agricoltura, 2013; Laore, 2016). According to available data, there are approximately 28 active industrial cooperatives, about 70 private processing enterprises ranging in size, and around 150 artisanal mini dairies manufacturers (Farinella, 2018, Laore, 2016). These figures account only for formally registered dairies; hence not all informal production is reflected. Cheese produced by mini dairies is spread across differently sized dairies, which make a variety of products for diverse markets and consumers, mostly sold in domestic markets through short chains and direct sale. Yet most of the milk is processed industrially, around 50-55% of the processed sheep's milk (Farinella, 2018), becomes Pecorino Romano, the export of which is controlled by a few private industries. In Sardinia, the Pinna

¹ When I use the term 'industrial' cheese, I refer to a type of cheese that is produced on a large scale by industries that vary in size (from big to medium and small) and in typology (from private to cooperative industries). The processing follows standardized procedures that are generally described in the Consortium's regulations which oversee the production of PDO cheese. The milk used is pasteurized, losing the territorial typicality and the diversity of the milk. With the pasteurization process all milk bacteria are eliminated, even those that are useful for milk coagulation. Instead, purchased ferments are added to make the production more predictable and less risky. Pecorino Romano is also 'industrial' in the way it is used. Being a low-cost cheese and with high salt content, Pecorino Romano is used to season and add flavor to frozen products such as lasagna, frozen pizzas, gnocchi, and tortellini that are sold in large retailers.

² By sheep farm I refer to those farms that specialize in sheep farming. According to ISTAT, there are about 22,000 farms engaged in animal husbandry (including cattle, sheep and goats) in Sardinia. Among these, sheep farms predominate.

³ Factories, of different sizes, dedicated to the processing, storage and sale of milk, cheese and dairy products.

⁴ Artisanal dairies, often called 'mini-dairies' in the context of Sardinia given their micro size, make artisanal cheese which is often characterized by territoriality, by a mode of production that does not follow industrial standards but rather traditional and place-specific savoir-faire. For a more articulated discussion of the term artisanal see section 6.1.

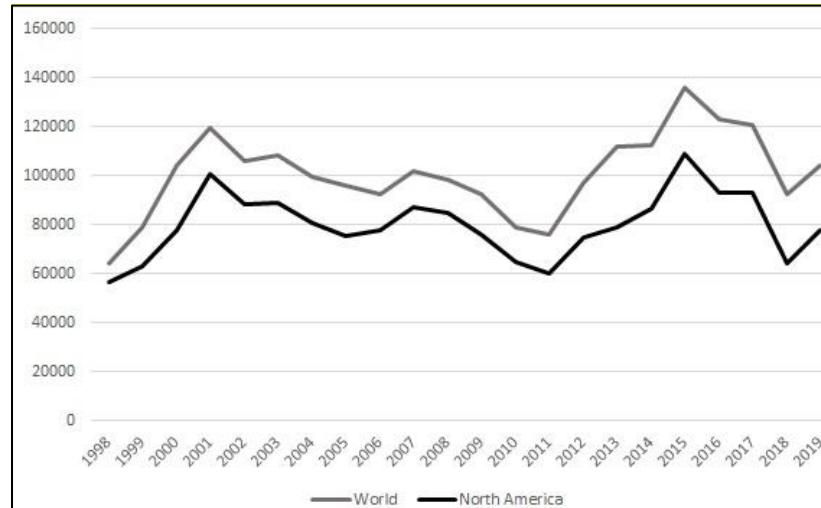
brothers' company stands out for being among the first Sardinian entrepreneurs to build a commercial channel between Sardinia and the USA during the Great Depression. Since the beginning of the twentieth century, the Pinna brothers have managed to consolidate an important and relatively monopolistic position in the export and distribution of Pecorino Romano. Industrial dairy cooperatives, founded in the early twentieth century to counter the growing power of private industries, had a hard time creating a recognizable name for their products and building a direct commercial channel. For this reason, they are historically dependent on Italian wholesalers who export abroad. For years, cooperatives have also worked as sub-contractors, supplying cheese to the largest dairy industries to sell under their brand name (Porcheddu, 2004).

The distance between Sardinian pastoralists and the main consumers is indeed continental; export has historically been dependent on a single market. As Figure 1 shows, the total dairy export from Sardinia to the world and total export to North America have the same pattern. In North America, the United States is the main country to which Pecorino Romano is exported. This is understood from the historical relationship between Sardinia and the USA, which have traded Pecorino for more than a century (Pinna book), and from the continuous efforts of the Pecorino Romano consortium to decrease dependence on the United States. In 2020, around 70% of Pecorino Romano exports were directed towards the USA (Ismea, 2020). As demonstrated by the empirical research carried out by Farinella (2018), the export of Pecorino Romano, a low-cost and standardized cheese, is mainly controlled by a few intermediaries. Today, just as twenty years ago, the Sardinian dairy exports strongly depend on the USA market. *Auricchio, Galbani, Pinna, Granalolo, Ferrari, Trentin, Biraghi, Agriform, Ambrosi, Zarpellon, Brunelli* are some of the companies (mainly from Northern Italy) that purchase Pecorino Romano and sell it to big distribution chains such as *Auchan, Conad, Esselunga, Lidl* and to American importers such as *Ambiola* (acquired in 2015 by *Auricchio*) and *Schuman Cheese*, which manages distribution in the USA.

Figure 1. Export of dairy products from Sardinia to the World and North America.

Years 1998-2019 on x-axis. Quantity in ton on y-axis.

Source: Farinella and Simula (2021) elaboration on ICE data.



On the input side, costs of production are high, even if extensive grazing is still very common in the Sardinian agro-pastoralist system. According to Ismea the miscellaneous costs of production⁵ represent 33.41% of the total costs of production for medium size farms and 40.72% of the total costs of production for large scale farms. Throughout the last decades, and following years of incentives from public policies, farms have become more specialized, mechanized, and costs have increased. These costs include fixed costs (machinery maintenance, taxes, debts repayments etc.) and variable costs (feeds, seeds and fertilizers, fuels and lubricants, medicines, technical and veterinary advice, electricity, detergents and disinfectants, machine hire etc.) (Ismea, 2018). According to Ismea's analysis (2018), the recent unpredictable and unfavorable weather conditions in Sardinia resulted in a significant increase in the costs of saved fodder and concentrated feed. Feed costs become one fourth of costs for middle-size farms and one third for large-scale farms. Variable costs are increasingly more volatile and uncertain, and especially in the case of seeds and animal feed, global distribution is controlled by a handful of transnational corporations (Clapp and Fuchs, 2009), leading to speculation and high price volatility. Among these, DowDuPont, ChemChinaSyngenta and Monsanto control more than 50% of the seed market, while ChemChinaSyngenta and BASF Bayer control 51% of the pesticide market (Spadaro, 2016).

Therefore, key dynamics in the Sardinian sheep dairy sector are currently: distance between chain actors, increased dependency on commodity markets for the reproduction of the farm, concentration of industrial corporate power, agricultural squeeze, and market volatility and

⁵ "These represent costs incurred for the purchase of goods and services with total wear and tear, such as feed, seeds and fertilizers, fuels and lubricants, medicines, technical and veterinary advice, electricity, detergents and disinfectants, rental of machines for crop operations, and other minor expenses necessary for the normal conduct of work." Ismea (2018:7).

uncertainty. Market uncertainty interacts with uncertain weather conditions (droughts, floods), animal and human disease outbreaks, changing policies, and geopolitical shifts which have a strong impact on production.⁶ Pastoralism is a production system that must adapt daily to the variables of complex and changing ecosystems. Pastoralists live with uncertainty (Scoones, 2021; Nori and Scoones, 2019; Krättli and Schareika, 2010), and, as argued by Scoones, pastoralist activities are centered on "the exploitation of variability, particularly of natural environments, and the importance of flexible forms of mobility in the face of diverse uncertainties" (Scoones, 2021:2).

The development of the dairy industry in Sardinia represents a strong manifestation of the capitalist penetration into agriculture. But capitalist types of exchange and commodity markets were not always dominant. It is useful to look briefly at changes in markets and market engagement, as today's collective and individual responses to uncertainty remain rooted in the interaction between commodity markets, domestic markets, and others, which have evolved over time. The sheep monoculture was not always a feature of Sardinian landscapes. Before the production and export boom of the 1980s, and before the push towards mechanizing and intensifying the pastoral sector, livelihoods, production, and engagement with markets were very different. It is important to summarize significant structural changes in livelihoods, production and markets so as to frame my research question in a broader context of state-led market policies, resource management and development, and the adverse inclusion of pastoralists in global commodity chains (McMichael, 2013).

From the 14th century onwards, land management was enshrined in the *Carta de Logu*.⁷ Shepherds were instructed to remain in the mountains and the *saltus*⁸ and not to enter the cultivated, communal lands, *vidazzone*, of the plain areas from October to July. Anyone who decided to cultivate outside the communal lands bore the responsibility of seeing their sowings destroyed by animals and nomadic herdsmen. Any animals that were caught grazing inside the *vidazzone* could be slaughtered. The *Carta de Logu* ordered that no one should sow in the mountains and *saltus*, which were meant for the animals. Transhumance was at the center of extensive pastoralism and remained the norm for centuries. While the shepherds moved with their flocks in search of resources on an island with a relatively dry climate (Le Lannou, 2006), the wives and/or family

⁶ A recent example is the war in Ukraine, which will impact the wheat, fertilisers and energy market, potentially leading to a worldwide food crisis (FAO, 2022).

⁷ *Carta de Logu* literally translates as "the agreement of the territory". It is a collection of laws in Sardinian language for the Sardinian *Giudicati*, the districts governed by different judges.

⁸ *Saltus* was the word that indicated the grazing lands dedicated to pastoral/animal use.

remained in the towns and grew vegetables and fruit, had chickens and pigs, and were responsible for bringing up the children and maintaining the family economy. Far from being specialized, pastoral livelihoods were diversified and included agriculture (with the prevalence of cereals, especially wheat and barley, but also vines and, to a lesser extent, olives) mostly for self-consumption and pastoralism (with the prevalence of sheep but also cows and pigs) for both self-consumption and for the sale of pastoral products such as milk, wool, and meat. Pastoral production came from extensive grazing and made use of the availability of free land.

Shepherds were connected to the plains and cities via transhumant routes. Here they found traders and merchants that were not only intermediaries for the sale of cheese, but in some instances, they also became partners for their activities. Cheese was mainly produced by pastoralists, as Tennant (1885) notes, there was no big dairy industry at the time. Cheese merchants would go to the lands where they knew that there was sheep pasture, and collect the cheese. In winter, part of the cheese was made in mostly stone pinnacles built by the shepherds themselves.

Figure 2. Pinneta (traditional pastoral house) in the territory of Ittiri. August, 2021.



Merchants and traders wanted more produce to export, and shepherds lacked sufficient resources such as capital or flock. Thus they often formed economic partnerships known as the "*soccida*" contracts, whereby owners provided land and animals, and the pastoralists their labor, and the earnings were shared. In other situations, merchants provided funds to kick-start the production season, and debts were repaid through the pre-sale of cheese at agreed-upon rates, which were typically lower than the market value (Ortu, 1981). Braudel (1972) points out that Sardinian cheese export to international markets was already present in the 16th Century. This was connected to the high content of salt in Sardinian cheese and the high price of salt abroad (Gemelli, 1776).

The transhumant and extensive pastoral model changed with the gradual privatization of land in 1835 and the abolition of civic uses and fulfillments (which established grazing rights and the right to collect wood in the common lands); and subsequently, with national and regional policies that incentivized sedentarization and the intensification of the pastoral sector. This substantially changed at the beginning of the 20th century thanks to a conjunction of several factors. In Lazio there was no cheap milk, while in Sardinia wheat production was in crisis due to high international competition. Subsequently, industrialists from Lazio moved to Sardinia to open dairies and benefit from cheap milk. The wheat crisis freed up land and the demand for milk encouraged sheep farming, which grew considerably in the first twenty years of the century. The land dedicated to wheat went from 314,000 hectares in 1909 to 138,100 hectares in 1924 (Le Lannou, 2006:339-340).

After the Fascist period⁹ – in which policies of food self-sufficiency led to large investments in wheat – pastoralism continued to grow. But, despite its economic importance, pastoralism was largely neglected by regional policy. Instead, policies imparted a developmental vision centered on industrial agriculture in the irrigated plains, as became clear in the first regional development plan of 1964. This caused widespread discontent in the internal regions, where pastoralists' incomes were eroding despite the rising demand for milk. A significant part of their income was conspicuously spent on high land rent to landowners. Moreover, the lack of financial resources exposed pastoralists to the coercion of merchants who offered advance payment but led pastoralists to underprice their milk. Increased protests, as well as a rise in banditry and criminality, prompted an agro-pastoral reform to facilitate land purchase and sedentarization. This was executed by a second development plan in the 1970s. Thanks to the Marzi-Cipolla law, which set a cap on rent, many landowners began to sell. Tenants were also granted the authority to undertake all organizational and management activities needed for intensive land cultivation and animal husbandry (Pulina and Biddau, 2015). Long-term mortgages and low interest rates encouraged shepherds to buy, but effectively conditioned them to increase production in order to repay their debts. Here began the process of sedentarization, one of the most significant changes in the history of Sardinian pastoralism. Many pastoralists effectively became small landed producers, and this underpins the sector's transformation. With the creation of the European Community, after the Second World War, Europe embraced a productionist paradigm (Lang and Heasman, 2004) and

⁹ The Fascist period starts with Benito Mussolini's seizure of power in 1922 until the end of the fascist regime formally in 1943.

incentivized agricultural productivity through technological development through the creation of the Common Agricultural Policy (CAP).

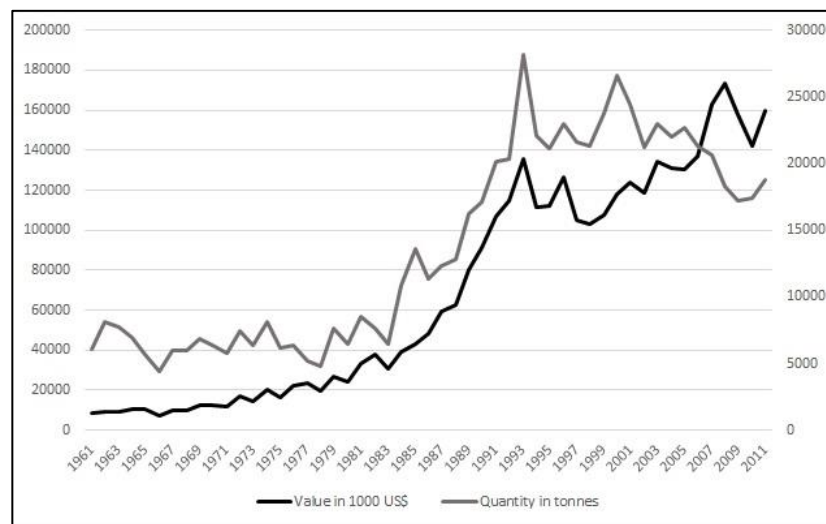
Throughout this period, there was a change not only in livelihoods but also in production and market engagement. Sedentarization was gradually followed by intensification of production and, crucially, the introduction of mechanical milking machines: another factor that leads to a radical change. The milking machines changed production. It became more specialized; the high maintenance costs could only be justified by higher output, and so, to produce more milk and to attract sheep into the milking place, a feed supplement was introduced. These activities all took longer, and pastoralists started working increasingly alone, as most had private land and mechanization was subsidized by the state. Howard (2009) very skillfully proposes a metaphor for this often-observed dynamic by the pastoralists themselves: the agricultural treadmill. Pastoralists recognize that technology has, in many cases, improved their lifestyle and working conditions. But they also point out that it replaced labor and, with the aim of reducing costs for one liter of milk, it increased overall costs on the farm. This is what most matters on a farm that does not reason according to the principle of scale enlargement. Moreover, technology has facilitated an increase in production but this has also been accompanied by a consistent fall in prices, as supply exceeds demand.

Technology allowed enlarged milk production, but it also increased the running costs of the farm, and, as production increased, the price paid for the product decreased. Livelihoods were revolutionized and pastoralists became relatively less mobile milk producers. They also became more dependent on upstream and downstream markets.

The way pastoralists engaged in markets also changed. There was a shift from diversified farms that produced cheese, and many other products for self-consumption, to farms that specialize in milk production. Industrialists coming from Lazio were the first to introduce the division between milk and cheese production. Distance between producers and consumers widened, and the actors involved in global commodity chains increased in type and number, leading to more uncertainty and price fluctuation. Financial actors investing in global commodities such as grain, soy and milk are one example (Clapp, 2014). But companies also used financial means to increase capital, as demonstrated by van der Ploeg (2008) with the Parmalat case. Oligopolistic markets were harder to access for small producers, and significant price volatility made them more vulnerable. On the other hand, for industries who were well positioned in commodity chains, price fluctuation facilitated capital accumulation through speculation.

Milk production rose dramatically around the 1980s, following the increasing demand from the USA market. Up until the 1980s, milk production was always between 20,000 and 60,000 tons per year. In 1985, it went up to almost 100,000 tons and by 1993 it doubled to 200,000. As seen below, the increase in production was accompanied by price fluctuation.

Figure 3. Italian Export of Cheese and Sheep Milk to World.
Value in 1000US \$ (on left-axis) per ton and Quantity in Tonnes (on right-axis), years 1961-2011.
Source: Farinella and Simula (2021) elaboration on FAOSTAT data.



This situation, resulting from a mix of policy incentives, market dynamics and geopolitical convergences, contributed to increasing the uncertainty in which pastoralists already lived (Scoones, 2019).

As Farinella (2018) argues, this process of modernization, understood as inclusion in commodity chains, resulted in loss of farm autonomy, with a growing reliance on the market for the purchase of production inputs (such as feed, hay, fodder, but also fertilizers, seeds, electricity, diesel, water, and costs for genetic selection), as well as various types of costs including labor, maintenance, insurance, veterinary, and processing of paperwork such as on animal welfare regulations and claiming of subsidies.

Still today, the falling price of milk increasingly fails to compensate for the labor sacrifices and economic expenditures of a modernized farm. According to Ismea (2016) the cost to produce one liter of milk is more than € 1. So, an acceptable and dignified compensation should at least reach that amount. However, this price has only been reached a few times in the last 20 years (Farinella,

2018), making this activity highly uncertain and "irrational" in the eyes of an outsider who reasons with a relatively limited logic of costs and profits. And yet, despite the fact that many farms have closed, and many are experiencing difficulties, pastoralists resist and exist in big numbers, responding in various ways to the intersecting uncertainties (market, climate, bureaucracy) with which pastoralism is riddled. They generate invaluable wealth, which is economic, social, environmental, and cultural. Over the last decades, local food systems (Robbins, 2015) and the struggle for autonomy (van der Ploeg, 2008) have been considered viable alternatives to global commodity chains for producers. But after decades of policy, which promoted integration into global commodity chains, millions of farmers throughout the world, including Sardinian pastoralists, rely on them for their livelihood. It is in this context that I set out to understand pastoralists' perspectives on commodity markets and their responses to the uncertainties they face within them.

1.2. The context in which pastoralists operate

As explained in section 1.1. pastoralists now operate within the context of a global market. The specialization of the Sardinian dairy sector into production of Pecorino Romano creates a lot of uncertainty and exposes producers and processing industries to market price fluctuations. But not everyone is equally exposed. To give the reader a better understanding of the structure in which pastoralists and semi-intensive producers operate, it is useful to provide a brief background about the main actors, their role and position within the sheep dairy chain and the main policies and standards that regulate production and distribution. I will give a brief overview of this information which will also be discussed more in depth in the empirical chapters and the specific cases.

Pastoralist production. Pastoralists are at the center of my enquiry but when we look at the bigger context, we should rather refer to dairy sheep producers or sheep farms. In fact, among the sheep farms in Sardinia, not all of them are, or self-identify as, pastoralists. In Sardinia there are around 12,000 sheep farms. Among these, there is a high percentage of very small farms, almost 30% of the total farms have in fact less than one hundred sheep (Atzori et al., nd). The second biggest groups are sheep farms with a flock that varies between 100 and 300 animals. These two groups constitute 70% of the sheep farms of the island. Almost 20% of the Sardinian sheep farms have a flock that varies between 300 and 500 sheep, and the farms which have a flock bigger than 500 animals are the minority and constitute roughly 11% of Sardinian farms. Of this number, 4.96% have more than 700 animals (*ibid.*).

Table 1 Distribution of sheep farms on the basis of flock size (number of sheep/farm). Source: Atzori et al. (nd:8).

Flock size class	Number of sheep farms	%of total. sheep farms	Number of sheep heads	% of total. sheep heads	Average flock size
<100	3,455	28.65	148,119	4.88	43
100-300	4,982	41.32	976,736	32.16	196
300-500	2,245	18.62	860,538	28.34	383
500-700	778	6.45	455,775	15.01	586
>700	598	4.96	595,598	19.61	996
Total/Average	12,058		3,036,766		252

There are various types of production across this range of farms and flock sizes. Production goes from highly extensive (including some who still practice transhumance¹⁰) to those who practice a semi-intensive production in a fixed farm site, with high levels of inputs and mechanization, and who supply a large portion of the feed through forage crops grown on site, along with purchased feeds and supplements. There are also different geographical and territorial realities that inevitably influence the type of production that is possible. Atzori et al (nd: 10-11) identify four different production systems: (i) sylvo-pastoral systems which are typical of mountain areas, they rarely focus solely on sheep but rather include goats and cattle and are based on herbaceous and ligneous feed resources with a minimal or no use of external feed. (ii) Agro-pastoral systems are situated in hilly areas and dedicate a small part of land to the cultivation of forage. (iii) Cereal-based dairy sheep systems are generally found in the lowlands; producers have a bigger land availability and cultivate more than 30% of their land to produce cereals and other crops such as legumes for grazing and haymaking. (iv) In the intensive irrigated systems “the use of total or partial diet feeding technique is frequent” (ibid: 12), and while part of the feed is produced in the farm, generally half of the animals feed consumption is met with purchased feed.

Inputs. The use of inputs and the level of mechanization is therefore very different among sheep farms. However, it is important to note that public policies generally incentivize the use of animal feed and other farm inputs even for farms where extensive grazing is predominant (see for example Animal Welfare policies that have certain conditionalities and are implemented through extension services). Animal feed is mostly imported in Sardinia (FT1, FT2). Looking at the official registry of the autonomous regions of Sardinia (Regione Sardegna, 2005), it emerges that there are around 20 main feeding distribution companies in Sardinia. Some of these are Sardinian companies that import raw materials and then process them in Sardinia, making mixtures and even pelleted products suited to the needs of companies in that specific area. Other feed mills are authorized

¹⁰ Transhumance can be the mobility between mountain and plains, but also short-distance transhumance is practiced by those who do not own enough land and who seek pastures in abandoned land or underutilized.

dealers of multinational companies such as the Purina feed mill in Mores, which is a branch of the Cargill company.

The cost of production is highly interconnected with the input's costs. An Ismea survey for the 2016-17 agricultural year on a sample of livestock farms in Sardinia shows that the cost of milk production for large farms is €1.33 per liter while for medium-sized farms (the majority of the farms) it is €1.82 per liter (Crenos, 2020). Under adverse market conditions and declining milk price, a cost of €1.33 per liter of milk is not economically sustainable. Leaving aside labor costs (the most important of all production costs), the other cost items relate to the purchase of feed, fertilizer, fuel, and energy, with variability depending on the type of farm, its size and geographical location (ibid.).

Policies. With high costs and low milk prices, producers are stuck in the middle and pay the highest price. However, public policies do not end up supporting smaller producers. One of the key structures that determines the direction of economic incentives and policies in agriculture, animal production, and pastoralism is the European Common Agricultural Policy (CAP). Policy frameworks frequently change, leading to subsidy schizophrenia and lack of long-term political perspectives (Idda et al., 2010). During the 1990s, the CAP had a productionist framework (Belo Moreira, 2015) that rewarded productivity therefore incentivizing the intensification of production. With the decoupling mechanism, CAP subsidies are now disassociated from production levels but are associated to flock and land holdings. This shift, which was designed to move towards a more sustainable and less intensive production, has instead encouraged speculation on land, dependency on EU subsidies and rent-seeking behavior while discouraging production and excluding small, young, and landless producers.

Processing. Where does the milk go? The milk has different destinations. Some sell their milk through milk collection groups, but most people are part of and sell their milk to dairy cooperatives. According to Farinella (2018), there are around five big cooperatives (with more than 400 members) and around 20 to 25 medium and small cooperatives. These are managed and owned by pastoralists themselves which industrially process the milk mainly into Pecorino Romano cheese and other types of cheese which have smaller markets. Producers who are not part of a cooperative sell the milk to private industries. As mentioned in section 1.1, the market is dominated by a few private industries that have monopolistic control of the market and, given the amount of cheese they control, have significant influence on supply and on the price of milk. As of 2017, there were five big industries who process more than 15 million liters per day, 20 medium size industries that

process between 5 and 15 million liters and around 30 small private industries that process less than 5 million liters per day. Producers who sell their milk (either to cooperatives or private industries) have an open contract or agreement (many pastoralists I interviewed do not even have formal contracts). This means that they receive a fixed advance payment per month (generally from 0.6€ to 0.8€ per liter, according to the predictions on the productive year) and at the end of the year they receive the rest of the money depending on the market price of Pecorino Romano and depending on how the vintage was closed. While cooperatives share all profits among members, private enterprises can use the excuse of low market price even when they were able to sell at better than market prices.

There are pastoralists and sheep dairy farms who are formally registered as mini dairies to make artisanal cheese and sell directly to consumers in their shops, and pastoralists who sell locally and informally to the community, focusing mostly on home consumption and who also engage in other paid work. While high-quality artisanal cheeses are produced for niche markets in Sardinia and abroad and sold to tourists who populate the island in huge numbers during the summer, the industrial cheese Pecorino Romano dominates the market. This results in a dependence on the price trend of Pecorino Romano, which has a great influence on the price trend of milk (Farinella and Simula, 2021).

Policies. Regulations for cheese making are mainly geared towards intensive and industrial production. Rigid and sanitary quality standards in conventional commodity chains have a tendency to favor corporate retailers over primary producers (Marsden, 2018). Even if the regulations for mini dairies are different to those of large industrial dairies, they are still based on the same phyto-sanitary and hygiene principles and obligations. Spaces must be tiled, they must have several rooms (a lobby and changing room, a bathroom, a ventilated room for cheese storage, a room for production) and a sophisticated sewage system for example. Policies and regulations encourage the use of pasteurized milk and cultures to stabilize the bacterial load of the milk. If a producer makes cheese from raw milk, finding a public sector technician to support him in case of need is much more difficult.

Distribution. As mentioned in section 1.1. a few industries control the market of Pecorino Romano, at the same they are in a subordinate position vis-a-vis big multinationals who control a big share of the wholesale and final distribution and can therefore have the power to negotiate very low prices. Some of the main industries are in mainland Italy and other important ones are in the USA.

These industries buy large batches of Pecorino Romano cheese, portion or grate it, package it, and resell it under their own brand name. Supermarkets brands like Conad, Carrefour, Auchan are increasingly selling Pecorino Romano under their brand name. Pastoralists have little market power with milk processors, input providers as well as the distribution node of the chain. In many cases sheep farms act as 12,000 separate small buyers even in the input market, when purchasing feed and other inputs. During the 1980s cooperatives and milk groups were created to gain market power vis-à-vis industrialists but the quantity of milk available is high and pastoralists do not contract the price of milk collectively, so industrialists take advantage of this situation and play with downward competition. The same power relationship exists between dairies and distribution companies. In fact, the double downward auctions of large companies such as Eurospin, which have the power to determine the price because they buy large quantities, are well known. Pastoralists are paid an advance for milk every month, but the final price is determined at the end of the production year. In this way, industrial dairies can transfer part of the risk onto the shepherds' shoulders and pay them less for their milk in times of crisis.

Policies. The creation of milk cooperatives and milk groups was encouraged with public incentives. However, cooperatives are dependent on the production and sale of Pecorino Romano which is often sold in the international market directly from private industries. When the price of Pecorino Romano drops, the government cannot stock Pecorino Romano to then sell it when the price is higher. This public intervention is limited to a few products and sheep milk is not included (European Commission, n.d.). During a price crisis, if the Pecorino Romano market is saturated, the regional government buys a batch of product that is given to the needy or used in public school canteens. This means that public authorities cannot influence the price stability of the product. On the contrary, the EU also provides support to private sector operators to pay the costs of Pecorino Romano storage for a determined period to reduce the impact of oversupply. In fact, private actors like banks and private dairy industries often receive subsidies to store or sell cheese while pastoralists and sheep milk producers generally do not benefit from specific subsidies in times of crisis.

1.3. The research problem: autonomy and local markets as a response to the squeeze of global commodity chains?

What are the responses to the commodification of production and the dependency on global commodity chains? First, it should be noted that the number of sheep farms has had an unstoppable downward trend for many years already which means that many producers have abandoned agriculture in the last decades (Ismea, 2005). From 2000 to 2010, sheep farms decreased by 12.1 % (Regione Sardegna, 2010). To reflect on this question, I refer to the literature of peasant studies and agrarian change, even if my research is on pastoralism. As Scoones (2021) has argued, the classic debates on agrarian change around production, accumulation, and politics that are focused on "peasants" are also very useful to analyze agrarian change in pastoralist societies. Academic literature, in particular the critical agrarian studies literature, considers peasant struggles for autonomy and alternative markets (short chains, local markets) as central when assessing producers' responses (Bernstein, 2014; van der Ploeg, 2008; Henderson, 2019). This focus is particularly found among scholars who are close to the global food sovereignty movement. They posit that, if markets are more local as opposed to global, and more 'peasant-like' as opposed to 'capitalist', small-scale producers benefit more (van der Ploeg, 2008, Schneider and Niederle, 2010), have more bargaining power, and are less vulnerable to the vagaries of global capital (Kloppenberget al., 1996; Starr et al., 2003).

One of the biggest efforts to understand responses to commodification can be found in van der Ploeg's book *The New Peasantry* (2008). According to him, the struggle for autonomy is a central characteristic of peasants' livelihoods, production, and engagement with markets. Van der Ploeg differentiates between peasants, entrepreneurs and capitalist farmers. Capitalist farmers run large-scale corporate production, which is based on wage labor and is dependent on market inputs and financial capital. Van der Ploeg pays particular attention to the difference between peasants and entrepreneurs. Entrepreneurs are dependent on industrial capital; they are highly specialized, they focus on scale enlargement and their production is oriented entirely to markets. By contrast, peasants try to reduce their dependency on input and commodity markets. As he puts it (2008:24):

"Central to the peasant condition, then, is the struggle for autonomy that takes place in a context characterized by dependency relations, marginalization and deprivation. It aims at and materializes as the creation and development of a self-controlled and self-managed resource base, which in turn allows for those forms of co-production of man and living nature that interact with the market, allow for survival and for further prospects and feed back into and strengthen the resource base, [...] enlarge autonomy and, thus, reduce dependency. Depending upon the particularities of the prevailing socio-economic conjuncture, both survival and the development of one's own resource base might be strengthened through engagement in other non-agrarian activities. Finally, patterns of cooperation are present which regulate and strengthen these interrelations".

Thus, the struggle for autonomy is seen as a response to the relations of dependency created by the adverse inclusion in commodity chains. Van der Ploeg uses the specific term "distantiation" (meaning partial delinking or distancing) to refer for example to the reduction of input purchase and the increased production on-farm, or to the distantiation from sale in commodity markets. According to him, the meaning of "peasants" in the context of Europe today is not connected to production for self-subsistence. Peasants still produce for the market, but they produce in a different way and they engage in and create "nested markets", embedded in different institutional arrangements and with different understandings of quality and fairness (van der Ploeg, 2008: 280). Distantiation is not the only strategy to respond to dependency from commodity markets. Other peasant responses include different forms of diversification and everyday forms of resistance (Scott, 1987).

This view of the peasant condition and peasant responses to the exploitative tendency of commodity chains, which is widely cited by scholars and activists, revolves around the willingness to distantiate from "the Empire" (Van der Ploeg, 2008) and the dependency created by commodity markets. The empire, as referred to by van der Ploeg, is a structure, "a mode of ordering that tends to become dominant. At the same time, Empire is embodied in a wide range of specific expressions: agribusiness groups, large retailers, state apparatuses, but also in laws, scientific models, technologies, etc." (Van der Ploeg, 2008:4). The literature thus emphasizes a distinction between commodity markets/dependency from the Empire on one side and distantiation/ local markets on the other side. This argument is also central to the advocacy of social movements that struggle for food sovereignty and food system transformation, with whom I have worked and whose struggles I joined over the past five years.

During my Master's research at the International Institute of Social Studies I had the chance to approach these debates. Then, after researching and being involved in social movements, I had the privilege to be able to do fieldwork in my motherland, Sardinia. The more I spoke to people and interviewed pastoralists the more I saw the complexity around these debates. Three things particularly resonated with me.

First, arguments in the literature assume that peasants, motivated by a search for relative autonomy, create markets that are embedded in different social values, and sell their products there. It is often assumed that diversification, or partial delinking from commodity chains and interactions and creation of different market arrangements, are peasant acts of resistance against commodity chains. But in Sardinia, I realized that many pastoralists did not want to delink from

such commodity chains. Delinking and sale in alternative markets was not an option, despite the ideal projected by peasant movements and their academic supporters. Some literature started to raise similar questions (Soper, 2016; Jansen, 2021). This is a crucially important point for me. Throughout my short professional experience, a central objective has been to create spaces and facilitate the direct participation of peasant and small-scale producers in policy arenas. When talking to small-scale producers back at home, however, I realized that many of these struggles did not resonate with them. I asked myself, why? I pondered: whose voices am I listening to among the Sardinians and among transnational movements, especially on the issue of markets, which is so central for producers? Are those who sell milk to commodity chains also pastoralists? Understanding this was a strong motivation for my research.

Second, in these debates, the market is often presented as an entity with intrinsic characteristics. It seems as if the market itself is "bad" or "good" and that the producers' engagement has little importance. While it is true that there are compulsions that are created by certain market dynamics and by processes of commodification (Bernstein, 2010, Howard, 2009, McMichael 2013), markets are always embedded (Block, 2003) – in different values, cultures, identities and relations – but always embedded. This means that the way markets are regulated always reflects some social priorities, values, norms, ideas, and interpretations of rural development, as well as meanings of food quality and production that result from social struggles.

In these debates, which sometimes 'essentialize' markets, local and direct sale is generally seen as better for producers. However, some scholars have also engaged in the discussion on market localization with a critical eye, concluding that local is not always and necessarily better (DuPuis and Goodman, 2005; Robbins, 2015). Such alternative market arrangements may give producers more bargaining power, but some questions arise over the intrinsic moral superiority of local versus global. As Goodman et al. (2012:8) argue:

"supporting an open, process-based and pragmatic food politics, we reject normative portrayals of the local as places with [...] communitarian values of reciprocity and fairness that unproblematically "incubate" alternative economic forms and promote social justice and environmental sustainability."

Third, it seems that these two markets – industrial and local – are opposed. There are dichotomies constructed between industrial-artisanal, global-local, and bad-good. And yet many producers still engage in commodity markets. Why is that so? Here we have to look beyond the narrow confines of 'the market'. Non-capitalist relations always co-constitute capitalist market relations. Feminist

political economist scholars (e.g., Gibson-Graham, 2002) have highlighted the need to look at markets beyond the capitalist form of exchange. Other interactions exist; hence the importance in understanding what they are, and their role in relation to commodity markets and producers' engagement. But what intersectional relations – across age, gender, identity – affect such exchanges, and how do these co-constitute 'the market', and therefore exchanges in the context of accelerating production and market uncertainties?

The three reflections outlined above led me to want to understand better why many pastoralists in Sardinia still engage in commodity markets. From the literature, it seems that those who pursue peasant-like production are more likely to engage in markets that are less distant, and industrial, and more networked, and territorial. Is that so in the context of Sardinia? What is the interaction between production, markets, and the construction of livelihoods? Does "peasant-like" production (also sometimes referred to as "artisanal production") operate completely outside industrial market arrangements and the logics of capital? What does the complexity of market arrangements in daily-lived experiences look like? If shorter chains and alternative market arrangements leave producers better off, why are there still producers who decide to engage in global commodity chains? What types of uncertainties are connected to what types of market arrangements, and how does market engagement affect the sources and arrays of uncertainty?

The reasons I pose these questions are varied. First, starting from the 1970s, the Sardinian sheep dairy sector has often faced cyclical periods of crisis. One of the most acute price shocks has resulted in widespread protests starting from February 2019. At the beginning of 2019 the price of milk varied between € 0.50 and € 0.60 per liter. This remuneration does not nearly allow shepherds to cover their production costs and it is almost 50% less than what is considered a fair milk price (varying from € 0.80 to € 1 per litre) (Farinella, 2018; Ismea 2018). Being from Sardinia, and as part of a family who has long been connected to the pastoral world, these events interest me directly. It is therefore my intention to explore deeply these dynamics, in order to understand better where action and research should be directed to support pastoral livelihoods.

I was actively involved in and worked for peasants' social movements and Food Sovereignty alliances over the past 4-5 years. Food sovereignty is a key political struggle to challenge the current food system and to propose alternatives. As a supporter of peasants' struggles I feel committed to the food sovereignty agenda. At the same time, during my Masters' research in Sardinia, I found that some producers see food sovereignty as an ideal, almost essentialized, vision of peasant agriculture. Working for the food sovereignty movement, I also realized that including

producers whose livelihoods depend on global commodity chains is difficult. Far from saying that every producer wants or should be part of the food sovereignty struggle, one contradiction that I see is that these producers are among the most vulnerable and the most affected by uncertainties. So, those who are most reliant on global commodity chains, are also the most negatively affected by them and could potentially be among the ones who would benefit most by agri-food system restructuring.

As my background is in working with social movements, my critical enquiry is intended to be an exploration on the empirical reality of Sardinia. It is not meant to be destructive of the transformative agenda espoused by food sovereignty proponents. On the contrary, my intention is to reflect on producers' different experiences and positions on commodity chains, and to contribute to a reflexive struggle for true transformation. In so doing, there is a need to look at pastoralist livelihoods through the interactions between structure and agency, and thus between a structural analysis of dynamics of exploitation and dispossession of the capitalist system, and a more micro-analysis that looks at farming systems and their heterogeneity (Niederle, 2018; Scoones, 2015). It is in this context that I seek to understand how producers interact in markets, how they react and adjust to increasing uncertainty and to the oppressive consequences of the agricultural squeeze. To explore this, I formulated the following research question:

How do different pastoralists navigate and create diverse market arrangements in a context of uncertainty?

In the next section I explain my central argument and how I organized my thesis.

1.4. Organization of the thesis

In this thesis I argue that when we investigate 'real markets', embedded as they are in society, the industrial and artisanal market divide is not as straightforward as it is often assumed. Industrial and artisanal markets on the ground are often not as separated and antagonistic as it is often portrayed in the literature or in political debates. On the contrary, some pastoralists often engage in both as part of their strategies to respond to uncertainties. Based on the empirical data collected throughout my fieldwork and presented in the empirical chapters, I conclude that, when we examine the way pastoralists engage in markets and respond to uncertainties (market uncertainties in particular), we

should think of the creation of a livelihood – through milk and cheese production – and engagement in markets as co-produced, intertwined, and embedded.

Market engagement and responses to market uncertainties are not simply determined by supply and demand and by "the market". Nor are they only a matter of individual choices, "efficient" or "inefficient" farm management, or political values (such as community solidarity, supporting agroecology, feeding local communities). For this reason, it is not enough to talk about "the market" as being good or bad, industrial or artisanal, without looking at the engagement of pastoralists within such markets, at their agency and at the interaction between pastoral production, markets and the construction of diverse livelihoods. This co-constructed interaction between production-livelihood-markets, I argue, forms different market arrangements that emerge out of different factors, both exogenous and endogenous, and that are at once social, material, and political.

In Chapter 2, I introduce these concepts and locate them in the literature. I explore how 'uncertainty' is understood, and how I interpret market arrangements. By using an extended livelihood framework, I equally integrate both class and Chayanovian analytical approaches to understand the interaction with markets, and how this leads to different processes of agrarian change and different ways to respond to uncertainty.

In Chapter 3, I explain and justify how I conducted this research and what methods I used. Then, across five empirical chapters (Chapters 4 to 8), I explain how livelihoods, production and market engagement are co-produced and should be seen and analyzed in this way. I present five different categories of market arrangements that emerge from my fieldwork and how, in each one, there is a different configuration of livelihood, production, and market engagement. The last two sections of the empirical chapters review patterns of livelihoods and how market arrangements emerge across the cases but do not, as such, have a conclusion. Rather than concluding each empirical chapter, in Chapter 9 I analyze the different market arrangements transversally and identify the drivers of this process of co-production. In other words, I discuss the different factors that influence how these market typologies emerge pulling together key findings and transversal conclusions. In Chapter 9 I also discuss how my thesis contributes to academic debates. As a way of concluding, in Chapter 10, I summarize my main argument and reflect on some implications for policy, research and social movements. I will not enter into an exhaustive discussion, but rather indicate areas for further reflection.

Based on the empirical analysis of material, I show that class relations are indeed important to understanding production and market engagement, dynamics of exploitation, differentiation, and identity formation (Bernstein, 2010). However, I suggest that class is not enough to understand responses to market uncertainties. Pastoralists, just like farmers and peasants, follow distinctive but heterogeneous logics to run their farms, to engage in markets, and to respond to market uncertainties. These logics can be unpacked and explored with the help of the analysis offered by van der Ploeg (2013), whereby a more Chayanovian perspective is integrated with a more classic class-analytical approach to agrarian dynamics.

In conclusion, I argue that, since market engagement is relational, it is co-constituted with production and with the construction of livelihoods, so market relations are always embedded in societies and institutions governed by rules and regulations. Uncertainties (including market uncertainties) are thus lived, experienced and faced through such embedded relations. To understand better how diverse pastoralists engage differently within markets, and respond to uncertainties (perceived in different ways), the themes of class and pastoralists' different logics must therefore be considered together. This has implications for policy makers and international social movements. Over the years, with the "modernization" and "rationalization" of the pastoral sector, certain practices that were key to respond to uncertainty have been discouraged or even become illegal (such as working together on the most labor intensive tasks, informal sale to the community, using marginal land without formal permission but only with informal agreements), increasing costs for pastoralists and discouraging small-scale production, and direct sale in favor of a food system geared mainly to international exports. These practices were often confused with "backwardness", "ignorance" or reluctance to modernize, but they are key to navigate uncertainty and to survive as a farm. This also has implications for international social movements where the definition of the peasant struggles often assumes strong political and ideological positions against industrial markets and international commodity chains. While these facilitate the concentration of power and profits in the hands of a few, interaction with commodity chains is also essential for many pastoralists and peasants to navigate uncertainties and precarity.

Having explained my research question, the context that led me to it, and the organization of the thesis, in the next chapter I elaborate some key concepts, which were key in carrying out the research.

Chapter 2 - Conceptual framework: uncertainty, market arrangements and differentiated pastoralists

In order to operationalize my question, I broke it down into three components: uncertainty, market arrangements and differentiated pastoralists experiences. I will now explain these concepts in turn, stressing how they helped me carry forward my research.

2.1. An uncertain context

As the quote below shows, uncertainty is a condition that characterizes pastoral lives.

"I tell you straight away, here we are in the hands of God, of the bureaucracy and of all these things, because this is a profession in which you cannot make predictions; it is a closed-box. You can't just make your own calculations "ok this year's total income and capital", because maybe you start with your sheep, they get sick, you have grazing grass but the sheep get sick and you're with your ass on the ground. In a few years maybe your sheep are healthy but there is a shitty year and you spend money to recover. When the sheep are healthy and there is a good year they do not pay well enough for the milk and you are always back at the same point. It is just a job where you do not have security, never an economic security because it is a job full of unexpected events."

(Shepherd, Centre Sardinia, Barbagia di Nuoro, September 2016 as cited in Farinella, 2018:127)

Scoones (2019) argues that uncertainty characterizes many aspects of our lives to the extent that it can be seen as a condition that defines our times, where knowledge about the future is not predictable. Financial markets – linked to people's savings, food prices, feed prices, sovereign debts, and taxes – are, for example, intimately linked with people's lives. Yet, despite all the focus on technical and economic provisions, the financial crash of 2007-2008 was not predicted. It spread so fast and widely that it affected people worldwide, with a particular impact in the West. Environmental disaster and climate change is another field where states and international organizations develop predictions and calculate risks to understand and prevent possible outcomes. In fact, an entire industry has developed for risk reduction and resilience in the face of disasters and climate change (*ibid.*). However, even when these phenomena are seen as uncertain, they are treated and managed as risks. The probabilities of an event are assessed through elaborate modeling techniques, and responses are developed to adapt or mitigate the upcoming risk (*ibid.*, 2019:24).

As Scott (1998) argues, states are not able deal with mess and with the complexity that constitutes reality. For this reason, states attempt to simplify information to develop policies and regulations, to control and plan. They do so through statistics, censuses, and science and technocracy. However, responding to uncertainties as if they were risks leads to inadequate responses (Stirling, 2010). Uncertainty is best thought of as a situation where outcomes and likelihoods of a certain event happening are not known, as opposed to risk where outcomes and likelihoods are known or are predictable. Stirling (*ibid.*) also identifies two further states of knowledge: ambiguity (where outcomes are contested), and ignorance (where we are not aware of the potential unknowns we could face). Acknowledging these different states of knowledge has profound implications for policy-making (*ibid.*).

A new viewpoint for development thought and practice develops when uncertainty—where there is no knowledge of future likelihoods of outcomes—is compared with risk—where likelihoods can be measured and forecast. When risk is framed in this way, planning and control are suggested, and stability, or at least the desired result, is anticipated. Performing a typical risk assessment is useful in some situations, such as when building a bridge or road. Without a risk assessment, this would create potentially dangerous situations. There are intricate engineering procedures based on knowledge of potential shocks and the physics of materials. But in other situations, we just don't know what the future will bring, and we cannot predict the outcomes of specific responses (for example the responses to subsidies and incentives) with models. Even with advances in climate science, the models are too complex to predict what will happen in a specific location in a specific year beyond some very basic estimates. We anticipate more extreme occurrences, such as droughts, floods, or huge snowfalls, as a result of climate change, but we are unsure of when they will happen. The same goes for economic shocks or health-related pandemics.

We can offer scenarios, create backup plans, and prepare for a variety of outcomes in this situation of uncertainty, but it necessitates a different approach to development. Shifting our frame from risk to uncertainty does not mean that we cannot do anything and that we should sit back and wait for things to unfold. Pastoralists are forced to deal with whatever situation arises and they produce, build livelihoods and networks in a way that uncertain situations will not find them unprepared. However, shifting our frame implies that different development strategies are required. This entails a fundamental rethinking of how we assist people in accessing and managing resources, adapting to climate change, negotiating markets, migrating to new locations, dealing with calamities, and other such activities (Scoones, forthcoming). Thinking about how people - individuals but most importantly collectivities connected in networks - can transform high variability (the increasing

norm) to ensure a reliable flow of goods and services is essential to developing a new narrative for development that is based on pastoralists' (and others') experiences (Roe, 2020). Such a reliability approach confronts complexity, uncertainty, and mess head-on rather than attempting to domesticate it through models and technologies. According to Roe (2016), this entails considering pastoralism as a "critical infrastructure" where "high reliability" experts and the networks they are embedded in can produce reliability through a set of practices and processes that are simultaneously rooted in regional cultures and contexts and connected to outside assistance, technology, and information (Roe 2016).

This does not mean that pastoralists are experts in dealing with uncertainty and that therefore we should rely only on the local knowledge embedded in a specific territory. This means that we should move away from a control-oriented mindset that ignores variability and the uncertainties that follow (Scoones, forthcoming). It also means recognizing that pastoralists have an in-depth knowledge of the interaction between the global and the local specificities. This framework begins with the local reality in a given territory at a specific time in history. External support and interventions must take this into account, understanding and assisting rather than displacing local arrangements. If they do not, they will likely fail.

Pastoralists organize their livelihoods and production while facing uncertain presents and futures. Decisions are never taken in stable conditions, but rather by trying to prevent possible contingencies; or at least to leave some flexibility to change course if possible and when necessary. Given that events are unknown, we could consider having more flexible policies to allow for shifting from one arrangement to another, to exploit opportunities, and to avoid pitfalls for individuals and for the collective. By assessing the relation between uncertainty and different market arrangements, and by understanding more about the ways pastoralists face uncertainties, we can potentially draw lessons on how to face uncertainties in other domains. Meanwhile, looking at these uncertainties can shed light on specific dynamics we should look at when assessing uncertainty as faced by pastoralists.

2.2. Markets and market arrangements

Classical agrarian studies have explored how capitalist penetration affected the social relations of production in the countryside. An analysis of markets is therefore crucial. A central feature of capitalism is therefore the commodification of production and social reproduction (Jan and Harris-

White, 2021; Bernstein, 2010). Commodification is the "process through which the elements of production and reproduction are produced for, and obtained from, market exchange and subjected to its disciplines and compulsions; capitalism is distinctive as a system of generalized commodity production" (Bernstein, 2010:124). Commodification eventually leads to social differentiation and the formation of social classes: on the one hand capital that engages in expanded reproduction and the creation of surplus profit, and on the other petty commodity producers who engage in simple reproduction and struggle to socially reproduce their farms and labor (Bernstein, 2010; Byres 1995). This can eventually lead to 'deagrarianization' (Bryceson, 1996) or 'depastoralization' (Caravani 2018). This literature, however, mostly assesses the impact of structural dynamics on pastoralists' livelihoods, and how these create path-dependency leading to exploitation, but perhaps pays less attention to peasant agency and resistance in the face of capitalist penetration.

Delinking, diversification and nested markets

Another big body of literature, by contrast, focuses more on producers' agency and responses, and on what they do in these adverse circumstances. Scholars studying rural livelihoods note a broad shift away from a rural economy centered solely on agriculture and toward more diverse rural livelihood systems with a greater emphasis on off-farm work (Scoones, 2015; Verbrugge and Thiers, 2021; Ellis, 1998). Additionally, scholars of peasant studies – including van der Ploeg – analyze how the peasantry and agricultural work is constantly changing, transforming yet still existing, resisting and responding to capitalist penetration. These actor-oriented approaches are, in some way, an attempt to overcome the excessively structural focus on international regimes of capital accumulation (Niederle, 2018). Taking inspiration from Chayanov (van der Ploeg, 2013), these studies stress the heterogeneity of 'styles' of farming (van der Ploeg, 1994) and try to go beyond the simplistic capital-labor dyad.

However, here too the focus became a struggle between 'The Empire' and peasants, partly to respond to authors who pointed out to an excessive localism that did not relate enough with wider dynamics of capital accumulation. In van der Ploeg's analysis of peasants, the contrast between dependency on commodity chains and peasant autonomy as a response is very strong. He argues that the struggle for autonomy is central to the peasant condition. The construction of autonomy is understood as a direct response to the oppressive nature of commodity markets. The construction of autonomy is visible in a shift of livelihood patterns, production styles, and engagement with markets. Livelihoods are thus diversified in order to decrease dependency from one sole source of

income (Ellis, 2000; Schneider and Niederle, 2010). This is the case both for the activities and jobs that producers undertake, and the production itself, which shifts from being specialized to being more diversified in order to reduce dependency on one single product.

In these terms, peasants also try to actively 'distantiate' themselves from input markets by substituting a resource base that is dependent on industrial inputs (seeds, fertilizers, feed, pesticides) with a process that van der Ploeg (2008) calls 're-grounding'. Re-grounding entails reorganizing the farm's resource base, minimizing reliance on external resources and putting more focus on locally available resources. In a broader sense, re-grounding entails de-commodification (van der Ploeg, 2010). It can take a variety of forms, including working in non-agricultural jobs to save and reinvest in the farm to avoid indebtedness, and investing in a low-external input agriculture and cooperation with the community to lower costs (van der Ploeg, 2013; van der Ploeg et al., 2012). Peasants also actively construct autonomy from the output side by actively distancing from commodity markets and creating new "nested markets" that are embedded in different shared values and definition of food quality, specificity and fairness (*ibid.*)

Scholars who describe these nested markets and their impacts on rural development analyze specific manifestations of the struggle for autonomy. By looking at successful examples of distantiation, the meaning of autonomy has been shaped and defined as a peasant feature.

However, this has acquired a normative meaning that seems a bit far from the reality on the ground (Jansen et al., 2021). In fact, as the subsequent chapters show, the reality on the ground in pastoral Sardinia is much more complex. After decades of policy incentives to specialize in milk production and subsidies to purchase external inputs, taking a distance from commodity chains can signify completely restructuring the farm, resulting in lower or more uncertain income. Moreover, nested markets are not necessarily a distinct alternative to commodity or industrial markets, but, as the cases discussed in this thesis show, these often coexist in the life of pastoralists who create livelihoods, produce, and engage within markets in a much more flexible way.

Looking at 'real markets' and market uncertainty

By looking at how both capitalist and non-capitalist economic practices coexist and are interdependent, the two geographers Gibson and Graham (2002:18-19) already start to uncover the plethora of practices that exist on the ground. They argue that:

"One effect of representing the economy as multiply identified and complexly overdetermined is to open up the possibility that "local" non-capitalist economic practices "matter" (and can be seen, for example, as crucial "drivers" of development) and should therefore be a focus of an invigorated economic politics".

Similarly, Niederle sheds light on the fact that different social orders are "defined as an arrangement of practices integrated by socio-technical and institutional apparatuses, located in time and space" (Niederle, 2018:1461), and they coexist. He emphasizes not only the actors or the institutions of rules and regulation, but also the interaction between practices, sayings, and meanings about how farming should be practiced and how markets and market regulatory practices are understood. In other words, he invites us to see how different markets are embedded in daily practices in different ways, including how global institutions are incorporated in daily practices. This position is anchored in the assumption that markets are embedded in societies, and this means that we should start our analysis from there. Referring to the case of Brazil, Niederle (2018:1473) argues that:

"his [a producer] practices will demonstrate the ways he deals with a diversity of socio-technical and institutional apparatuses in order to construct different livelihood strategies. In the same establishment, some practices can conjugate industrial-financial logics (a style of soybean crop), while others express the civic-domestic (an organic milk production) and the aesthetic-industrial (artisanal cheese processing) interfaces [...] In other words, we are no longer comparing previously established categories of farmers such as family farm and agribusiness. The difference between them shall be expressed a posteriori considering the prevalence of one or another set of practices and orders."

Niederle invites us to avoid starting from a set definition, and to instead assess what happens on the ground, to see what practices and meanings prevail, and also how hybrid forms exist and coexist together. This is, in my view, the practice of looking at 'real markets'; in other words, looking at how economic and social practices blend at the local level, and in daily practices (de Alcantara, 1992). The concept of 'real markets' emerged in contraposition to the 'ideal type' market often used in neo-classical economic literature and by proponents of the free market (de Alcantara, 1992; Bernstein, 1989; Harris-White, 1996; Rahman, 2007). While neo-classical economics analyzes economic behavior and markets in terms of demand and supply, the proponents of 'real markets' see markets as the result of complex interactions between different actors who are always embedded in social and political contexts and power relations. Investigating real markets and how markets actually exist in practice means stressing the importance of sociopolitical relations in the

distribution of power within markets (de Alcantara, 1992, Rahman, 2007). Looking at real markets also means assessing how structural dynamics play out differently in diverse social, economic, and political contexts. Actors and agents carry different power and privileges and have distinctive positions within families and communities. This interplay between structure and agency in practice creates arrangements that are much more complex than the dichotomized version of industrial versus artisanal markets. Markets – in principle and in practice – are very different (de Alcantara, 1993).

To explore these themes further, across a series of cases presented in subsequent chapters, I assess the different market arrangements that emerge from the engagement of pastoralists within markets. But what are 'markets'? Çalışkan and Callon (2010: 3) define markets as sociotechnical arrangements or assemblages (*agencements*). They argue that:

"A market is an arrangement of heterogeneous constituents that deploys [...]: rules and conventions; technical devices; metrological systems; logistical infrastructures; texts, discourses and narratives (e.g. on the pros and cons of competition); technical and scientific knowledge (including social scientific methods), as well as the competencies and skills embodied in living beings [...] [m]arkets delimit and construct a space of confrontation and power struggles. Multiple contradictory definitions and valuations of goods as well as agents oppose one another in markets until the terms of the transaction are peacefully determined by pricing mechanisms."

What does the complexity of market arrangements in daily-lived experiences look like? I use 'market arrangements' as an organizing concept to investigate the interaction between pastoralist and markets, between agency and structure, starting from the assumption that markets are always embedded. Rules and regulations are created and developed into policies and laws according to specific ideas, values and meanings of, for example, development, efficiency and quality. This highly political process includes some interests, forms of knowledge, and beliefs, while excluding others. This also results in the creation of a structure that facilitates capital accumulation for some and labels other forms of production, exchange, and knowledge as 'backward' and 'inefficient'. Nevertheless, other forms of knowledge, other logics, other forms of exchange, and other economies do not simply disappear. They coexist with and are often crucially interlinked with dominant economic systems and market structures.

As mentioned, I start from the assumption that markets are always embedded. Looking at real markets and how these are embedded is an important aim of my research and therefore it is important to unpack the meaning of embeddedness. This concept is a useful theoretical concept to explore the relationship between territory on one side and livelihoods, the production of food and

the exchange of food through markets on the other side. The concept of embeddedness was first introduced by Polanyi. In his seminal work, *The Great Transformation*, he argues that the human economy is always embedded in social relations, politics, religion, society. The term “embeddedness” expresses the idea that the economy and markets are not autonomous, the economy does not exist independently from society and markets do not self-regulate. This concept was formulated in a context where economists such as Malthus and Ricardo were proposing the idea of subordinating society to the logics of the market.

Block (2003), one of the most prominent scholars of Polanyi’s thought, argues that Polanyi has often been misunderstood. He says that some scholars have argued that neoliberal capitalism has disembedded the economy from society and that they differentiate between embedded and disembedded markets. Following this line of thought, there can be embedded markets which are rooted in society values (such as fairness, quality, sustainability etc.) and markets that are disembedded, such as for example the global market. In agri-food studies, the concept of embeddedness has been used to demonstrate how alternative food networks are more entrenched into social values. Sage (2003) for example, argues that relationships of mutual regard and reciprocity and social embeddedness are essential in the alternative ‘good food’ network in southern Ireland. According to Block however, Polanyi’s main argument was that disembedded markets cannot exist and that markets are always embedded.

Many scholars also note that understanding embeddedness as the social dimension of markets and economies is limited. Hinrichs (2000) and Goodman (2004) argue that this view overly romanticizes local economic and social relations and it is based on an overly simplistic and dichotomized view of ‘global capitalist actors’ and their ‘embedded local counterparts’ (Goodman, 2004, p. 5). Therefore, I understand markets as always embedded. Markets can be embedded in specific territories and can reflect the values (which are not romantic, but results from competing understandings of quality, efficiency, sustainability etc) of those territories; but they can also be embedded in spaces of global/regional and national policy making where values of quality, competition, efficiency are very different and are reflected in different regulatory norms. For this reason, the question that follows is not whether markets are embedded or not embedded in the values of a specific community or territory. The question is always *how* markets are embedded, whose knowledge and values are reflected in the norms (formal or customary) that regulate the exchange in a specific market.

For example, Sonnino and Marsden (2006) analyze alternative food networks in Europe and show how these are embedded in very different values in the North and South (Sonnino and Marsden, 2006). In the North the emphasis is on commercial criteria and issues like animal welfare and sustainability or on innovative forms of marketing. Parrot et al (2002) argue that this relates to cultural and structural factors shared among Northern European countries such as the prevalence of larger, specialized and more capital-intensive farms. On the contrary, Southern Europe is dominated by small scale, labor-intensive family farms and food processing is very fragmented. “Within this context, ‘southern’ producers have often been attuned to traditional and typical regional foods and, more generally, to the view that the *terroir*, or the context of production (culture, tradition, production process, terrain, climate, local knowledge system), strongly shapes the quality of the product itself” (Sonnino and Marsden, 2006:186).

The word *terroir* is used by Sonnino and Marsden as a concept that goes beyond the morphological and biophysical aspects of a specific place. The authors refer to the context of production which includes the culture, tradition, and knowledge system of a territory. *Terroir* is a concept that originates in the French tradition, and it is born to refer particularly to the wine sector. It is a word that indicates the specificity of a given product. This specificity includes natural, human, and historical factors as argued by Barham (2003). *Terroir* is a difficult word to translate. The French word “historically, [...] refers to an area or terrain, usually rather small, whose soil and microclimate impart distinctive qualities to food products” (Barham, 2003:131). However, the word is increasingly being used with the English word territory (Owen et al., 2020; Hebinck et al., 2015; Counihan, 2019).

Agro-food literature in the past two decades has increasingly used the concept of *terroir* and territory to look at specific meaning of “quality”, “locality” and food labels (Van der Ploeg and Long, 1994) but also to look at the growing interest and demands by consumers and to discuss the emergence of different development paradigms (Van der Ploeg and Renting, 2000; Marsden et al. 2000; Van der Ploeg et al., 2000) and the shift from the conventional agricultural model (FitzSimmons and Goodman, 1998).

The concept connects production to the specific ecology and culture of a place and therefore embeds production and markets to a specific locality and to the social context of a territory. On the other hand, global commodity chains and their standardization of production are embedded in values that do not belong to a specific place and territory even if they reflect an understanding of

production and global market process that mirrors the balance of power and the supremacy of the United States in the trade agreements of the General Agreement on Tariffs and Trade (GATT) and the WTO (Barham, 2003).

In this thesis I often use the word territory. While this word is connected to the theoretical debates on terroir in the French literature, the relevance of “locality” and territorial specificities was praised and reason of pride for Sardinian agriculturalists and pastoralists long before the word terroir became universally used in literatures of food and place (Counihan, 2019). For example, the anthropologist Counihan conducted extensive research in Sardinia at the beginning of the 1990s and she explains how already back then, pastoralists would stress the specificity and distinct taste of the ham they produced in comparison to the one produced by the neighboring village which was 15 km away. In Sardinia, each village produces a different type of bread, different Sardinian sweets, different types of pasta, wine, and different cheeses. Each product is connected to specific traditions and cultural celebrations, to the different morphologies of the territory and to the socio-economic background. “Territory, as terroir, is memory, affect, social relations and shared moral and cultural values compressed in the taste of food” (Ayora-Diaz, 2021:110)

Hence, I believe it is important to explore how market arrangements are interpreted, understood, negotiated, and lived within different territories, without normative prior assumptions about what is 'good' or 'bad'. Dominant forms of knowledge and rules are often challenged and rejected by society. Producers – pastoralists in this case – find spaces of alternative action within dominant structures. At other times, despite rules and regulations, social interactions and power relations might be more important and have a higher influence in determining prices or conditions of exchange, rather than simple market functioning.

A Note on Structure and Agency

How do we, as social scientists, best understand the interrelationship between structure and agency? Simply put, a social structure is a set of social arrangements and institutions that influence, constrain, or facilitate choices. Agency is the ability of individuals to act freely. While during the 20th Century the debate revolved around what was more important, whether structure or agency, it is now accepted by social scientists that both structure and agency are essential to understand human behavior.

Two scholars were particularly key to going beyond this dichotomy: Giddens and Bordieau (Tan, 2011). Giddens is well known for his concepts of “structuration” and “duality of structure” with which he tries to capture both structure and agency in a framework. As Giddens has argued:

“Crucial to the idea of structuration is the theorem of the duality of structure [...] The constitution of agents and structures are not two independently given sets of phenomena, a dualism, but represent a duality. According to the notion of the duality of structure, the structural properties of social systems are both medium and outcome of the practices that recursively organize” (Giddens, 1984:25).

Taking the structuration theory seriously, means that we should see any given structure and societal dynamic as co-constituted with the individual behaviors. In the specific case of commodity chains and producers, we cannot simply see producers as victims in commodity chains even if structures create more obstacles for some and more opportunities for others (this becomes the center of the enquiry). Second, Giddens argues that structure and agency are an iterative process. Structures are not fixed; they are constituted by the constant interaction of individuals and result from the continuous negotiation and struggle between them. Agency is exercised under specific structures, constraints, and circumstances but individuals and their actions recreate and reinforce those same structures, they are active in the process rather than passive recipients.

The idea that structure and agency are co-constituted and function as a “recursive loop” has been criticized because rather than transcending the determinism/voluntarism dichotomy, this theory just bunches them together (Tan, 2011). This makes it difficult to understand what factors influence the interconnection between the two. Of course, if we start from the premise that agency and structure are co-constituted, the analysis becomes much more complex, and it is far more difficult to pinpoint specific dynamics of interaction that can be relevant in different contexts and territories. At the same time, even if we start from the assumption that structure and agency are in constant interaction and are co-constituted, it is very hard to speak of them in an interconnected way, going beyond the dichotomy and looking at the process of interaction.

The debate on structure and agency and how these two interact is strictly interconnected with the debate on embedded markets. Markets are a set of norms, legal and customary, that create a structure. This structure is not something disconnected from society and individuals, these norms reflect a set of ideas that reflect dominant interest and ideas of development. These norms are also embedded in specific places and historical moments, they are interpreted and lived by individuals in different ways. They reflect and they influence cultural norms, religion, different types of

knowledge and beliefs. Structures do not exist in a vacuum; but rather they find different interpretations in different territories.

Bourdieu speaks of habitus and field. “Being the product of history, [habitus] is an open system of dispositions that is constantly subjected to experiences, and therefore constantly affected by them in a way that either reinforces or modifies its structures (Bourdieu and Wacquant, 1992:133 as cited in Tan, 2011: 46). If we take these theoretical concepts to think about the specific situation of pastoralists in Sardinia, we can say that the commodity chain of Pecorino Romano creates a structure in Sardinia that is a product of a specific historical configuration. This global commodity chain is embedded in international trade rules, in geopolitical relations as well as in the territorial experiences of pastoralists in Sardinia. The historical configuration of the commodity chain sees a dominance of private industries in influencing market outcomes and reflects a dominant view of how markets should be regulated. Agency is expressed within a certain existing structure that is the result of a particular historical trajectory. At the same time agency can be expressed in a way that is creative, that contrasts the existing structure, or confirms it and live within a structure in ways that are more beneficial for one person. One can continue to be an intensive livestock producer that sells in global markets, one can change to artisanal production and sell directly to consumers, but what one can and cannot do is always partly constrained from and facilitated by existing structures. Within the domain of rural studies, Niederle (2018) has argued that “the mediation between ‘styles’ and ‘regimes’ is constructed from the concept of ‘social order’, which is defined as an arrangement of practices integrated by socio-technical and institutional apparatuses, located in time and space (Schatzki 2002). Instead of the ideas of regularity, stability and universality that usually prevail in food regime analysis, our proposition emphasizes the ‘nexus’ of entities that enter into social life in a much more unstable, fluid and place-based dynamic”. At the same time, Niederle (ibid.) also invites us to look at the different social orders that coexist together at a given time.

2.3. Looking at livelihoods informed by political economy

Different pastoralists perceive, live, and navigate market uncertainties in different ways. Lived experiences of market uncertainties are influenced by different factors. The goal of my research is to partly understand what these are, and how they interact. In examining the differences among pastoralists, my study of their livelihoods is informed by political economy (cf. Scoones, 2015). This means assessing the broader arrays of rural and non-rural activities in which pastoralists engage. It means investigating the temporal and geographical dimensions and interaction between

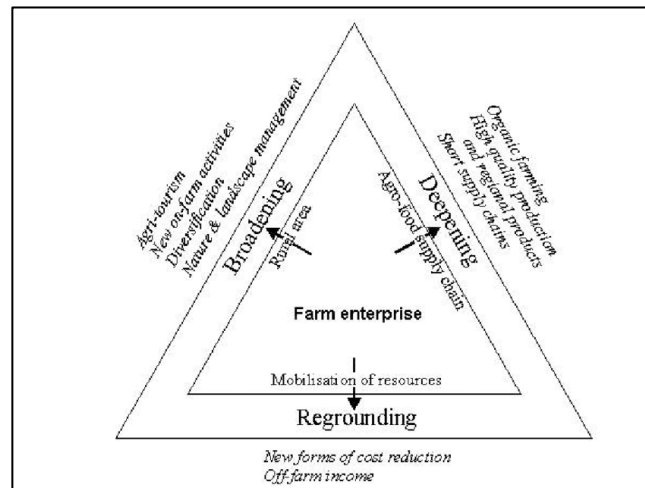
contextual specificity and structural dynamics. A study that is informed by political economy is bound to examine power relations, hence the politics behind access to resources, patterns of distribution among people, and social division of labor. The main objective is to enquire about how resources are used and why they are used in certain ways. Scoones (2015) does that by integrating Bernstein's four key questions of agrarian political economy into an extended livelihood framework – he asks: who owns what? who gets what? who does what? and what do they do with it? Livelihood analysis is nevertheless broader than the mere relationship to the means of resources, and using it therefore also requires investigating human and social resources as mobilized by producers.

Producers are therefore inevitably differentiated as they pursue different livelihoods. How does this relate to patterns of class formation in rural settings? 'Class' – broadly defined as "the social relation of production between classes of producers (labor) and non-producers" (Bernstein, 2010:124) – is of course a multi-dimensional and context-related concept. For example, concepts such as "landless labor" and "small-scale farmer" or "pastoralist" are very fluid. They change from country to country, and people can move from one position to the other or even belong to two categories simultaneously (Banaji, 1990). However, class is insufficient to guide me in my analysis of engagement in markets. Most pastoralists in Sardinia own land and have access to other means of production, to different extents. They sometimes hire seasonal labor when the price of milk is good and economic conditions are favorable. With the development of capitalism, peasants who first relied on subsistence production were partially incorporated into market relations, and became petty commodity producers. But petty commodity producers engage with markets in very different ways, both regarding the way they produce and farming styles, and the markets in which they sell.

A livelihoods analysis enables us to assess what producers do and how they interact with extremely uncertain conditions. The framework identifies three main livelihood strategies: diversification/specialization; intensification/extensification; and migration. The first two are key when we look at the interaction between production and market engagement. Van der Ploeg et al. (2002) go more in depth to look at the different ways producers diversify and the different ways processes of diversification and specialization are linked to processes of commodification and market integration. In particular, he identifies three different strategies that he summarizes as the triangle of diversification, as seen in Figure 4.

Figure 4. Shifting boundaries

Source: van der Ploeg et al. 2002.



“Deepening” is connected to activities undertaken to add value to agricultural production, in order to increase its value. This can be done by substituting chemical inputs with organic ones, by paying more attention to the quality of production, and by focusing on local, territorial products rather than on imposed commodities. Other ways include innovating in the way products are distributed, for example, through short chains, sale on the farm, through Internet channels or through community groups for example.

The second path is to broaden farm activities. “Broadening” is connected to diversification, i.e. it is the enlargement of farm activities to include other non-agricultural goods and services. A case in point, also in the Sardinian context, is agritourism, along with other hospitality-related activities such as catering, tourist services and experiences linked to rural activities (such as lunch or an aperitif with the shepherd) or to the rural landscape (such as activities linked to hiking, mountain walks, horse riding or cultural walks) (Pulina and Meloni, 2020). Other options include social services such as educational activities for children, and labor market integration activities for people with disabilities or people who have been released from prison. Over the last decade in Europe, and in the last years in Sardinia, pastoralists also talk about green services such as keeping the territory and the undergrowth clean and free from the danger of fires. These activities very often depend on public subsidies, which, through the publication of regional calls for tenders, allow shepherds and farmers to have the necessary liquidity to expand what their farms offer.

“Regrounding” consists in finding new forms of cost reduction within the farm such as, for example, a return to spontaneous grazing or the reduction of fodder; or the diversification of farm income

with work outside the farm. Where do we see these strategies emerging? Among which pastoralists? And what does this tell us about our understanding of the peasantry and pastoralists? And do they happen as a response and an alternative to commodification? What other forms of market arrangements emerge?

In short, both classical political economy of class differentiation and Chayanovian analytical tools offer useful lenses to look at dynamics within the farm and are useful for understanding different aspects of the interaction between structure and agency, between markets and pastoralists (White, 1989; 2018). In order to start exploring how different pastoralists navigate and create diverse market arrangements in a context of uncertainty, in this chapter I broke down my analysis to three main components: uncertainty, market arrangements and differentiated pastoralists' experiences. I explained how these will help me carry forward my research, and how I will use an extended livelihoods approach to interrogate the extent to which market arrangements are central to navigate uncertainties. Next, I discuss the methodology I adopted to explore my question before moving into my five empirical chapters.

Chapter 3 - Methodology

In this chapter, I explain how I developed my research question, and the methodology used to collect and analyze the data that inform my findings. This chapter is divided in three main sections. Section 3.1 briefly covers my research objectives and plans. Section 3.2 explains how I conducted my research, from choosing the research sites, to the criteria used to find research participants, and from the phases of fieldwork to the methodology and data-gathering methods. Lastly, section 3.3 covers the data analysis process.

3.1. What I wanted to do

At the beginning of this journey, I wanted to explore the difference between industrial and artisanal producers, assuming that these two were clearly separated markets. I also wanted to understand the reason why producers who were connected to the dairy industry and the international commodity market still chose to engage in commodity production, despite its extractive and exploitative dynamics. My initial research question was: *how do different market network arrangements have an influence on pastoral livelihoods, especially in relation to market volatility and price shocks?* The way I first posed my research question reveals my initial bias. The question allowed me to explore the influence that markets have on pastoralists, but not how pastoralist agency is expressed. The way it was formulated played down the agency that pastoralists have, and their ability to engage in different market arrangements. It was roughly two months into fieldwork that I became aware of my assumptions and started to let go of my somewhat inflexible initial plans, and to allow for the conversations to speak to me. During my fieldwork, I reformulated my question to highlight both agency and structural factors. I focused on pastoralists' varying constructions of livelihoods, and their diverging interactions with markets.

The key concepts explained in Chapter 2 were the umbrella framework, however, based on the above, I now chose to assess the interaction between structural obstacles and opportunities and pastoralists' agency. My methodological choices and data-collecting methods were guided by my understanding of markets as always embedded, socially constructed, heterogeneous and plural. My research did not aim to prove or disprove a theory. I had a theoretical background and a question in mind, but I left the door open to learning about the broader topic: how pastoralists understand, relate to, and engage with markets and market uncertainties. As mentioned in Chapter

2, the existing literature about agrarian transformation is rich, significant and gives important conceptual and methodological tools.

3.2. How did I conduct my research? Research design and data collection methods

Where and who

In order to address my question "*How do pastoralists negotiate uncertainties and how do they engage with markets?*", I needed to explore pastoralism in all its diversity. To do so, I had to decide where to go and how to organize my research. I was guided by the existing literature: The first source of inspiration and information was the iconic book by Le Lannou, *Pâtres et Paysans de la Sardaigne* (Pastoralists and Peasants of Sardinia). Le Lannou was a French geographer who thoroughly described the agricultural and geographical landscape of Sardinia in the 1940s. His book is widely cited by Sardinian scholars and taken as a reference point for any analysis of agrarian change in Sardinia. He talks about the Barbagia region as:

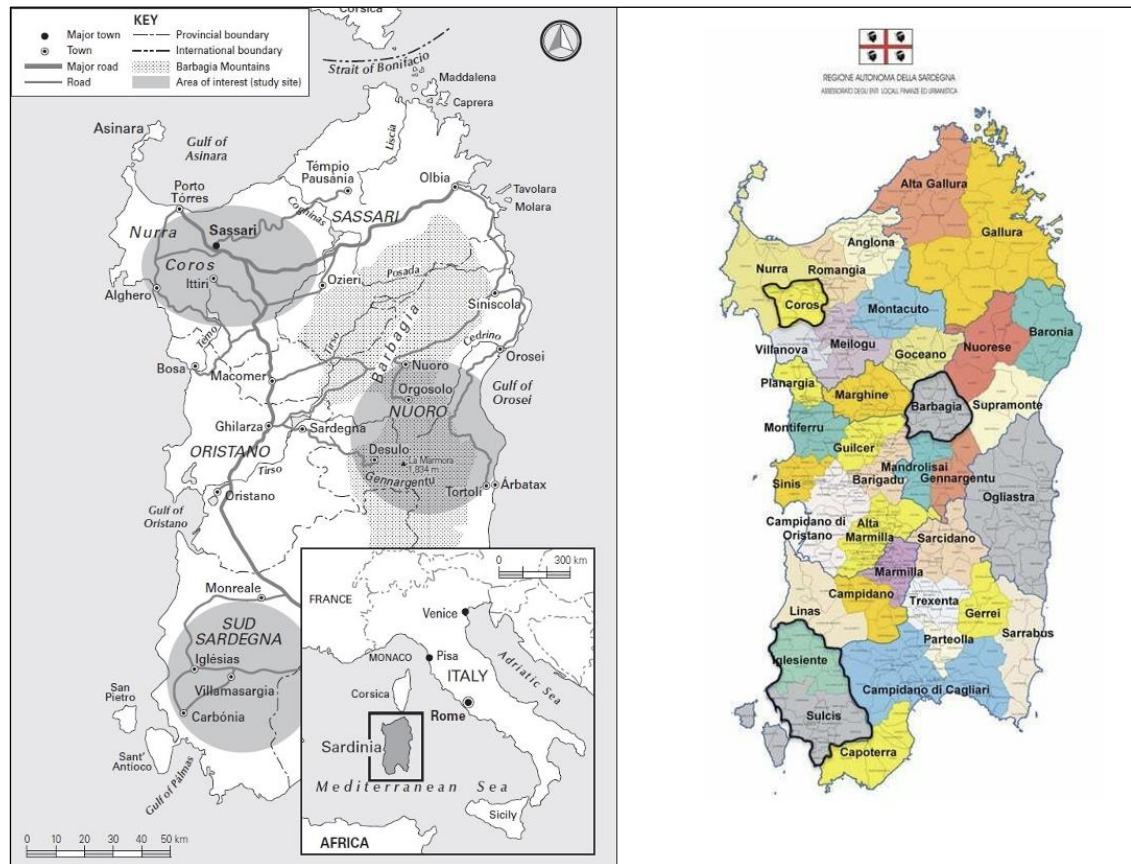
"One of the landscapes and a way of life that has never changed since the Carthaginian conquest of Sardinia: the pastoral life of Barbagia, almost enclosed by the cultivated fields that surround its borders, has preserved its ancient form and offers spectacles that are among the most evocative that can still be contemplated in a European country. The centre of this small millenary world is the worn but compact massif of the Gennargentu. Its boundaries are precise. To the west, there are the well-cultivated hills, cut into the marl and miocene limestone, which lie between the ancient mountain and the Campidano trench; fertile, rich in villages, Arborea, La Marmilla, Trexenta form the most absolute contrast with the bushy, deserted slopes that lead towards the mountain" (Le Lannou, 2006: 213).

Le Lannou describes a kind of pastoralism that originates in the mountains of Barbagia and extends towards the coastal and plain areas. This pastoral economy is mobile, and transhumance towards the southern and northern plain characterizes the seasonality of production and the way pastoralists engage with markets. The inner, arid, mountainous region is where pastoralism was historically most concentrated. Hence, I chose this as one of my research sites. The classic mountain-plain transhumance is hardly practiced now, and many pastoralists migrated and became sedentary in the plains (some in hilly areas), while many migrated to mainland Italy during the 1960s. Nevertheless, there are still many pastoralists populating the inner regions of Sardinia. The

province of Nuoro, for instance, is one of the capitals of pastoral culture and traditions for music, literature, traditional clothes, and food.

Figure 5. Research sites on the left, highlight of the historical regions on the right

Source: PASTRES (left), Regione Sardegna (right).



As highlighted in Figure 5, the other two historical regions that I chose as research sites were the hilly region of Coros and Sulcis Iglesiente, a plain region where many transhumant pastoralists from Barbagia sedentarized after the land reform. These three sites have different geographies, and different access to markets. Moreover, the varying distances from cities and dairy industries, and their distinctive socio-economic backgrounds, contribute to diverging production systems, ways of creating a livelihood and market arrangements.

My 'mountain' site was Desulo, in Barbagia. It has roughly 2,300 inhabitants. It is located 800-1000 meters above the sea level and, being at the heart of the mountainous area of the Gennargentu (the highest mountain chain in Sardinia), it is less well connected to big towns and urban markets. Historically, Desulo is a poorer town, and many of those involved in rural activities were herders of

richer pastoralists. Many pastoralists moved from Desulo to the northern and southern plains of Sardinia, including Ittiri (AR4, RI2, RI1).

Located about 400 meters above sea level, Ittiri, in Coros, is my 'hill' site. It has a population of roughly 8,500 inhabitants. It is 20 km away from Sassari, one of the four provinces of Sardinia and the biggest city in the area. Ittiri is a historically relatively wealthy town characterized by the production of cheese, olive oil, wine and a lot of artisanal textiles and jewelry. One big cooperative collects a big proportion of the town's milk and processes it into Pecorino Romano and other minor products.

Villamassargia is a municipality of 3,490 inhabitants situated in the province of South Sardinia, located in the sub-region of Sulcis-Iglesiente, and is my 'plain' site. The territory is mainly flat, but as we exit the town, the plains rise and form hills and eventually mountains that surround the municipal area forming the Cixerri mountain range.

These three very different sites were an ideal starting point to contrast differentiated livelihoods, evolving uncertainties, and existing market arrangements. Starting from these three towns, I expanded the geographical location to interview pastoralists from the three sub-regions in which the three towns are located.

Starting from three different geographical regions (mountain, hill and plain), two other criteria were very important: flock size and farm size. Ismea, the service institute for the Italian agricultural food market, is a public body that carries out market research and provides services to companies. In a 2018 report (Ismea, 2018) it analyzed the costs and income of Sardinian pastoral farms, and it divided the farms into two clusters based on the distribution of heads of sheep by class size (medium-small farms, from 50 to 384 head, and large farms with over 385 head). This is the second criterion I used. However, in my research, farms under 100 head were classified as small and from 100 to 384 heads, as medium. So I used three clusters (large, medium and small) to ensure that I was also considering very small farms in my sample.

The third and last criterion enabled me to interview pastoralists who were selling to different outlets: private industries, cooperatives, and direct sale (both formally and informally). In sum, these three criteria – geography, size, and market outlet – helped me to ensure a diversity of interlocutors, and to explore the complexity of different market arrangements.

I started fieldwork following three main paths: people, research, and presence. Through key informants and key contacts, I was introduced to new people and pastoralists. I followed different strategies according to what I considered to be the easiest entry points. In Villamassargia, I started to establish relations with an intensive sheep farmer whom I had met through a researcher, Domenica Farinella. From this acquaintance, I expanded my network by asking to be introduced to other producers. However, I realized that this farmer preferred to take me out of town and introduce me to herders who were not in direct competition with him. With time I realized that this was probably due to two factors. On the one hand, as a large shepherd who had an advantageous relationship with the industrialist, his relationship with other shepherds in town who might sell their milk to other industrialists was delicate. Taking me to shepherds who were in direct competition with him would not have made him feel comfortable. On the other hand, many of the farmers in town are dedicated to intensive production and in October, the month I moved to Villamassargia, it is sowing time. However, this producer also introduced me to a person who informally rented rooms. This person managed the maintenance of the industrial complex at Porto Scuso, but he was previously involved with the sale and maintenance of milking machines. This proved to be key in uncovering another important aspect of pastoral production related to the mechanization of certain aspects of production, and to getting to know other shepherds in the area. In addition to relying on these people, I also began to build relationships with the municipal agricultural councilor and the veterinarian. While the connections with local institutions turned out to be useless, the veterinarian introduced me to three shepherds who became key contacts for my research.

In Desulo, it was hard to generate trust at first. A student from Desulo who was studying in Sassari, Andrea, introduced me to some of his family, as well as a family who produced traditional cheeses. While Andrea's family showed no desire to talk to me, the family of cheese-makers did. But this was not a family of shepherds; they only focused on production and bought milk from a shepherd outside of town. I also contacted some technicians from the municipal offices and, after establishing a minimum of trust, they gave me access to information on access to mountain pastures which they said included all the shepherds from Desulo and those returning for transhumance. But none of them were willing to introduce me to shepherds because they argued that no one would like to meet a person asking questions. The person who proved most helpful was Armando, the brother of a lady from Desulo who works in Ittiri and is a friend of a family member of mine. It was only by mobilizing my contacts in Ittiri, family members and others, that I managed to find someone who trusted me and helped me to meet someone. After three weeks in Desulo, I also attended a two-

day course on animal welfare; that occasion was perfect for exchanging views with people and generating more contacts.

In Ittiri, my city of origin, building a network was relatively easy. Most pastoralists sell milk to the town's cooperatives, and so that was an important channel through which to create connections. I also found a list of direct cheese sellers on the regional government's website. Internet research, regional lists, and census, were all important to find artisanal producers in specific areas.

The main approach I used was ethnography. I started fieldwork by trying to learn as much as possible, being there with the pastoralists, observing, asking questions, getting to know new ones and interviewing as many people as possible just to listen and understand what being a pastoralist entails (Hammersley and Atkinson, 2007). I thought ethnography was the best methodological choice because I wanted to understand something about others' perception of uncertainty and of markets. As Scott (1976:160) says:

"if the analytical goal [...] is to reveal something about the perceptions of the exploited—about their sense of exploitation, their notion of justice, their anger—it must begin not with an abstract normative standard but with the values of the real actors. Such an approach must start phenomenologically at the bottom and ask what the peasants' or workers' definition of the situation is. When a peasant considers 20 percent of his harvest a reasonable rent and 40 percent an unjust rent, how does he arrive at this judgment? What criterion of fairness does he use?"

Given my intention to understand market engagement, I tried to downplay my opinions and perceptions, letting the words and thoughts of others describe and define their current situation. I tried to put myself in other people's shoes, while remaining aware of my positionality. In my fieldwork journal I kept a space on the right side of the page for my reflections, feelings, and observations. I noted down contradictions and further questions and points to clarify. My ethnographic approach is reflected in the way I present my data. In fact I use extensive quotes from my interviews to narrate pastoralists' perspectives with their own words. Respondents' names have been substituted with pseudonyms and all interviews are referenced with interview codes (Appendix C).

The most challenging aspect of this ethnography was gaining access, and thereafter, to build trust and strong relationships with the pastoralists who participated in this research. Establishing trust was indeed a gradual process throughout my fieldwork; it took several months before some pastoralists opened up to me. LeCompte and Schensul (2010) state that building trust is a long-

term process, made even more complex by age, gender and other social differences. Building trust is not instant, and it is not a linear process (Brewer, 2000). Trust must be maintained and nurtured; in fact, it is a continuous process of negotiation that is repeatedly reassessed. At times, it was draining, because, in the context of Sardinia, it involved reciprocating favors, and spending hours on the phone to maintain relationships alive. It also meant silencing aspects of my own personality in favor of conforming to the context in which I found myself in. This was necessary so as to be perceived as a person who deserved to be trusted, rather than someone who was judgmental or critical of certain social aspects, beliefs and ideologies that characterized so many families, such as racism, classism, and/or discrimination against women. Most interviewees were people with whom I had no previous ties. They did not welcome me at the beginning; in fact, I had to gain their trust, their friendship, and their willingness to open and talk to me. Nothing was a given; it was all was part of a long and difficult process.

Based on the above, on February 27th 2020, roughly four months into fieldwork, I wrote the following email to my supervisors:

"While writing these pages I realize how much information I have heard and underestimated throughout these months. When I was feeling particularly unwell, I was not able to appreciate, listen and see things that I now understand, were crucial. My brain was not there. I was present only with my body. I underestimated the amount of data I was being exposed to. And the importance of it even if I thought that what I was writing did not make any sense or it seemed obvious. I felt a constant sense of failure and frustration and I was feeling like an imposter amidst people that were struggling with their daily work. Even if back then I felt like I was seeing nothing, but, I was learning by being there, I was building relationships, I was collecting data."

(Email exchange February 27th, 2020)

As is visible from my email, gaining access to pastoral spaces was very hard at first and I deeply felt like an impostor. To understand and contextualize this difficulty in building trust, I must inevitably reflect on my positionality and the baggage my body and my person carries. My body was the first carrier of distance. As a young woman, I did not belong to pastoral spaces, I was therefore imposing myself on these spaces: on the farm with animals, hanging out in bars and cafes, discussing with pastoralists, and asking questions about their work, I was often the only woman in these spaces and my presence was not accepted by all; it was often contested, and many people actively suggested that I should not enter those spaces. Bandinu (2006), one of the most respected Sardinian anthropologists, describes how the role of women is essential in the pastoral household,

but women generally have specific roles and spaces and once these spaces are contested, a woman is actively contesting limits and prescribed roles.

A second important aspect was my identity as a Sardinian researcher. As a Sardinian, I was automatically part of the extended community. That same community which "exercises a role of judgment that has value as a dominant social and cultural code over all family groups. The rule of the community stands as a super-ego capable of imposing strict social norms and obligations" (Bandinu, 2006:50). Researchers in Sardinia are perceived as part of the state apparatus (which they often are). "The state is perceived as dominating, as foreign and unjust: in any case an external normative source" (*ibid*: 54). Most Sardinian university researchers work closely with regional agencies that deal with research in agriculture and animal husbandry, implement projects, and transfer knowledge and technologies. Over the last century, researchers and state agencies have held a great responsibility in stimulating practices that have profoundly changed pastoralism (e.g. sedentarization, mechanization, and change in animal production and nutrition, all of which gradually copies cattle breeding in Northern Italy, etc.). As pastoralists say, "they work in offices and they want to come here to teach us how to do our job". As a researcher, I was also pigeonholed as one of the "experts" who have little recognition of territorial knowledge and epistemologies, and who try to impose their own logics and knowledge. This created a lot of distance and general mistrust regarding my role and objectives. Moreover, the fact that I was a researcher in a foreign university and that I was studying abroad also revealed my class position as privileged and relatively wealthy. It took a long time to construct my identity as a person who is critical towards the dominant ideas of development and production of knowledge, and who is aware of her position of power and privilege.

Moreover, despite being Sardinian, I was external to the town community and dynamics. The first thing pastoralists wanted to know from me was who I had previously seen and talked to. This showed me how important social and political relations are inside the town. As Pira (1978) argues, relationships between families in Sardinian towns are regulated as relationships between states: there are alliances, peaceful coexistence, wars and conflicts; all mediated through hierarchies of power. Siding with the "wrong" families could prevent me from accessing spaces. Pastoralists wanted to know whether I sided with the "right side", i.e. with the "right families" before opening up to me. This was stronger in smaller towns like Desulo. Hence I had to have at least a smattering of the town's social and political relations before revealing who I knew and talked to. These were partly the things I was also trying to understand and analyze, but the fact that I was looking at these

dynamics without taking a position was very disturbing to people. Knowing that at some point I would have to make a written judgment about their social status, and these dynamics, was equally a clear cause for concern. Thus I always started by reminding all interlocutors that they would be anonymous, although this was sometimes not enough for pastoralists: the fact that I was asking and that I held certain information was enough to push people away.

My strategy to overcome these obstacles in trust-building, at least partially, was to open my geographical focus and change from individual towns to historical regions, so that I could more easily follow a snowball sampling strategy in my first phase of fieldwork and benefit from pastoralists' networks. In the first phase of fieldwork, I started a period of extensive semi-structured qualitative interviews. I interviewed more than 200 people over one year (see Appendix A). Of these, two thirds were pastoralists. I was based in Sassari, my hometown. From here I travelled to Ittiri, the main town I took into consideration in Coros, and then Alghero and Olmedo. I also spent two months living in Villamassargia and two months in Desulo. From there, I moved to other towns in Barbagia (Fonni, Orune, Ollolai) and in Sulcis/Campidano (Iglesias, Cagliari, Fluminimaggiore, Domusnovas, Vallermosa, Teulada). During this period Sardinia experienced around five months of lockdown, which restricted travel. Nevertheless, engagements with research participants continued through phone calls, Whatsapp conversations and photo exchange, and Facebook.

After conducting an initial round of semi-structured interviews, I started an inductive exploration of diverse livelihoods. In May 2020 I did an initial transcription of the interviews and a pre-analysis of how different pastoralists negotiate uncertainties (facilitated by agency, constrained by structure), and how they in turn create different market arrangements. While transcribing and filing collected documents and while reading fieldwork notes, I became increasingly familiar with my data and a first round of analysis was emerging. I started noticing patterns as well as those pastoralists who did not "fit" in with these emerging patterns. This was of course normal, as there is bound to be diversity in any typology. As with any attempt to categorize, there is heterogeneity and different lived experiences that result in life choices and market arrangements, which are particular to individuals and their background. Nonetheless, I still found it useful to come up with categories to differentiate production, livelihoods and market arrangements and to link these to deeper stories of migration, settlement, asset-building and intensification, government programs, EU subsidies, relations with other players in the chains and newer market opportunities.

After this first phase of interviews and an initial analysis, I hypothesized five different categories of market arrangements that encompass different interactions between livelihood, production, and market engagement, based on the initial data I collected, and informed by the existing literature. These five market arrangements are:

- Intensive producers and industrial market arrangement (Chapter 4). In this category production is semi-intensive, and capital intensive and livelihoods are highly specialized. The milk is sold to industries which are linked to the global market.
- Middle-pastoralists and commercial market arrangement (Chapter 5). Production is more extensive than the previous category but still specialized in sheep milk. The product is sold to international markets through a high presence of cooperatives but also private industries.
- Mini dairies and domestic market arrangement (Chapter 6). Small and medium scale production often characterized by diversification. Artisanal products are sold directly to consumers and part of the milk is sold to the industry in times of uncertainty.
- Diversifiers and civic market arrangement (Chapter 7). Highly diversified small scale extensive production. Engages in both industrial and domestic markets to allow social reproduction of the farm. It is found in peri urban areas, and is characterized by the relationship with urban groups interested in social and ecological values.
- Diversifiers and traditional market arrangement (Chapter 8). Highly diversified small scale extensive production. Mostly found in mountainous areas. The production is highly linked to the territory. Very flexible production and sale that changes according to convenience.

Following much 'stress-testing' of the typology across my interviews, in my view these five categories make sense in the Sardinian context, where Farinella (2018) equally differentiated between two types of production. The first is "industrial production" (Pecorino Romano, Pecorino Sardo and in some cases the Fiore Sardo DOP), which is destined to big distribution. The second is based on "artisanal production", using raw milk that is processed on pastoral farms, and which is destined to the "niche market". However, I believe that an important distinction should be made between intensive producers and middle farmers. Moreover, Meloni and Pulina (2020) speak about mini dairies as pluri-activity farms engaged in agritourism and in civic action. In my research sites, however, there were insufficient empirical examples to justify having only a category of mini dairies with diversified production without looking at those who produce and sell cheese informally.

My objective at this point was to go in-depth and understand how different pastoralists in each category in my typology negotiated uncertainty and engaged with markets. I wanted to understand how different market arrangements emerged. In the second phase of fieldwork, therefore, I purposively sampled some cases from each of the five categories from different geographical locations, different types of production, different sizes and wealth, and different ways of engaging with markets. Purposive sampling is the selection of specific research participants based on specific qualities and characteristics they have. In qualitative research, purposive sampling is commonly used to locate and pick the most information-rich instances to make the most use of available resources. Scholars also emphasize the importance of availability and willingness to participate (Palinkas et al. 2015).

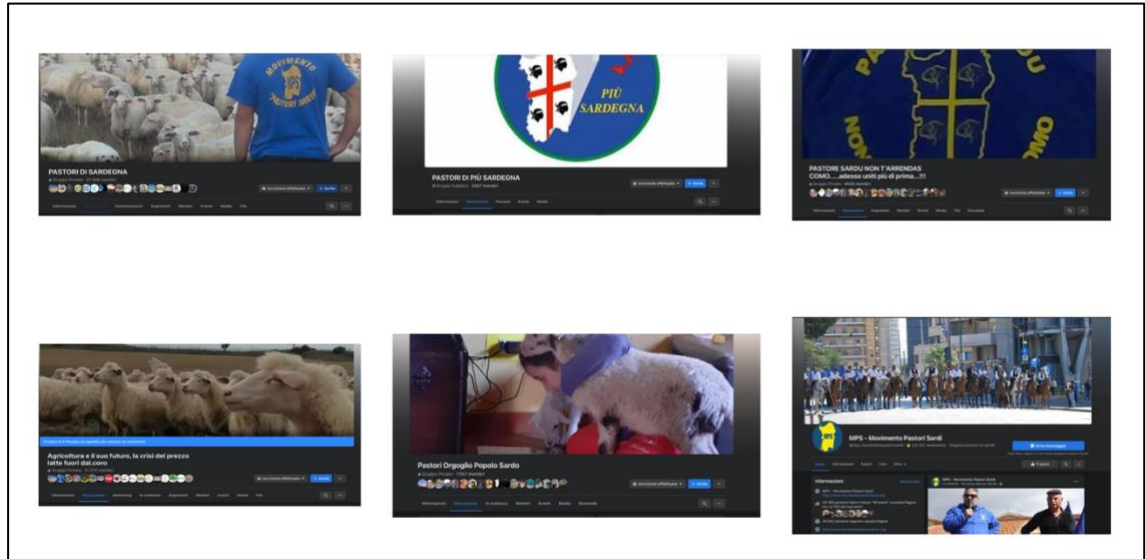
While the specific data acquired is not generalizable because of the nature of the sampling, in-depth interviews with a small number of cases, combined with broader semi-structured interviews, gave me a fair overall picture of the different market arrangements in the studied population. I selected a total of 14 cases according to the emerging market arrangements. In each category (which I later describe and analyze), I made sure to include cases that were different from each other, because it was precisely this diversity that I wanted to explore. Some engagements with markets were clearer and more straightforward than others. For example, it was obvious that large farms with big volumes were strongly connected to the industries both on the input and output side, but it also emerged that they were willing and able to diversify their production and market engagements (with solar electricity production or different types of meat production, for example) more so than middle pastoralists were.

I then conducted these in-depth interviews over the course of several weeks (see Appendix B), sometimes repeat visits occurred over months reflecting the time needed to develop a strong relationship with the pastoralist. Once a good level of trust was established and I started my second phase of fieldwork, I asked deeper questions about the livelihood of family members. These included a history of the farm, their assets, flock size, and land assets (owned, rented, inherited). I stayed on their farms when permitted, and I observed their daily work and helped when allowed to do so. I interviewed as many members of the family as I could, including young sons and daughters, wives, siblings and the elders, and I tried to build biographies of the farm.

An important part of my interviews was understanding how pastoralists responded to the latest 2018/2019 crisis (economically, socially, restructuring of elements on the farm), whether they took

part in the protests, and why they found this important or irrelevant. To monitor this, I also closely followed discussions in six major Facebook groups, as shown in Figure 6.

Figure 6. The six main Facebook groups of pastoralists in Sardinia



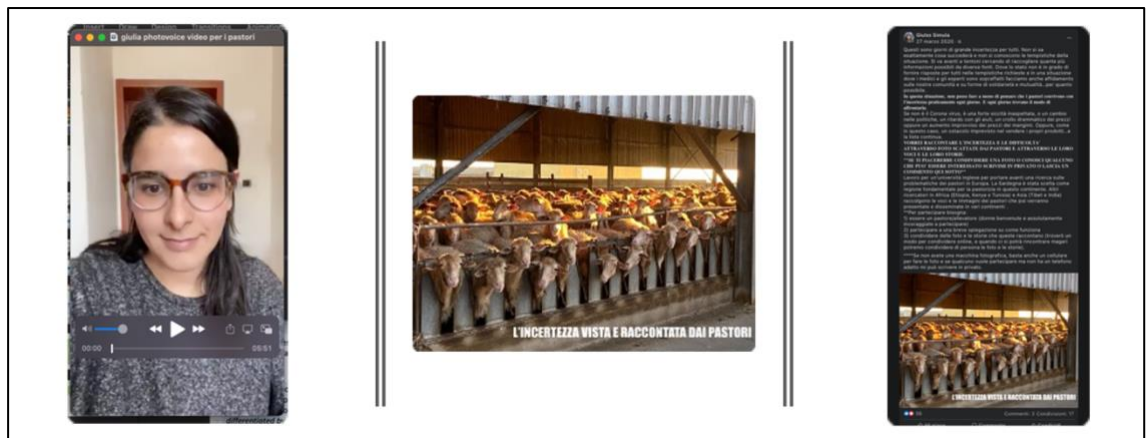
COVID-19 was a major disruption of fieldwork. For months, face-to-face interaction was not possible. However, it was also a period when people generally felt connected to each other, so I started communicating through audio messages and written texts via WhatsApp and Facebook. I also had the opportunity to meet new people via Facebook and to investigate further how pastoralists perceive and navigate market uncertainties. I spent two months participating in the six main Facebook groups of Sardinian pastoralists.

My online interactions were complemented by a 'photovoice' experiment. Photovoice was a valuable tool to keep collecting data during this period. Wang and Burris (1997) were the first to introduce the notion of 'photovoice' into academic literature. Although there are diverse viewpoints, conceptions, and uses, this method is frequently utilized with underprivileged groups who are marginalized in the political arena. Participants reflect on and articulate their concerns using ethnographic methodologies that blend photography and critical discussion to represent their perspective, culture and highlight specific problems (Sutton-Brown, 2014). As Sutton-Brown points out, photovoice emerges as an action-oriented, participant-led method. However, it is now also used to complement other research methods where the research is not necessarily shaped by the participants. Accordingly, I utilized photovoice to sustain communication with my research participants: if they could not show me in person what was happening on the farm, they would send

me pictures and tell me stories associated with them, so as to keep me up to date on news from the farm, town, and their daily lives.

I decided to launch an open call for pastoralists to participate in a photovoice reflection. I wrote a post on Facebook inviting everyone to tell their stories and their struggles in the difficult period of the COVID-19 pandemic.

Figure 7. Photovoice: Facebook post and video explanation



Five pastoralists responded to my open invitation. Three of them were people who I did not know and with whom I then developed a virtual friendship. After they showed interest, I sent them a video of myself explaining what photovoice was, and why I thought it was a nice opportunity to share their stories through pictures. I then started a WhatsApp conversation about the pictures that people shared with me, reflecting on their significance and why they chose certain photos over others to share their perception of uncertainty.

Another important method of data collection was monitoring Facebook groups, newspaper analysis and policy document analysis. This was key to understanding how different markets were perceived and depicted by pastoralists, by the mainstream media, by the political elite and by Sardinian scholars who often write in regional newspapers. I monitored the newspapers for two years, keeping a photographic record of the relevant articles on agriculture and pastoralism in particular, the dairy industry and related uncertainties (Figure 8).

Figure 8. Resources: regional newspapers



3.3. Testing the typologies and data analysis

This section covers how I processed and analyzed the data I collected from the in-depth interviews and photovoice. As Saldana (2011) points out, research design, fieldwork and data gathering are mostly provisional plans that evolve, change, and adapt throughout the research process. As such, the data you collect along the way are analyzed and in turn influence the future steps and development of the project. Following the first phase of fieldwork, there was a period of sustained transcription and analysis, which was followed by a reflection on the missing data and a second period of fieldwork, once the COVID-19 restrictions were partly lifted. This was in itself a sustained analytical process that also involved trial and error. As concluded by Saldana:

"Through fieldnote writing, interview transcribing, analytic memo writing, and other documentation processes, you gain cognitive ownership of your data, and the intuitive, tacit, synthesizing capabilities of your brain begin sensing patterns, making connections, and seeing the bigger picture" (*ibid.*, 2011:90).

After establishing the typologies and purposively selecting the cases, I started testing the robustness of the typologies, thinking about variations within and between categories and looking at emerging patterns and themes. A more sustained analytical period started in March 2020, with the beginning of the COVID-19 lockdown. During this period, as mentioned above, I started transcribing, analyzing interview transcripts, and looking for patterns. I analyzed the cases by using fieldwork notebooks, documents collected from cooperatives, industries, and consortia, all notes taken during local governments meetings, during pastoralists' movements gathering and the news archive that I built throughout fieldwork. I started re-organizing and categorizing my archive. I started to make order in my notes and in my mind accordingly. As any researcher will testify, this

initial phase of analysis was quite hard and seeing patterns was not always obvious, especially as any specificity observed during fieldwork seemed very relevant in itself, but sometimes difficult to relate to bigger patterns.

At first, every pastoralist's story looked different. But with time, and going through my notes, I started seeing commonalities in the way pastoralists responded to market uncertainties. It started emerging that for some, diversification or cheese production and direct sale was not an option or a wish. This was not considered to be a viable option, at least not without revolutionizing the whole production system or considerably increasing costs. Likewise, the interaction between formal and informal markets was more important for some than others. Some pastoralists had similar strategies to reduce costs and for some, specific networks mattered more than others. I started questioning what factors allowed for one specific market arrangement to emerge.

I followed an inductive approach to generate codes corresponding to the key themes and patterns that emerged from my interviews and documentation (assets, labor, technology, social relations and networks, relationship with the state and identity). I then asked myself how these themes combined and related with the themes I had identified as important at the beginning of my research, based on the relevant literature.

For the interviews' extracts that were particularly important to understand the identity, the relationship with state and institutions, the interaction with the markets and so on, I added coding while I was transcribing. The quote below represents an example of the coding:

Giulia (interviewer) You were telling me before that your sheep don't get sick?	[1] animal welfare
Respondent: They don't get very sick because I don't use or treat them with antibiotics of any kind. I have decided not to vaccinate them anymore for anything [1], nor for bluetongue, if they want to die of bluetongue, let them die of bluetongue [2]. Thank God they are resistant.	[2] traditional practices versus modern medical prevention
Giulia (interviewer): Did you vaccinate them before?	[3] distrust vis-à-vis institutions
Respondent: Yes, I used to vaccinate them. Even on this thing. There is Voce di popolo that the vaccines that they make [3] for the blue tongue then somehow, they cause, I don't know why, a decrease in production, which is not so fantastic because you're	[4] uncertainty
	[5] negotiating authority

going to put a weakened virus in an animal anyway. So I don't know if it's true, I don't know if it's not true [4]. By not vaccinating them I don't make any mistakes.

Giulia (interviewer): Don't you give him any more vaccines?

Respondent: No vaccines. Except for the compulsory ones [5], but for now there are none.

Coding also helped me to explore narratives and discourses and to organize them in a way that was easier to analyze. Moreover, I also critically assessed discourses and narratives in my analytical process (Kress, 1990; Blommaert and Bulcaen, 2000). Analyzing existing narratives is central because language is not neutral; on the contrary, it is highly political and embedded in social norms, in understandings of past present and future, and in ideas of development and success. The language that people use reveal a lot about what they think of markets, women, the state, institutions, progress, the role of science and so on (Kress, 1990). Sometimes even body language and behavior speak for themselves. For example, a question I always used to ask was: "do you define or call yourself a pastoralist?". Some pastoralists proudly defend this term while others started laughing as soon as I mentioned it. Critically looking at discourses was also necessary to analyze what I was told by scholars, institutions, citizens and pastoralists themselves about pastoralists. The narrative was often that of lazy swindlers who exploit the system to their benefit. However, these considerations are always deprived of context and, when context is brought back into the picture, the story is often very different.

As I approached the end of my analysis, I organized a big pastoral gathering in the pastoral agritourism of Sa Mandra in Alghero, with the support of the PASTRES project. More than 100 attended the event. The majority were pastoralists, but there were also local researchers, people involved in the Pecorino Romano Consortium, agronomists, journalists etc. During this one day-long event, I exhibited my photovoice project and presented my initial research findings both formally and through bilateral chats. This day of exchange provided further elements of reflection and also became an occasion to validate my data.

Figure 9. Photovoice newspaper presented at the PASTRES event in Sardinia



To conclude, I conducted my research in a two-stage process. There was an exploratory phase at first where, through an extended livelihood analysis, I looked at the different market arrangements and I probed different typologies of market arrangements that were emerging. In a second phase, I purposively selected case studies to explore the main factors that influenced pastoralists' ways to engage with markets and navigate uncertainty. To answer my revised question: *how do different pastoralists navigate and create diverse market arrangements in a context of uncertainty*, I will now explore the different categories of pastoralists and market arrangements I identified, starting with the first category of intensive producers and industrial market arrangements.

Chapter 4 – Intensive producers and the industrial market arrangement

4.1. Introduction

This chapter examines intensive producers, their engagement with the market and the diversified responses to uncertainty across varying geography, labor and identity. It is not surprising that, in the common imaginary, many actors in the pastoral sector look up to these livestock entrepreneurs. Members of the faculty of agrarian studies in Sassari describe them as "the evolution of the pastoralist" – capable of rationally managing the farm and an ideal model to which other pastoralists should aspire (AR1, AR2, AR3). During interviews with an influential professor of animal husbandry, he shared that pastoralists existed in the past, but that now, with the sector's sedentarization, there are only livestock entrepreneurs (AR3). Nutrition experts working for feed companies refer to them as "the only intelligent people with whom you can have a conversation and that are not stuck in past habits" (FT1). The general opinion is that livestock entrepreneurs are pastoralists who actually work rather than sitting in bars drinking beer (FT1, AR3). Livestock entrepreneurs see themselves as a different league, i.e. better, more efficient and worthy of more merit, compared to lazy pastoralists who continue working as they have always done (FT1, AR3, INT1, INT2).

A renowned professor of animal production shared that "nowadays there are no more pastoralists in Sardinia" (AR3). He dated the disappearance of pastoralists to the land enclosures, the sedentarization process, the advent of the milking machine, and the beginning of modernization policies, which progressively changed the main system of production. "There are no more pastoralists now, they are all sheep farmers", he stated, because his definition of pastoralism implies mobility as central to the production system. He emphasized that, "today, most farms are modern and technologically advanced" (*ibid.*).

It is worth noting, however, that despite the fact that the professor, like many other scholars, underestimates the presence of pastoralists, and speaks only about specialized sheep farmers, the former still constitute a minority in Sardinia. Atzori et al. (n.d.) demonstrate that in the Nurra lowlands (Northwest Sardinia), and in the Campidano plain, the percentage of farms with a flock size of more than 700 animals is respectively 10% and 9%. In these areas, almost 60% of farms have fewer than 300; while between 30% and 35% of farms have a flock size that ranges between

300 and 700 animals. Despite the hypothesis that most intensive producers have a large flock, intensive production is not merely a matter of size. Similarly, some farms manage large flocks through extensive grazing and oppose intensification for different reasons. Such data, therefore, are only partially helpful in assessing the size of this group of people. In fact, animal nutritionists and traders from feed companies with over two decades of experience across Sardinia argued that only around 20% of farms are intensive, and business-like in their management (FT1, FT2). Veterinarians also agreed that only a minority does intensive production in Sardinia (VET1, VET2, VET3, VET4).

Intensive producers are generally surrounded by technicians, whom they pay directly or indirectly (by purchasing their products). These can be nutritionists from feed companies and/or veterinarians who are increasingly involved in the private sector, as existing public sector services are considered insufficient and/or inefficient. These producers trust experts and allow their presence on the farm. The relationship with technical expertise also enables them to mobilize capital, and to acquire knowledge about new technology and available projects.

The intensive producer owns a considerable amount of land, most of which is inherited and always (almost entirely) cultivated. The land is often irrigated and located in the plains. They invest much capital in terms of technology and farm infrastructure compared to other pastoralists, who often have unfinished stables on the farm, and own maybe just one or two tractors, forcing them to outsource certain farm activities. Livestock entrepreneurs generally have a rationally planned feeding system that relies on a limited amount of extensive grazing, and where the rest of the feeding happens in the stables. Scale enlargement is therefore crucial in order to cut production costs. They depend on purchased inputs for production, and production is highly specialized from a technical point of view. Production is mostly oriented towards the international market. Through the intermediation of private and cooperative industries, the milk is processed into different types of cheese, and then sold on international, national and regional markets through large-scale retail stores. Contrary to what is generally assumed, this is also true for the middle pastoralist (see Chapter 5) and, even among livestock entrepreneurs there are still significant (and unanticipated) cases of production for self-consumption and informal sales.

Hired labor used to be necessary for intensive farms, but this is changing due to the increasing formalization of labor, rising labor costs, and a decreased availability of skilled labor that is willing to undertake heavy duties for relatively low wages. The presence of labor depends on the farm's

economic situation: if there is contraction and a stagnant economic situation, less or even no labor force is hired. According to intensive producers, uncertainty is navigated and responded to through planning, and making the farm increasingly predictable (INT1, INT2, INT4). This often means that total or partial animal diet feeding in the stable is preferred, as it reduces the amount of unpredictability. Sometimes further mechanization is considered the most viable path (such as mechanized feeding robots, complete feeding in the stable, and elimination of outside grazing) (INT2, INT4); in other cases, a shift towards direct sale is considered the best way to increase profit (INT2, INT3).

When comparing the three geographical regions, livestock entrepreneurs are more common in the lowlands. There, availability of land and irrigation leads to more rational farms and agricultural practices. However, livestock entrepreneurs can also be found in the hilly areas. From there they have expanded by purchasing land in the lowlands, whilst retaining their original farm. Many intensive producers originally come from the mountain region (such as Fonni, Desulo, Orune), and have settled in the northern and southern lowlands of Sardinia. Even in mountainous areas there remains a small percentage of intensive production. There, pastoralists intensified production so as to make the most of the harsh territories to accumulate (VET1). Nevertheless, the main trend was to move to the plains, which is where the highest number of bigger farms is now concentrated (Gioi, 2016).

Based on the above, Section 2 next presents three selected cases of livestock entrepreneurs. Empirical material is divided into three main interconnected sections: 1) livelihood, i.e. family context, livelihood construction, task distribution, and other sources of income; 2) pastoral production i.e. assets, production system, and level of integration with the market; and 3) engagement with markets, i.e. what products they sell, to whom and how. The cases reflect different forms of engaging with markets, different trajectories of capital accumulation, and different strategies for managing relationships, uncertain markets, and falling milk prices. Section 3 then analyzes how market arrangements are created.

4.2. Case Studies

Case 1 – Intensification on one side and partial detachment from the commodity chain on the other

Livelihood

I met Tonino through Sicilian scholar Domenica Farinella, in Desulo, during an event on cheese making called “Open Dairies”. Tonino was welcoming and open to talk. Tonino and his wife Elisa were curious to know how the family who planned the event had managed to open a small dairy and organize production and sales, and whether their business was going well. Tonino and Elisa come from Desulo. Tonino and his family moved to Villamassargia when he was just a kid. He remembers his father moving the flock to Desulo during the summer and coming back to Villamassargia around September. This does not happen anymore. Moving animals has become costly, and it is not worth it anymore. Tonino works together with his brother Luca, and his nephew. They used to have salaried workers until 2017: first a Romanian man who decided to return to Romania after several years, then a Senegalese, who they dismissed after roughly a year because they were unsatisfied. They have one single company registered to the chamber of commerce, but two separate farms, distanced less than ten minutes from each other. This separation was done to reduce the flock movement, and to prepare the farm for future division. In fact, the two brothers Tonino and Luca have one son respectively. Pergiuseppe (Tonino's son) studies Agrarian studies at Sassari University since 2020, and helps his father during periods of seeding and hay-making. Gabriele (Luca's son) decided to stop studying after high school because he prioritized working on the farm. Tonino shared that when the cousins are older and form an opinion about the farm's management, they will want their separate farms, hence the division.

The family's main source of income comes from selling milk and lambs, but Tonino and Elisa also have around 5 hectares of olive grove. In October, November and December they pick olives, bring them to the local olive mill, and sell olive oil locally and informally to their clients from Villamassargia and Desulo. The olive-picking is mostly done by Elisa together with her sister-in-law, Luca's wife. Elisa also has a vegetable garden, which is a common practice in Desulo. She does not have a paid job; she did in the past when she lived in Desulo but quit when she moved to Villamassargia.

Tonino and his brother currently own around 700 sheep over 120 hectares. Their father purchased most of this land when he moved and sedentarized on the plains (1970s-1980s). In the 1970s, public incentives moved from agriculture to industry. This reconversion of production created a real

energy-metallurgy sector for aluminum, making this area one of the most important national industrial sites (Invitalia, 2021). Thence, a large part of the population that was previously employed in agriculture chose to become employed in factories and mines. This freed up land in the plains, and incentivized pastoralists to move from the mountainous region to the lowlands.

Figure 10. The sheep in the barn. Villamassargia, June 2020.



Production

Tonino and Luca have a semi-intensive production: sheep are mainly fed in the stable and graze in groups outside for two or three hours a day, morning and evening. The production system is highly planned and organized. Every morning Tonino prepares the feed with the mixing wagon: he mixes accurately weighted doses of forage, ensiled forage, supplements and additional feedstuff. Animals are also given nutrients and additional vitamins for the different gestation periods. Animal diet is changed according to weather conditions, seasons and amount of pasture available. Pregnant and non-pregnant sheep also receive differentiated meals.

Figure 11. Tonino with the mixing wagon. Villamassargia, June 2020.



Animal nutrition is carefully planned on farm with the help of Francesco, a nutrition expert from the company Purina (part of the transnational Cargill). Tonino often reiterated that "Francesco is an expert, and can provide me all the answers I need". Francesco plans the yearlong nutrition for Tonino's flock. He often visits Tonino's farm. Additionally, for Tonino he is a key connection with the university, with science, and the expert world in general. Francesco is not directly paid for his consulting; Purina provides free long-term consultancy to retain their customers' loyalty to their products (mixes and flours for the mixing wagon, feed, pellets, protein or nutritional additives for animals, milk meal for lambs).

Figure 12. Feeding the sheep during the milking moment. Villamassargia, December 2019.



The animals' veterinarian care, along with the management of the reproductive system, is outsourced to a private veterinarian company, which is paid per animal per month. The family also pays a monthly amount to a private project manager to handle all bureaucracy. This person helps them secure land-related and animal welfare subsidies, as well as apply for potential rural development projects, for which he takes a fee if they win. Some farm enlargement projects were possible through the financing of public development projects, as well as through the purchase of new technology to monitor the animals' reproductive period and milk production.

Figure 13. Visit with the veterinarian. Villamassargia, December 2019.



Differently from other producers, Tonino also produces milk in summer. Normally the ovine milking season goes from October/November to late spring, and in summer the animals rest. Tonino has organized his flock in different groups; the heats and deliveries happen at different times in such a way as to have both lambs and milk throughout the year. This shift was initiated by his father, following a successful trial by a cousin living on the east coast of Sardinia. The driving force was the demand for milk in summer (summer-milk was valued more then), and the necessity to spread business costs over the year. This practice is called de-seasonalization. Interestingly, it is highly recommended by agronomists from the private and public sectors (AR1, AR2), yet strongly rejected by most pastoralists because, to de-seasonalize without overspending, one needs irrigated land that is predominantly present only in the plains (fieldwork notes, November 2019). In a Sardinia-

wide compulsory course on animal welfare, which I took in Desulo, I watched a film produced by the University of Agrarian Studies in which Tonino and Luca were interviewed about de-seasonalization, and about the general management of heats and births, and the benefit of dividing sheep into groups to monitor and eventually improve productive efficiency. Indeed, their friend Professor Piras often uses them as an example of a model farm worth replicating (AR1).

Markets

Tonino sells his milk to a well-known private industrialist, but would like to slowly transition to on-farm production. Contrariwise, his brother wishes to further intensify milk production. Tonino's dream is to have a mini dairy where he and his son transform their milk, and where customers can also buy their olive oil and products made by Elisa, such as ravioli and fresh pasta, *seadas*¹¹ and other typical Sardinian sweets.

Tonino shared his opinion that a serious pastoralist, a "league A" pastoralist in his words, never rests. Shepherds work hard, never have holidays, and invest all their time and capital in the farm. But their work is not recognized with a dignified price for milk. Even though he had a good relationship with the industry he sells to and a relatively stable price for the milk, he felt that the price was unfair, and that most of the revenue was retained by the industrialist. And as he mentioned, this is valid for the milk as well as for other products.

"Now there are no piglets in Sardinia. Because they pulled, pulled, pulled the price down until they told them to f*** off, it is not possible to produce this way. And now they're coming from Spain. And so will the lambs. They pull, pull, pull until the string breaks. And then they bring them in from outside. Is it nice like this? No! I have this friend who has the slaughterhouse here. Here (pretending to talk to his friend), butcher these lambs for me. How much do I give you? This much. I'll take them home and I sell them.

Q. And now you cannot do that?

I cannot do that right now. You need a room as ASL (national health service) says. Now I'm making a little project on my own dime because it doesn't take much. All it takes is a plated room like they say, to draw it, and then they authorize it.

Q. this for you to be able to butcher?

Not to butcher it, this guy butchers them for me, then I bring them back here and I can sell them from here. So, when they come to get my lamb, they get a form of cheese, they get two litres of olive oil, they get ravioli and so on" (INT1).

¹¹ Typical Sardinian sweet filled with sheep cheese

Although they did not have a contract, they were selling their milk to Argiolas, a 1950s-founded dairy company with over 50 employees. Before opening up their processing plant, Argiolas started off by purchasing Fiore Sardo (the traditional Sardinian pecorino cheese) from pastoralists, and selling it to Italian wholesalers. They are now a well-known dairy in Sardinia, which produces and sells cheese nationally, regionally, and internationally. Tonino explained that their negotiations on price build on a long-standing relationship between his family and the industrialist, and this translates into mutual respect, and into a relatively constant price of milk every year (regardless of 'the market price'). This is possible because Tonino's family guarantees big quantities of milk, which is not the case with smaller pastoralists. "He is almost like part of the family, he treats us well", he affirmed, "because we can guarantee him a good quality milk and we can ensure a constant amount, even during summer".

He explained that Argiolas – who took a sample twice a month – was satisfied with the high quality of their milk, and wished to keep them as providers. Argiolas consistently paid them around € 0,80 per liter of milk, although ultimately they had no say in the matter. Tonino and Luca would only know the exact amount after receiving an invoice from Argiolas, once the latter had decided. An example of an invoice (from May 2019) – which, I noticed, were not all filed in the same place – showed that the quantity of liters of milk sold in that month amounted to l. 17975, and the price to € 0,74. It also showed the "quality price" of € 0,019574, which, for that quantity of milk, translated to an extra € 351. Regarding quality, the invoice included information on the membership to the Fiore Sardo PDO chain, and on the milk's microbial load, fat, protein and somatic cells.

Tonino complained that even though they ensure milk in summer, Argiolas argued that they could not pay more. This is because, given the lower amount of milk, the cost per kilo of cheese produced was higher, due to the cost of activating the machinery for such a small quantity of milk. Consequently, Tonino was committed to convincing good pastoralists in the area to produce milk even in summer, with the goal of cutting the industrialist's production costs, and receiving a higher price for his milk. Notwithstanding the close relationship with Argiolas, Tonino expressed that industrialists take advantage of pastoralists.

"The world is changing. It's useless for us to keep insisting with fertilizers... what they decide to do we have to do and try to produce but also transform, because I don't want to be in the hands of... anymore, then slowly Pergiuseppe will help me too, he's small now, but he'll come back with a degree. I'll put the experience, he'll put the theory, the knowledge.

Q. even though they pay you a good price?

It's little, little, little. You work long hours and you never are... It's not paid, it's useless to say. If they paid me all the hours of work I do, I do all the hours of work I do ... you see me how much I work. I get up at 4:00 a.m., come home when it's dark, what the f*** for? So that they collect all the money? No! you go protest, and for what? You don't do anything protesting. Everyone must try ... the other problem I told you is that we are not united and so it's impossible" (INT1).

After decades of working towards reducing costs so as to increase revenues, Tonino's opinion was that there was no return on his investments; hence he started looking at how to solve this, and visited mini dairies so as to understand the requirement to produce cheese on-farm. He asked many questions about sales, revenues and the time needed to start such a business. He cleaned and started refurbishing his cellar so as to eventually make a space where cheese can be produced in accordance with health and hygiene regulations for local consumers. The fact that the family already sells olive oil gave him confidence on potential sales. He shared his vision of a slow transition – of trials and adjustments – backed by the sale of milk to the private industry, whilst trying to open markets for his own cheese. In his view, his son would play a crucial role in this transition.

"Selling with these tools here today is easy, it is possible. If you make a name for yourself...with the computer, with the phone you sell stuff...you have to make a wider reasoning about territory and about the area and region. You have to diversify because it's no longer possible like this [...] And so, I want to go that way, slowly, because if you run too fast you'll fall. I want to put more money on that, but not just to make cheese. Also to make ravioli, *seadas*, which people like. Instead, they [referring to his brother] want to keep insisting on producing. But I want to be [the one who decides] but without abandoning the industrialist. I'll transform 100 liters, but those 100 liters will allow me to make some money. [...] I want to do like Todde (small dairy in Desulo), Todde has the store there. What does it take? it's just a little thing. But it stays in your f***ing pocket, the money stays with you. It doesn't go to the big f***ing retailers or the industrialists. And I'm aiming for that. I don't know if... I'm quite old, but I don't care anymore. I like it that way.

Besides, I want to go organic, there's a lot going on there now. Being with people, you have to open up, not be closed. I always like to meet new people. You see, now they come from the university, for me (smiles showing a happy face)" (INT1).

It is interesting to note that Tonino considered diversification a strategy to face uncertainty. Thus, intensification and cost reduction are not the only foreseen paths for capital accumulation. On the contrary, there was a profound disagreement within the family on how to appropriate as much value as possible for each liter of milk that is produced. According to Tonino, diversification and direct sale were the best solution, given the direction that the external world is taking. This entrepreneurial or capital-intensive form of diversification significantly differs from other types of diversification aiming to ensure the social reproduction of the farm, discussed further in Chapters 6, 7 and 8. This

type of diversification envisioned by Tonino was more about recouping investment after appropriating a bigger share of the profits generated by milk, by capturing new markets. Contrary to his brother, Tonino did not think that further intensification would lead them to increased accumulation, but he believed that cutting intermediaries could. In sum, intensive farmers have many approaches to accumulation and one of them is to mix milk sales with cheese production and direct sale.

Even though Tonino is critical regarding the low milk prices, he did not voice his frustration through participation in political movements. He was generally not interested in politics, and he did not actively participate in the milk protests of 2019. He believed that protesting would not change. "I have witnessed twenty years of protest and the price is still going up and down" he shared. During the protest they also stopped selling milk to the industry. This decision was not a conscious political strike, however, but rather the consequence of the general environment, as the trucks of industrialists were too afraid to travel to collect milk. That occasion was an opportunity for the family to test cheese production. The family came together and rediscovered the practice of cheese making, which they had lost after becoming large-scale intensive producers. Part of the cheese produced was donated to schools and gifted to friends and family members. Around 60 forms of cheese were sold to various families in mainland Italy. Some were friends while others were found through Facebook users who were commenting on the photos of the protest and cheese making, and asking whether they could support by buying cheese.

More so than affiliation to political movements, Tonino greatly valued the relationship with universities and experts. Once his son got into university, he started building new relationships and strengthening existing ones with academics, making himself available for potential projects with students and professors. In fact, it was thanks to these relationships that he discovered and accessed numerous public projects to financially support structural changes within the farm and the purchase of new technology.

In conclusion, even if Tonino presented himself as very independent and as the product of hard work and entrepreneurship, this alone would not have been enough. The long relationship with the industrialist, and the fact that he secured big quantities of milk all year around allowed him to negotiate less uncertain prices of milk. He also relied on privately secured advice through relationships with commercial companies and experts, including via his son. He was also still reliant on state subsidies even if he underplayed this aspect. Through his contacts, he was trying to

understand spaces to diversify, to reduce chemical inputs in favor of a more organic production, and to find public money to finance his partial transition towards cheese production and direct sale. He contextualized his future plans in broader changes within society and therefore in different market demands, and he understood that with different demands, different subsidies become available.

Case 2 – A shift to robot feeding machines, goat milk and permanently housed goats

Livelihood

Pietro is a young livestock entrepreneur from Ittiri, as he defined himself. He was 31 years old and single when we met. Aged 18, after high school, he started working full time on the family sheep farm with his father, who later retired but remained quite active on the farm. His father was a wealthy pastoralist who, together with a group of visionaries and supported by an active politician, co-founded a cooperative in the 1960s. The rest of the family was not involved. His mother is a nurse, and his two older married sisters had other jobs, and as Pietro expressed, "they are not even aware of where the farm is located" (INT2). His family is quite rich; his father was known for having bought the first milking machine in town and for innovating with technology. Pietro was very confident and proud of his work; although he expressed that the general situation in Sardinia was disastrous compared to other European countries.

Pietro and his father had around 800 sheep and 141 hectares of land, of which 25 were rented. The land was divided into two plots, one in the territory of Ittiri and one in the plain area closer to the coast. They had milking machines on both, installed by Pietro's father thanks to the significant incentives of the 1990s. To exploit the land, the animals were divided across the two plots, following the different groups of gestation periods. Although public incentives had clearly backed some investments, Pietro maintained a narrative of independence, and stressed that most investments were made from their pocket, perhaps because most subsidies were taken by his father when there were fewer conditions attached to European subsidies.

"Everything you see I did from my pocket. I built all the new structures out of my own pocket and all the new machinery I bought out of my own pocket. The only public incentive I took was the one for the first installation of young people when I started in 2010, ten years ago. I've never had a tractor with an incentive, not even one. We have five wheeled machines,

not a single one, we bought them all out of pocket. Because many times you have to meet conditions. There are a lot of people who plan the RDP [Rural Development Plan] and have to build a stable, so I was going to build that big stable you see there with the sloping roof. That stable is 1240 square meters [...] it's quite big. I wanted to put that one in the RDP. What happened? The RDP was cancelled. Fortunately, I didn't wait. I started doing this and that. The RDP, it seemed like something that was going to happen from one day to the other. It was supposed to go out the next day, do everything, take the money go away" (INT2).

Pietro argued that due to bureaucratic hurdles, it was no longer convenient to wait for subsidies when planning farm investments. He shared that, while before subsidies were aimed at developing the pastoral sector, now they are aimed at feeding the bandwagon of regional and private employees who gravitate around European subsidies and projects. He felt that this led to loss of time and money, and in the long run, productivity. In his words, the money received for subsidizing an investment is lost in productivity because of the time it takes to follow up. He gave the following example, where 40% of the investment into barn adaptations came from public money:

"So with 40% you have little to gain if I have to wait four years to do it. I think the convenience is very low. The 40% that I had gained if I did it, I would have lost at least 40% for every additional year in terms of loss in production. Because in the end I needed a barn, I had to feed in a certain way, I had special needs, I built the barn myself and that's it. Many times we have to meet our needs. We don't just have to wait the money. In the end, if you do the maths, it's a bit of a joke because 10% on a big structure like this barn goes to the engineer designer, you have to pay all the VAT, he has to declare everything [...]. If you do not get public money you still have an engineer to design it but practically for the same structure I paid € 1300. With the Rural Development Project the same engineer would have taken € 10000, and the project is identical, he didn't do anything else but you are obliged to pay 10% of the value invested you see" (INT2).

Pietro hinted at the fact that public money stipulates set percentages for different figures (engineer, builders, other technical specialists, and mostly taxes), whereas if the investment is done privately, there is leeway and space to negotiate certain jobs off the books, so that both parties benefit. Moreover, the time saved and early adaptation of new technology translates in increased productivity and profit.

At his farm, they have around 20 hectares of irrigated land, which allow them to cover around 40% of the farm input requirements. There are more than five big barns and two big greenhouses. His father used to plant tomatoes with a group of friends with whom he created a small company. After some years, however, this investment was not yielding a return. Pietro's father was putting more labor into the tomatoes enterprise, but he was also very busy with farm work, so he decided to rent the greenhouses to somebody else. But renting is also not easy, Pietro shared, as people don't

want to pay rent. Hence he was thinking of accessing public subsidies to install solar panels in order to exploit that piece of land with a more secure income, and in order to partly power the farm with solar energy.

Pietro shared that he was very busy with his job and could not dedicate time to anything else. They do not diversify because, in his view, diversification is for other types of farms. Their production is specialized. All farm resources are invested to cut the cost of production for 1 liter of milk. According to Pietro, the only way a farm can currently survive and increase its revenue is by investing in technology (which helps to self-produce, thereby cutting the dependency on processed feed) and in the planning and rationalization of costs and revenues (including an increasingly precise calculation of each animal's productivity).

Despite recognizing that important sums of public money were invested in the farm, Pietro did not feel supported by the government. On the contrary, he thought that the regional government was incompetent, and had no political will or interest to invest in the pastoral sector. He expressed that the political interest to keep things as they are was high because the situation of permanent crisis in the pastoral sector ends up benefitting a lot of people whose work revolves around it.

"Just think about the feed trucks that travel around Sardinia every day, consuming tires, oil, diesel and the trucks that are replaced. I'm not even talking about the trucks that collect the milk, just the ones that deliver the feed. Multiply by... Look at the spin-offs, the spin-offs that the agricultural world can create. So it must be convenient for some people to keep it going the way it is. The only way to keep it going without affecting the large takings of powerful industrialists was to enter the European economic system, take the rewards, and everyone would be quiet and happy. That's all. Then... my way of thinking may be wrong... but the accounts don't add up, two plus two is three in Sardinia, not four. We don't even know how much a sheep eats every day, it is unbelievable" (INT2).

Production

The farm scale and intensity, and the fact that there are only two family members working on the farm, means that there is no space for diversification. The production is intensive and carefully planned. The animals graze around one to two hours per day and the rest is feeding in the stable. They use the Unifeed Wagon (mixing wagon), to control and balance the food ratio, and so they can keep count of costs and gains. They produce around 150-170,000 liters of milk per year, but their objective then was for production to exceed 200,000 liters per year. Like Tonino, Pietro kept a very strong relationship with the nutritionist expert and commercial from Purina. In general, according to him, the only way to deal with uncertainty is to make use of the knowledge of

experienced people to achieve adequate farm planning and management. Following the same line of thought as the nutritionist, he did not think that more should be paid for milk, but rather that the only way to increase profit is to lower the production cost of one liter of milk. To this end, Pietro explained that when they receive public subsidies, these are reinvested in farm restructuring to have the needed infrastructure and machinery to standardize feeding:

"We tried to reinvest the money from the CAP subsidies inside the farm by doing investments that we think make sense for us. For example, we invest in self-production, we produce a lot of raw materials, which contribute to reducing the cost of one liter of milk. There is no alternative, that material is necessary to feed the animals who then produce the milk" (INT2).

Thus, an important way to reduce costs is to minimize the input of commercially purchased feeds and concentrates by producing on-farm fodder for fiber and protein intake for the animals. In an area of around 20 hectares of irrigated land, they plant legumes such as sorghum and fava beans for animal diets. The farm production accounts for around 40% and the rest is purchased from Purina (Cargill).

Overall, production is highly mechanized. Pietro was planning to invest even more in technology in order to reduce costs from employing labor and to reduce uncertainty. In fact, he believed that labor was scarce, unskilled, and unwilling to work hard. He recognized that employees do not self-exploit as much as the farms' owners do, and shared his plan to invest in a new milking machine to replace the "traditional milking machine". On this, I asked for clarifications:

"Q. when you say traditional you mean a trolley milking machine?"

(He laughs) No, a traditional milking plant. We have had the milking plant for thirty years; we were the first to have it in Ittiri. We are going to invest in a new milking plant with meters and bolus readers, so it identifies the animals and gives us the production of each individual animal. Because we need to know who's in and who's out.

Q. it means to understand which animals produce the most?"

Absolutely yes, both for the genetic selection and for a cost-benefit reason where I, who normally feed all animals in the same way, clearly cannot afford to give the same ratio to animals who produce two liters of milk and animals who produce $\frac{3}{4}$ of a liter" (INT2).

This points to the reiteration of being early adopters of technology. According to Pietro, continuous investment in technology and fast adoption were features that qualify a good entrepreneur. Being the first means being "forward looking, illuminated, and good entrepreneurs". Even people that were not "the first" often referred to the moment of investment to validate their good entrepreneurial spirit. A sentence that often came up during interviews was: "I was among the first to do that/to buy that" (INT2, INT4, INT1). Additionally, everything pointed to the need to reduce costs for one liter

of milk. Any investment is done to that end; unproductive animals are slowly eliminated (INT2, INT4). To increase production, even an investment of up to € 500,000 is deemed rational, because with so many animals and a limited labor force, monitoring on-site production and costs would be impossible, and thus outsourced to machines.

Pietro wanted to restructure his entire farm and mechanize to further reduce farm costs, to minimize mistakes, increase trust in employees, and, more generally, to adapt to a workforce, which, he lamented, had changed. In his own words:

"Labor here is a problem, sometimes people that work for you go crazy and leave. In fact, I don't deny you... obviously if things remain confidential there's no need to worry. I won't deny that even though we have invested a lot in sheep in recent years we are in a phase where we are seriously thinking about changing the destination of the farm and make dairy goats and mechanize the farm technologically to the maximum [...] this will allow us to do fixed stabling and put a feeding robot, which is much more complicated for sheep, especially Sarda sheep. The feeding robot self-loads, it has a kitchen like a mixer wagon but it works on wheels, it is independent. It goes on magnetic guides. *And so, nothing.*

Q. How come you are thinking of making this decision?

Because we can have the goats in stables, and all the land we have including the irrigated ones, we only dedicate it to the farm's production, so we will make a huge quality leap from that 40% of in-farm input production to much more. So, everything will be subtracted from the famous liter-milk cost we were talking about earlier. And then we would still benefit in terms of labor, which is difficult to get and unreliable. We would have the manpower, but with other duties. He would milk and do normal administration every day. [...] So we adapt the farm, that is basically what it is, adapt the farm to the needs of today's manpower. Today's manpower is no longer what it used to be. They're all gentlemen, they all have iPhones and smartphones, they are also a bit delicate in their work, nobody does the dirty job anymore. [...] And then technologizing the farm means that the reliability is much higher, because if I send an employee to do the unifeed wagon I'm not sure of the quantities he puts I'm not sure of what he does. I'm not sure if he'll feed them if I am missing for a day for whatever reason, definitely I do not miss a day because I have to go to Cuba to lie down on the beach but because I have commitments because I also manage the whole bureaucratic work of the farm. You understand that having a careful eye and having technology at your side on a farm like this is very important" (INT2).

By making everything automated, Pietro hoped that he would be able to take a few days off because "the feed ratio is automatically loaded by the feeding machine, which is activated by the employer". In the long term, he planned to invest in labor-replacing technology so as to minimize the presence of human beings. According to him, this transition is necessary to have a highly efficient and highly predictable and manageable production system. This requires massive investments (starting from around € 1000,000) and an adaptation of the farm infrastructure; as described above, it is the farm that has to adjust to standard machines such as the feeding robot, including a possible change from sheep to goats, thereby enabling scale enlargement and further

intensification. He was discussing with the nutritionist a possible trip to Holland to visit a technological farm with 6000 goats, producing 6 million liters of milk per year. This transition would massively reduce labor costs as fewer people would be needed to feed a much larger amount of animals, and (since they are paid monthly and not by output) this effectively translates into a reduction on the cost to produce one liter of milk, allowing Pietro to retain a bigger margin of profit. Reliance on technology and relationships with external expertise are crucial, yet capitalist surplus generation is also demanding on the farm owner, and his quality of life.

Markets

As a specialized farm, Pietro's products were mostly milk and lamb. The agricultural production was entirely utilized for internal needs. He sold his lambs directly to a private seller, and was not part of any selling group in Ittiri. Just like his father, Pietro sold the milk to the cooperative. However, in his view, most cooperative members had no ambition to grow and develop. He saw predominantly laziness and ignorance in their failure to genetically select animals, reduce the cost of milk production, and increase investment. He rejected any other logic of farm management, which would allow for work-life balance. He was afraid that in the future the cooperative might push for regulations and measures that could dis-incentivize productivity and intensification. Measures for producing Pecorino Romano could potentially regulate the type of animal feed, by excluding, for example, silage feeding. They could also include production quota, which are an obstacle to scale enlargement and intensification.

Pietro equally diverged from most cooperative members regarding protests. He only believed in the construction of good relationships with "the right people", mostly referring to technical experts. He was dismissive of the state, and relied mostly on privately hired experts. He expressed disdain for subsidies; in his view, they create market distortions, despite the farm's dependency on them. He presented himself as a progressive and independent entrepreneur, and was keen to model himself on northern European, mostly Dutch, bovine farmers. This image is far removed from that of most cooperative members, who have a very different production path and livelihood profile, and therefore diverging political interests.

For Pietro, being part of a cooperative was a source of uncertainty and of little use. In response to the uncertainties over its management, he was planning to shift towards goat milk, which, following the advice from experts, he considered a growing niche market. The goat milk market is less

regulated and milk-goat breeds like the Saanen are well-suited to intensive production. He planned to sell milk to Arborea, Sardinia's biggest cooperative industry. Unlike other cooperatives in Sardinia, Arborea mainly processes cow and goat milk, and has more than one factory (four, including two outside of Sardinia). In 2018, the cooperative bought *Fattorie Girau* (a factory specialized in sheep and goat milk processing), the Tuscan cooperative *Caplac*, and *Trentinalatte* in the Trentino region (Arborea, 2022). Overall, Pietro's decision was in line with his trajectory towards intensification of production and scale enlargement.

Case 3 – Intensification, informal sale and diversification for accumulation

Livelihood

When I met Enrico, a farmer from Sindia (a town in the hills), he was 44 years old and married. His wife was employed in a meat packaging company. He used to work with his father and one paid employee. After his father passed away, he inherited the farm and started managing the animals with one employee. His mother and sisters were also involved in farm work, making fresh bovine cheese and selling it informally since over 20 years. It is a simple spun paste cheese – typical from the area – and twisted into different shapes, such as knots or a large braid rolled up to form a flower. The community highly appreciates it, and it is often purchased as a gift to bring to dinners or events.

Enrico owned around 800 sheep, 20 cows and around 50 pigs spread over 120 hectares of land, divided into two farms, where 5000 square meters were covered stables. Most of the land is owned and a part of it is rented from his wife's family. Enrico shared that even if he does not use all the land, he includes it in the farm record to increase the premiums he receives from the CAP subsidies.

Production

The sheep production system is semi-extensive. The sheep spend roughly half the time grazing on cultivated land and the other half in the stable. They are fed mostly forage and feed produced on the farm, but Enrico estimated that less than half is purchased from the market, especially during dry seasons. In fact, his land was not irrigated, so the use of external resources depended to a big extent on the climate. As the cow milk is entirely processed for direct sale and family consumption, the cows are mostly left grazing and fed with some additional cereals during milking.

Enrico used to do organic farming 5 years ago but stopped when the regional government lowered related subsidies, making it too costly to maintain. His family has always produced "homemade and artisanal" bovine cheese, as he defined it, and they have always sold it through friends and family in town, and, in the last 5-10 years, to pizzerias and restaurants. They chose not to start a formal channel of direct sale nor to increase production, because this would completely change the type of product due to health standards, production methods (e.g. stabilizers and commercial ferments), and related expenses. Nonetheless, they did undertake some direct sales, which are allowed under a certain limit without having to declare tax. These sales contributed significantly to farm income, which, he explained, was an "almost clean income, because clearly there are expenses to produce the cheese, but if normally cow milk is paid € 0,40 per liter of milk, this way we manage to earn more than € 1.00 more or less." After realizing that people are once again demanding artisanal homemade products, they slightly increased the production of cheese and piglets.

Reliance on privately hired experts was less present in this case. Enrico belonged to the Coldiretti union, which managed all the applications for subsidies and the farm record. He expressed that pastoralists complain a lot about trade unions, but that they were useful in spite of mistakes and delays. In his words: "I cannot do it, I can do some of it but it is mostly through the fiscal assistance center that I manage all the bureaucracy, I could not do otherwise. There are specialized technical persons that I have to trust, otherwise it is impossible to do it all" (INT3).

Markets

At the time of research, Enrico produced on average 140,000 to 150,000 liters of milk per year. Since 35 years, they sold ovine milk to Pinna, Sardinia's oldest and most well-known cheese factory, which often makes the news during protests. As one of Pinna's long-standing clients, Enrico's family had a friendly and respectful relationship with the industrialist and, as he put it: "I respect all pastoralists, but I am not one of those persons who jump from one industrialist to the other [...] With the historical clients, I don't know how many we are, 30 or 40, Pinna always recognize an additional premium, not much eh, but they always recognize the regularity and the trust you have given them" (INT3). Enrico additionally shared that the price was set by Pinna in the following way: an open contract at the beginning of the milking season with an informally agreed-upon price, followed by a premium which is given to all pastoralists according to sales at the end of summer. A reason for him to remain loyal was the reciprocal understanding, built over the years.

He saw this relationship not as a source of uncertainty but rather as a source of certainty. One example was the advance payment, which allowed him to avoid banks. As he said:

"When the year is going well, you don't need it, but if the year is going badly and you have some unforeseen circumstances, you might need an advance. It's not a fixed base. If you don't need it, it's better....they give it to you because they know that you'll be giving them a product, whereas if you go to the bank today and you only have a small amount they'll never give it to you. The company doesn't ask you for a tax return or a tax form. You go there and on the basis of the company's structure and the milk that you bring, they give you an advance. If someone brings 10,000 liters of milk, they don't give you a € 30,000 deposit, understand? On the basis of the number of animals that you have, you can ask for an advance. I sell my milk to Pinna and he is a certainty for me, but the market is what it is, maybe there is a country that no longer wants cheese and the price drops. It's the same with meat, you've seen during this pandemic, the restaurants have closed and instead of paying you one euro more for lamb they have paid you one euro less" (INT3).

While Enrico continued to sell ovine milk to Pinna during the COVID-19 pandemic, cheese sales practically stopped because of local travel restrictions. "We've always produced because you can't throw milk away, we've preserved it and matured it and in the summer we sold it quite well. Obviously there has been a drop because the more it matures, the more it drops in weight [...] But, thank God, we didn't stop selling milk to Pinna" (INT3).

Subsidies were as important for this farm as they were for the other two farms. The difference was that Enrico acknowledged their importance in terms of investments and new markets. For example, Enrico entered the European funded *Piano Integrato di Filiera* (PIF) Project (Integrated value chain project) through his cousin's company (the slaughterhouse where his wife worked). Through this project he hoped to build another stable, and eventually buy a mixing wagon.

"I entered the project to make another structure in the other farm, and I want to produce meat lambs, about a hundred big lambs a year. So, I'm investing in that in order to diversify, so in January when the price of lambs falls, instead of selling them you put them in the barn and feed them in the barn, but then at the end you don't have a problem selling them because you have to give them to the company leading the project. There is already an agreement and there is a guarantee that the product will be sold. In Sindia I'm the only one who entered this project, there's another one who entered but for the cows, for the calves. It's useful because they give you a 75% contribution. I should build a shed on the other farm I have in Sindia and then I want to buy a mixer wagon [...] I can't say I'll do it tomorrow but it's an idea that I like, the mixing wagon is comfortable, the animals that today are staying more and more in the stable and before they go out you can feed them in a different way, it is better but you have to have the place and you have to be organized, you can't have the wagon if you don't have the right structures and so now I want to do it. Slowly though, once you have paid off one debt, which never ends, you get into another" (INT3).

All in all, Enrico followed a twin-track approach. Firstly, he heavily relied on his relationship with industry for the sale of sheep milk. He considered this a certainty, a stable income, and a resource for liquidity during bad seasons. Secondly, his mother and sister produced cheese and sold it directly in and out of town. Even though the sister was employed elsewhere, she contributed to the farm's income, as bovine cheese sales were important, especially considering the declining price of sheep milk. This diversification to accumulate, however, was not considered a source of stability nor as a political gesture of protest against the increasing power of industrialists and distribution companies. It was a strong part of the family tradition, it kept them grounded in their territory and, most importantly, it was a source of "clean" untaxed income for the family. This contributed to capital accumulation that was then reinvested to intensify production, enlarge scale and diversify with new markets such as 'meat lambs'. This was equally accompanied by a strong reliance on subsidies.

4.3. Livelihood pattern

The three cases presented above, and data collected from wider interviews, helped me to reflect on livelihood patterns that emerge in this category. All three cases had big family assets consisting of land, barns, and machinery partly inherited from parents and grandparents and partially purchased throughout the years. The farm size was bigger than 100 hectares, ranging from 100 to 150. The land was mostly privately owned and, on some occasions, only a small part was rented (like in the second case where 25 hectares were rented to allow for more self-production on the farm). It was acquired over time and over one or sometimes two generations, but the main acquisitions happened during the 1970s and 1980s. Land was a priority any time land and capital became available to reinvest, because land exploitation and agriculture was the primary source of animal feed. This should be seen in a context where the state was incentivizing land purchase and sedentarization to replace transhumance. Through the regional development plan, the European Union was subsidizing technological development (milking machines, tractors, ploughs etc.) and biotechnology to increase land exploitation. As I have argued earlier in an article published with Farinella (Farinella and Simula 2021:113):

"Whereas in earlier periods the ecological surplus was extracted from the free appropriation of nature thanks to natural grazing in open fields according to an extensive model, sedentary life and the creation of modern farms meant the intensive appropriation of nature at low cost. Natural pastures became residual, and the land used was increasingly exploited for more and more agricultural activities".

In the 1980s, the quantity and value of exported Pecorino Romano grew significantly. Thus, following cheap, subsidized inputs and relatively well-remunerated dairy products, investments in land were booming, especially by those who had financial capital and sufficient assets to secure a loan from the banks.

Both in the first and second cases, part of the land was not utilized for agricultural production or as pasture, but was thought of as an asset to increase revenue from subsidies. Land shifted from being a source of feed to being a source of feed and subsidies. As shown in the second case, the father of Pietro increasingly purchased land towards the irrigated plains rather than in the hills where his farm was previously located. However, the land in the hilly territories is maintained also for its value in terms of CAP subsidies. Mencini (2021) dedicates a whole book titled *"Paper Rangeland: Hands on the Mountain"* to this phenomenon. This speculation on land, incentivized by European subsidies and also known as the Rangeland Mafia, is not only common in the Italian mountains that Mencini so accurately describes, but also in Sardinian marginal territories. Land speculation is part of a broader trend connected not only to the multiple CAP distortions, but also to 'green grabbing' (the land rush for environmental reasons). Onorati and Pierfederici (2013) demonstrate that land concentration both in Italy and in Europe more widely is increasing, and that this trend is further exacerbated by European CAP, trade policies, and rural development incentives and regulations that, as explained in Chapter 2, incentivize those who already have considerable initial assets.

Initial assets, access to natural resources, and geography, of course highly influence the type of pastoral production. Livestock production was more intensive in the first two cases, where livestock grazed in cultivated pasture for two to four hours per day. The rest of the feeding happened in the stable with a mixture of feed produced on the farm ranging from 40% to 60%, while the rest was purchased from feed companies.

Given the quantity of milk produced, and the constant output they wanted to secure, big investments in inputs were perceived to be very beneficial and to pay off. Pastoralists spent relatively more on externally sourced feed, but they cut costs on labor by shifting to carefully planned stabled in-barn controlled feeding.

Accumulation and extended reproduction through capitalized intensification were only possible through a longer history of asset acquisition. None of the pastoralists I interviewed started from

zero in building such mechanized and specialized farms. All these factors (assets, incentives, export boom) created a favorable environment to invest in the farms, while political incentives and specialized expert advice on intensification focused on deepening technical know-how rather than on covering the whole chain.

Reproductive and care work was performed entirely by women. This included caring for the children and for the elderly, cooking and cleaning in the house and, to a large extent, maintaining an active part in the social community and nurturing networks. In the first and third cases, women also performed part of the productive work, as seen above.

The farm owners ranged in age from 30 to 55 years old. Contrary to what could happen in other agrarian capitalist or ranching contexts, all three pastoralists fully engaged in labor within their own farm, and did not have any other job. The main income came from milk and lamb sales. While the first and third cases diversified – to varying extents – the second farm specifically specialized in milk production.

The type of intensification required very careful, time-consuming management. They hired accountants, nutritionists, and project-hunters, and relied on expert advice. Nonetheless, the overall management was carried out by the pastoralists with relatively little hired labor.

There was a high yet different presence of technology on all farms. The first two farms owned a mixing wagon which, based on a wider sample, is rare in Sardinia. It can be considered an instrument used by industrialized farms with mechanized farm management in the plain areas. The mixing wagon has changed the feeding system, and led to an enlarging of the stables to allow for the machine to go inside. The third farm was also planning to buy the mixing wagon in the near future. These structural changes were often done with the help of public subsidies.

In the first two cases, the owners hired external foreign workers, who were employed permanently rather than seasonally, but were not satisfied and decided to stop. In the third case, despite the lack of skilled labor and the high cost of permanent workers, there was a long-standing salaried worker from Sardinia. During particularly intense periods, certain jobs such as plowing, seeding or milking are given to seasonal hired workers.

These cases reflect a classic trajectory of intensification. Investment in labor decreases and is replaced by technology and machines, modifying and centralizing tasks. Over forty years, there has been an evolution from milking by hand, to milking machines, to smart milking machines and feeding robots. This has led to major shifts in production relations. Production used to involve several people working together, whereas now pastoralists try to do as much as possible by themselves, and outsource specific tasks to paid experts. Farming has changed based on the increasing technology. The machinery requires different farm structures; nutritionists and technical experts teach pastoralists how to operate, and how to adjust farm management to machinery. Eventually, mechanization leads to scale enlargement up to a point where the maximum output can be reached with the assets and investment made. This creates new and increased possibilities for accumulation.

Two trends are currently emerging: firstly higher investment in technology and intensification with feeding robots; and secondly breeds that better adapt to industrial production. The former involves identifying and establishing a stream of passive income such as direct energy production or renting barns' roofs to private companies for solar energy production. The latter represents diversification for accumulation (Hart, 1994; Ellis, 1998; Bernstein, 2010), i.e. investing in higher product quality and internalization of other nodes of the chain, for instance, starting direct-sale or strengthening the informal direct sale that is already present to internalize a bigger part of the profit.

There is a high reliance on external experts to carry forward specific roles, and to increase production or make it more cost-efficient. A clear emerging theme is the need to build strong networks with experts and industry, including, as described above, with nutritionists who may also be a company salesperson, or with privately paid veterinarians.

Moreover, the first and second farms also rely on a commission-based project hunter. Projects can relate to farm extension, cultivating and protecting specific cultures, breeding a different breed, or entering another chain. The third farm relies on the trade union for this service. Other pastoralists are generally very skeptical about experts, but in this typology, expert knowledge is considered a positive resource and contribution to farm management.

Pastoralists are generally deeply unsatisfied with the government. They feel the lack of a political direction, and therefore distance themselves from politics. Intensive producers believe that their efforts and investments to increase efficiency – understood as output produced with a given input

– are not respected by a government that subsidizes pastoralists regardless of their levels of efficiency and productivity to keep the sector afloat. They have a negative view of welfare policies, and on subsidies, even though they admit that without subsidies, their farms would collapse. They express frustration, particularly given their own debts, the increasing bureaucracy, the need to outsource, and what they view as complacency in other subsidy-dependent pastoralists. However, the importance of public incentives and public policies is often underestimated, and too much emphasis is placed on personal hard work, and merit for their efficiency.

Indeed, their identity of a "successful pastoralist" or "livestock entrepreneur", as they self-identify, is constructed in relation to other pastoralists. There is a recurrent narrative that middle pastoralists who do not follow a similar accumulation trajectory are lazy, inefficient, and subsidy-dependent. As such, the pastoralists in the above-described cases do not participate in pastoralist movements or in farmers unions, particularly because movements are seen to demand undeserved assistance from the state.

Additionally, a narrative is emerging whereby modernization is combined with a return to artisanal, natural, genuine, and homemade products. This is particularly true for those who diversify, and for those who would like to engage in direct sales.

Overall, an important strategy to ensure the farm's sustainability and to increase income is to cut costs on the liter of milk. This is done by ensuring that each animal produces as much milk as possible with a calculated and 'efficient' use of feed. Livestock entrepreneurs talk about the importance of finding the right balance between the size of the flock and money invested in production. The cases show that costs are cut by producing forage and raw materials in-situ, thereby reducing the quantity of cereals purchased from the market. Nevertheless, substantial external inputs, such as feed and vitamins, are used to ensure that animal diets are balanced and adequate for every moment of the gestation period.

4.4. Market arrangements

How do these livelihood patterns and configurations of labor, social reproduction, technology, land, and so on influence the 'class characteristics' and accumulation trajectories of intensive producers? What types of market arrangement emerge? What contradictions or limitations arise? And what does it tell us about this type of pastoralism?

As suggested above, we notice a classic trajectory of intensification in this category. Labor investment falls, as technology and automation replace it. The use of technology restructures farm infrastructure, activities, and social relations. These actors accumulate through a standard capitalist trajectory, exploiting labor and making use of technology. Their identity as entrepreneurs, and as central actors in the sector's modernization, is important to them. It allows them to negotiate better prices with other fractions of capital and to access finance both from private entities and public ones.

Specific activities are increasingly centralized and carried out by one person. These actors focus on specialization and have the following approach to diversification: they engage in high capital investments on activities from which they can extract rent such as producing energy, or conquering new commodity markets, one example of which is the big type of 'meat lamb' (not common to Sardinia). These are not "nested markets"; they are commodity markets. Traditional knowledge is gradually replaced by technical knowledge (Mannia, 2014; van der Ploeg, 2008). Available assets – including irrigated land in plain areas, machinery, private financial capital, and public subsidies – allow pastoralists to follow a trajectory not unlike the green revolution: large-scale intensive production facilitated by technology aimed at producing big quantities, constant and predictable output, and reliable qualitative characteristics. Certainty, planning and predictability are key words that accompany this type of production and livelihood creation. The uncertainties that are typical of pastoralism are minimized with the help of technology and experts' interventions: stabled feeding, preventive medicine, diversification mainly with investments to generate a stream of passive income. There is a clear tendency to want to control uncertainty, rather than live with it.

Despite the narratives that might suggest the opposite, there is a strong dependence on subsidies, reliance on inherited assets, reliance on environmental exploitation (of land, water, animals, and natural resources), and dependency on external inputs including capital, nutritional and medical inputs, without which this level of intensification cannot be reached. These pastoralists are not autonomous; in fact, they refrain from doing activities that go beyond their skills. They often prefer to rely on experts. Rather than re-grounding production and finding ways to cut on the farm's general costs, the emphasis is on cutting the cost of one liter of milk to produce 'efficiently'. This is done also through increasing production of feed raw material, like different types of cereals, on the farm. This is done to increase the level of autonomy from feed companies, and to decrease cost of production. However, production is capital intensive and relies on seasonal labor exploitation.

All these factors lead to the emergence of a particular market arrangement characterized by a clear trajectory towards intensification and scale enlargement. This type of intensification does not follow the time and rhythms dictated by nature, rather, it controls nature so that it may serve the purpose of production. Second, there is a solid, meaningful and mutually beneficial relationship with experts, professional elites and Sardinia's dairy industrial, which is crucial to maintaining a constant income from milk, and without which, pastoralists would be much more vulnerable to changing prices (although this relationship varies from case to case, as does the price paid). The price of milk, in fact, is seemingly not only determined by supply and demand or by how successful sales are, but by personal relations.

Contrary to what is commonly assumed, not all pastoralists in this category want to follow with this trajectory of technology and capital-intensive intensification. Producers consider de-intensification and on-farm cheese production a viable way to recoup investment. Some producers want to delink from the chain in order to capture a higher share of profit. Three particularly visible trends emerge: i) further intensification, ii) intensify and diversify, iii) de-intensification and delinking, selling part to the industry and part directly to consumers.

Having discussed the category of intensive producers and their engagement in industrial market arrangement – in many ways the easiest to define – the next chapter moves on to discuss the category of middle pastoralists and the commercial market arrangement.

Chapter 5 - Middle pastoralists and the commercial market arrangement

1.5. Introduction

This category emerges strongly from a comparison with other market arrangements. The canonical Marxist/Leninist view talks about a “middle peasant” category somewhere between “large” capitalist farmers and “small” farmers. This category is characterized by its inability to invest in scale-expansion to the degree producers in the industrial market arrangement can. Yet, flock sizes are too big to allow pastoralists within this category to diversify or to engage flexibly with different

markets. This makes them quite dependent on the sale of milk and meat and on the commercialization of milk as a commodity in international markets.

This category is significant as most pastoralists in Sardinia fall within it. As shown by Atzori et al. (n.d.), between 60% and 70% of farms in Sardinia have flocks of between 100 and 500 animals, with more than half of this number having smaller flocks, (ranging between 100 and 300 animals) and the remainder, roughly one-third, having between 300 and 500 animals. This is true for all geographical areas in the study including mountainous, hilly and plain areas. This corresponds to what I discovered during my qualitative research phase. Pastoralists generally aim at having a flock which is large enough to cover production costs and allow for a small level of accumulation, but they do not go beyond the point where a flock requires additional labor and costs. This is possible in a context where many cooperative and private industries are ready to buy milk, so that the sale of this raw commodity is relatively easy.

This category is very heterogenous and pastoralists have different strategies to cope with uncertainties. These depend on the geographical and agro-ecological setting in which they operate, family labor availability, flock size, land availability and quality, and so on. There are, however, a few things that these pastoralists have in common. Their engagement with markets is one of them. The flock size generally makes it difficult for meaningful diversification to happen. Hence the dependency on the fluctuation of the price of milk is higher in this category, making pastoralists more vulnerable. However, there is also an overlap between this category and the civic (Chapter 7) and the traditional market arrangement (Chapter 8), and this is true especially when the flock size is reduced or when the availability of family labor increases.

Another important similarity is pronounced engagement in political struggles and debates. The face of the Sardinian pastoralist movement is the face of the middle pastoralist. Unable to diversify income as they are “stuck” with milk production, middle pastoralists express their social discontent by demanding higher milk prices, ones that reflect production costs. They rely on public resources and they think that cooperative dairies should be subsidized and that more investment should be put into opening new international markets for the commercialization of Pecorino Romano, their main commodity.

They exclude the possibility of distancing themselves from the international market as a viable alternative and they respond to uncertainty in two main ways: first, they try to reduce costs, limit

investments and reduce external inputs as much as possible. Second, they cooperate and organize, creating group sales, dairy cooperatives, and social movements. As I will explain in the next section, the features of this category of pastoralist – their asset base, the availability of labor and time, and their identity and politics – explain their market engagement and explain why particular market networks emerge and how these influence pastoralists' responses to uncertainties.

1.6. Case studies

As in the previous chapters, I will introduce three cases here, looking at three main areas: livelihood profile, production, and market engagement. Looking at these three aspects of pastoral life, I was confronted with several thematic areas that I will touch upon in the case studies' detailed description and then resume in the analytical section, paying particular attention to how different configurations of assets, labor-technology relations, identity, networks and relationships with the state give rise to a specific market arrangement.

Case 1 – Delinking from input markets, cooperation and protest

Livelihood

Gino and Luisa live in Ittiri. The town is not known for tourism, it is renowned for its small crafts and entrepreneurs, its cooperative, the production of olive oil, wine, textiles and for jewelry. They have always sold milk to the local cooperative and have a strong attachment to it. The cooperative is not only an industry to whom they sell their milk, but it is also a source of pride for them, as they are actively involved in it. They are also very much involved in the MPS, as are their two sons.

The cooperative has slowly made a name for itself and built a good reputation at regional level. When I talk to pastoralist members of the cooperative who live in Ittiri, most speak of the cooperative with a sense of pride, I also notice that they refer to the cooperative in the 'we' form: "we process", "we managed to have the milk at € 1 this year", "we had some problems in 2012". They speak as if the cooperative was an extension of their own farm itself. Gino tells me:

"Despite everything, we can consider ourselves lucky because this year [2019] those who sell to the private industry closed at € 0,60 per liter and, if they are lucky, they will get an

additional € 0,14 at the end of the season. That said, I know that the majority did not get it. We, on the other hand we received the advance payment of € 0,70 and we will receive whatever remainder at budget closure, depending on how it goes" (MID1).

Luisa worked in an accountant's office for the first ten years of her career, then, she decided to quit and help in the farm. "There were the children, and there are always so many things to do on the farm she says" (MID2). She used to take care of all the administration, now, she is slowly giving everything to her two sons, 30 and 34 years old, respectively. "Now we are retired, it is time for our sons to take over the reins" (MID2). Gino told me that he felt very lucky to have a wife who has taken care of all the administrative work. Like all pastoralists that I have talked to, administration and bureaucracy is a heavy weight, and it takes away a lot of time from the farm. Gino used to take care of the animals and had a very active role in the cooperative. Together with other pastoralists he also created an association with the help of public funds to sell lambs collectively and purchase some farm inputs and medicine. He no longer works full time on the farm, but he keeps going to the farm to help his sons whenever it is needed. He also helps his son Bachisio, the current president of the association. When I asked about other paid labor they told me that they used to have a pastoralist helping them. Luisa informed me that he was a 'true pastoralist', that he knew the land, the animals and the territory like nobody else, and that he recognized smells and noises. Now they have decided not to take on any salaried worker as it is too costly. They say that with the insurance, the contract, and paying any necessary contributions that it would be about € 2000 per month at minimum wage rate, and the family agrees that it is worth doing less and spending less.

The two sons, Bachisio and Piero, are now working full time on the farm. Bachisio told me that initially they did not want to work there, but that they helped out their father on the farm since they were teenagers and they did not really know what alternative job they could do, so they chose this as their work, and are now fully committed to it (MID7).

Production

The family has 80 hectares of land divided into two plots. 30 hectares are in the municipality of Olmedo, and the rest is in the municipality of Ittiri. The flock is made of 600 animals and the ewes are divided in these two land parcels, pregnant ewes are kept in the plot of land that is more repaired from the wind and where there is proper shelter at night. Before they used to move the flock between the two parcels on foot, walking for about 15 km through other people's fields. Luisa

tells me that they used to do it on the weekend because friends, non-pastoralists, wanted to participate. “We used to finish everything with a big lunch. Now the flock is transported with a van because the veterinary does not permit transhumance given that the municipalities of Ittiri and Olmedo are not neighboring” (MID2).

Gino and Luisa, together with their two sons, live off the milk they sell to the cooperatives as well as from the sale of meat, mainly lamb, but also mutton. The value of wool is so insignificant that they don't even mention it when I ask for all their sources of income. During the productive season they bring milk to the cooperative every day, receiving payment at the end of each month.

Different from other families I interviewed in town, the family has decided to stop ploughing and sowing altogether.

“Apart from these two months of incessant rain, I can't complain... because of this aspect of the weather, which is now becoming very uncertain, we have stopped sowing. They [the parents] have managed this part of Olmedo for some time but since dad retired we have been taking care of it. We have fantastic natural grasses here in Sardinia that produce the best milk, and moreover, from an economic point of view, you don't take risks and you don't spend money, you only spend on fertilizer. In fact, we don't have any more problems with grasslands destroyed by downpours. For the last ten years, we've been quite happy with that, but obviously, with two months of continuous rain, the sheep are always wet, there's mud and that can cause problems” (MID7).

Now they have decided to sell the tractor and they did not buy a new one. They now purchase all their fodder from a local producer with whom they have built a strong relationship throughout the years. Luisa positively refers to this decision as “going back” which, for her, it means rebuilding a relationship with the land and the natural and wild pasture of a given territory without purchasing seeds from the markets to plant the same grass that would grow spontaneously if the land is left to carry out its natural cycle (MID2, MID1). The family uses a small amount of chemical fertilizers in order to facilitate shoot growth. “It is a matter of days, you have to be precise, and when the time arrives you can apply some fertilizer, we call someone who has the necessary tools, and we get it done in one day” (MID7).

Figure 14. Uncultivated pasture: clover. Ittiri, April 2020.



Markets

Gino and Luisa tell me that they produce cheese and smoked ricotta but only for personal consumption, and for customary presents for friends and family. They tell me that they often receive requests from friends to buy their cheese but that they give all of their milk to the cooperative. They stress that it is written in the cooperative statute and that it is right to avoid competing with your own cooperative.

“If you are caught producing and selling cheese you face a big fine but that is only right, otherwise everybody can just do whatever they want and you destroy everything that you have created” (MID1, MID2). According to them, cooperation involves benefits as well as duties, and they stress the fact that many cooperatives in Sardinia have failed because the members switched between the cooperative and private industry or they were allowed to produce and sell cheese, thereby creating problems for the cooperative that could not ensure stable production from year to year.

During a walk in the farm with Luisa, she tells me that during a difficult milk price crisis they considered investing in an agritourist farm. Their farm is positioned in a beautiful hill that looks out onto the valley. Their two sons who work on the farm both have partners that could also provide valuable labor to operate such agritourism. However, Luisa tells me that their sons are not interested to play that folkloristic role that pastoralists are increasingly required to play (MID2), suggesting defined role of pastoralists that is limited to caring for their livestock, the farm and producing milk. Aldo adds that Ittiri is not a tourist destination and therefore investing in agritourism

would be risky as it is not a place where tourists normally stop (MID1). There is also another agritourism farm in town and this also discourages the two sons from creating yet another one to compete with something that is already well-established. He also values the solitary dimension of his job, being in the middle of nature and not having to deal with people and customers (MID1, MID7).

Talking to this family and many other pastoralists it seems like a real issue is the fact that over time in Sardinia, a huge apparatus has been created around sheep farming and pastoralism, and that everyone profits and finds employment from it. Everyone that is, apart from the shepherds themselves who are impoverished. This is because there are always new things like taxes or other obligations that pop up unexpected. In this context, Gino tells me: "You know what? You feel powerless, you feel unarmed, helpless" (MID1).

Luisa and Gino tell me that perhaps it would be good to take some steps back and stop following everything that the technicians and the state apparatus say.

"Someone claims that intensive livestock farming has a lower impact on CO2 emissions than intensive livestock farming, it takes a lot of imagination for someone to claim this, I mean...the wealth we have from extensive livestock farming. No. Nobody sees it. Wherever you go you do have an impact in managing and conserving the environment. If it continues like this, in a few years they will make us look as the great damage of the Earth and, in the end, they will exalt intensive industrial farming as more sustainable. You will see, I'm waiting" (MID2).

According to Luisa the idea behind subsidies was, in theory, a noble one. Allowing consumers to buy quality products for a lower price is certainly something to be respected. However, she says: "we are the only node of the chain to have that much control. Does it make sense to have an income support measure if you then fail to control the whole chain and to ensure that the final product is actually affordable for the wider public?" (MID2). There is a contradiction between the stated objective of the policy and the reality. The end product in supermarkets ends up being quite expensive and the quality is not even guaranteed.

"The problem is that. There's only the first check. In the sense that. You make me produce, you keep the price of milk low, or the price of grain low. But, when my finished product arrives on the consumer's table, it's not at that low price anymore. Then there's all the speculation of the various trade passages. The wholesaler goes and buys. Then there's the people who go and bring the product... In the end everyone has their earnings and a tomato that is paid to a farmer in Puglia at 12 cents per kilo I end up buying it at € 3 per kilo at the supermarket" (MID2).

Luisa recognizes that subsidies are essential for her family and for any pastoral family in Sardinia. Without them it would be impossible to go on. However, she recognizes that they are an instrument of control whereby the state control production without a clear vision but following the vagaries of national and European politics. For this reason, and for the lack of control, they would prefer to see the subsidies removed and the milk remunerated for its real value and price.

In response to fluctuating and falling prices, the main response is cooperation and participation in the protests in the MPS. Cooperation is important both to secure better prices but also for its political value. Cooperation is actively lived as an alternative to a profit oriented and individualistic way of producing and living. The family is critical of the current system but it is also partly dependent on it. Where possible, dependency on commodity markets is reduced. as in the case of seeds. The choice of returning to uncultivated pasture was both economic and political. However, cutting down on the use of fertilizers would mean threatening family livelihoods, and, thus, the social reproduction of the farm has priority over having a coherent political stance. They express their political position through very active participation in the MPS, their main struggle is expressed through the movement demand to reduce input costs and to pay a fairer price of milk that reflects farms' average cost of production rather than following market speculations.

Case 2 – Broadening of farm activities and selling the flock

Livelihood

Aldo and Rosa are married, they are both over 50 years old and live in a nice home in Villamassargia. Their farm is quite close to their house. It takes about five to eight minutes by car to go from the town to their farm. They also have a finished house with a large living room, a bedroom and a bathroom on the farm. Rosa tells me that when the sheep are birthing that they often sleep in the farmhouse as the risk of having the lamb stolen is too high. They have 2 sons, one living in Barcelona and studying photography and one who won a scholarship to do a masters in research at Oxford University. Neither of the two sons work yet and they are both financially supported by their parents who are both working on the farm. Aldo is originally from Villamassargia, his father was a pastoralist and still today, at almost 80 years old, he comes to the farm almost daily to give a hand with feeding the animals and with daily tasks, keeping the barn in order. Aldo

is the first person that I met who has his origins in Villamassargia. Most pastoralists that I have met in town are originally from the Barbagia mountainous region. Rosa, on the other hand, comes from another town not too far away. Her parents were farmers and produced olive oil, so she also grew up in a rural environment.

Figure 15. Sheep grazing. Villamassargia, June 2020.



Rosa helps with the daily work on the farm, she is generally in charge of feeding the animals. Before starting Rosa tells me that everything has to be cleaned. She tells me that the sheep have become squeamish and if they find remains of excrement or dirt then they don't eat. After cleaning everything, the feed mix is first prepared in a wheelbarrow. It contains some beet pulp, corn, sometimes oats or other grains and pellets. Then the wheelbarrow is taken to the barn where the animals are housed. Rosa fills up a bucket of feed and throws it along the whole row of the two pens. A long row on the left pen and a long row on the right pen. While eating, the animals push a part of the feed away, so, the second step is to gather up the feed with a large broom so that nothing gets wasted. After she finishes with the feed she cleans the space again and starts putting fodder in the rows of the pen.

“Then Aldo brings me home around 11 in the morning. That’s when my other job starts. I take care of the house, I clean everything from the day before and I cook. Then at 3:30, I come back here and we feed the animals again [...] they are like babies, they constantly require care and attention” (MID4).

Aldo does all the agricultural work of ploughing and seeding the land with his tractor. He also milks the animals even if, at times, this is a job that they both do together. When I visit them, it is early December, the beginning of the productive season, and Aldo is milking by hand because activating the milking machine would be too costly for around 40 sheep who have milk. Aldo will keep milking by hand until the lambs are sold. When the majority of the sheep are ready they will start using the milking machine.

The two sons have decided not to work on the farm. Even though their parents regret to see the end of what they have created, they are happy to see their sons engaged in other activities because they want a better future for them.

“We did everything in the hope that, with two boys, they would want to continue this activity. But they realized, with all these difficulties, that they wanted to do something else. This farm will die like this, there's no future. Either we sell or we will do something else. It ends with our generation” (MID4).

Aldo and Rosa own 60 hectares of land and rent 10 hectares. They have 250 animals but they are planning to reduce their livestock load in spring 2021 and focus increasingly on environmental sustainability linked to organic farming. They have progressively lowered the amount of animals they had in the past 5 years to leave only those necessary to support their sons' studies and life abroad, as well as their own subsistence.

Production

They have been producing organic grain and fodder for a couple of years now. The main incentive was not a market incentive since few dairies will pay a different price for organic milk in Sardinia. The dairy they sell milk to, since it is medium sized, and since it does not sell to niche markets who care for organic production, does not differentiate between organic and conventional milk. Everything ends up in the same polyvalent (where milk is processed) and all milk receives the same price. As many pastoralists say in Sardinia when they consider this phenomenon: “this milk, that milk, it is all white in the end” (MID1, MID6, MINI1, DIV1). Changing to organic is therefore a way to receive higher subsidies (with relatively higher costs only for the feed which is externally purchased something that, in this farm, is low) with the idea to eventually reduce the flock, and, perhaps, sell the milk to some dairy that offers a higher price for organic milk. But this is not enough, Aldo and Rosa are also embarking on many diversification and broadening strategies.

This choice was influenced by the fact that all costs had been increasing over the past few years and those who shifted to organic production were compensated with a significant amount of money per hectare. As Aldo explains:

“The cost of ratio per head... look I'm talking about 7 years ago maybe, you used to spend about 23 cents per head to feed them per day. Now it's around 35, actually even 40 cents.

Q. so it has almost doubled, then?

Yes, because you have to consider that feed prices have gone up, the price of seeds has gone up, the price of fertilizers, the price of diesel. These are all factors that influence the cost of producing a liter of milk. Because from that liter of milk you have to deduct all the expenses. Without considering labor, because that is never taken into account. Let's say that you live on EU subsidies so to speak and this also conditioned the decision to switch to organic, to try to have an income to compensate for these costs that were increasing.

Q. is there much difference between conventional and organic subsidies?

Yes, I can tell you that organic cereals receive around € 350 per hectare, then € 250 for fodder crops plus the CAP subsidies on land. This is a separate premium, they call them organic maintenance premiums. Basically, every year they give you a total amount per hectare. They are premiums that compensate for the income, or rather for the loss of income, because an organic hectare yields much less than a hectare cultivated with conventional methods. Organic fertilizers are very low in nitrogen and therefore production decreases, it is much lower, so the EU compensates for the income lost” (MID3).

On the morning of the 6th of December, I went to talk with Aldo and Rosa and in the afternoon, at 15:30, I went to feed the animals. Everything revolves around feeding the animals on the farm. First, we prepared the mixture of barley, oats, corn, and peas. Then, with Rosa, we started feeding the animals. We used the wheelbarrow to take the mixture to the barn where the animals are housed. As soon as they see you coming with the grain they start bleating, they know their lunch is about to be served, and they are eager to dig in. We use a bucket to scoop the feed from the wheelbarrow. The sound of the grains entering the bucket attracts all the sheep, allowing them to be gathered in the catch.

Once the sheep are gathered Aldo milks them by hand. As they have not yet activated the milking machine. Milk production is too low to justify its use in terms of costs as of yet. Once the lambs are given over to the slaughterhouse the milking machine will be activated. I helped with the cleaning, and with pushing the grain towards the sheep every time they finished eating in their row. We lay the hay once all the grain is eaten, that allows for them to always have food.

Figure 16. Sheep in the barn. Villamassargia, June 2020.



Markets

They sell their milk to a private local medium sized dairy processing plant, run by 5 pastoralists who are cousins, from Fonni, a town in the mountainous region of Barbagia. I asked whether there was a reason for selling milk to industry and not to a cooperative. Aldo explained to me that:

“There's this uncertainty there. You run the risk that if you don't get paid for the milk, you're screwed. Sirai and Santadi's cooperative they were both about to go bankrupt. And they are losing members. You run the risk that they won't pay you. Some industrialists pay for the quality of milk too. Tallaroga pays on time and we would rather sell here than to someone farther away. The price is about the same anyway. And here you have the guarantee that they take the milk even out of season if there is little quantity” (MID3).

The family finds more security and predictability in selling milk to private industry rather than a cooperative because the cooperatives in the area have had several management problems and they could incur the risk of delayed payments or even not being paid at all. According to them, selling to a private industry is safer and keeping good relationships with the industry is key because if you change from year to year, then companies might give you a worse price for your products.

Aldo and Rosa manage to sell some forage as well when the season is good and the flock can leave the barn and go out to pasture. In order to improve their livelihood, Aldo and Rosa tell me that they would like to diversify, however, they have no capital to invest in the different activities they have in mind and they are waiting for regional calls for proposals to be launched by the regional government. Moreover, the flock takes up all their time and they find it difficult and too labor intensive to diversify (MID3, MID4).

When I ask whether they have thought about producing cheese on the farm, Aldo and Rosa tell me that 2019 was the first year they produced a big quantity of cheese, this was because of the protest. They have not thought about this as an option because caring for the sheep requires a lot of labor. Moreover, they know they are expecting a future without their two sons in the family so, they are investing in something less labor-intensive than sheep. "They always need to be looked after. In summer you have to take them from one plot to the other because the plots are not all joined up together. You never have a free day" (MID4).

Cost reduction and taking advantage of available subsidies are strategies that function best when there is limited access to capital and money is reinvested in children's education rather than in farming. Aldo stresses that they would like to diversify with off farm activities, but they do not have the capital available that is required for the type of investment they would like to make. They are thus open to several possibilities for the farm and await potential subsidies to invest. They are cleaning up a roofless rural building for the possibility of building a couple of rooms for tourists if there will be some subsidies for it going forward.

There is no cooperative that provides them with security in the area, therefore they sell to the closest dairy factory with whom they have built a good relationship. Their idea of the future consists in reducing the livestock load already from May 2021 and focusing increasingly on environmental sustainability linked to organic farming.

Public funding allocation seems to be a determining factor for the decisions taken on Aldo's farm. Since the value produced through the family's work and the products is not recognized, an alternative strategy is to start opening up spaces to integrate with other activities, betting on organic and environmentally sustainable production because policies are going in that direction. Furthermore, as Aldo points out, they think it is a better production model than the conventional one (MID3). There is a clear openness to any relationship with researchers and to potential

collaborations that could be fostered, he tells me that he is open to try any path at this point, abandoning the idea that increased revenue could come from pastoral products. He is opening up spaces on the farm and he is waiting for regional tenders to be released so that he can invest less in sheep and more in other things such as organic chickens and touristic and social avenues. He has contacted with the municipality to express interest in social agriculture projects. As part of these projects, people with disabilities or cognitive issues are welcomed in the farm to perform simple tasks that allow them to be in contact with animals and nature.

Case 3 – Local cooperation and political engagement

Livelihood

Gavino is 69 years old, he lives with his two sons that are 30 and 35 years old. They are both unemployed, they worked in bars and restaurants before, but they have no fixed income. That is why they help their father on the farm even though this is not what they wished for from life; they do it because they see no alternative, according to their father (MID5). His daughter is a psychologist and lives abroad. Gavino was married before and he tells me that now that he is separated, his former wife's income doesn't contribute to the family's finances anymore. He is part of the Ittiri cooperative, and he has always been. His father was among the founding members of the cooperative so, for him, being an active part of it is a source of great pride. He has two brothers, both are pastoralists and have their own separated farms.

In 2020, he became the president of the *Organismo Interprofessionale Latte Ovino Sardo* (OILoS), the Sardinian sheep milk interprofessional body, a body that was supposed to bring together all the actors of the milk chain but that in practice has unfortunately been forgotten by the new regional administration. I understand from our discussions that even if the body is not really active, it is still important to be there representing the cooperative. Firstly, it can be an opportunity to allow for a body that has the potential to start a discussion on the chain to be heard, rather than focusing only on the issue of price (MID5). Secondly, being on the management board of any organization that deals with pastoralist markets and products and that is recognized at the regional level means having a seat at regional meetings where priorities are decided upon and budgets are allocated. In short, it is strategically important to sit in as many places as possible in order to deepen knowledge of policies and financial opportunities.

Production

Gavino has 100 hectares property land, divided between the hills of Ittiri and Uri, a part is in the plains of the Nurra countryside too. Around half of the land was inherited by his father who was able to buy more partly thanks to land reform and to the higher product remuneration of 'the golden years' together with the generous subsidies received by pastoralists in the 1990s and 2000s. Gavino also bought land throughout the years in order to increase his flock.

He now has 15 cows and around 500 ewes. He considers this a medium flock according to the average in the area he lives in. The family's main source of income derives from milk sale, and meat. I ask if they also produce other things, oil and wine for instance, the main products in the town, and he says no (MID5). Then he corrects himself and says that they produce some for their family and for gifts:

"In Sardinia it's still the custom, you give cheese, oil and then people give you back what they have, sweets, wine, it is not a written barter but it's a customary barter. But I think it's still used in most towns as well. I can tell you that this Christmas I didn't buy anything, I have given some oil, I gave away a few lambs because I know that people give me things in return, I received a lot of sweets and wine, I didn't buy anything" (MID5).

He also had a few goats but he decided to get rid of them because they are damaging and require a lot of attention, and as he says:

"In the Ittiri cooperative we don't process goat milk so that would mean giving it to an industrialist [...] I would not put the goats in, though, because these people decide not to take your milk, and you've had the goats all season and you don't know what to do with them. Also because the processing of goat's cheese is more complicated. Not everyone likes it. Maybe a percentage of 20%" (MID5).

Markets

Gavino has been part of the cooperative for generations. The cooperative is the only place he sells milk to. This allows him to participate in big projects the cooperative is involved in, to access knowledge and information, and, since this is a successful cooperative, it grants some stability in terms of timely payments and in the long term.

He remembers that the situation was completely different when he was a child and remembers it as being much worse than it is now. He sees the modernization process of agriculture and the

pastoralism as something inevitable and that will force pastoralists to constantly adapt. He has been active in formal political spaces, he has been in the management board of the cooperative in the past, and he is now still quite close to management board members.

1.7. Livelihood pattern

The three cases I have presented above are very different, yet at the same time they represent the intermediary character of pastoralists who engage in commercial market arrangements: they are neither full capital-intensive producers with high levels of inputs nor artisanal farmers relying on their own production of cheese to sell directly and diversify. They are instead a group reliant on the state and subsidies but committed to low-cost production pastoralism, with limited capital inputs.

Picking up on the themes introduced in Chapter 4, and looking across the cases as presented above, we can see that all the cases presented here have relatively limited family assets, often relying on family members working outside the farm. Farm sizes are varied – ranging from 50 to 100 hectares – and very often with multiple plots that have been acquired over time. To maintain a flock of sheep without heavy investment in forage input bought in from outside – as in the cases here - requires sufficient land. Pastoralists explain that the total size depends on the quality of forage; as Gino explained, in some territories you can produce forage without even investing in seeds and in others less fertile areas, you need to rent land or be more dependent from external purchase. This can be supplemented to some extent, but not to the level of the highly capitalized farmers discussed in Chapter 4.

Thus, livestock production is not intensive and relies more on extensive grazing rather than stabled animals fed by purchased or self-produced inputs. Most of the time the grazing pasture is produced on the farm and partly purchased, implying ploughing the land and seeding purchased seeds from local traders. Given the growing uncertainties coming from the unpredictable and varying climate conditions, a few pastoralists in this category are deciding to reduce the production of forage on the farm and stop ploughing and seeding altogether. Thus cutting one of the most important farm costs; the uncertainty of losing the investment from unfavorable climate conditions is also reduced.

The farm owners range between 50 and 70 years old, and most have adult children, often living outside the region. In terms of labor and available time, they are focused on their own production

– managing flocks of sheep – ranging from 200 to 600 in size – which requires considerable labor. This varies over the year, with November, December, March and April being peak seasons. As Giacomo explained, these are the birth and lactation periods (MID9). In each case study presented here it is the adult farm owners who are the main managers of livestock, with important gender divisions of labor. Across the case studies in my wider sample, I found that smaller pastoralists with less machinery and/or family labor available, hired external labor for particular tasks, and in some cases permanent labor lives on the farm. This is usually only one laborer, usually of Romanian or, more recently, of West African origin, and sometimes staying only for one season. In most cases, the pastoralists complained about their hired laborers. As Aldo observed now everyone is interested in a monthly income but the level of skills and knowledge of the territory is not what it was (MID3). Overall, however, the pattern was one of individual farm management, based mostly on family labor.

Being a pastoralist is a busy life, with little leisure time. None of these case study farmers took regular holidays and most worked every day of the week through the year. As Enrico complained, “it is always Monday if you are a pastoralist as the animals always need to be fed” (MID6). Absent children of such farm owners look at their parents and see the amount of work involved, and this is why they are investing in livelihoods outside the farm. Their parents agree and point to their struggles to pay for university fees, professional courses and so on, but also argue that their life is on the farm; it is what the family has done for years – for example, across the three cases studies discussed here, all are multigenerational farms. As Aldo and Enrico explained, they are doing the job of their fathers and their grandparents (MID3, MID6). This links to pastoralists’ identity and to a sense of territorial belonging and a feeling of security. With less education than their children, the idea of working elsewhere in a big city or in mainland Europe is not really an option. As Alberto explained, there is a sense of belonging connected to this job as well as a sense of autonomy (MID10). It is a busy but fulfilling life and encapsulates perfectly what they know and believe in. However, without extra time beyond investing in farm production, and without the capacity to hire labor to lessen their own burdens, they look for relatively low time-cost options for marketing, as discussed below.

When thinking about an uncertain future, they have often used their relatively limited and highly variable farm surpluses to invest in education, rather than capitalizing the farm further. For example, Aldo has financed the studies of their children abroad with some personal sacrifices, while Mario from Teulada has invested in real estate rather than in the farm (MID7). They are therefore not

'rich', but nor are they 'poor' – they get by through focusing on their own farm, using largely family labor, although, as in the case of many pastoralists in Ittiri, they employ some laborers, often seasonally. Accumulation and extended reproduction is limited and occasional, and when prices are depressed (as during the milk price crisis), there are real limits, even to basic social reproduction from farm income, and so farming economically becomes crucial. Questions are raised about inter-generational sustainability on these farms: will sons and daughters return to invest in the farm, or will this be the last generation of pastoralists working these farms? Many views are expressed in broader interviews with other members of cooperatives. Many suggest that young people do not want to stay in the pastoral sector as incomes are too uncertain and working hours are long and strenuous. However, as discussed below, these farmers have a deep commitment to the family farm and the pastoral way of life, meaning other values are emphasized.

As pastoralists committed to livestock production, often across generations on the same farm, they have deep associations with its place in their lives, and with identities linked to localities. This gives rise to a particular type of politics among this group of pastoralists. The first and third case study families discussed above are very active politically. They are part of the MPS and from the movement and the cooperative they have received the mandate to take leading roles in other bodies that manage the dairy chain, like OILOS. They sit at the regional and national negotiating tables, bringing their demands to the fore. They are not linked to experts and industries as the industrial farmers may be, and they are very critical about the role of industries in price speculation; nor are they linked with the more civic politics of agroecology and artisanal production such as with those making their own cheese.

They are linked, instead, usually via the cooperatives where they market, to territorial pastoralist politics, connected to towns and regions, and associated with the MPS and other pastoral movements. This is an old but perhaps dwindling form of politics in Sardinia emerging in the 1990s, at the height of the pastoral boom. When pastoral producers were more numerous, they were very influential in towns like Ittiri. Several members of the cooperatives explained to me their participation in the protest in Cagliari when they occupied the government regional offices or when they travelled to Brussels to protest in front of the European Commission building, leading to several arrests. Political narratives are very much about the high costs of inputs, the social and economic value of the dairy chain and the economic, social, and environmental loss Sardinia would suffer if pastoralists were to disappear. While they are keen to lobby the state and are reliant on state machinery and its links to the EU for subsidies, the relationship is somewhat particular and

conflictual. Technical experts are present on their farms to the extent that it is now compulsory in order to receive certain types of subsidies, but, unlike with intensive producers, such individuals are not hired specifically to boost production, but are state functionaries completing bureaucratic procedures.

These pastoralists have different strategies to face uncertainty. These vary from reducing costs by going back to their own natural resources, to opening possibilities for diversification, to maintaining political influence to maintain the flow of public subsidies. The thing that they have in common is their reliance on public resources for investments, and the fact that distancing themselves from the international market is not seen as a viable alternative. As I will explain in the next section, these characteristics – the asset base, the availability of labor and time and their identity and politics – together explain their market engagement and further explain why particular market networks emerge and how these influence these middle pastoralists' responses to uncertainties.

1.8. Market arrangements

What then does the form of market engagement look like for this category of pastoralist? The first and third case study families sell their milk to the town cooperative. The processing and sale of the final product is then entrusted to the board of the cooperative, composed of pastoralists themselves who, through the collaboration of external agents have a presence in international markets, maintain a relationship with international clients and constantly try to find new markets for their products.

What are the reasons for sticking to the cooperatives and not deciding to self-produce cheese? The first thing that both families mentioned to me is their belonging to the cooperative for their entire life and their parents' lives. In the presence of a strong cooperative, being part of the cooperative is being part of a broader political engagement and of a strong family tradition. This strong political engagement sees the active participation of pastoralists both in town, in grassroots political spaces like the MPS, as well as in more formal spaces like the one occupied by Gavino. Occupying formal spaces is important because it opens up possibilities for financing further work in the cooperative, with the constant objective of reducing costs for the processing of milk and, as a result, ensuring a higher share for pastoralists.

But being part of the cooperative is also part of maintaining a *status quo*; it is a successful and growing business and, despite the internal disagreements, it was able to create a functioning union among its members. In fact, the numerous members of the cooperatives that I interviewed told me that the only ones who are not part of a cooperative are the artisanal producers and one family who is renowned for having criminal records. Even this family, whom I have interviewed, would like to be part of the cooperative for its stability and for the price it pays to producers.

Being part of the cooperative also opens possibilities to gain access to public funds. The first family case study for example is now benefitting from a structural fund to be able to build a stable in their second plot of land. These funds come from a call for tenders won by the cooperative in the framework of the integrated supply chain project (Piano Integrato di Filiera, PIF). It is important to note that, as many other calls for tenders issued by the region as part of the regional development plan 2014-2020, this integrated supply chain project requires a minimum annual turnover of € 10 million (PIF tender). In this case, it is evident that being part of a large cooperative gives access to the funds allocated to large industry, of which there are many in Sardinia (for example, just for the PIF, a total of € 36 million were allocated).

The cooperative itself (together with bars and cafes) is also a place of knowledge sharing and a regular gathering place, where I participated in daily informal discussions on different combinations of subjects around feed for livestock nutrition, subsidies, and different issues such as tips on production suggested by technicians and tested by them.

It is also important to mention that the cooperative also pays a relatively good price at regional level. The first and third family case studies are part of a strong cooperative, which has been able to pay a good price for milk almost every year over the past ten years. Pastoralists constantly compare the income they receive per liter of milk on Facebook groups and other social venues like movement meetings. Members of the Ittiri cooperative realize that their cooperative is a stable one compared to others. This is a strong reason to remain in the coop and it fuels their sentiment of pride, as is visible in the stories they tell me about the cooperative.

The cooperative also maintains certain non-capitalist mechanisms that give precedence to solidarity and mutualism rather than profit making. For example, when pastoralists cannot sell their milk for certified medical reasons, the cooperative undertakes to compensate the member for the loss of income. At the same time, each member is required to pay membership fees. If one decides

to leave the cooperative, these fees paid over the years are lost, resulting in a large loss of money if one decides to dissolve the social agreement.

On the other hand, the second family lives in a territory where the two nearest cooperatives are weak and they keep losing members. In this situation, it emerged from the interview that the family gives little importance to the difference there might be between the private dairies in the area. In this case, it is more important to build a solid relationship with private industries in order to get a stable price. This relationship is built throughout the years both by delivering a good quality product and by refraining from changing industry.

Contrary to the capitalist producers, the intermediate producers are very careful to keep a balance between scale and intensity (Ploeg, 2013). The number of animals, further investments on land, external inputs purchased are all carefully assessed in relation to the availability of labor force and of natural resources already available. It is interesting to note that the aim of the two families with sons involved in the farm is to maximize the labor input. On the contrary, the second family who does not see a future for their farm, is slowly reducing the flock as much as possible in order to minimize future labor engagement as they are going towards retirement.

Subsidies are key for all the three families, but while in the families with active youth in the farm they are used to also include structural enlargements, the investments of the family with two sons outside agriculture go more towards environmental sustainability and organic production because there is where they predict most money and investments will go.

None of the three families see self-production and local sale as a viable alternative to selling milk to cooperatives or private industries. Why is that so even if they recognize that by transforming and selling directly the price paid for one liter of milk would double or even triple? Part of the reason is explained above, and arguments are related to the social and financial importance of being part of a cooperative. Even when selling to private industries however, starting a private business is so uncertain and so risky that having a minor income and not a very stable one is considered to be more secure than risking investing in the unknown.

With the shift in consumer habits, selling traditional cheese would be much more difficult than it was before. Families used to buy ten or twenty kilos of cheese for their annual stock, since the last twenty or thirty years; this is not true anymore, families have changed consumption habits and

therefore selling directly means to effectively build a dense network of clients. This of course is very much relative to the size of the farm and the flock. Smaller flocks, as I will explain in the next chapters have more flexibility in deciding to process part of the milk on the farm and sell it directly. A bigger farm and a bigger flock means more labor and higher costs and this sometimes prevents pastoralists from seeing direct sale as a viable option.

Another consideration that families explore is that of similar producers who sell cheese in town. Competing with existing artisans in town is perceived as cumbersome. The first family above could have the labor force in their own family to become artisanal producers as they have two sons who are now fully committed to the farm and their partners who could potentially help run an agritourism farm. However, becoming an artisanal producer is not seen as a viable option because there are two artisanal producers in town. One of the artisanal producers is a well-established producer that has ran a family business since the 1960s and the other one is a new-born family dairy that is producing a different product: soft cheese. So, starting another type of artisanal production would mean creating internal competition at the town level.

In this situation, the first and third families consider it more convenient to regroup their production: to try and cut on costs rather than increasing their revenue by distancing themselves from the cooperative. This is done in two ways, the first is trying to use natural resources more thereby cutting costs of ploughing and sowing. However, this is possible especially in places where the land is more fertile and spontaneous pasture is more present. In fact, the third family, who has half of the land in more flat territories considers it necessary to purchase seeds from the market and to sow in order to ensure appropriate nutrition for the animals. The second way is through cooperation and association in purchasing farm inputs (mostly medicines and chemical fertilizers since the choice of seeds and feed is quite varied among the group) and selling meat, the second biggest revenue in the farm. The creation of an association was also possible thanks to the cooperative who provided a space to aggregate and test the possible functioning of the group.

A third important factor is the availability of labor and capital and the presence of future generations. During the interviews I note that the second family who is investing in organic production sees that this is not valued in the industry where they sell the milk because all the milk coming for the area of Villamassargia is mixed (including milk coming from intensive production that are typical of that geographical area). So, the family would potentially like to be able to operate organic cheese production. However, the sanitary and fiscal requirements require large investment that the family

would not be able to initially afford as they are maintaining expenses for two sons living abroad and then because with around 300 sheep, and owned land, the amount of labor required already fully occupies Aldo's and Rosa's days.

Costs and knowledge also represent an important obstacle. The second family in fact tells me that the first time they really produced cheese was during the protest of 2019. This is testament to the fact that traditional knowledge in all pastoral families is slowly being replaced by technical and administrative knowledge which is now required by pastoralists to operate technologies purchased for production purposes and the need to foresee future political priorities as well as to shape them.

Chapter 6 – Mini dairies and the domestic market arrangement

6.1. Introduction

This chapter will look at pastoralists that practice on-farm cheesemaking. In Sardinia, pastoralists who are formally registered to produce cheese on their farms are commonly referred to as mini dairies. This term refers to pastoralists who do not produce milk and meat as raw commodities but who also process milk into different types of cheese and other dairy products.

For this category of pastoralists, or, of farms/small businesses there is a definition from the government in line with the European institutions. According to the national decree of the president of the republic, a mini dairy is defined according to the quantity of milk it produces: “establishment for the manufacture of milk-based products whose production is limited, identified on the basis of the quantity of milk processed, which must not exceed 2 million liters per year” (Legislative Decree No. 54/1997). Research conducted from the regional technical agency for agriculture Laore, includes another operational definition that considers the derivation of the milk processed: “On-farm cheesemaking is a processing system related to and sufficient for farm-produced milk, dedicated to the production of cheeses to be sold directly to the public on the farm and with no, or minimal, external milk purchase”¹² (Laore, 2016:7).

According to a more recent law – “Small agri-food enterprise - An enterprise engaged in livestock breeding which has at least one hectare of agricultural land functionally linked to the activities of livestock breeding and cultivation of the land which also carries out activities of transformation or valorization of agricultural production, included with a character of normality and functional complementarity in the business production cycle and with at least 2/3 of the raw material processed from the cultivation activity of the land that is available to them” (Legislative Decree No. 152/2006).

Contrary to others who sell milk as a raw commodity, pastoralists who own a mini dairy process their milk and sell their products directly. Many mini dairies generally have a small shop where they

¹² This definition used by Laore, is given by Ottavio Salvadori del Prato, an agronomist and technical cheese expert.

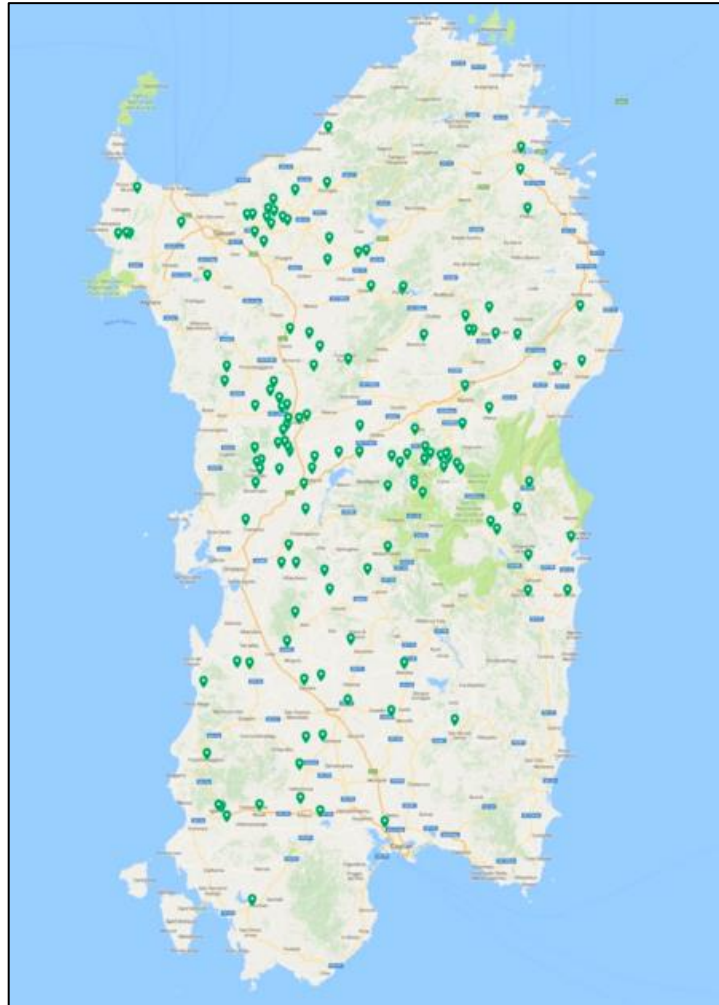
engage in direct sales. Such shops are located either on the farm or in the nearest town, or sometimes in both locations, especially if their farm is difficult to reach. The main difference between mini dairies and other pastoralists who produce artisanal cheese on farm is that mini dairies are formally registered and formally recognized by the state. Hence, they pay VAT and they have to comply to health and sanitary regulations and therefore they are also allowed to sell to small shops, to restaurants, and they can also sell through online platforms and ship cheese to mainland Italy. On-farm cheese makers who do not have a shop, also sell in territorial markets. This happens either directly whereby the pastoralist or a member of the family farm sells the product in weekly markets, or it can happen indirectly, in this case the cheese is sold to intermediaries that supply itinerant vendors.

According to research conducted by the regional agency Laore in 2016 (RI3), there are around 300 dairies registered in Sardinia. This number includes private and cooperative industries that transform more than 1 million liters of milk per year. Of the 300 total dairies present in Sardinia, 210 responded to the survey sent by regional agency. Only 186 declared the amount of milk they process and of this, 131 are farm or artisanal dairies, also called mini dairies, with a productive capacity of less than 500,000 liters per year. This number does not consider all the farms that are registered as direct farmers and have the right to produce and sell their cheese on farm but that are not mini dairies. It also does not include all the informal production. This number represent less than 0.2% of the total ovine farms registered in Sardinia that is around 12,669.

As it is visible from Figure 17 and as it is further specified on the website of the regional agency, 30% (for a total of 63 dairies) of these can be found in the province of Nuoro, the 'capital' of the Barbagia mountainous region. 26% (a total of 54) are in the province of Sassari, 14% in the province of Oristano (in the west of the island) and 9% in the Cagliari province (the main city of the island, located in the southern coast).

Figure 17. Geographical distribution of registered cheesemaking farms.

Source: Laore (2016)



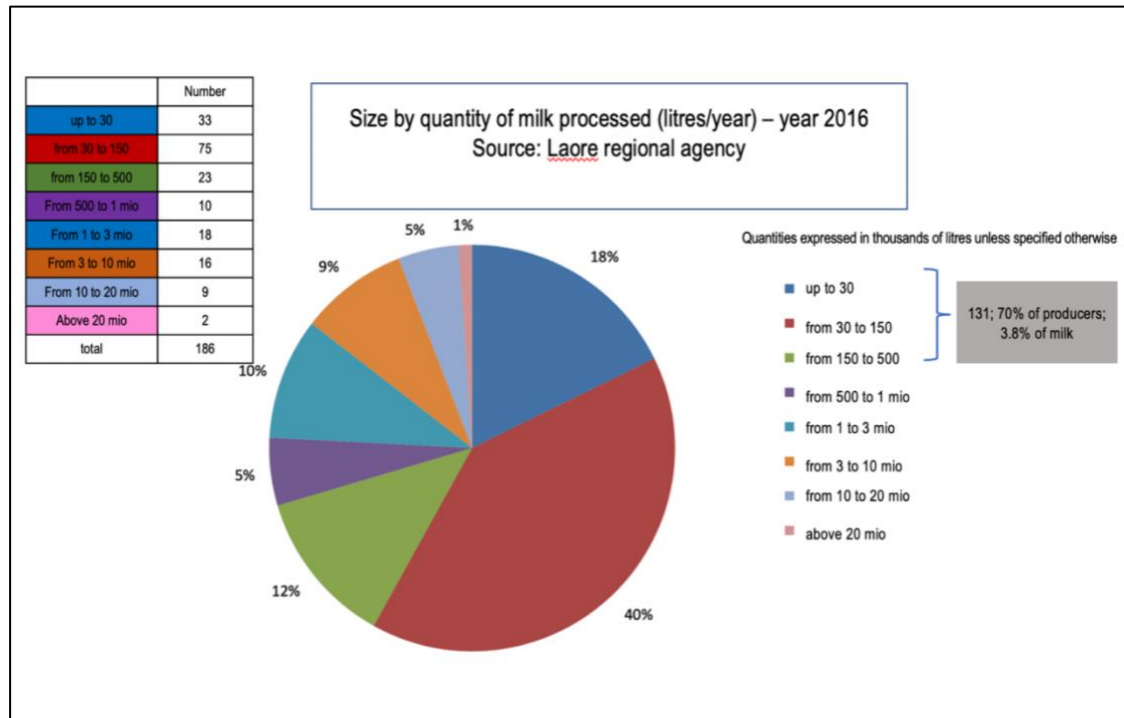
As it is visible in Figure 18 below, 131 of the 186 dairies that declared their production (around 70%), process less than 500,000 liters of milk per year and process around 3.8% of the milk (ovine, goat and bovine). Of this 70%, the great majority (almost 60%) processes less than 150,000 liters. This could mean that most artisanal dairies transform mostly their own milk and might purchase small quantities from other farms. 1% of the dairies transforms above 20 million liters per year.

Most mini dairies (up to 30,000 liters) tend to produce fresh and short-aged products, almost all produce ricotta and medium to long aged cheeses, some of them make *pasta filata* (cheese similar to *provola*), *Fiore Sardo* DOP and sometimes even fresh products such as yogurt. The production of Pecorino Romano DOP is almost absent. From the survey carried out by the regional government we can notice that, in general, there is not a very high production of DOP cheese among the respondents. However, most likely there are many dairies that produce *Fiore Sardo*, the

traditional long aged cheese, that has a DOP, but they call it with different names. This is because there is a political struggle between bigger industries and mini dairies over the characteristics of Fiore Sardo as a traditional, territorial cheese. (cf. Goodman and Dupuis, 2012: 73).

Figure 18. Size by quantity processed (liters/year) – year 2016.

Source: Laore regional agency (my translation)



In the common imaginary, the 'role of a pastoralist' is often disputed. Some pastoralists would argue that its role is to raise animals and produce milk, not to make cheese and sell it. Other pastoralists, think the opposite and maintain that a 'true pastoralist' makes cheese as it has always been the case before the consolidation of the Pecorino Romano industry. This second point of view is especially common among pastoralists coming from Barbagia, where cheese making and livelihood diversification have been part of the traditional pastoral life and are still today much more common.

In general, pastoralists who make cheese on-farm are more interested on ensuring the presence of extensive grazing to ensure high quality for the milk produced and therefore to the cheese as a final product. However, mini dairy is not a synonym of extensive or diversified production. There are also mini dairies who produce more intensively and who are very specialized like the second case that I will present in this chapter. There are two types of mini dairies: those which are there from more than a generation and those which were started as a direct response to the squeeze of the price of milk or in general to make sure that the value added in the process of cheese making

ends up in the farm and is not concentrated in the hands of the processing and distribution nodes of the chain.

Mini dairies are often thought of as being completely disconnected from the global commodity market. However, several pastoralists also sell to private dairies (which produce Pecorino Romano in industrial commodity chains). This is done as a strategy to reduce risk when cheese sale is foreseen to decrease as during the COVID-19 pandemic crisis but it can also represent a sale diversification strategy to make full use of natural and labor resources in the farm. For example, it can happen that pastoralists have the capacity to process a limited amount of milk because of limited time and labor resources or because the markets in which they sell is able to 'absorb' a limited quantity of cheese (and after that quantity, selling cheese becomes more difficult and requires more work). For this reason, selling to private industries is often a secure sale channel even if the value for their milk is considerably lower. At some point, the choice is between hiring labor or selling milk as a raw commodity to bigger industries. For diversifiers (Chapter 6 and Chapter 7) pastoralists who produce artisanal cheese but do not have a mini dairy, use the formal market to be able to access subsidies and in general to "exist" in the eyes of the state (so, not only to receive aid and support but also to receive social security and a future pension). For mini dairies, selling to private industries has a slightly different rationale, which is that of reducing or diversifying risk when they think they cannot sell the cheese they produced.

Family labor is central for the functioning of mini dairies. Sometimes there is a visible gender division of labor within the farms whereby women are dedicated to the processing and sale of cheese and men are dedicated to managing the animals and the farm (including agricultural work such as ploughing and sowing cultivated pasture). But the division of labor does not always follow gender lines and sometimes it follows generational divisions. In this case, it is possible to see young people, that sometimes have studied agrarian, or food technology studies come back to the farm and start making cheese and selling it. Relative to the size of the farm and of the mini dairy, hired labor can also be present. But in general, the family resource is really important.

The relationship with the state, the public sanitary sector and technical state agencies can differ. On one hand, it emerged from my fieldwork interviews that many mini dairies make use of public technical knowledge to improve their know-how in the processing of milk, to improve their visibility, to experiment and innovate with new techniques of cheese making, to access new technologies for cheese making etc. This is particularly true when it comes to raw milk processing, that is very

common among mini dairies. On the other hand, several mini dairies also believe that the state, more particularly the regional government, has policies that favor the production of quantity rather than quality. Quality is at times even hampered by very complex and costly bureaucratic procedures. Pastoralists who produce cheese on farm are not vocal inside social movements or unions. The struggle of the MPS in fact, mainly concentrates on the milk price crisis and on the chain of Pecorino Romano.

This chapter presents three cases. The first case is the story of Rita and her family. Rita's father decided to start producing cheese two generations ago but sale to industry is necessary to ensure sustainability in the family. Even though their cheese production follows traditional methods and recipes and only uses yeast as an additional ingredient, decisions taken on the input side and the sale side are not based on ethical or political principles but on the need to maintain sustainable livelihoods and income, on the need to sustain production, and on market possibilities. Networks are key for pastoralists in this market arrangement but the industry allows them to maintain a work-life balance which would otherwise mean they would have to hire someone else. The second case also used the industry to transition to artisanal cheese making. But the cheese production raises question on what artisanal means. The cheese is made by the family from their milk. But the milk is pasteurized and industrial starters and yeast are purchased from the markets and used to make cheese. The cheese is fresh and do not reflect territorial tradition which was already covered on the territory. The family is also intensifying animal production now that they have a mini dairy and try to automate as many things as possible. They also buy milk from an intensive pastoralist from the south before they are able to produce milk in summer. The third case is the story of an innovative cheesemaker. His sheep graze in the hills and his livelihood is diversified. He produces very different types of cheese and like to experiment. He very often produces cheese for other pastoralists and he thinks it is becoming convenient to focus on cheese production only as producing milk is too costly.

6.2. Case studies

Case 1 – Cheese production and direct sale as a family tradition

Livelihood

Rita is the face of the Pecorino San Leonardo mini dairy. The farm is located in the hills, near the Cuga reservoir and the small Cistercian church of San Leonardo, hence the name Pecorino San Leonardo. The farm's mini dairy processes the milk produced exclusively by the farm's flock. Rita studied law but after one year of study and a divorce she decided to go back to the family business, and she became an expert cheese maker. She not only makes cheese but she also maintains the social relations for the shop and the mini dairy. When visitors, researchers and media come to the farm, she is the one who welcomes them and passionately explains the history of the farm and the history of the cheese they make. Rita's family have been making cheese for two generations.

Family work is key on this farm, many members of the family are involved in the production of cheese in different ways. Rita takes care of the transformation side in the family business. At the moment, there are around seven people that are actively involved in the business considering that Rita's parents are now retired. Rita and her two nieces, Anna and Giorgia make cheese. Rita's brother Tonio and his son Alessandro take care of the animals. Giulio, Rita's son, takes care of the cheese orders and of shipping parcels to the shops they provide to. Giulio also partly takes care of the bureaucratic work together with his uncle Tonio. Rita starts her day at 5.30 and makes cheese in the morning while Mariangela, the wife of her nephew Alessandro tends to the shop. After lunch, Rita goes back to the shop and keeps it open until 20:00.

Production

The farm has around 600 sheep and around 200 hectares of land for pasture at their disposal. They produce around 6800 forms of cheese per year and around 4000 forms of ricotta. The traditional pecorino cheese that they make would correspond to the Fiore Sardo type of cheese but with the characteristic recipe that has been followed in Ittiri for years. However, they cannot sell it as Fiore Sardo because they are not part of the PDO consortium.

Figure 19. Sheep grazing in the hills. Ittiri, October, 2019.



My interviews in the farm were mostly done with Rita and the other women involved in cheese making. Therefore, the data collected focuses mostly on the processing and selling aspects of the farm. As Rita says “we think that the innovation in cheese lies in the millenary path developed on our island” (MINI1). They produce the typical pecorino cheese of the tradition of Ittiri, a raw milk and raw paste cheese still produced in copper pots and with traditional wooden tools.

Figure 20. Artisanal cheese making. Ittiri, October 2019.



30% of their milk is sold to the Pinna industry, the most famous dairy industry in Sardinia. They would not be able to transform all of it because this would mean needing additional labor or working longer hours; she says it would not be worth it (MINI1). The additional labor would be needed not only to produce the cheese but also to sell it and distribute it. So, selling to a private industry is important in order to keep a sustainable work-life balance.

Around 80% of the cheese is sold directly in the shop or to small food shops in Sassari, Alghero, Uri and Usini. In the last 5 years, they are giving more importance to social media presence, thanks in part to the younger generation that is more active in this regard. Moreover, friends of the younger members of the dairy, are giving renewed attention to the territorial value of the dairy and they offer to make videos and photos of the milk-production and cheese making process. The mini dairy is very well connected and it is widely recognized and appreciated in the area.

Nevertheless, twenty years ago, they went through a moment of crisis that they were able to turn into an opportunity. In the early 2000, a customer reported the small dairy because he felt sick after eating one of their products. From that episode, Rita was able to innovate the way cheese was produced from generations while keeping a product that is connected to the territory, and made in the traditional way, something that is crucial for her and the whole family. The help of the university was key, she tells me. But while the professor she contacted first suggested to use chemical starters or bacteria in order to stabilize the cheese, Rita refused to take this shortcut and worked with him instead to find a different solution. Now they use the serum from their own milk (*siero innesto*) in order to insert the necessary bacteria to stabilize the milk. This allows them to still make raw cheese with raw milk and to keep the properties of their own milk in their cheese.

The quality of their own product is key for her. And she also explains how quality matters in terms of nutritional values:

“It’s a very fashionable matter now, let’s say. But it’s also a very important matter because transforming raw milk means giving the cheese a link to the territory because in that milk there are all the lactic bacteria of the territory. Working with pasteurized milk means taking that milk and make it sterile so mixing everything good and bad. And then you have to use the starters, that is the ferments that you buy from multinationals and they are the same bacteria for everyone. So, in the end there’s no cheese diversity. Then there are other important things too. In the sense that in raw milk you can also find, there are the bacteria of course, the *Escherichiacoli* and all these things here that have to be controlled anyway so that they can’t hurt you. But it’s important that they are there because the organism

learns to defend itself. [...] Then, in addition to this, there is also the fact that the sheep graze and therefore eat grasses and flowers because the sheep is very selective in its eating [...] and therefore this enriches the milk with all those properties that are in the grass and flowers so they can have anti-inflammatory properties. There are some antibiotic properties as well because in medicines, the active ingredient is taken from plants and so I mean to make a cheese with raw milk a good cheese is also fundamental for our health” (MINI1).

When I went to visit Rita she explained thoroughly how she grew from the collaboration with the university. She learnt a lot about the properties of the milk, and she now tries to communicate the beneficial properties of her product to her customers. She tells me how milk and cheese strengthen your immune system and she explains to me something she read about the anti-tumor properties of raw milk.

She stresses the importance of the nutritional value of milk and cheese. This is what she presents to her customers, and this is what she thinks should be pushed in the field of research and from regional policies. Rita is critical about regional policies around the ovine sector. She thinks that policies were never made to support the production of quality even though this is the strength of Sardinian production in general. On the contrary, regional policies support quantity production to make standardized products. “In a region like Sardinia, with extensive pastoralism and the availability of quality grazing land, they should not push towards stabled sheep and quantity but towards quality and diversity” she says. Quality and tradition are central to their way of producing and this is also what brought her closer to researchers who helped her increase her scientific knowledge on the matter. She puts a strong emphasis on the specificity and the health value of her products. As she says it “the serum graft with your milk bacteria from the night before. It is a wealth to be able to understand that those bacteria multiply and then in your milk they give you this guarantee and fragrance and aroma; there is an immensity”.

Markets

In 2019 the farm produced around 110,000 liters of milk per year and around one fourth of this (28,000 liters) were sold to a private dairy. Some of the milk is sold to the industry because to process it all would require an extra person for the processing and more space in the warehouses to mature it. But if the family reduces production and if they do not sell to the industry, they will not be able to provide a salary for all the family members. Selling to the industry in this case allows them to maintain a fair balance between production and labor and a balance considered fair

between utility and drudgery (van der Ploeg 2013:38). During the COVID-19 pandemic, a bigger part of the milk was sold to the industry as the summer demand was very uncertain because of a foreseen decline in tourism.

Rita sells her products in her small shop in town. But the shop is not only a place of cheese sale. Information is exchanged, people sit and chat and gossip. The customers know Rita and her family well and sometimes in the shop they also exchange products and gifts such as eggs or seasonal vegetables that the customers bring Rita. Besides selling the products in her shop, Rita also supplies other shops in bigger cities and in towns that are tourist destinations like Alghero. There is a horizontal relationship between Rita and these shops, they are connected in a network that is based on professional and trusting relationships formed over the years. Unlike other shepherds who sell to industries or to the highest bidder who comes to pick up the milk or cheese, these relationships between producers and small retailers are more stable and last over time.

Case 2 – Cheese production and intensification through technology as an alternative to declining milk prices

Livelihood

Miriam and her two brothers started producing cheese on-farm in 2019. Their father has been selling milk to the local cooperative in Ittiri all his life. But after the milk price crisis of 2015 the three sons have tried to convince him to change and start producing cheese. In March 2019 they started with their own mini dairy. They decided to shift when they realized that they could no longer continue with such low revenue.

Miriam is a young and energetic woman. She works for the University of Sassari. She is an agronomist and is currently doing a post-doc. She is the only sibling who graduated from university. Her two brothers take care of the work related to animal production and milk transformation within the farm. Before starting to produce cheese, they used to work with their father on the farm. I did not meet the father, but Miriam describes him as a very tough, patriarchal and hierarchical figure. She tells me that he has always taken decisions within the household and that nobody could question those decisions. When they were children, holidays were rare for the three of them, they were always studying or working on the farm. She had a tough time convincing her parents to allow her to enroll in university and to study. The transition towards starting to produce cheese on-farm

was also difficult because her father was very hard to convince, but the pronounced price drop in 2015 provided the three siblings with stronger evidence for this shift to be justified. However, Miriam thinks that their severe upbringing has also strengthened them and contributed to making them hard workers (MINI2).

Production

The family has 400 sheep on 34 hectares of land. Since the three siblings are starting to take care of the family the production is becoming more intensive with less animals but more productive ones. Miriam tells me that everyone in the family contributes to the family business. Now that she has finished her PhD she works mainly for the university and current management of the farm is done by her brothers, even if they always ask for her opinion. They do this for things concerning which feed or fertilizer it is best to buy for example. She also takes care of all the technical monitoring of the farm that otherwise would have to be carried out by a paid technician (MINI2).

The first time I go to meet them in the farm, I drove to the dairy: Milky home. As it often happens with mini dairy in Sardinia, they have a selling point in the same place where they process the milk. Not everyone has a separate shop in town as this is an extra cost for rent and maintaining the shop open including having a person that is there to sell.

I go there with a friend from Ittiri who introduces me to the siblings. Miriam and her brother Nicola offered us some yogurt to sample. I had never tried yogurt made by sheep milk. They also gave us a creme caramel pudding and a lemon-based yogurt; everything made by sheep milk. They decided to invest on fresh produce: yogurt, desserts, soft cheese and spread cheese. This is something new, they decided to innovate from this point of view as sheep milk generally means hard cured cheese. Miriam tells me that it is not easy to find a market for these products in a territory that is strongly attached to traditional products, with people used to their pecorino cheese, matured and strong in taste. On the one hand, there is also a growing demand for fresh produce, soft cheese and products that are not overly matured (MINI2).

To make cheese, the family purchased modern technological machinery and the milk is pasteurized to reduce risks and improve predictability. Miriam talks about pastoralists as “very difficult” people. She says that most of them are ignorant and stuck in the past (MINI2). They reject technology that could really help them in their work and their life (*ibid.*). She is a strong supporter of technological

advancement and she does not really believe in the utility of protests. The construction of this mini dairy was a direct response to the declining price of milk and increasing uncertainty. The family distances herself from the protests against the falling price of milk and she thinks that the cooperatives and pastoralists themselves have their share of responsibility when it comes to the current crisis. The complex situation between cooperatives, private industries and regional institutions has created a very complex system that is difficult to change and that will take generations to resolve.

To undergo this transition, the family had to first abandon the cooperative and the members' quota were not given back to them, so they lost a considerable amount of money. Then, they had a period of transition where they sold their milk to the industry while preparing the dairy and making the first trials. The private industry, even in this case, represented a secure outlet to rely on during a transitory period.

Market

Miriam tells me about the difficulty in creating a new market, they have no “inherited market network” from their parents and so she foresees that it will take them year to build one. For this reason, they are very active on the internet and social media. A very different strategy compared to Rita's dairy and to Salvatore in the third case.

Figure 21. Advertising on social media. Source: Milky home website and Facebook page.

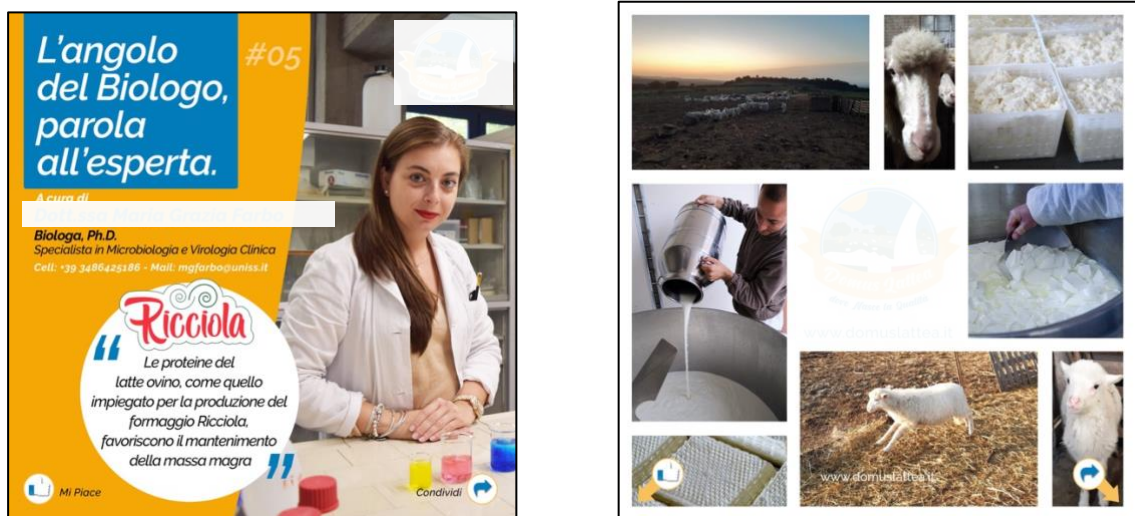


Selling “quality”, is in their slogan (Milky home: where quality is born). Their marketing is connected to quality and to the nutritional properties of milk and cheese. Moreover, they strive towards selling

territorial production (they use the hashtags #buySardinian and #buy products from Ittiri). Miriam tells me that people increasingly want to buy the experience of a product, the nutritional property of a value and not the product itself. To valorize the nutritional properties of the products, they have introduced a column on their Facebook page called: “the Biologist’s corner, let the expert speak”. In Figure 22 on the left, the biologist writes: “*Ricciola* cheese: the proteins in sheep’s milk, used to make *Ricciola* cheese, favor the maintenance of the lean mass”.

Figure 22. Advertising on the nutritional value of cheese and on the family farm.

Source: Mini dairy Facebook page



The three brothers also introduce themselves and the family on social media in order to give a face to the dairy and its products and to stress that by buying from them, people are also supporting three young entrepreneurs who give value to Sardinian products.

Another distinctive factor of Milky home is that they build relationships and cooperation with other artisans from the territory. For example, they have done it with an artisanal ice-cream shop in Sassari. This ice-cream shop is also quite new and the owner has a particular attention for local and high quality ingredients. He makes ice cream with seasonal Sardinian herbs and with dry fruits typically used for Sardinian sweets. From the collaboration between the two, the ovine yogurt ice cream was born and in the ice cream shop one can see where the yogurt comes from. They also sell products to small shops and bars where their cheese and ricotta is served as *aperitivos*.

Case 3 – Diversification

Livelihood

Salvatore is 48 years old and he is from Desulo. He became a pastoralist when he was 30 years old after his father died and he decided to build the mini dairy. Until the age of 20 he worked on cork extraction. After that, he spent one year in America with his girlfriend. His father did not want him to follow his path and become a pastoralist, and he wanted Salvatore to stay in America or to go elsewhere. But Salvatore decided to come back to Sardinia and his father then agreed under the condition that he graduated from university before doing any job related to pastoralism. Salvatore took the undergraduate on economics and he started working with his father and he built the mini dairy when he passed away.

Figure 23. Cheese vat in mini dairy. Iglesias, November 2020.



Salvatore's family moved to the Campidano area from Desulo when he was young and he now lives close to Cagliari, the biggest city in Sardinia. He lives together with his wife and their young son who is 6 years old. He feels very lucky to have met his wife who, despite having a job, helps him greatly with all the bureaucratic work related to the farm and with the marketing side of cheese sale. His farm is in Iglesias, in a mountainous territory that goes up to 1000mt above sea level. He has a small shop in the town of Iglesias but he sells most of his products in the greater Cagliari area.

Production

He has 300 hectares. They are in more mountainous and forested territory even if we are in a plain dominated region. They decided to stay in the mountain because the pasture is better and, also because the cost of the land was lower. Many pastoralists who migrated from Desulo ended up buying land in the mountains because they were used to that type of territory and the mountains in the south are less harsh than the ones in Barbagia. The farm is at 700 m above sea level, some peaks reach 1000 m. That is where the barn is so, as he says, "I don't do quantity, but I do quality" (MINI3).

Before he had 800 animals while now he lowered the number of animals to around 500. He decided to cut the number of animals in order to have more flexibility and time to manage both the farm and the cheese making. Of 300 hectares of land, 10 hectares are cultivated and he uses them to make forage for the animals. This year he decided to enter the organic label because he feels that he was already doing an almost organic type of production and he tells me he has never used pellet feed. He has always used grains and cereals and he does not want to force the animals to produce greater quantities:

"I don't care about having sheep that produce two liters of milk, if I get 800 grams but of good quality, I am more than happy. My animals are feeding on acorns right now, the milk has more or less 8.5 fat content. The average milk is about 5.5 or 6, some get 7. Mine is 8 and a half, but when I make cheese, my protein is low, I should give them protein supplements, but I don't give them any. Because it should be protein and fat 8.5, if you have 5 fat and 5 protein you have structural problems in the cheese that will show later. In the sense that all the parts of the cheese don't stick well together because the fat part doesn't have enough protein to start the break down process. You'll find cracks in the cheese and that's a defect, but in terms of smells and flavors you can't compare this cheese with others. These are very tasty cheeses even when they are young. Because it all depends on what the sheep are eating, and now they're eating lentischio (lentisk), you understand.... wonderful flavors and you can smell all the flavors and all the pasture in the cheese. And that's why I can afford to sell it for € 20 per kilo. I bet that if you put 10 pecorino cheeses next to each other my cheese wins. And then they tell me that it's a case, but it's not, the taste always wins. Even if they it is not connoisseurs, everyone like the taste and the good taste, so my cheese has to be paid a bit more, it has nothing to do with an industrial cheese. With some small refinements, even a cheese that I sell for 15 now, I can sell it for € 20 or € 25 per kilo. It will be more difficult to enter the markets, but for that I have my wife to help me, from the IT point of view she's very good, and also at writing" (MINI3).

Salvatore's wife is also involved in marketing and selling the cheese and she helps him with bureaucratic matters. On the farm there is also a high level of diversification. Diversification

happens mostly in summer, when he does not produce cheese, he goes back to Desulo to harvest chestnuts, or rather to organize the harvesting. In fact, he owns land and trees there and he informally hires young people to harvest chestnuts and pays them. For them it is their summer job, for him, it is a livelihood diversification activity and a way to please his customers who know that they can find chestnuts from Desulo in his shop.

He also keeps making and trading cork. He invests quite a lot in this business. He makes investments of up to € 80,000. He puts together a team of people, he cuts the cork, buys it and then resells it. "I buy with the eyes and then I sell by weight and quality" he says (MINI3).

"My wife was really scared when I spent € 80,000 on this, 'you're going to ruin us' she said, and I am small but I know when it is worth to make an investment and up until today I did not make big mistakes" (MINI3).

His farm is a bit like a circular economy, profits on one side is reinvested into other activities in a way that all the resources he has available and all his knowledge is utilized. He does not specialize on one thing but rather diversifies as much as he can, whenever he can in order to diversify income. According to him, every asset they have must be utilized to the maximum. He makes the example of his mother-in-law who owns a plot of land with cherry trees and he finds absurd that these are left unharvested.

He has positive relationship with scientific institutions and universities that help him to develop the technical knowledge of cheese making. However, he uses this knowledge in an autonomous way, for example technical experts suggested him to give protein food supplements to the animals but he decides not to do so. One of his mentors is a professor of microbiology of Cagliari, they both come from Desulo, and he taught him the importance of valorizing the nutritional and organoleptic components of cheese and milk when selling cheese. In general, however, he tries to stay as autonomous as possible. He tried to be part of the union Coldiretti but at some point the union was placing too many conditions on sale and production so he decided to abandon the union.

Market

Rather than producing the same traditional products Salvatore tries to innovate and always make different products also inspired by northern Italy and by scientific knowledge but he always tries to use and valorize Sardinian regional products, plants and spices. For example, he talks to me about a cheese covered with a gold foil on top, that looks like an egg. He is now trying to do something similar with saffron, a traditional spice in Sardinia.

Salvatore sells most of his products to different shops, privates, bars and restaurants in Cagliari. Cagliari is a great market he says, it is a big city and the majority of the Sardinian population concentrates there. People are looking for quality products and they are also missing the traditional flavors that they had in their native towns.

Figure 24. Mini dairy and shop on the left and Salvatore holding a national award on the right. Iglesias, November 2020.



He values the flexibility that his small-scale gives him. In his words:

“The good thing of my little jewel, I call it my little jewel [referring to the mini dairy] is flexibility. It is not like a big farm or industry. Contrary to those I am much more elastic. If tomorrow someone calls me and tells me that he does not want ten kilos but he wants three kilos I can do it, I am flexible. A big farm or industry cannot. They cannot block production, if they do 100 kilos it has to maintain that level of production. But I can play on the quality and the price, and this is what my father did not understand” (MINI3).

Salvatore plays with this flexibility and he always tries to make new things, to test new markets. He sees that now the great majority is making yogurt and he knows that Pinna is going to invest on it so he is already thinking about his next product. He reads university research and he found out that the next thing is going to be kid rennet. There are studies that prove its benefits for health reasons and he is already thinking about testing new products with kid rennet.

He also invests in self-education. For example, he is thinking to go to northern Italy in the coming year to do a course on cheese refinement through smoking. Right now, he is already working to

find contacts that can link him up with such experiences. To keep his web of contacts, and to market his products he also participates to a lot of prizes and competitions.

6.3. Livelihood Pattern

Mini dairies are made of family farms and small-scale pastoral production. The scale of production is kept under control to keep a balance between earning and costs, between internal and external resources between utility and drudgery. Even if the scale is small, the production can be intensive and this depends on a lot from the pastoralists running the farm. The new generations of young pastoralists running the farm are often highly educated and they have followed agrarian university costs where they learn how technology can help to produce in a cost-efficient way.

The three cases presented above show that mini dairies are built on pre-existing family farms assets. While in the first case there was already an existing mini dairy, in the second and third cases the mini dairy was built by the second generation of younger pastoralists. In one case, the one of Miriam and her brothers, this was in direct response to the falling prices of milk. In the third case, Salvatore formalized what his father was already doing informally or somewhere in between formality and informality. This tells us that creating a mini dairy starting from scratch in one generation is a very difficult and costly thing to do.

This process is not free from power relations, in fact, as we can see in the second case, there are processes of negotiations within the family that are embedded in generational and gender relations. Families are more involved in the farm work compared to other categories. In other categories male sons are those mostly involved in pastoral production of milk (and then they decide what to do according to opportunities and aspirations), and women are involved in reproductive work, diversification work and home-processing of food products. In this category, women are involved directly, so not only in the reproductive work of the farm (housework, cooking, cleaning and caring for young and elders) but also in cheese-making and sale. Often women (younger and older) are also the face of the farm, they maintain active and wide social relations through volunteering work, other activities related to territorial local traditions.

The land available varies greatly and so does the geography. Mini dairies can be found in mountainous, hilly and flatland areas. In the cases taken into consideration the land owned varies from 30 to 300 hectares of wooded land. Part of the land is inherited, and, in some cases, some

additional land is purchased by pastoralists. In other cases, a part of inherited land is sold together with a part of animals in order to align production capacity with the factors of production.

Generally, a mini dairy is characterized by the extensive use of family labor. This is related very much to the size of the farm, and the number of animals and of milk transformed. Normally, the first strategy to reduce cost is to self-exploit the family labor and avoid hiring external workforce. However, other mini dairies have grown to an extent that requires external hired salaried labor. This might be the case also when family members have decided not to stay in the family business but to be employed elsewhere. This is for example the case of the mini dairy of the Farina brothers, in the Campidano plain, close to Villamassargia. The Farina brothers come originally from Ovodda, in the Barbagia region, they have continued to make cheese as their father used to do and they have expanded and intensified production. They now produce 100,000/150,000 liters of milk per year, they employ six to eight people (including some members of the family and some external workers) between the work in the dairy and the work in the farm. They have more than 1000 sheep in 150 hectares of land. This is important because it is an example of accumulation from below and expanded reproduction which started from small-scale production and local sale (Jansen, 2021).

As mentioned, the management of the animals and related agricultural work is generally left to the men. The relationship between land and animals tells us that artisanal mini dairies is not always synonymous with extensive pastoralism. The second case the choice has been to intensify production and sell part of the land to free up capital to create the mini dairy. Moreover, the type of market arrangement and products that they have decided to produce together with the high technical skills present in the family, result in a higher use of technology and agronomic techniques used to intensify production and reduce costs. Extensive grazing is still present but it is much more rationally calculated.

A certain amount of diversification was present among the pastoralists that I have interviewed but not as much as in other categories. Cheese processing together with milk production require a lot of time and the costs for a mini dairy are high. Therefore, there is a certain level of specialization in cheese making. Geography plays an important role here, in fact in mountainous areas there is a higher level of diversification and a stronger connection with the territory and the products that the landscape can provide (for example chestnut in Desulo, cork, pigs derived products, honey). When there is diversification, the other products are generally sold in the shop but semi-informally.

It is important to stress that the cheese making process is different in the three dairies. For Rita, raw milk is at the hearth of artisanal cheesemaking. Moreover, the milk processing is kept traditional and with low input of technology and high-labor. This is less important for the second and third case where traditional recipes are not central and technological innovation are combined in different ways.

In all three cases the relationship with public scientific institutions is important in different ways. In the first and third case it is important for knowledge creation and to improve traditional cheese making process or to make it more innovative. In the second case, Miriam works in the university, some of her income is reinvested in the family business and her connection and involvement in university projects are directly beneficial to the family mini dairy.

In all three cases, there is no evident participation in social movements and the families prefer to create their social and collaborative networks individually rather than being part of a structured network, a movement, or a union. Either born as a direct response to the falling milk prices or continuing the family tradition, mini dairies are committed to on-farm production and direct sale because it is more beneficial for them. Even though market arrangements differ, they have certain things in common that are worth exploring.

Normally, we can notice that they start from an initial existing capital (mostly inherited), and existing network even when the dairies are created from scratch like the connection to Desulo or the connection to university. Geographical position and family availability are all factors that contribute to the choice to open a mini dairy or to the choice of continuing an existing one.

6.4. Market arrangements

Mini dairies produce cheese and sell it in domestic markets to consumers or to small shops and distributors. They sell in short circuits and have a direct relationship with consumers. This grants them more control on price so this makes their market arrangement very different from middle pastoralists who are similar in scale and size. While they mostly engage in domestic markets, there is a visible interaction with private industries which is important to keep a balance between utility and labor and to respond to uncertainties.

Mini dairies generally process the milk produced in the farm. However, in some cases they also purchase milk from other pastoralists outside of the family farm unit. This is done for different reasons. Sometimes when the scale of the farm and of milk production is kept small and production is not intensified, purchasing milk from outside allows them to cover the running costs of cheese production. Other times, this is also done as a reciprocal favor. For example, when pastoralists want to sell cheese in the informal domestic market but do not have time or means to produce it, they might outsource production to a mini dairy. In this case, milk is not paid with money but a part of the cheese is kept and sold by the mini dairy. The favor might be returned in the form of help in ploughing and sowing. In other words, as it might be expected that pastoralists who own a mini dairy will try to make use of it as much as possible to cover running costs. Another example where milk is purchased is to diversify cheese offer (including, for example, goat cheese) or to extend fresh cheese production to summer months. In the latter case, milk is purchased from intensive farms which produce milk in summer.

These market arrangements do not emerge from organized social struggle. Many times, mini dairies are a direct response to uncertain markets and declining and volatile milk prices. Social and family networks are key for the creation and success of mini dairies and, in each case, existing and created communities and networks are an asset for knowledge exchange, sale, quality products and they have positive social and cultural repercussions. These actions are often not perceived as political, they emerge as low profile and private behavior (Kerkvliet 2009). Sometimes mini dairies purchase milk from other pastoralists and this could be the beginning of subordinate relations between small cheese producers and pastoralists. Generally, however this relationship is mediated by friendship and when deciding how cheese will be split, the negotiation is mediated not by the logic of profit making but by the intention to repay labor costs and running costs related to cheese making.

The first thing to notice in this market arrangement is the type of products that are exchanged. Products are embedded and connected to the territories and the traditional recipes that vary according to the area. Raw milk is a very much emblematic when it comes to mini dairy cheese production. The Fiore Sardo cheese for example, the typical Sardinian aged pecorino cheese, is traditionally made with raw milk. The type of pecorino and cheese that are produced are connected to the territorial traditions and they often depart from the tradition to innovate in ways that bring together new consumers' wishes and old recipes. However, raw milk cheese requires a much more delicate process, and it is difficult to standardize production because it requires human attention

throughout the phases of production. For this reason, and in order to reduce uncertainties, many rely on the use of technology and pasteurization. Production nevertheless remains territorially relevant, very diverse and of high quality.

Cheese produced by pastoralists in mini dairies is sold through a complex, diverse and embedded web of relations. Firstly, the centrality of the family leads to market networks that are capillary. Every member of the family or of the community creates networks with potential clients, with technicians who can help with some aspect with the farm, with some photographer who can give visibility to the farm, each 'social network' has positive repercussions for the farm and the mini dairy. However, these networks are sustained not only through family but also by wider town communities and even academic communities.

The market arrangement also provides other functions (like in informal sale) that go beyond economic function and food provision. Whether the product is sold in markets or in smaller mini dairy shops, these become places of exchange, information sharing, and they acquire a social and cultural function.

For more established mini dairies like that of Rita, it is often retailers and customers that go to the mini dairy and ask for products. But this is also the result of decades of 'network maintenance' and network development. However, mini dairies also actively create their networks in several ways:

- Participation in town fairs and traditional events. Cultural, folkloristic event within the town provide a great venue to participate and be known.
- Participation in already existing territorial markets like farmers markets.
- Participation in regional and national cheese awards and competitions, and to national food fairs like the Bra cheese festival.
- Online presence and creation of online communities (used by a minority of producers and especially mediated by the younger generation).
- In the shop by creating loyalty with the clients (through maintaining positive relationships, flexibility, gifts).
- By creating connections, synergies and cooperation with other existing territorial realities (touristic, other food production activities, shops).

On-farm production and direct sale is obviously the main feature of this category. This is more remunerative for pastoralists and they have more control over prices and more power of negotiation

with consumers. In fact, products are sold to small retailers and restaurants that are small in size and that purchase quality products, when the product is sold to retailers or restaurants, these are often very small retailers with high quality products and delicatessen. As there are no intermediaries between mini dairies and small distributors, more value can be retained within the farm.

The producers are directly linked to local, regional, national food markets and so the gap between the producers and the end consumers is reduced (territorial markets). In general, they do not sell to bigger distribution shops because these require predictability and fixed constant quantities. Products are also paid less and not valorized for their quality (as in the case of raw milk products).

How is uncertainty negotiated in this market arrangement? Since labor is mainly provided by family members and the farms are small in scale sometimes sale to private industry is necessary. In this sense, flexibility is really important for these farms. Several markets therefore coexist and serve for different purposes and have different requirements, characteristics that pastoralists know and try to use to their advantage.

The shift to on-farm production itself, territorial sale and the creation of mini dairies can often be a response to declining prices and market uncertainty. The shift happens gradually, and it may include a stage where the farm sells informally in order to understand and study the potential market available. This is often the case for younger or smaller pastoralists with low capital availability. In other cases, like in the second case study presented here, the shift happened without passing through informal market networks but by selling milk to private industries when preparing for cheese production. In this case, the three young brothers created a virtual community more than a territorial community with high investment on web platforms and social media.

It is important to notice the role and interaction with private industry (and international market sale) to respond to uncertainty. This interaction can be crucial to facilitate small-scale producers to shift from milk sale in commodity chains to on-farm production. If there was no industry always available to buy milk, perhaps shifting to on-farm cheese production would be riskier.

When milk production costs increase pastoralists are faced with a choice: either reduce the amount of milk (by either reducing the flock or deciding to sell part of the milk to bigger private industries) or increase the labor factor (family labor, self-exploitation hence more hours of work or employ salaried labor). This choice is influenced by many factors but decision taken tell us very different

stories about the trajectories of capitalism and the role that local markets and direct sale can have for a transformative rural development. If pastoralists stop producing milk and start processing cheese only, this process of accumulation from below can result in local forms of capital accumulation and exploitation.

Chapter 7 - Diversifiers and civic market arrangements

1.9. Introduction

This chapter looks at the livelihood profile of pastoralists characterized by diversification and by combining pastoralism with other activities to sustain their farms. After broadly introducing this category and describing three case studies, I will examine how market arrangements emerge for pastoralists in this category and describe their characteristics.

This category includes relatively younger pastoralists who often have higher formal education (such as a university degree) and who try to engage in more flexible pastoralism connected with consumers, who are also committed to a changed pattern of production and consumption, and a transformation of the countryside. These are, thus, termed ‘civic’ engagements, as there is an explicit political commitment to sustainability, rural regeneration and localization of production and market relations.

These pastoralists either enter pastoralism from scratch or try to reassemble some of the resources left from their parents, making flexible use of their territorial networks, knowledge, and resources, and engaging in different markets according to what suits them better. This relatively new generation of pastoralists thrives on the diversification of activities, markets, and production. Flexibility and the ability to diversify allow them to keep the farm going in a challenging economic setting, especially when the initial access to resources is minimal. These pastoralists remind us of the “new peasantry” that van der Ploeg (2013) talks about, with such pastoralists having a commitment to civic action against consumer society and critical of industrial production and with the aim of re-localizing food production and reviving traditional activities, giving social value to communities.

Diversification is necessary for the farm’s survival and allows for some limited accumulation of relatively young but educated pastoralists creating a new form of pastoralism. Diversification is necessary because the resources and capital (land, livestock, financial) available are very limited and do not allow them to create a sustainable livelihood entirely from milk and meat. Such pastoralists take advantage of all the natural resources they can in order to diversify their livelihoods. Their education and knowledge give them the confidence to take risks, try out and create different, nested markets and go beyond some of the classical diversification strategies that

other pastoralists use. This is also because, thanks to their education, they have a connection to the urban world that they experienced; they are able to interpret it, and willing to use it as best they can.

Pastoralists in this category diversify products, and product characteristics or quality, interpreting societal needs and interests. They make use of the natural resources available to them as much as they can (making beauty products from herbs and plants, honey and wax candles, wooden and cork artisanal products and products derived from chestnuts).

Often, they minimize external resources and use land, forests, marginal urban land as much as possible for animal nutrition to reduce costs. This is done with a conscious and recognized awareness of the benefit this has for managing the landscape, reducing fires and avoiding the abandonment of rural areas. Reducing the use of external inputs to production is also considered positive for the animals, whose products are then marketed as coming from mainly free, extensive grazing. Moreover, a few people, often the youngest and more educated, also reconnect to circular and solidarity economies where there is a shared understanding regarding the value of sustainability, direct sale, and traditional products.

Frequently articulated motivations to be a pastoralist include a desire to reconnect with nature, revive traditions and values that they deem important, and they want to preserve. These pastoralists research traditional values to bring them back to life, and with their prior knowledge, they try to bridge the rural-urban divide and create traditional products and rural experiences that urban people can appreciate. They use pastoral knowledge, traditions, philosophy and values to bring added value to their work and their products. They actively try to build a sense of community and cooperation through varied initiatives and activities, although this often creates tension with 'traditional pastoralists', who are sometimes less formally educated, less open to change, and less likely to take initiatives that add value or commodify other not strictly material aspects of pastoralism.

Networks and nested markets are significant for this category of pastoralists. They, therefore, invest in social relationships to assemble market connections and create new nested markets. Pastoralists do not necessarily move through family connections, but try to create networks with cities connecting sometimes with colleagues from a previous job, with groups who have an interest and are sensitive about social, environmental and health issues, with primary schools where their

children go and often with tourist networks. Direct, informal sale is key to assuring higher revenues and these pastoralists use their network to sell products in the region or abroad.

Informal and direct sale is necessary to keep farms alive and allow for some accumulation and revenue increase. Nevertheless, sale to international export markets through cooperative and private dairy factories is essential to reduce uncertainty as it constitutes secure and predictable even if insufficient income. In practice, pastoralists are not against selling to international markets or global commodity sales. On the contrary, international markets with their fluctuations, the speculation, and profit concentration are seen as a backup, a constant, and as secure income that allows for focusing on sale diversification.

Middle pastoralists (Chapter 5) and livestock entrepreneurs (Chapter 4) see these pastoralists as not 'real pastoralists' but downgrade them as 'hobby' pastoralists. They highlight their insignificance in numbers, and they blame them for competing with other pastoralists for land and natural resources and for a space in the market as well as for atomizing production even more.

This chapter will look at three cases. The first one is Felice, a young architect who decided to become a pastoralist after years of precarious and meaningless (according to him) work as an architect and as a restaurant cook. His father had a job outside agriculture but was a pastoralist for a long part of his life and never sold all the animals. Felice lives in a peri-urban area in the plains and with a very small flock he put together, he struggles to make a living and turns to informal sale and tourism to diversify markets and sources of income. The second case will present the story of Matteo who has worked in the Provincial association for breeders for almost two decades and then decided to take care of the land and animals he inherited from his father. Living in a mountainous area and having a limited flock, diversification is necessary. Mariella is the third case to be presented; her story will help highlight the challenges and paradoxes faced in this category where pastoralists try to maintain pastoralism as the main activity but, in challenging circumstances, they might be forced to focus more attention on diversification rather than pastoral activities.

1.10. Case Studies

Case 1 – Making cheese and selling milk to the industry

Livelihood

Felice is 38 years old, he lives with his partner and his three kids in a house that he managed to create from his parents' house. His mother lives on the floor above and Felice and his family have made the ground floor independent and built there the house where they live. It is a simple house, and it is visible that Felice and his partner do not care too much about appearance. On the other hand, they are rather practical and recycle and reuse old pieces of furniture that they collect and receive from friends and family. Felice graduated with a degree in architecture. His father was a pastoralist but was employed in a public agency towards the second half of his life, , so he reduced the flock and left a small flock managed by a servant shepherd worker paid a very small monthly salary.

His wife does not have a paid job, she used to sell cleaning products door to door for a short time before the kids when born and then she stopped. She now takes care of the three kids, and she takes care of the house, while the cooking is shared between her and Felice. With her past experience, she has contributed quite a bit in teaching Felice some tricks of marketing and sales.

Felice diversifies with farming and off-farm activities in order to be able to provide the necessary things for the family. He used to work in restaurants before he decided to buy more sheep and dedicate most of his time to his animals to fulfil his aspiration to produce and sell his own cheese. In summer, however, the animals do not need to be milked daily and there is less work on the farm, so he covers some shifts at a restaurant particularly during busy touristic periods like August. Felice diversifies his livelihood also by making use of the equipment he has like the tractor and the truck. As he says:

“I have them working for third parties. In other words, if there are any trips with the truck, I do them, if there are any pieces of land to plough, I do it. Then I can also do faux stone, as you so outside my house, so I do that too. Everything that I can do, I put it in practice” (DIV1).

He negotiates access to land with neighboring landowners who do not use their farmland. He makes prior agreements with them for both pastureland and cultivated land. Some of them still live in the municipality and others migrated but still own inherited land. Of the five hectares that Felice cultivates, three belong to 'zio (uncle) Antonio', as he calls him.

"I don't have a lease. Because the landlords won't give it to you for rent. For example, there is one who is retired. [speaking as if the landowner was speaking to him] If I make the lease out to you, it comes out as income and they lower my pension. Since you are not able to give me as much as they would cut from my pension, it is not convenient. I would have to ask you for too much money, more than the land is worth" (DIV1).

The way he refers to him: uncle, already signifies that Felice intends to maintain a familiar relationship and wants to show respect towards him. Uncle Antonio, the landowner, is retired and does not want to rent the land to Felice because this would be perceived as income and therefore it would automatically reduce the pension he receives. Therefore, they have reached an informal agreement where Felice uses the land and he gives uncle Antonio part of his produce: lambs, cheese and charcuterie (sausages, ham, lard) as a form of payment for a total value of around € 500/600 per year, the approximate value that renting such a piece of land would have (roughly € 100 per hectare for non-irrigated land).

Likewise, the land Felice uses for grazing is not rented formally. The landowner did not agree to rent him the land because he gets CAP payments from it. As he says: "on 17 hectares that I use as pasture, he told me explicitly: I am not going to make a contract with you because I receive more contributions, let's say, by leaving it uncultivated and in such a state of neglect than by renting it to you" (DIV1).

For Felice having a formal rental contract would mean being able to include the land in his holding file and receiving CAP subsidies for it. So, access to land is a source of uncertainty for him, and this stops him from investing too much in the holdings.

"It's a problem because in this area nobody wants to give you land for rent. And so you are forced to remain a small company that is getting by. That can't structure itself. Because if you don't have land where you have freedom of decision and power of decision; it means that you can't structure yourself. This year I don't have a contract, so, I don't know, next year he'll turn around and tell you... I want to plant potatoes this year, so you have to leave. And you have no choice but to leave" (DIV1).

Accessing land is also a constant process of negotiation, which, at times, leads to conflict. The mediation does not only happen with the landowners but also with other pastoralists looking for grazing land. Felice in fact tells me about two brothers who very recently moved to the area and purchased a plot of land. To reach their lot, their animals graze in the land where Felice normally

goes to. It seems like talking to them was not useful and Felice will have to let go of that part of land and move elsewhere.

Production

Sheep provide the family's main source of income, but apart from this, he has pigs and hens and also informally sells and gifts eggs and pork products (sausages, cured meat cuts, etc.). When we arrived at the farm he first fed the sows with two day old whey. Felice gives the milk to the cooperative every other day, and processes the other 50% at home, making cheese and ricotta. The dogs take advantage of the few moments the feed is left unattended to steal some corn and whey as well. Felice has several ways to cut down costs and reuse what is considered waste in other chains. Every other day, during the milling period, he goes to the mill to take the scraps of olive branches and the leaves.

"I go to pick up the scraps of vegetables and things when he has boxes that has gone bad that he can't sell anymore. He'd have the problem of disposing of them anyway. Instead, I'll go there and I'll dispose of them for him. And I give them to the pigs. I'm the recycler (laughs) I take the olive leaves from the mill, I take the vegetables from him. I spread the olive leaves in the field here and they [the sheep] eat them and then it also serves as fertilizer so it has a double benefit. In addition, if some neighbor prunes some trees that the sheep appreciate, I load them up. I load prickly pear shovels. I use these free supply systems a lot. And I save people a problem and feed the beasts" (DIV1).

For his pigs, he recycles food waste coming from a friend who has a shop and sells fruits and vegetables. At some point, he also used to sell his cheese in this shop. Then the risks involved with the health and safety regulations discouraged his friend from allowing him to continue the sale in the shop.

Felice reuses, recycles and builds strong and diverse networks to support his production, to cut costs and waste thereby creating circular economies, to keep traditions alive and to keep learning more about being a pastoralist.

Mobility is central to Felice's production because he has not inherited land and he is a young pastoralist who recently started this activity. He brings the flock to graze every afternoon for around 3 to 4 hours, sometimes even more, depending on the season, the nutritional need of the animals and the other commitments he has with other secondary jobs. This makes his job very labor intensive as many hours must be spent with the flock. He carefully chooses the best places to bring

the flock according to how he can maximize the nutrition of the animals. He cleans the olive groves with permission and prior agreement with the owners of the land, passing land and after harvesting products from his neighbor's gardens, he takes his sheep to graze in those fields to clear them.

Other, landed pastoralists, also move their animals but this is mostly done between different fenced plots of land, generally following a rotation scheme to avoid overuse, they release them there and leave them grazing unaccompanied. That is how, in fact, fences, or in other words privatization and the enclosure of land, completely changed the role of pastoralists and even shifted the role and responsibility of salaried workers and herders.

Figure 25. Bringing the flock to graze. Sorso, January 2020.



He brings the flock to land (both private or public) that is unutilized, in private olive groves generally not fenced, in transit land that connects different properties, and roadside land. He chooses specific plots of land according to the season. After the olives harvest, as well as after the pruning of olive trees, he brings the flock "to clean the olive groves" as he says, as sheep like to eat olive leaves and small pieces of wood. During the olive harvesting period, that goes from mid-September to December, he also goes to the olive press with his truck in order to pick up the waste: leaves and small pieces of wood that remains from the pressing. This is then spread it in his two hectares of land to have an alternative and free source of fibers and nutrition for the animals when they are not outside grazing.

He also cultivates around 5 hectares of land to produce forage for his flock. However, the low access to land means that he must purchase forage from the market as well. To some extent, he manages to exchange labor for forage when he ploughs somebody else's land.

Figure 26. Grazing in unutilized land. Sorso, January 2020.



While we talk about his “free-supply systems”, referring to the land he is able to access, he prepares the feed for the sheep which will soon be milked. He mixes up beet pulp with a feed mix. He points out two contradictions: the first has to do with the definition of animal welfare. First, he tells me that the agronomist in charge of checking animal welfare compliance suggests he increase the amount of concentrates. As he says:

“But of course, they have a cost, then it is true that sheep produce a little bit more but [...] concentrates are the cereals. Beet pulp as a protein substance is 5-6%. This (showing me the bag of feed) reaches 25-26% of protein. This begins to be a good protein intake. The grass, say that it has ... it depends, in this period it has 2-3%. So, you are giving a protein supplement which is what is most scarce in grazing. Although we can have a discussion on that. When the sheep are free-grazing, it's not like they find that many grains and protein around. They find some legumes... anyway, giving them feed it's a stretch. The vet who

tells me that for the welfare of the animals I have to increase the dose of concentrates, he makes me laugh a bit because in nature they do not have this hyper-nutrition" (DIV1).

He is quite critical of the definition of animal welfare coinciding with higher production and challenges this paradigm.

"Theoretically it is called animal welfare so the objective should be that the animal is in a welfare state. In my opinion it does not always coincide with increased production. Because I do not know if the sheep of that farm that we have talked about, we can also say the name (says the name of an highly mechanized farm) are... well, probably they are well in the sense that they have levels of fat and proteins and things, because then the proteins are those that serve for the muscles, to produce muscle mass, so probably from that point of view they are well. But overfeeding of that type I do not know in the long run what it can cause in the genetics of the animal. I always tell the vet this. [...] I mean 50 years ago sheep didn't get any feed. At the most, the shepherd would plant a little Sardinian barley and thresh it and throughout the year he had the barley he needed for when he had to milk the animals. Or he gave it as a supplement when he was preparing for births. But it has nothing to do with the diets that those farms adopt there. With the difference that fifty years ago, sheep were much more resistant to the weather and everything. Diseases, they were less susceptible to pests and stuff. Now, f***, if you don't bomb them... mine aren't, because they are not used to it in the sense that I didn't raise them on this diet, because in the end every flock gets used accordingly. There's a sort of symbiosis between the shepherd and the flock, you know" (DIV1).

Felice and the veterinarian often have this discussion when he comes to check the farm. They like to discuss about these things. He tells me that the vet likes his job and cares about it contrary to rest. He does not want to create trouble for Felice so he pretends not to see the pigs as they are not complying with all new normative requirements. And as long as he sees that the sheep are fine, he does not create any trouble. After all, Felice tells me that the vet can suggest improvements but cannot force him to buy concentrates or even to vaccinate the animals. Felice even stopped giving vaccines and antibiotics. He thinks that it is not worth it and having some losses if some sheep get sick is more acceptable. He knows that if he doesn't vaccinate he will not be entitled to the public compensation in case of losses for blue tongue or other epidemics. But he tells me that he wouldn't get them anyway because he is not in order with the tax payment.

"I don't even give them... which is quite important, I don't even give them the anti-parasite that should be done once a year when the sheep are at rest to clean the stomachs of the parasites they catch grazing. What these parasites do is they practically eat the substances that the sheep should eat... No, I take some garlic every now and then, I crush it in the middle of the feed. And that's my anti-parasite. The function is the same" (DIV1).

The second contradiction he points out to is that the quality or content of the feed that is given to the sheep is not considered at all.

“These feeds I use. that we use most farmers use anyway are all GMO feeds. If you look at a label. in the feed it says GMO product.

Q. Is it actually written on the label?

Yes, because they all come from Canada. I think most of them are from Canada. I mean Chessa, which is the Sardinian feed factory, just purchases the raw material and mixes it up and bags it. Which I say... but what the f*** is the point that in Italy we can't grow GMOs but in the end their use is allowed [...] even at the supermarket we buy food products, processed products, which have been... where the raw material is GMO products. For animal use is even more direct because from here they eat something GMO and what they eat is transmitted to milk” (DIV1).

Even if he is critical of GMO products and its use, he does not want or rather he cannot change to an organic feeding system because the costs are too high. He tells me he would shift to an organic production system if he had a mini dairy where he could value the fact that he is producing organic he would think about a change. But the cooperatives do not pay extra for organic milk hence the high cost of shifting is not worth the financial incentives given by the region. He is not happy about the feed he utilizes because that is what he feeds to his family and what he eats in the first place. But he tries to use unprocessed raw materials and avoid pelleted feedstuff that contains things like molasses and other industrial by-products.

Figure 27. Milking by hand. Sorso, January 2020.



Market

Felice sells half of his milk to the cooperative of Mores and he processes the other 50% into home-made pecorino cheese and sells it informally. He also sells lambs to a private butcher and to neighbors and friends to a smaller extent. Direct sale is necessary in order to sustain the family as the earnings from pastoral products as extra seasonal jobs are not enough.

He doesn't bring the milk to a collection point nor does the cooperative pick up the milk from his farm. The milk is taken to a neighbor who owns a milk refrigerator: "we have an agreement, at least I was able to achieve this one thing. Since I don't have a refrigerator, there's a shepherd near here about 5 km from here and since we both sell to the same cooperative, I bring him my milk" (DIV1).

Francesco is disappointed by the competition and distrust that dominates the pastoral sector (see Chapter 3 for more context). He became a member of the cooperative with the hope of finding a space for cooperation and knowledge sharing, he wanted to organize collective purchases and other joint actions, but he found that everyone was just concerned with their own affairs.

Selling milk together is an action of mutual trust, each pastoralist takes note of the liters they produce and they then sell under separate names to receive separate invoices. The milk is mixed so each pastoralist has the responsibility for the quality of his milk and has to trust the other pastoralist that he will collect quality milk. Milk analysis in fact is done twice a month (two samples on two different days) and they are taken from the refrigerator which contains the mixed milk. As in all other cases milk receives a small bonus or a penalty for its quality. And this raises questions about the different understandings of quality. Quality is measured according to the yield of cheese one can produce with that milk. Hence measuring fat, protein, microbial content and so on. "But really...we are talking about thousandths. We are talking about € 0,01 a liter. I give 20/30 liters a day so it does not really affect my pocket. But for someone that produces 2000 or 3000 liters a day, those cents clearly make a difference" (DIV1).

He shows me the quality test results and points out that the proteins are low. "At this time, it is normal because the grass is in full vegetative phase and therefore contains a lot of water and little substance. Theoretically it should be supplemented with concentrates: soya, peas, broad beans, corn, or leguminous which are loaded with protein" (DIV1).

Delayed payment at the cooperative is an issue, because it creates problems with meeting the deadlines of several scheduled payments. However, selling to the cooperative is also essential

firstly because it insures a predictable monthly income and secondly because it shows fiscal compliance, and it therefore opens up the possibility to receive public subsidies. The same thing happens with the pigs and lambs, while direct, informal sale is necessary to increase income and to support his family, sale to the cooperative and therefore commercial trade to global markets is necessary because it ensures a predictable monthly income in case something goes wrong with the cheese or in case something happens which obstruct direct sale.

On-farm transformation is a necessity for Felice rather than a choice. The first time we met he told me he didn't start making cheese because he was late. He could not clean and refresh the room where he makes cheese because he was busy with other construction jobs on the farm. He built the stable where he feeds the animals during the summer of 2019 and therefore he didn't have the time to work on the cheese-making room. Mid-February he shared a post on Facebook that said "late but we are starting again"

Figure 28. Facebook post on the left side "...late but we are starting again..." and cheese making at home on the right side. Sorso, January 2020.



When I sent him a message congratulating him because they managed to start making cheese again and he replied "otherwise we do not get by". He makes cheese and sells it through informal networks. His main buyers are in social clubs. They are cheaper bars because the facilities receive tax breaks. His wife does not help him with cheese production and sale at the moment because caring for three kids is very time-consuming. However, they think about the different selling strategies together, she helps him to make meat cuts and when they engage in touristic activities such as cooking pastoral meals for a private dinner, she supports Felice in the organizational side of things, with the cooking, and with entertaining guests.

The difference between the earnings from the cooperative and the one coming from the cheese sold directly is quite evident.

“Last year it was 60 cent [selling to the cooperative]. Two years ago it was 80. Three years ago it was 85. We are more or less around that figure. I am telling you again on a 50-liter output. € 35 to 37, it does not change my life. If you produce a thousand liters from € 700 to € 750 it can make a difference because maybe with that € 50 earned daily, you pay a worker for example [...] If I make it myself. If I make it myself, I can get out 10 forms of cheese [...] I have found the system for the maximum possible income. I found some commercial tricks to be able to sell the cheese at the maximum price, I can make € 130. Ten forms of cheese and three ricotta. From one day worth of milk, so now we're talking [...] It's like selling for € 3 a liter more or less” (DIV1).

So, Francesco regained control over the price of the milk he is producing, by selling it directly, and he managed to find a good balance between a remunerative price and a satisfying price for his customers. He decided to do smaller forms because he knows that customers are more reluctant to spend more than € 10 for the traditionally bigger form of pecorino cheese.

“Initially we made the shapes that all the shepherds used to do... which are around 3/3.5 kg more or less. Since I do direct sale, in the sense that I'm going there to sell it, I realized that one problem was that the form was too big. Even if you sell it for € 10 a kilo. One form is € 30-35. And who the hell has that money in a social club? In a club, but even in a house [...] who the f*** has € 35 to invest in a form of cheese nowadays. [...] so what did I do? I've made smaller forms. Once they are half mature they weight 800/850 grams. I sell them for € 10 a piece so in the end it is like selling the cheese at € 12 a kilo. This way, I can sell it more easily because I can find € 10 in the pocket of almost anyone. In the sense that even the old man who is sitting at the club and is drinking his wine maybe he's got € 10 that he's willing to spend in his pocket” (DIV1).

Sometimes he thought about building a mini dairy but he is also very skeptical because he does not want to enter into the fiscal and bureaucratic regime that this would imply. According to him, it is more convenient to keep selling informally even if this implies having a smaller market and taking higher risks because this gives him more freedom and less conditionalities and regulations to follow.

Case 2 – low cost pastoralism, cheese making and sale to industry

Livelihood

Matteo worked in APA (*Associazioni Provinciali Allevatori* – Provincial associations of breeders) the public agency that collected data for the genetic selections of livestock in Sardinia. He has

worked there for 25 years, but when the APA closed, he decided to go back to the land. His father was employed elsewhere but they had a paid pastoralist who lived in the farm and took care of the animals. This paid pastoralist, that Matteo calls *servo pastore*, servant pastoralist, was central to keep the farm going, so much so that when he died, in 2011, his father decided to sell most of the sheep and to only keep the *rimonta*, the younger animals. As he says: “luckily we kept it because from there now I have around 100 animals” (DIV2). Matteo is 48, he is divorced, and has two daughters. He remarried and his current wife works outside of agriculture. Matteo’s partner is a teacher, she does not like being on the farm.

Figure 29. Matteo showing me the boundaries of his farm. Iglesias, November 2020.



Pastoralism was for him an alternative to unemployment or to finding another job. But contrary to Francesco, he inherited quite a lot of woodland, and manages around 150 hectares (one third of this land belongs to his father’s sister and it is still not divided). Of these 150 hectares around 70 are rented to somebody.

Production

He operates extensive production with integration of feed that increases during the milking period and decreases when the animals are less productive, when there is more spontaneous nutrition available or even in moments of high expenditure. He has 10 hectares of cultivated land where he produces forage.

Heats and the births are not planned, there is no use of hormonal sponges. He milks the sheep by hand at the beginning of the births season because the small amount of animals would not cover the costs of maintaining an active milking machine and then he milks them once a day.

Livelihood diversification is key for Matteo. He produces wood, he has sheep and goats (around 150 in total), cows (around 20/30) and sells veils, he has around eight pigs and sells piglets as well as sausages when he manages to make them. A consistent part of his diversification comes from assisting other pastoralists for small technical jobs that he does informally mostly related to the genetic improvement of the breed. Every ten years he also sells cork, which provides an important source of income with 150 hectares of wooded land.

Figure 30. Diversified production, pigs, cows and sheep. Iglesias, November 2020.



Production and animals are partly dictated by what the territory is like. As he also points out, one could not have 400 sheep in that mountainous area because the amount of sowed land is very limited and it is more convenient to try to use the landscape for what it offers because a sheep for example does not take advantage of shrubs and small bushes, it does not climb on plants to eat the sprouts as a goat could do. As Matteo puts it diversifying animal production in this territory is convenient also from an ecological point of view: “goats are also useful to keep the undergrowth

and bushes clean otherwise we would have a high risk of fires. If we have a fire it would be a disaster for us for example because we get a considerable income from cork production” (DIV2).

Market

Most of the milk is processed into cheese and is sold informally without intermediaries. Matteo's family has always produced cheese for personal consumption and, even if he does not explicitly say it, it is fair to assume that some of it was sold given the quantity produced. Once, when he was still working for APA and his father was still active on the farm, they were called by a friend who owns a restaurant in the closest town, saying that someone was looking for homemade cheese. These two tourists coming from Ancona in the Marche region in Italy, went to their farm, tasted their cheese, and bought 40 forms of it to sell them in their local butchery in Ancona. Today, they are still their main customers. He also sells something to local restaurants and in town. He only transforms the sheep milk while he sells goats milk to a mini dairy in the closest town who produces artisanal cheese and then sells it in his shop, and to other specialized cheese shops and restaurants in Cagliari, the biggest town in Sardinia. Matteo also sells the milk to a local industry because he needs formal milk sale invoices to receive public subsidies.

He is aware that agriculture is going through a process of privatization and the APA he used to work for has gone bankrupt because of the reduced public support. He wants to stay far from the state and keep producing cheese in the informal sector yet at the same time he recognizes that public support is essential for his farm to keep functioning “it is integrated into your income, that [subsidies] is like a pension, you need to try and keep that aside, to avoid touching it, and then with the rest of your production you need to try and make a salary” (DIV2).

Case 3 – From veterinary to pastoralist

Livelihood

I met Mariella through the cooperative of Ittiri. She was introduced to me by the president of the cooperative. She is not from Ittiri, she lives in a farmhouse between Sassari and Ittiri and owns land in the territory of the municipality of Alghero. She is 38 and lives together with her husband and their 5 year old son. Her husband works outside of agriculture, and he is an internet broker. However, he helps Mariella with the farm work whenever he can through managing the financial

and planning side of the farm. He helped her out with planning costs and with the application to regional funds for young people entering agriculture when she started, even if he was always skeptical about investing in pastoralism. Mariella's father also helps her with farm work.

Mariella withdrew from veterinary school just before graduating. In 2010, she decided to invest into something that had real meaning for her: a strong connection to her territory and to land and nature, so she started a pastoral farm. She followed her passion for traditional products, animals and nature and she wanted to leave the city and move to the countryside. Her passion is also connected to building solidarity and networks, to build a different education in balance with nature and to defend the environment. She wants to raise awareness on ethical food production and consumption and she believes in the broader role of agriculture as a resource of the wider community. So, her entrance into agriculture is connected both to the necessity of changing lifestyle as well as to a political vision.

As nobody in her family has ever worked in the pastoral sector, Mariella decided to hire a pastoralist for three years to learn the job from someone experienced. She learnt how to milk, how to make cheese and how to generally manage the flock. Almost ten years after her decision and her investments, Mariella tells me that she was a bit naïve before starting the job. She seems slightly disappointed in the pastoral sector now, she invested a lot in the farm, but she has found an environment where producing is not convenient anymore. Production and hard work are not paid and what she found was not what she was expecting.

Mariella has around 100 sheep but she keeps increasing and decreasing her flock according to external conditions and different and interlinked uncertainties: price of milk, costs of inputs, climate condition, all things that are deeply interconnected and in constant interaction.

Production

When Mariella started this activity, she was ploughing and sowing the land yearly, even twice a year to have grazing grass for the animals and to self-produce forage for stable feeding and summer stocks. This year she only sowed a small part to have pasture, she buys everything else because, calculating all the costs and all the manpower it takes, it's not worth sowing the land, it's better to buy fodder from those who produce it. In the beginning she felt much more enslaved to follow the cycle that all her colleagues followed: sowing, ploughing, making fodder, milking every day, twice a day. Now she has realized that even milking and selling milk is not always worth the

money. Sometimes it is better to just process it and eat it, sell it if you can, or even sometimes it is better to let the sheep go dry without producing.

“Certainly, for someone with 2000 head of sheep or 300, you can't process 200 liters of milk every day. But for a business like mine, sometimes it's not even worth selling it. Because [...] there's a lot of work behind it and there are a lot of expenses because there's electricity, all the washing and the work you're putting into it and that you're not using to do something anything else” (DIV9).

Mariella can take the decision to produce for self-consumption rather than selling or to stop producing milk because her flock is small and because she has another income in the family coming from her husband, who works outside of agriculture. Moreover, she also started with a capital resource base, as she purchased the land without a mortgage with the financial help of her parents who sold a summer house used for touristic reasons in order to help her purchase the land and start her business without debts. This means that she does not feel trapped to produce to repay an outstanding debt. She recognizes, however, that this cannot be given for granted:

“Purchasing 100 hectares for € 600,000 or € 700,000 in cash is not something that everyone can do. Those who have a mortgage to pay to pay their land, are forced to produce if they don't want to have their farm seized” (DIV9).

Mariella is gradually reducing her flock and she is taking more and more advantage of spontaneous pasture rather than cultivated pasture to feed the animals. In the past couple of years, she stopped ploughing the land and purchasing seeds and she reduced the number of animals so that it is in balance with the available grazeland. According to her, in fact, investing in seed purchase, land tillage, sowing the land was not convenient anymore given all the adverse conditions and the income expected for milk and meat.

“I tried to do alfalfa two years in a row. Precisely because there was nothing in the ground around October-November and so we tried to have the alfalfa ready for November-December. But it was a disaster because then in November, like every year, a hail of water arrived on time. An infinite amount of water that rains for a whole month, and this year it rained for a month in a row and even more, the seeds flooded. If you had already sowed the seed, it dies, drowned, if the plant had not already taken root, it dies. And you have made a huge investment for nothing. For the prices that there are now too heavy because the water costs a lot, not to mention the seeds, the diesel...” (DIV9).

All these investments are seen in a context where it is not convenient to produce something that does not ensure you adequate income. She makes the example of another random product, aluminum trays, to make the point that when you produce something you have to sell it in a market,

coming up with an adequate price, and make sure that all the costs that you incur are repaid. She includes labor costs in the calculation, something that not all pastoralists do.

"I'm selling a product that they pay 0,70 cents now anyway. But it's not worth it to me! Why do I have to work? Why do I have to milk? Why do I have to bend over? Why do I have to get dirty? Why do I have to exploit the sheep more? Why do I have to do that job? I mean this is the main issue: why do I have to do this job if you're buying it at a price that's not convenient for me? I'm basically working for you for free. And this is the reality now, without any filter. Then people tell you 'yes, ok but at least you get that income', ok but only because you are working hours and hours for free. For me it is not correct to work for free because I have also worked as an employee and I did not work for free. If an employee comes to you in the farm, you try to tell him 'I don't pay you' or you try to tell him that you pay him € 3 per hour. You try and see whether he accepts. So, am I worth less than that 'servant shepherd', that employee or that nurse? You are worth less, this means being worth less. Because I have to work for free, but for whom? For the cooperatives? (asked rhetorically)" (DIV9).

Mariella tells me that the price is so low because buyers and wholesalers cartel and buy products when the price of the cheese is the cheapest. Therefore, Mariella increases the production of milk when she deems it convenient enough, and when it is less convenient, she focuses more on off-farm diversification and less on milk production and sale.

Throughout the last five years, Mariella has tried to reduce costs and to adjust them to her needs in different ways. She has cut the number of the flock according to the farm size so that she would not have to rent any land. She is also reducing the work on the land and making more use of spontaneous, natural pasture. So, she avoids ploughing and tilling the land every year and she noticed that if land is well hydrated the grass grows. In this regard she has also drastically reduced the use of the sheep barn. She limited the use of the barn to animal housing during the night.

She also milks the animals once a day now to free up time and be able to diversify. As she says:

"If you milk twice a day, you cannot do anything else. I have generated a small income from green workshops, educational farm, 'valorizing' the farm and natural resources. I created an association of which I am president, called *Koremama*, which is a cultural association and does social work. It was set up to get people closer to the countryside again. We run natural education workshops, we promote the area, so we organize excursions with families, green workshops, we teach the importance of sustainability and biodiversity, the importance of healthy food, and therefore also of protecting the environment by choosing short chain products, local and regional products, so this is also how we promote the area. We run courses in food processing, for example, we make

*culurgiones*¹³ using local flour and local potatoes. I buy the flour from my neighbor who has a pasta factory and who produces wheat, I buy the flour and I make the courses. I don't sell the products, people process them and cook them at home... we make bread, we've made *spianata*¹⁴, we do courses in regional traditional foods. But that is not all we do, we also devote ourselves to giving new life to waste products and recycling materials. Like candles and old clothes. We teach how to make homemade soap. We make excursions on the farm, we collect herbs, we introduce children to territorial plants and then we make oleolites and with those oleolites we make cocoa butter, soap, natural body cream, hand cream. We also do cheese workshops and then a few days later we make a course of seadas with that cheese. So for now I mainly make cheese for my own production and for the workshops. Still these activities don't have a big impact on the income of the farm but I am focusing on that and I hope it will grow, we are focusing on it to have a big impact" (DIV9).

When she realized that she would not have been able to live only from pastoralism, Mariella was able to reinvent herself using her connections with other women and mothers, with schools, using her knowledge about nature and the broader value of the work she does in social and environmental terms. By doing so, she was able to access the market segment of those people who are broadly interested in nature, social change and territoriality.

But not all pastoralists are able to reinvent themselves and access these market fragments the way she has done. This is thanks to her education, her geographical position and her social network. For example, she tells me that she organizes cheese-making laboratories for schools also in collaboration with other moms, this gives her the possibility to communicate her values and how these influence the way she produces food. Hence, people that she meets in these occasions end up calling her for a lamb or for some cheese or for some natural cosmetic product that she makes.

Market

Mariella would like to do small-scale, on-farm processing, and slowly leave the cooperative, have a small-scale processing and small-scale production. In the future she would like to do that but she stresses the difficulties of getting older, being a woman, and being an only child:

"There are no other women in the area who do this kind of thing and I cannot think of doing at 50 years old the same things I did at 25 years old. The body changes, family needs change, I don't know if I can go on for long. There are also certain things a woman cannot do, and sometimes I need the help of a man, for example for the tractor, I get my father to help me plough. The problem is that I don't have a family behind me, a nucleus behind me. Alberto for example has two brothers, the other one [pointing to the farm on the other side of the road] has his brother and his father.... he relies on a family unit and I do not have

¹³ Typical Sardinian dumplings.

¹⁴ Typical Sardinian flat bread

that. If there is any news about small domestic processing with a small flock then I can also do it. But managing 100 sheep on my own at 45-50 years old is not feasible. It would not even be worthwhile for me to have the sheep, I would be better off buying the milk. Or keeping few sheep so that you can easily manage 30 or 50 and the milk processing” (DIV9).

First, she sold to Pinna, then she started selling to the Ittiri cooperative because she wanted to support a local cooperative rather than a private industry. The choice was not so much influenced by the price, in fact the price paid by the private industrialist and that paid by the cooperative is more or less the same. However, the milk she sells to the coop changes from season to season, according to how much she produced and to on-farm production. She sometimes sells to the coop but often produces cheese and sells it through her networks because selling to the cooperative she “would not even repay her own labor” as she says (DIV9). She does the same with lambs. She has lambs available during Christmas and Easter and many people want to buy them from her because it is not easy to find a pastoralist that sells informally.

According to Mariella, subsidies are an easy way for the state to keep a whole system alive. A system made not only of pastoralists but also of all the sectors that gravitate around them. She argues that the state, particularly the regional government, bears a big part of the responsibility for the current crisis, and it is unable to even plan and spend European funds.

“Farms are now running on inertia thanks to subsidies. We are slaves to the subsidies. They survive for the subsidies, basically on the applications to be paid, for a farm like mine, they start from € 1000 per year just for the application and to pay the accountant, € 1000, plus 700 for the *Consorzio di Bonifica*¹⁵ [water], we arrive at € 2000, plus € 4000 of fiscal contributions. I have the burden of € 6,000 clean just for these applications without calculating the electricity, which in a farm like mine is about € 300/400 every two months” (DIV9).

According to her, the state should put producers in a position to produce, but it is not doing so now. It should support small producers by reducing or abolish taxes entirely, or reduce production costs to near zero, or provide additional incentives to encourage individuals to produce. The government should make it possible to produce and exchange goods at a low cost. As she says: “I would want to build a dairy, and I'd like to be able to do it at a minimal cost. I'd like to build it out of wood, for example, and then clad it inside to meet all health regulations” (DIV9). As this seems to be too

¹⁵ The public body the public utility responsible for purifying water and providing it to the public

expensive for the moment, Mariella concentrates on diversifying and saving some money so as to build something in the future.

7.3 Livelihood pattern

From the cases presented above, and considering the broader interviews conducted during my fieldwork, it can be concluded that the situation of land ownership and assets can be diverse in this category. It varies from younger pastoralists with limited inherited assets and access to land to pastoralists who inherited land or were able to purchase it with family capital. When access to land is difficult for younger pastoralists who have not inherited any assets, especially in the plains, then negotiating access to natural resources becomes crucial. Diverse, artisanal products become an exchange currency to get access to, other produce, knowledge, and to markets.

The first and third cases focus on individuals located in peri-urban plain areas. The second case is that of a pastoralist in a mountainous area. On one hand, living close to a city provides a lot of opportunities for off-farm diversification and for engaging in and assembling different markets. On the other hand, access to land and natural resources is easier in mountainous areas and to some extent there is still communal access to land, forests, and water. In fact, in mountainous areas we can still find more diversification as part of pastoral production (Paoli, 2018). As I explained in Chapter 3, diversification was easier and more widely practiced before because pastoralists could still make a good income with smaller flocks and selling less milk. Hence, they had more time available to diversify, to ensure self-sufficiency. The land close to the city was for inhabitants' vegetable gardens and the outer land was for animal grazing. With the incentives to specialize in animal production, the need for bigger flocks to sustain family living, the changes in labor regimes and the increase in mechanization, diversification started to decrease.

Those who have inherited the land have less pressure to diversify and sell informally because they also receive land subsidies which are additional income anyway. In contrast, young people who negotiate access to land feel more pressure to produce and sell artisanal products because the income from selling milk and lambs is not enough with a small flock.

This type of pastoral production is very labor intensive, and the presence of technology is kept to a minimum. In some cases technology is shared like Felice's neighbor refrigerator. Technological machinery is seen as a comfort rather than always as a necessity. However, it is also recognized

that the advent of technology has taken away jobs. For example, Michele and his friends in the mountain informed me of how life was different before the milking machine and their job consisted mainly of milking the animals, sometimes even in groups of two or three pastoralists together (DIV11). Technology is used when it is necessary and when labor falls short. When possible, technology is replaced by labor. For example, in the low season or as a response to rising costs and falling incomes, it is still common to milk by hand, sometimes with the help of family members, close friends or young people. The technology that is available is often used to diversify the income as in the case of Felice who also ploughs and sows the land during high sowing season to maximize income.

Extensive production and the use extensive grazing are key to reduce farm costs. In mountainous areas, animals' nutrition largely relies on what the territory offers, and feed and forage are purchased and utilized when spontaneous pasture is scarcer like in the winter season. Cultivated pastureland is almost absent. In the first case this is because Felice does not own land and he is able to cultivate only a couple of hectares that he informally rents. In the second case, the mountainous morphology of the territory does not allow to cultivate large lots of land. Matteo cultivates around ten hectares out of 100 that he owns, while Felice does not have cultivated land but purchases all the necessary forage and hay from the market.

Mobility is central both in mountainous and in plain areas and the pastoralists still move the flock towards available pasture. When a pastoralist is almost landless, as in the first case of Felice, extensive production means negotiating with landowners and exploiting any available possibility of pasture, thereby also reviving old practices and agreements such as for example having the animals clean the land after harvest. This often implies a strong knowledge of the wider territory, of the community (and building positive relationships) and the resources it can provide for all the animals in the farm.

In the cases presented above, the division of labor within the farm does not always see the women as directly engaged in the farm work. Care work and housework is, always, to a greater extent, performed by the women who care for the children and who are generally expected to care for their houses, the cooking and the elderly. However, in general, pastoralist women are much more common in this category, and they are often active protagonists of farms that are open to the public for social, educational and touristic purposes.

This category generally farms with a low use of farm inputs purchased from the market in order to reduce costs. There is a strong connection to the territory and natural waste from olive groves or chestnut trees or acorns are used to feed the animals. There is also a lower interest in synchronizing lamb births. Rams are often left between the sheep, and the births are therefore less rationally planned. There is also little use of external inputs like hormonal sponges.

Livelihood diversification for women often goes towards the production of processed foods (*ravioli*, fresh pasta, bread), beauty and wellbeing products like creams with natural products such as honey, wax, myrtle and juniper; as well as production and sale of preserved food and liquors. Moreover, women often diversify their livelihoods by engaging in social and educational activities that are often incentivized by local municipalities like educational visits to the farm or social farming for people with disabilities. Mariella for example, has created an association that focuses on education about nature for children; knowledge exchange on the production of natural products; and the exchange and reuse of used clothes. Through this, she has created a network of social and solidarity economy that is also a market for her products.

Pastoralists in this category are critical towards the capitalist system, pointing to increased dependency on external inputs, the genetic modification of nature including seeds and animals to push production, reliance on preventive medicine and so on. They find spaces of resistance in their everyday practices, such as daily decisions that do not entirely conform with the suggestions of the veterinary officers to increase external feed resources or to vaccinate animals every year.

Through my conversations with pastoralists in this category, most openly recognize the contradictions they face – engaging in commodity chains while objecting to and resisting the incursions of capitalist forms of production in agriculture and pastoralism. They recognize too their inability to gain autonomy in all aspects of production and market engagement, yet in some ways there is more resistance in their actions compared to the pastoralist who buys organic feed because the government subsidizes it. Their daily decisions are taken with a material necessity, but they are also part of a narrative and motivation to contest and change the current system.

Rather than "acting against everything" or "being stuck in the past" or "acting irrationally" as the common narrative might suggest, these pastoralists - like middle pastoralists in commercial market arrangements (Chapter 5) - try out different options coming from traditional knowledge or from scientific knowledge, they critically analyze and innovatively come up with context specific solutions

that fit their realities, their material possibilities (like lack of land or lack of labor force) and, as a result, they assemble a pattern of production and exchange that works for them.

7.4. Market arrangements

How do the themes analyzed above intersect in creating this type of market arrangement? In this category, livelihood assets available to and created by pastoralists influence the type of diversified production. Such pastoralists make use of the territory and of existing networks as much as possible and they focus on reducing costs and external resources when challenges occur. Lower production output, falling prices and the relatively smaller scale create the material need to broaden up and diversify. This is met by the 'flexible' conditions that smaller flocks allow.

Patterns of accumulation are created mostly by engaging in different markets and making use of this flexibility to maximize profits according to changing external circumstances. Having a small flock, with less dependence on external resources and the use of machinery allows pastoralists to seize opportunities when they see them. This can go in different directions. On one side, pastoralists diversify and, in some periods, they even decide to reduce milk production, and concentrate on other off-farm activities and 'nested markets' (such as social farming, educational activities for kids, environmental walks etc.) as a response to challenging conditions. Having income from educational activities, touristic activities and the sale of other products, there is more room for maneuver. On the other side, when access to such nested markets is limited, they focus on cheese production and informal sales.

The engagement in both formal and informal markets is key. Such pastoralists do sell milk and meat via formal channels, through cooperatives or private industries. This gives them stability and the certainty of a monthly income. However, this income is not enough, and the need to find alternative strategies is clear. In order to sell artisanal cheese and meat, the creation and maintenance of networks is key. In flatland areas, networks follow the path of tourism or groups that might be interested in alternative, local, genuine, home-made products. In the mountainous areas, it is often the case that products are sent to mainland Italy through migrant or touristic networks. Products often follow the path of migration of family members who help find clients abroad. Once a relationship is established, it often remains throughout the years as Sardinian home-made cheese is appreciated and not easy to find abroad. But networks are not only essential

to sell cheese or meat, they are also key in order to diversify livelihoods and income as it is clear in all three cases. They therefore become crucial to respond to uncertainties.

So, even if commercial milk sale is exploitative and considered as unfair, it still remains a source of security for this category of pastoralists who need both a stable monthly income, albeit small, and who need to be formally recognized by public agencies in order to receive subsidies. For this reason, despite criticizing the exploitative and intensive nature of the system, these pastoralists do not intend to detach from this market, but rather prefer to navigate parallel markets instead. At the same time, formalizing artisanal sale would be too risky and would require a different configuration of labor within the farm because of increasing labor needs and costs.

Having to face repeated market stresses, such pastoralists diversify in order to build a sustainable livelihood. Diversification is made up of on-farm and off-farm activities mainly touristic, related to urban interests and demand to reconnect with the countryside, connected to ideas of more sustainable modes of production shared by both consumers and producers. The strategy to face uncertainty is to create hybrid and flexible arrangements. On one side keeping the certainty of the coop or private industry, and the other side selling to informal networks when possible.

Chapter 8 - Flexible livelihoods and traditional market arrangements

8.1. Introduction

This last market arrangement emerges strongly in comparison with other categories. Like diversifiers in Chapter 7, pastoralists in this category build a portfolio of activities to diversify their income and to create a sustainable livelihood. But they do so in a different way.

This category is particularly pronounced around Desulo and the inner mountainous region of Sardinia. This is the region where pastoralism was prominent in the 20th Century before the process of sedentarization took place and pastoralists and livestock moved to the plains in parallel with the boom of the dairy industry. Pastoralism in this category is nearest to a so-called 'traditional' type of livestock rearing that is celebrated in the island's folklore. This is characterized by extensive grazing in wild, uncultivated pasture, by a low-cost type of pastoralism and by minimal investment in purchased external feed which is put aside for the winter season. There is little or no use of agriculture to produce cereals and hay because the mountainous landscape only allows for limited use of land for agriculture.

Figure 31. Mountainous region: Barbagia. Desulo, November 2019.



The term traditional also connects to the fact that milk sale to industries is always accompanied by the on-farm production of cheese and other animal products for family consumption, for informal sale through family networks, and for gifts and exchange with family and friends. This interaction between sale to industries and production for subsistence and informal sale started at the beginning of the 20th Century when cheese traders used to come to the mountainous region where pecorino cheese was produced, to purchase cheese, to then sell it (Chapter 2).

Differently from diversifiers who engage in civic market arrangements, these pastoralists generally do not have high formal education and they are not connected to critical urban consumers or alternative consumer networks. In fact, while diversifiers in civic market arrangements self-produce and sell locally abiding by a narrative of system change, pastoralists in traditional market arrangements produce and diversify for their own subsistence and sell through networks revolving around the family, community networks and migratory networks (for example maintaining relations with those who migrated to other areas of Sardinia or to mainland Italy).

Diversifiers in civic market arrangements (Chapter 7) use their knowledge and education to connect with specific sectors of the population that are interested in sustainable, non-intensive production or to tourists that want to engage with local culture and traditions. Contrary to that, apart from a few exceptions, pastoralists in traditional market arrangements do not capitalize on society's demand for local, green, sustainable experiences and products. Quite the reverse as it happens, they are critical of those pastoralists who commoditize pastoralists' traditions and knowledge like it happens in civic market arrangements (Chapter 7).

In traditional market arrangements, on-farm cheese production and direct sales are both practices handed down from parent to child, and a necessary response to uncertain markets and volatile milk prices. Transhumance and access to land in the plains allowed for low-cost production to be maintained. However, with the privatization of land and sedentarisation of middle pastoralists and intensive producers in flatland areas, those lands in the plains have become unavailable. This has resulted in increasing costs of production in mountainous areas where pastoralists now have to purchase hay and feed from elsewhere, even if in small quantities. Small flocks and the low prices of milk would not cover the increasing costs of production. For this reason, there is a high presence of on-farm production of cheese, meat, sausages, honey, vegetable, and bread. Most producers have their own vegetable garden in the outskirts of the town, as was the case 50 years

ago. This production is used first for self-consumption, then for exchange with other friends from town leaving parts of it for informal sale.

Diversification activities are strongly connected to the products and resources that the territory has to offer and to traditional activities as well as to formal and informal work opportunities that emerge from the networks that pastoralists are part of. For example, diversification might be related to the maintenance of forests, chestnut trees, the production of wood and fencing of land. Some of these jobs are obtained through informal agreements, often with absentee pastoralists who moved to the plains or urban employers (including politicians, civil servants, private businessmen, and so on) who still own land and natural resources in the countryside. Other job opportunities might come from regional institutions such as the *Foresta*s regional agency, responsible for the management of forests and protected areas. Even if seemingly “marginal” on one side, these pastoralists assemble their means of reproduction in a very connected way bridging urban and rural, agricultural and non-agricultural, wage employment and marginal self-employment divides in a different way from the arrangements we see in civic market arrangements.

Different epistemologies emerge, very strongly connected to the territory. Pastoralists are committed to follow traditional methods of production. For example, they decide to breed autochthonous sheep breeds which, although they produce less milk, are much more resistant to the harsh conditions of the mountains, more resistant to disease, and they survive needing less food supplementation. New technologies or methods of production are tried out only after many years of inspection.

In traditional market arrangements, there is a strong philosophy rooted in the value of autonomy, understood as self-subsistence before, and market sale after. Pastoralists have a strong sense of autonomy and rootedness to their specific territory. Most of my interviewees spoke in Sardinian to me. They wear traditional clothes, black velvet trousers, white shirt and *la berritta*, the traditional Sardinian hat. This is true also for younger people who intentionally want to connect and maintain traditions alive through clothing, language, and other customs. Their sense of autonomy is strongly connected and influences the way they produce and construct their livelihoods. Pastoralists who diversify and sell through informal networks are mostly accountable to their families, their communities, and their territories. Maintaining traditions alive through habits, language, clothing, production, and forms of exchange is positively acknowledged by the wider community and it is therefore a reason for pride and honor.

The combination of pastoralism with other activities, living between formal and informal economies, market and moral economies, the commitment to low-cost pastoralism and the strong attachment to the mountainous Barbagia identity, all contribute to create a narrative of the backward, anti-science and state-resistant pastoralist. Some define them as “B-league pastoralists”, people that do not care for their animals, who are lazy and who spend their days in bars. They say they only have animals for opportunistic reasons to receive subsidies (INT1, RI1, FT2). Their capacity to assemble activities and opportunities (including subsidy opportunities) to make a living in harsh circumstances is often misunderstood as laziness. Some pastoralists in this category, however, believe that they deserve high recognition for being able to resist and to actively protect and inhabit harsh environments.

These territories in fact have been at the center of a major depopulation phenomenon in recent decades. When pastoral producers moved from the mountains to the plains, they left their houses and part of their land semi abandoned. Pastoralists who moved to the plains still have a very strong relationship with the town and the community, and they come back to Desulo during holidays and festivities. Pastoralists who moved to the plains and hills are still very attached to the traditions from Desulo and they often buy cheese, meat cuts and honey from the pastoralists who remained.

Living in a depopulated city means living in a remote and poorer area, where public services are limited and where pastoralists have to face harsher geographical and climatic conditions. When I first arrived to Desulo everyone I talked to kept telling me that there were no pastoralists there. “They all left to the Campidano plain, you should go down there if you are looking for pastoralists. You won’t find pastoralists here” (R1), one person in the municipality told me. However, the numbers of people still accessing communal land – reinforced by my interviews - demonstrates that there are still pastoralists in Desulo. This highlights the imaginary of what constitutes a ‘real pastoralist’, which is embedded in the hegemonic view of the landowner, semi-sedentary, specialized pastoralist of the plains and hills. Anything other than that is erased, it does not exist, and it is not worth acknowledging. As van der Ploeg (2008) argues, modernization manufactures invisibility.

Contrary to what local politicians, veterinarians and more capitalized pastoralists often tell visitors like me, such pastoralists are not anti-technology *per se*. They are critical of the political economy of technology, of the supremacy of science whose results are mostly based on research conducted

in the plains and in intensive production systems, and of state programs because of resource grabbing and privatization and increasing costs. They do not use the milking machine not because they are against it, but because it has high maintenance costs that their often small flocks cannot justify such investment. More than an opposition to technology, science, and state-led technical programs, it is a clash between different philosophies. They use and appreciate technology and at the same time they are critical of technologies that require capital investments while substituting labor. They try to make use of what they have and try to avoid the creation of needs' and the 'profit first' logic.

These pastoralists are considered marginal by institutions because given the limited resources and infrastructures and the harsh geographical conditions, they have to make do as best they can in order to create livelihoods that are sustainable for them. Non-farm income becomes critical in this category where, at varying times throughout their lives, pastoralists sell their labor to reproduce themselves and to sustain the increasing costs of pastoral production. Livelihoods are assembled through "combinations of wage employment and self-employment arrangements" (Bernstein, 2010:111). These pastoralists seek reproduction through insecure, and increasingly scarce, wage employment - particularly in these increasingly depopulated areas - and a variety of precarious small-scale activities that are performed between the 'formal' and 'informal economy' such as pastoralism, forest activities, and so on. Like diversifiers, pastoralists build a portfolio of activities to differentiate their income and to create sustainable livelihoods. In the following section of the chapter, I will present two cases which will form the bases for my analysis of emerging livelihood patterns and market arrangement in section 8.3 and 8.4.

8.2. Case Studies

Case 1 – A different philosophy

Livelihood

I met Tonino through Elisa, he is her uncle. Elisa studied food technologies in Oristano and she is my age so the connection results easier and fast. She is one of the first people I met in Desulo, a small town in the mountainous region of Barbagia, and one of the first to tell me that in Desulo there are no serious pastoralists. She was referring to a particular experience. She has a family dairy

which she runs together with her parents and his brother. They tried to find someone trustworthy and who could ensure them constant quantity and quality of milk in town. But according to what she tells me pastoralists make little investments in feed, and animals nutrition remains quite low input and based on wild pasture grazing. “My uncle is a character she says, he has his own philosophy” she says “but I can give you his number if you want” (MIN1234). After texting and calling Tonino we agree to meet close to his family house. It is the end of October and the rain has not stopped for 11 days straight. I wait for him under the canopy of a closed newsstand. I wear a heavy jacket and take cover with an umbrella. He arrives about ten minutes later than scheduled. He is wearing a waterproof camouflage suit, with the military pattern that, together with the classic velvet, is very popular here in Desulo.

Tonino is 52 years old and he lives alone. He has two brothers and one sister. He lives between the farm and the village of Desulo. He has a small house close to the land where his animals graze and oftentimes when there is a lot of work to do and he does not find a ride back to Desulo, then he stays in the countryside. One of his brothers, Basilio, lives in the village and has opened a mini dairy with his family, his son and daughter, and his wife. Another brother lives in Campidano, the southern plains. Tonino has a different philosophy from his brothers and he is happy with a simple life.

“Do you know what my philosophy is? to produce everything that I need. Why do I need to buy bad quality products and sell the things I produce? I sell my good products when I have enough for myself” (DIV3).

Tonino defines his philosophy as *all'antica* which translates in English as ‘old fashioned’. It refers to a different way of doing things, a different logic which is not the market’s logic, a different way of understanding production, market and money. To make me understand his way of living and his philosophy better, he told me the story of his aunt who lives in Irgoli, a mountainous and remote town in the province of Nuoro, located one hour and a half north-east from Desulo. Tonino’s aunt was the wife of a pastoralist, she used to breed bees, she made candles with bees wax, she had a vegetable garden and she cleaned chestnuts .

“She was a woman with the traditional clothes, really like the old-fashioned ones...if you entered her basement there was everything there, it was a wonder in itself, you could find tanks dug underground where there were potatoes, walnuts, chestnuts, all products that she made. Then you could find cheese, ham, honey, grapes left there to be dried. Those were all the products of her family. I cannot even describe to you the scents in that basement [...] I think we will see this philosophy coming back in this Century but meanwhile we will have lost a big part of our knowledge” (DIV3).

Following this philosophy, Tonino does “a bit of everything” as he says. He diversifies his portfolio by engaging in several activities with the conviction that diversification is key in difficult territories, and “it is mathematically impossible that everything goes wrong all at once” (DIV3). Tonino produces almost everything that he needs and he exchanges or sells the rest. He has bees and he produces honey, he has a vegetable garden where he grows his own food, he makes wood from the chestnut trees and chestnuts during the season. He carries out tree pruning work and land fencing work. He also has 30 sheep and 30 goats that graze in wild communal and family land. All these activities follow different times and seasons, and he is always busy.

Some years ago he was also involved in environmental tourism, he used to make horse-riding tours for tourists. Together with his other brother who now migrated to southern Sardinia they built a *pinnetta* (the Sardinian traditional pastoral house) where they stopped and organized lunches for few tourists that visited the mountain in summer. When his brother left, he stopped because he could not manage everything alone. He tried to find interested people, “but youngsters want to make easy money, the first thing they ask me is how much money I will give them. And most people my age think that I’m crazy or something. But I know this is what people like, when I was a chef in Nuoro I could see that, people like these things, they want to go back to nature, they appreciate this” (DIV3).

Production

Tonino has less than 100 animals all together and he generally does not purchase external feed but relies mostly on wild grazing. He purchases dry feed like hay and alfalfa for the winter season when it snows and the animals are not grazing in open pasture. He had pigs up until 2018 but as the situation became complicated so he got rid of them, because with the swine flu scandal and the increasing controls you are now requires to declare your pigs formally and to keep them in a double-fenced area. He does not have cows even though there are a lot of bovine animals in the area.

This diversification of livelihood and production makes Tonino unsure about whether he can call himself a pastoralist or not. “I belong to the pastoral world but I am not really...I am

polyvalent....can I call myself that?" (DIV3). The idea of the specialized pastoralist is now so rooted in people's imaginary that diversification as a method of production or even as a response to uncertainty and crisis is often seen as becoming less pastoralist. However, in our discussion, Tonino remembers that this was quite common before. You did not have a pastoralist that engaged only in animal rearing, they also did many other works and activities connected to the territory and the agroecological landscape just like Tonino does now. This is because production was much less specialized, less intensive, and more extensive. It required low input and wild grazing was much more common than it is now, especially in mountainous regions and territories. Pastoralists used to be able to make a very decent living.

"Before, a shepherd had 80, a hundred sheep, eight children, ok, he fed the whole family and then they built their house and had money. They were doing well. Now a shepherd with 500 sheep is starving. Do you understand why? Because before, with 100 sheep, they didn't feed them... they did wild grazing, they were practical in many jobs and everything they produced, they used it and sold it. Cheese was highly paid in relation to the cost of living. Now, on the other hand, they pay 50/60 cents for one liter of milk, and to produce a liter of milk you have to spend more than that milk gives you" (DIV3).

He often works with friends and then they share the output and money. Among themselves and between them and the master there are often informal agreements based on customary law that might require negotiations, which means that these relations are not free of power, but they generally follow existing customary rules that find their origins in the feudal system like the *mezzadria*.

For example, he has around 20 chestnut trees that require yearly work for harvest (that generally happens between September and October), for maintenance (generally around May/June) pruning and wood cutting. He does not have many trees so when he does the harvesting or the maintenance, he also uses his time and labor to harvest or clean or make wood from other people's chestnut trees, very often these people are pastoralists or other workers from Desulo that live in the southern or northern plain or non-agricultural producers that live and work in cities.

He works together with a friend, and he is not always paid with money. Sometimes his compensation comes in the form of chestnuts. With some people, he has a *mezzadria* agreement in place: he takes care of the trees and harvest and he takes half or two thirds of the production. If there is need to invest capital for some specific work or treatment, this is generally discussed among the two parties. Other times the *mezzadria* agreement is modified and when they cut the wood from the chestnut trees, they find an agreement with the master, one part money and one

part wood because there is a wholesaler to sell the wood to. Other times he is paid daily like when he works on fencing the land.

“The pastoral society of today is globalized. We have entered a system of acceleration. It's not because you run that I have to run more, nor if I play music you have to dance and I turn up the volume louder and louder. At a certain point you have to... you have to brake. Yes, these are certainly different philosophies. Certainly, those who decide to invest and make a farm of 2000 sheep they think differently. But if you want to keep another kind of farm, another kind of philosophy, you're working with totally different values. Here, they hired people in a factory, but after a while they fired them. The factory went bankrupt and what do these people do? They die? If you are used to doing many small things, then mathematically all things cannot go wrong” (DIV3).

Market

In the period of the interview, Tonino was producing mostly pecorino and ricotta. He makes around 100 to 150 forms of cheese per productive season. He does not know the exact number and he tells me that he actually has never really counted them. He makes cheese from May to July when there is a good grass and when the grass is “mature” as he calls it. He waits until the grass makes leaves in the spontaneous pasture because in that moment the grass contains more protein, and the milk is of higher quality, has a higher fat content and gives a higher yield.

His cheese is sold informally, and he specifically asked me to keep this information confidential because he could get into trouble for this. The ricotta he makes is sold to his sister who has a bakery in town and who uses ricotta as the basis for many sweets. The cheese is sold to privates and friends who ask him directly and to some restaurants. In the bar/restaurant where we are speaking during the interview, they serve some of Tonino's cheese. This restaurant is at the entrance of Desulo, a strategic point where visitors stop and where they serve delicious food. This constitutes for him a strategic place to showcase his cheese because people who try it often ask if they can buy some. Similarly, he also sells to a restaurant in Nuoro (the provincial city), owned by a friend of his from Desulo. He does not tell me the name of the restaurant, even after I ask a couple of times and I reassure him that I will not disclose that information.

Tonino has built these strategic connections over time and they eventually mean further clients for him and his products. But talking about clients is very reductive. Money and the search for clients is not the primary objective of the relations that Tonino builds. In fact, Tonino does not even talk about clients or use this word. He talks about people who buy cheese, he talks about

tourists and friends of friends and this is how he sees them and interacts with them. His objective is to build a network of people around him and to keep doing what he likes in an autonomous and independent way, and in the way that he thinks is correct and just. He knows that from this network of social relations he can make a living by selling his produce and find jobs in different ways. Of course, this does not mean that he is not interested in marketing his products or make profit. He is, but his priorities lay elsewhere. He wants a good living, he wants to produce and consume the goods that he produces because he knows that they are good quality products, he does not want to be a slave of the market that, as the theory goes, is controlled by demand and supply and it forces you to run faster and faster.

The first thing I try to understand is why Tonino does not sell his milk to Basilio, who has a dairy but does not have animals, he purchases ovine milk from a pastoralist outside town and goat milk from his son in law. But I avoided asking such direct questions, nobody knew me, and nobody trusted me. Quite the opposite is true, everybody distrusted me and I did not want to negatively interact with the delicate social fabric of relations in the village. They distrusted me because they did not know who I am, what my purposes there was, and what I will use the information I want to collect for.

Tonino does sell some of his milk to people that ask him, but he mostly produces and sells cheese. He manages to do so mainly informally, and the small quantities he produces, allow him to stay mainly informal without being noticed too much. The balance of interactions that characterizes small communities and the general skepticism about the role of the government and institutions also allows this to happen. But this is not the only thing he does, he is very flexible and innovative and he produces as much as he can for his personal consumption and he does different rural jobs in the countryside.

During these lunches he used to sell his products, cheese and ricotta, and also other products made by producers in Desulo. When I asked Tonino if he was part of any farmers union he laughed as if I had asked something strange or ridiculous. He told me that farmers unions have never been useful for him, that as long as he can work, produce and eat well then he is fine.

“If one is inserted [integrated/embedded in a network] then you find jobs, once you eat and and you are well that is what matters. Everyone in his field needs to create a reality where the factors surrounding you are in your favor. This is intelligence, you need to create an environment where things and people are in your favor and then slowly things will arrive.

Then you do not have to get fixated in an ideal situation because things change all the time” (DIV3).

Reciprocity is key in maintaining the positive environment and social relations that Tonino talks about. Intersecting relations are at the hearth of this embedded social market where, before being mediated by money, exchanges are mediated by relations and people.

Tonino tries to rely on the state and on the market as little as possible. He actively builds a balance between autonomy and dependence (Ploeg, 2013:61). The more he becomes dependent on subsidies the more his understanding of what he is able to sell becomes distorted. He wants to produce and sell, and he wants to know whether there is a market for the goods he produces, for the skills he has and the labor he can sell. Moreover, he wants to be free to adjust his production and maintain it as flexible as possible so that he can easily shift the focus and the time from one thing to the other when there is a request for it. His animals are “rough”, as he defines them, and they are used to open grazing, they receive additional feed when needed and when possible, but they are used to feed themselves in wild pastures. So, his way of production and the animals' genetic selection are in line with his general philosophy and diversification strategy.

Part of maintaining and constructing his autonomy stays in keeping an independence from public subsidies and from input markets. “I am afraid to get used to these incentives, it is as if I give you a nut, I give it to you all the time and you don't have to do anything, but when I take it away from you what happens?” (DIV3). Taking subsidies means being vulnerable to the uncertainties and changes of subsidies and public policies. So, taking public subsidies only when necessary becomes a way to reduce uncertainties linked to policy changes.

His work is very connected not only to the agroecological landscape but also to the social landscape. He has a wide social network and, contrary to what might happen in other territories or for other pastoralists, this web is characterized by intersecting relationships of friendship, labor, collaboration, exchange, sale and family. Tonino understands the key role of his network for his social and working life and ultimately for his livelihood, and he even refers to it as a sort of diplomatic work. He tells me that he always tries to create and maintain a favorable environment around him and then with some intelligence and work skills he is always able to adapt, to meet his needs and to make some money. Reciprocity and gifts are also key in maintaining good social relationships and he does not sell produce from his vegetable garden but rather gives them as gifts. While these gifts are given without expectations of having something back, they are always

reciprocated in other, sometimes very different, forms. In this way, gifts become central to maintain a balance in a market embedded in the social and environmental fabric.

This means that if you have a bad reputation, if you make a mistake, if your father or a family member does, you trigger mechanisms that are not always easy to control and, as such, you are marginalized from the benefits of these intersecting relations of reciprocity. In this sense, the capitalist market, mediated by money is more 'liberating' and anybody with money can participate in it.

Importantly, when Tonino is engaged in paid labor activities and he does not have time to produce cheese, when the milk quantity is low or when the quality of milk is not at its highest, he sells his milk to the town collection point which gathers all the milk in town and then sells it to the industry which offers the best price. The possibility to sell milk to industry allows Tonino to maintain the flexibility that he needs. If there are specific seasonal jobs available that he is asked to do, he does not make cheese but rather sells milk as a raw commodity and focuses on the paid activity instead. Likewise, when the price paid for milk is high, he prefers to sell milk to industry and take some time to do maintenance work on the farm or experiment with another type of agricultural production. Moreover, selling to the industry allows him to produce cheese according to the specific amount of cheese he is requested from people. The interaction with the industry allows Tonino to diversify risk and flexibly adapt to uncertain and changing conditions.

Case 2 – A life with my flock on the side

Livelihood

Efisio is 71 years old, he lives in Desulo with his sister who takes care of him, she cares for the house and prepares food. I do not know if she also works or has worked throughout her life. I met Efisio thanks to a connection I have in Desulo, he did not seem very happy to have me around, but after a couple of encounters he slowly warms to me. Efisio has worked a lot of years as a shepherd and as servant shepherd and he has done many other rural jobs. He became a pastoralist when he was 14 years old. He now has a small flock and receives a small pension from the state. He tells me that if I am looking for pastoralists I have to go down south to the Campidano plains, "there are no shepherds here, they all moved to the plains [...] they abandoned us" (DIV12).

Figure 32. Walking to the farm. Desulo, November 2019.



Ef시오 has a total of around 60 sheep. Around half of them are in lactation. Now he has sold many of his animals because old age does not allow him to manage a big flock. Throughout his life as a pastoralist he did not follow all the formal procedures around sheep management in regards to production, animal health (antiparasitics, vaccines, etc.) nutrition, and sheep reproduction. He did not vaccinate the flock every year but only when he thought it was necessary. He fed the sheep with purchased feed only when necessary and when he could afford it. If he was paid well for his milk, the sheep might receive more feed to boost production. This was valid not only for feed but for general investment in the farm; it has always been relative to the economic, climatic and political situation.

In the past, Ef시오 worked as a servant pastoralist. He used to bring the flock of several owners down to the plains, including his own. He also used to bring flocks of pigs down to the plains, as he let me know that pigs used to be involved in the transhumance procedure together with sheep. He also used to do work managing forest resources such as cleaning and cutting wood, picking chestnuts. For some time, he did some work for a transportation company from Desulo. His sister was key throughout his life, because in case of emergency or if he could not take care of the animals for a specific reason, his sister would intervene and help out feeding the animals. The flexibility that allowed Ef시오 to diversify livelihood incomes was strongly related to the presence of his sister.

Production

Remembering the old times, Efisio tells me that being a pastoralist was a very hard life. He used to carry out transhumance in the south in autumn and come back to Desulo in summer. They used to go to Villamassargia, Capoterra, Assemini, Tula, there was no fixed place but they went around according to where the grass was and following the climate conditions (DIV12). The grass was where the rain was, and pastoralists used to follow the grass and wheat stubble. Transhumance was very hard, they often slept outside, under the rain and in the cold weather. “We were nomads” says Efisio laughing, “we did not have a house, when it started raining, we used to sleep under the cypress trees” (DIV12). When they were lucky they slept inside the *pinnette*, the typical constructions of shepherds. These were used and built by and for pastoralists to move animals. But in the transhumance route, they were also the place where pastoralists made cheese. In fact, forty to fifty years ago the dairy industry was not as developed as it is now. Pastoralists made cheese on the transhumance route and they then exchanged it for other goods and food, or they sold it to small intermediaries and industrialists who eventually exported it in national and international markets.

Efisio explained that he is now keeping a small flock in order to do something, and to have a reason to leave the house and keep himself busy with work. He claimed that the alternative in Desulo would be to hang out in bars and he wants to avoid that as much as he can. Even though he did not tell me -because of the changing laws around pigs ownership and management- I heard that he also has a few pigs that he presumably uses for family consumption and gifts and exchanges for friends and family.

Market

When we talk about cheese making and sale, the answers to my questions are always vague. Informal production and sale are a delicate matter. In this territory it is still very common to make cheese, the majority of pastoralists make some, at least for family consumption, and institutions know it very well. However, the discussion is delicate, especially in a situation where control from the state is always intensifying. Efisio has always made cheese. Only in 2019, the year of the protest, he did not make much because most Sardinian pastoralists stopped selling their milk and everyone was making cheese. So the island was full of home-made pecorino. Some

even brought milk from the Campidano farms to Desulo as a gift and asked pastoralists to make cheese, in order to avoid waste.

When he does not make cheese, he sells milk to Central, a private dairy located in Villasanta. The dairy's trucks usually come to Desulo every three days and collect the milk from the refrigerators in town. There is one refrigerator in Desulo that is used to collect several pastoralists' milk. Efisio does not bring his milk there, however, he keeps his milk in the fridge at his place. When he makes cheese, he sells it through his networks in town. He sells it to some families in town, sometimes to a friend of his cousin that buys many forms from him and sells them elsewhere. Some forms of cheese are used as gifts during festivities and others are brought to *spuntini*. Spuntini literally translates into English as light lunch. But in practice spuntini are actually quite big meals; they are not called lunch to underline the informality of the event.

The spuntini are important, because they are much more than just a lunch, they are at the heart of network building. Spuntino literally means snack, but in Sardinia they are something completely different from a snack. A spuntino is an informal lunch in the countryside, not in the city or village, where food, wine and beer abound. The spuntino is a social gathering among a group of friends who can also come from different social backgrounds. You might have pastoralists, carpenters, electricians, builders who are all part of the village traditional choir sharing food together at a spuntino. It is a place where knowledge is shared. A pastoralist whose milking machine just broke has a clear idea of who might help him remedy the problem or understand the best replacement pieces to buy. These occasions provide a platform where this type of knowledge exchange can happen. Pastoralists know what they can expect from other pastoralists or other villagers, they know what they can ask and how to reciprocate information and favors, and if it is appropriate to do so.

Many products consumed during a spuntino are not purchased in shops, rather they are brought by the hosts and guests; generally coming from people's farms. The spuntino is a place of exchange, it is a place of gift and friendship. It is a place where traditional products are consumed and celebrated. It is a place where producers display their products, where they can 'show off'. You make people try your cheese, you taste the yearly wine, you try the olive oil and the olives. When there is a guest from abroad, a spuntino is where the hospitality is shown and traditional food is served and showcased.

So, bringing your cheese to a *spuntino* means so much more than just bringing your cheese to a lunch. This social place becomes the place to share but also to showcase products, it becomes a place to reciprocate favors, a place to exchange knowledge and to maintain and enlarge networks. Non-producers can try products and make agreements with the producers for future purchase of products. For Efisio, and for producers in general, these social interactions and social gatherings are key. It is not really about the cheese you sell in the moment, rather it is about the relationships that you foster and the new ones you make, the social capital that you develop.

He says that every couple of years there is a milk price crisis due to alleged overproduction, and yet Sardinia imports spun paste cheese from France which is then processed in the region and sold and exported cheaply with Sardinian brands. In this environment, private industries benefit from domestic and international competition and the race to bottom results in lower and lower prices for pastoralists. According to Efisio the state allows this to happen and it is responsible for failing to regulate food markets. Likewise, he thinks, like many other pastoralists, that the export blockage and the mass extermination of the swine population (especially prevalent in mountainous areas) also served geopolitical and trade-related interests and was not only a sanitary issue. Moreover, this also served to accelerate the increased government control on pastoralists by the forced formalization of informal production.

We spend quite a lot of time talking about the state, political elites, the connection between political elites, banks and the dairy industry. The state and institutions, in general, are thought to be responsible for not defending Sardinian products through appropriate trade legislation and anti-dumping measures. Efisio calls the state and its political apparatus an organized mafia for according to him the state profits from capital accumulation through tax extraction (DIV12).

State schemes and policies are therefore seen as a way to increase control on rural populations and political and industrial elites end up benefitting at the expense of small rural producers. On the other hand, Efisio acknowledges that state subsidies in period of crisis have been essential. He remembers the loss of 160 lambs and sheep in 2010 caused by bluetongue. The loss of capital was huge; state monetary compensation was essential to be able to continue to work.

Now that Efisio is getting old, cheese production is slowly decreasing and selling milk to a private industry allows him to have a small income without having to work too much. He does not want to

give up livestock production because his very small pension would not be enough to cover unpredictable costs; personal health expenses for instance.

8.3. Livelihood pattern

Among the pastoralists interviewed, most of them are more elderly in age, they do not have high level formal education. They are often unmarried and have no kids. They generally have a small flock ranging from 40 to 100 animals. They combine pastoralism with other agricultural and forestry activities such as vegetable production, honey making, wood making, and non-farm related or self-employed jobs.

Picking up on the themes that have guided my analysis throughout the previous empirical chapters, and looking across the cases as presented above, we can see that all the people in the cases presented have very limited family assets, often relying on access to communal land that has reduced in size over the years due to environmental protection projects and privatization. Farm sizes are varied – ranging from zero to 20 hectares – and very often there is a combination of very limited privately owned land with access to public resources and negotiation of access to private land belonging to people who do not live in Desulo. This land belongs either to pastoralists that moved to the plains, or to their sons and daughters who have inherited it. Often this land belongs to people who work outside of agriculture but keep the land to make extra profit and to maintain a connection with their home town. Access to private land in Desulo is mostly mediated by informal oral agreements that follow customary law. An example mentioned in the first case and also in Chapter 7 is the *mezzadria*, an agreement whereby the products of the land (lambs, goats, cheese, pork products, chestnuts, honey, wood, vegetables and so on) are divided between the person working the land and the owner in different proportions, normally one third goes to the land owner and the rest to the person working the land. However, these agreements do not allow him to benefit from land subsidies; therefore, even if they had the possibility to use the land we would still see an accumulation of capital by pastoralists who do not use that land or by non-agricultural employees in urban areas. Pastoralists often gain access to land even without prior negotiation with the owners if they know that land is not utilized or abandoned by its owners.

To maintain their diversified flock of sheep, goats, pigs and cows they use minimal external inputs. A limited amount of purchased feed is still necessary both for the milking moment and during winter. To lead the animals in the catch during milking time, pastoralists use some purchased cereals, but

they also recycle waste every time they can. For example, Francesco showed me how he recycled scraps from the crusts of *carasau* bread¹⁶ from his sister-in-law's bakery. "Bread is made of wheat, and that is cereals, and I see they like it so I give it to them" (DIV6), he told me.

Their production is highly connected to their livelihood. A small flock might denote a certain wealth and class position but it also reflects the accommodation of a built up, diversified livelihood. Taking care of different activities would not be possible with a flock of 300. Time and costs are, therefore, two reasons why pastoralists do not increase or wish to increase their flocks. The flock is kept to provide food for the family and the extended community, to increase their income, to participate in the local economy.

The social relations of production and the relationship between labor and technology is very different from other pastoralists. Pastoralists need to sell their labor to allow their farms to reproduce, something that middle pastoralists and industrial entrepreneurs do not do. This means that these pastoralists need to reproduce themselves through labor; they need to have paid job to survive because they do not have access to a secure, sufficient farm-based means of production. These pastoralists, together with seasonal workers, both Sardinians and foreigners, move around Sardinia to do seasonal jobs like hay making, seeding, harvesting and so on. Without them, some small and bigger capitalists could not reproduce themselves either, hence the mutual interdependence across categories. While they might hire machinery from other people's farms, they rarely own machinery of their own, and when they do, they do not use it in their farms to avoid maintenance costs. As Gavino informed me:

"I was able to buy a trolley milking machine some years ago. You know these are the ones you can actually use here. You cannot buy a 24 stands milking machine here for small flocks like these, it would be crazy, some people got it with some incentives but they do not even turn it on. Mine is ok, but in the end, I almost never use it. I milk with my son and my brother, we have around 150 animals and sometimes their lactation period varies a bit, so it is never worth milking them" (DIV4).

For pastoralists in this category, technology is not something negative *a priori*. The role technology had in improving pastoralists' quality of life is often recognized. However, pastoralists also critically see how technology has replaced labor and restructure the whole production system in the farm. They also look critically at how technology has created comforts and needs thereby creating

¹⁶ Typical Sardinian bread, flat and crunchy.

dependency for some pastoralists. They see the trap that technology can constitute for many indebted producers.

The low-cost production philosophy is also reflected in the medical treatment of their animals: medical intervention is in fact minimal. Animal selection is done with the intention of raising strong and resistant animals; animals that survive not only with minimal feed but also with minimal vaccination and preventive treatments. For example, during informal gatherings after the animal welfare course, I was having a discussion with a small group of pastoralists who told me how they did not use many medicines because the animals had to develop their own strong antibodies. They argued that having a mixed flock was conducive for a stronger flock. According to them, the high costs of health prevention are not worth it in the mountains, it is better to produce a bit less but reduce costs and have animals who learn to resist by themselves to the adverse conditions. Veterinary officials often do not understand or share this point of view. Their understanding of animal welfare is based on the assumption that animals are productive assets and therefore they should be fed in a certain way and they should be selected on the basis of maximizing productive output. Contrary to that, pastoralists think that animals produce but that they should not be considered as milking machines; they belong to the outside space, they adapt, and are used to living in nature.

Veterinarians are seen as part of a broader apparatus, a state machinery that promotes homogenization, specialization and intensification as the only valid and recognized way of producing. Pastoralists in Desulo tell me that their way of producing is not understood and that when they talk to veterinarians, that they suggest inappropriate measures that would not be applicable in a mountainous landscape. Some of these measures are suggested by veterinarians and agronomists as part of the technical assistance provided, together with the conditionalities for the animal welfare subsidies.

As both Efisio and Gavino told me outside the municipality building: “the animal welfare program is mainly targeted towards intensive and semi-intensive production in the plains. They tell us about deseasonalization of milk production because they think that is the solution to low milk prices. They tell us about haylage techniques but here we do not even have the land to produce” (DIV4, DIV7, DIV12). Veterinarians give similar advice everywhere; their assistance is standardized and does not follow a context specific and place specific process. Most of the times this advice is irrelevant to pastoralists and it contributes to feed the idea that the state apparatus does not understand

them. “They don't understand anything, they don't understand life in Barbagia, they should come and live here and see how long they survive” Vittorio told me, stressing the sacrifices a pastoralist needs to make (DIV8). Other times pastoralists might adjust the information they receive and adapt it to their way to produce like Francesco did with the carasau bread.

Their identity and their relationship with the state apparatus is highly influenced by these experiences. They see the state as an institution that supports the interests of wealthy pastoralists and that does not understand or appreciate their way of living. They are not involved in politics and they do not see any difference between political parties, as all of them back big capital interests and ignore small scale producers. Moreover, mountainous areas are also increasingly neglected from institutional investments, which are more concentrated in densely populated areas. Investments in infrastructure are fewer and fewer, and private players are expected to make investments such as the construction of rural roads to connect existing roads to their holdings, the cleaning of gutters to prevent spillage in the event of flooding, or the clearing of roads when these lead to landslides. This contributes in creating a strong identity of autonomy and independence.

Production, diversified livelihood, pastoral identity, and the relationship with institutions are all intertwined and co-constituted with each other. One aspect of life influences and reinforces the other, creating a relationship that is only understood (albeit partly) by looking at the broader context. As one might expect, this is deeply connected to markets too, as the last section of this chapter explains.

8.4. Market arrangements

The cases above demonstrate a livelihood configuration with the following characteristics: limited assets and assembled access to resources, labor intensive production in a context of migration, marginal geographical position, economic marginality, exclusion from accessing natural resources and markets that exacerbate the relationship with the state. These factors converge in what I have called a “traditional” market arrangement. The term traditional refers to the fact that pastoralists rely heavily on networks that are characterized by family proximity, or by people coming from the same area of origin and where they sell cheese informally. These networks can extend beyond the region, following migratory flows. Pastoralists in this category feel like the only ones left in the abandoned town of Desulo, but they try to exploit this by selling traditional products that are processed in Desulo.

Production and market recipients are strictly linked; production is diversified, and it is flexible, it does not have a monthly or annual constant output. Production quantities are very low, but they generally are of very high quality. Animals are mostly fed through extensive grazing and minimal external inputs are used. These high-quality products are used first for personal use and then for sale. Personal use includes not only consumption but also gifts, non-monetary exchanges, and products given to reciprocate favors. While in the industrial and commercial market arrangement, products rarely have a value in the community, here community networks and exchanges are key. Sometimes, through community networks, pastoralists are also able to sell in shops that are part of big distribution chains bypassing the hierarchical organization of the shop and effectively using the shop to sell their cheese informally.

This market network is embedded in the territory and informal networks provide not only a space to sell products, but they are also essential to provide information, jobs, and to reduce costs during the production process. Territorial networks are certainly key for this category. These are not only within the boundary of the community, of the town one inhabits, but they extend through migratory flows to the extended town community abroad. Networks and social relations are important in other market arrangements as well, but in this category they are central to ensure a sustainable pastoral livelihood. Since livelihoods are diversified and production is not as specialized, livelihoods are connected to the agroecological landscape and to the opportunities that producers encounter through people and places.

Diversification and opportunistic behavior apply not only to production but also to subsidies. When the geography and the type of production allow it, these pastoralists follow what is subsidized by the government to take advantage of public resources as much as they can. The example of the growing cattle population in Desulo since the subsidy was introduced suggests this. This opportunistic subsidy diversification strategy should be seen in a context of the marginalization of poorer pastoralists. Different fractions of capital such as landowners, urban and political elites, industrial capital, extract surplus through rent, taxation, or exploitation and these marginalized pastoralists must try to take advantage of all income opportunities. On the other hand, they try to build their autonomy through self-production and the creation of channels of direct sale.

Pastoralists do not rely on one single market outlet but rather sell their produce according to the season, the convenience, and the wider context. If milk is paid very well one particular year than

they might sell more milk to private dairies. If the price of milk is lower, then they decide to process milk and make cheese especially in spring, when milk in mountainous areas is fatter and makes nicer cheese. This is not only decided according to the price of milk but also on the time one has available. We see that Giorgio sells to his network whenever he can but, sometimes, if he gets a good contract and the job takes him a lot of time then he just sells the milk. Likewise, when he is specifically asked for cheese by people who want to purchase then he produces, but at other times when he has no specific requests or when the cheese market is flooded like during the 2019 milk protest, he does not produce. These informal, embedded markets are strongly connected with the migratory history of Desulo. Tonino (DIV3) sells to friends in Tuscany and Piemonte region, while Gavino met someone from Tuscany on Facebook and he sends cheese to some Desulesi who live in other parts of Sardinia (DIV4). I was told that the Desulesi buy products from Desulo because they like the way the ham and cheese mature there, with mountain air, and it is different than anywhere else, they claim (INT1, DIV1, DIV2, DIV3).

It is clear from the interviews that I conducted that there are various strategies to respond to the uncertainty that pervades these mountainous territories. These are areas that are more difficult to reach, where it is more complex and expensive to produce, and which are increasingly abandoned not only by the population but also by politics. These are diversified producers, mixing paid work and animal production, following flexible and diversified sales, and with a hybrid presence in different markets. These strategies have worked for forty years for Efsio and are still working for Tonino. Yet, the two of them and others that I interviewed said that young people are not inclined to make all the sacrifices necessary to secure a decent life and autonomy in a complex, challenging, uncertain territory.

Autonomy and freedom are among the most important values for the shepherd in Sardinia. "I make a lot of sacrifices but at least I have my own small business," Luigi tells me (DIV5). However, according to the people I interviewed, young people prefer to work as clerks or in pizzerias, or even to receive universal income, which in recent years has sparked a lot of debate, not only in the mountains but throughout Sardinia because it is taking young people away from agriculture. There are some young people who, with few resources, try and manage to create a small business in these areas, but the numbers are few. While in the civic market arrangement (Chapter 7) we can see more young people who choose pastoralism as an alternative livelihood; in the traditional market arrangement, many former shepherds decided to sell all their livestock and concentrate on

finding paid work in transport, in the dairy industry, and in public bodies that look after natural resources such as forests and mountains.

Given the growing uncertainties stemming from unpredictable and varying climate conditions, and socio-economic factors, a process of social differentiation is set in motion, and some pastoralists decide to give up on pastoralism. In this regard, uncertainty is political and experienced by different pastoralists in a very different way. However, the differentiated engagement with markets partly allows pastoralists to circumvent uncertainties. They cannot rely on milk sales for survival and income, so they need informal sales to increase revenue. The interaction between the formal and informal markets allow them to have flexibility and overcome uncertainty. They are still able to sell their produce through informal networks and are still able to produce informally, despite the push to regularize production. This allows them to maintain low costs (low inputs as well as cuts on the cost of taxation) and to diversify according to what is most convenient in that particular moment/season or according to what the market wants.

Chapter 9 – Differentiated ways to respond to market uncertainties

9.1. Introduction

This chapter ties the thesis together and reflects on the empirical material presented in the previous chapters and the implications of the typology presented. This thesis has examined how different pastoralists navigate and create diverse market arrangements in a context of multiple forms of uncertainty. I argue that when we look at "real markets" (as defined by De Alcantara, 1992; see Chapter 2) and the social and political relations within markets, the so-called "industrial" and "artisanal" market arrangements are not as separated and antagonistic as is often portrayed in the literature and political debates. On the contrary, some pastoralists often engage in both as part of their strategies to respond to uncertainties. Based on my empirical data, I argue that five main market arrangements¹⁷ emerge from the interaction of different forms of pastoral livelihood, production and engagement with markets. These market arrangements coexist and interact. Some developed already in the 20th century and others evolved in more recent times, due to society's changing needs. Each market arrangement has certain characteristics, but it is not static and does not exist in a silo. Pastoralists interact with market arrangements in a fluid way – some more than others.

When we look at the way pastoralists engage in markets and respond to uncertainties (market uncertainties in particular), we should think of production, creation of livelihoods and market engagement as co-produced, intertwined, and embedded. Market engagement and responses to market uncertainties are not determined by supply and demand and by "the market", nor are they only a matter of individual choices, "efficient" or "inefficient" farm management. It is therefore not enough to look at the market's impact on pastoralists, or to talk about "the market" as being either peasant-like, artisanal and nested, or commodity-driven in the context of "Empires" (van der Ploeg, 2013). Moreover, it is precisely the flexible, responsive interaction with different markets, and the creation of different market arrangements, that allows pastoralists to sustain their farms and respond to uncertainties. At times, engaging (even partially) with commercial market arrangements is the only way to exist as a farm; it enables pastoralists to invest in on-farm production and

¹⁷ As explained in Section 2.2., a market arrangement is understood as the interaction between pastoralists and markets, between agency and structure.

territorial forms of exchange. These interactions, I argue, generate market arrangements that emerge out of different contextual configurations and social, material, and political factors, and these flexible ways to interact with markets allow pastoralists to respond to uncertainties. As seen throughout chapters 3 to 7, these factors are: 1. material assets, access to natural resources and geography; 2. labor quality and availability in the family, labor-technology relations and, related time available and quality of life; 3. networks that people are part of and create; 4. relationships with state and bureaucracies, including access to public funds and subsidies; 5. politics and identity.

Based on the above and on the empirical chapters, in section 9.2 I lay out how production, market engagement and livelihoods are intertwined and co-produced, and should be analyzed in this way. In Section 9.3., I assess drivers of this process of co-production; in other words, I discuss the different factors that influence how the market categories I have identified emerge in Sardinia. Looking only at structural factors, such as state policies or commodification and processes of capital accumulation, is not enough, as pastoralists express their agency by adapting their livelihood, production and market engagements in flexible ways. It is therefore insufficient to assume that peasant-like or entrepreneurial-like characteristics and 'styles of farming' are linked to pre-determined market arrangements. Market arrangements are emergent, contextualized and change according to shifting conditions.

In section 9.4. I return to the commodification, distantiating and autonomy debate presented in my introductory chapter and answer my research question: *How do different pastoralists navigate and create diverse market arrangements in a context of uncertainty?* I argue that focusing solely on class differentiation dynamics does not allow us to appreciate pastoralists' agency in finding arrangements to sustain their farms. The assumption that "peasant-like" producers are necessarily characterized by the struggle for autonomy – both to create self-sufficiency and distance themselves from industrial markets – does not correspond to reality on the ground, which turns out to be much more complex and nuanced. When faced with reality and material obstacles, pastoralists do not take political or ideological positions; rather, they create different market arrangements based on what is possible, what is convenient to improve livelihoods and what is desirable for them. Since market engagement is relational, it is always co-constituted with production and livelihood construction, and is embedded in societies and institutions governed by rules and regulations. Uncertainties (including market uncertainties) are therefore lived, experienced, and faced in different ways; these themes will be explained in section 9.5.

9.2. Production, market, and livelihood as co-constituted

Throughout chapters 4 to 8, I differentiated between five main livelihood types linked to different types of market engagement where livelihood, production, and market engagement are intertwined. These processes are equally co-constituted; hence they are constantly influencing each other, and are not static. Livelihood portfolios are built under constraints and opportunities that can be exogenous (e.g. market volatility, market opportunities, changing policies and state incentives, global pandemics or climate variability) and endogenous (e.g. changes within the family and labor availability, changing networks, changing balances within the farm etc.). Therefore, understanding real markets means understanding market engagement in the lived experiences of different embodied realities, understanding people's decisions and livelihood construction in all their complexity, including how social, political, and material relations influence people's perceptions and actions.

Markets are inherently relational, thus I argue they should be assessed and analyzed in a relational way, by considering the interaction between external factors and context-specific situations (Platteau, 1994; Beckert, 2009). Markets should be seen as places (physical and/or abstract) of interaction and exchange made of people (in all their diversity and with their political and social relations). Markets are embedded in societies, regulated by changing norms and regulations, simultaneously influenced by changing cultural and traditional habits and by global and local economic or sanitary crises, and by the very same actors that participate in markets (Callon, 2007; Çalışkan and Callon, 2009). We need a view on markets that includes structural factors and drivers, as well as contextual specificities of particular livelihoods and the agency of market actors (Niederle, 2018). In this way, we will have a "thick understanding" of producers' engagement and responses to market uncertainties (Gibson-Graham, 2014).

Inductively developing five types of market arrangements represents my attempt to understand how pastoralists navigate market uncertainties. As summarized in Table 2, I differentiate between five types of market engagement, which are linked to particular livelihoods.

Table 2. Market arrangements in the Sardinian Pastoral landscape.

Market Arrangement (MA)	Livelihood	Production	Market arrangement
Intensive producers and industrial MA	<ul style="list-style-type: none"> Highly specialized production Some income diversification through informal sale, sale of other agricultural products, rent extraction High importance of subsidies 	<ul style="list-style-type: none"> Large scale (600 animals and above) Semi-intensive Mechanized Rationalized Standardized High capital investment 	<ul style="list-style-type: none"> Monopolistic and hierarchical Strongly connected to industrial, international markets Marginal direct informal sale Market access and presence mediated by interpersonal relations and relations with experts
Middle pastoralists and commercial MA	<ul style="list-style-type: none"> Specialized production with increasing diversification relative to farm size, family labor availability, available subsidies and incentives Strong political activity 	<ul style="list-style-type: none"> Medium scale (300 to 600 animals) Generally semi-extensive production Lower but important level of technology Labor intensive 	<ul style="list-style-type: none"> Monopolistic and hierarchical No significant informal sale – less significant than industrial market arrangement Cooperative as network creation. Values cooperation. Selling and buying inputs through cooperatives and association to increase contractual power Political protest is key to respond to market uncertainty
Mini dairies and domestic market arrangements	<ul style="list-style-type: none"> Geography and family labor availability (family size/working or not in the farm) are important factors for diversification towards touristic/agritourist activities Some level of diversification is present especially in the mountains Valorization of traditional products and culture 	<ul style="list-style-type: none"> Medium scale Semi-extensive production (with exceptions) Different levels of technology – ranges from very traditional to very standardized Labor intensive and strong family presence 	<ul style="list-style-type: none"> Engages in different markets to respond to market uncertainty (e.g. sale of milk or cheese to industrial markets when direct sale is not an option or decreases) Territorial, capillary, linked to social networks
Diversifiers and civic market arrangement	<ul style="list-style-type: none"> Geography and family labor availability (family size/working or not in the farm) are important factors for diversification towards touristic/agritourist activities Diversification of activities according to territorial resources and networks 	<ul style="list-style-type: none"> Small scale (less than 300 animals) semi-extensive production Often in hilly or peri-urban areas, limited presence of cultivated pastures and high presence of spontaneous pasture Labor intensive and economic farming giving value to 	<ul style="list-style-type: none"> Territorial, capillary, linked to social networks Engages in both industrial and domestic markets to allow social reproduction of the farm and for the active re-appropriation of the act of production. Circular economies, social and solidarity economies Values cooperation

	<ul style="list-style-type: none"> Some valorize what is often considered normal (pastoral culture, traditions, products) 	biodiversity conservation, circular economies, social and solidarity economies	
Diversifiers and traditional market arrangements	<ul style="list-style-type: none"> Diversification towards agricultural and non-agricultural activities (construction, consultancies, associations, beauty products) including nested markets (services, tourism, educational farm activities) 	<ul style="list-style-type: none"> Small scale Low-input, low cost production Semi-extensive and high presence in forested mountainous areas Labor intensive 	<ul style="list-style-type: none"> Very flexible production and sale that changes according to convenience In and out of pastoral production according to milk/cheese prices and time available from other jobs Territorial, capillary, linked to social networks Engages in both industrial and domestic markets to increase financial security according to convenience and milk prices

In the industrial market arrangement (Chapter 4), production is highly planned and organized to produce and secure a constant quantity. Pastoralists try to control and prevent external uncertainties as much as possible through preventive animal healthcare, scheduled pregnancies, stabled animals and carefully designed nutrition rather than pasture. Like other intensive farms across the world, they reduce the cost of units of output through investments in labor-saving technologies and technical experts' assistance. The mainstream rhetoric is often that, thanks to their spirit of entrepreneurship, they make 'the right investments' and, consequently, these 'modern pastoralists' are equipped to compete successfully, and are thus models to emulate. However, going beyond the rhetoric of efficiency and entrepreneurship, the trajectories of accumulation remain uncertain and fragile. They are highly dependent on public subsidies and incentives (they are also significantly indebted with private banks). When subsidies incentivize further technological improvements or ways to intensify or a specific market, the production and livelihood construction of these pastoralists generally changes accordingly. Costly production and specialized livelihoods force them to improve in efficiency with the mantra: "cut on the cost of one liter of milk". They are highly dependent on the price of milk, yet thanks to the volume they provide to industries and the strong relations they build with their status and power, they manage to have relatively stable prices. Some diversification for accumulation is present and includes: solar or wind energy, grains and feeds and forage sale, different markets for lamb meat.

By contrast, the middle pastoralists (Chapter 5) are the most numerous and the most heterogeneous type among pastoralists in Sardinia. Production is not as specialized and

mechanized as in the industrial arrangement (Chapter 4) and not as diversified as it is for pastoralists engaging in civic and traditional market arrangements (Chapter 7 and 8). These pastoralists rely more on extensive grazing rather than on stabled animals fed by purchased or self-produced inputs. The work logic is very different because technology is only partially utilized, and the farm is not transformed into an industrial milk production business. Over the years, however, following policy incentives and milk demand from industries, middle pastoralists have increasingly specialized in milk production for commercial and international sale. Their flocks are too big to engage in self-production, and there is no capacity or willingness to intensify further. Accumulation is possible especially in good years when the price of milk increases, although this is also very dependent on input prices that fluctuate. They react to market uncertainty by trying to defend their livelihood through cooperation and protests over price that reflect increasing costs. The critical view of the industrial market arrangement revolves around denouncing the chain nodes that accumulate too much profit through speculation and appropriation.

Mini dairy producers (Chapter 6), by contrast sell mainly cheese rather than milk as a raw commodity, and sell it directly to consumers or sometimes to industrial processors. The production on the farm is only indirectly influenced by the general price of milk. This category of market engagement is habitually contrasted to the industrial type. However, this is not always the case, because this market arrangement is often characterized by interaction with the commercial market arrangement: the sale of milk and cheese for the global market is necessary either to start on-farm production or to increase income. Rather than engaging in income diversification and diversification of farm production as is the case for diversifiers (Chapters 7 and 8), mini dairies focus on *deepening* farm production and activities (van der Ploeg and Roep, 2003). This concerns actions aimed at enhancing the value of agri-food production through the reorganization of the chain (e.g. direct sale to consumer on the farm, sales in territorial markets or sales via the Internet and social media); greater attention to quality, territorial specificity, innovation or nutritional value of the product (e.g. raw milk cheese production or innovative cheese with coal, saffron, chili etc.) (Meloni and Pulina, 2020). While van der Ploeg and Roep (2003) see the substitution of conventional inputs as part of the deepening strategy, this is not always possible, because maintaining an economic balance within the farm is more important than ecological or ethical values (Jansen et al., 2021).

Diversifiers (Chapter 7) combine pastoralism with other activities to build a sustainable livelihood. Diversification happens off-farm, by *broadening* farm activities (van der Ploeg and Roep, 2003) including for example agri-touristic activities, but also social and educational activities – what van

der Ploeg et al (2012) define as nested markets. Additionally, they try to avoid specialization (by selling different products such as quality cheese, pork sausages, eggs and vegetables, beauty products etc.) and with a particular attention for self-subsistence. Different from diversifiers in Chapter 8, these pastoralists are often young, educated and part of the 'new peasantry' who have decided to return to agriculture (often to revive the practices of previous family generations). They are critical of industrial capitalism and the consequent destruction of territorial practices. As such, they also deepen their activities by partially distancing themselves from industrial markets and selling directly to consumers in informal chains. This market arrangement that I have characterized as civic, is marked by political and social motives that focus on a regeneration of a rural lifestyle and economy, supporting civil values in the countryside. There is a willingness to rebuild a balanced life in connection with nature, and a critique of the profit-oriented and destructive logics of capitalism. This is done through the development of alliances with urban educated networks. However, such pastoralists are also confronted with material constraints. In fact, contrary to mini dairies (Chapter 6) they do not have the material assets and capacity to enter the formal market for direct sale. Their economic position is quite fragile and this gives them less space to completely delink from commodity chains. Therefore, even though critical, they are partly dependent on industrial commodity chains, but they justify this contradiction because their livelihood and family survival comes before any firm ethical or political position.

Diversifiers in Chapter 8 are embedded in a traditional market arrangement. Like diversifiers in Chapter 7, these pastoralists need to diversify with off-farm activities and sell their labor. Diversification is essential to the survival of the farm and of the family. Their precarious economic position pushes them to interact with both commercial markets and domestic market arrangements. This market arrangement, which I have called 'traditional', is characterized by the mix of on-farm cheese production and informal sale, and milk sale. At the beginning of the 20th century, when the industrial and commercial market arrangements were emerging, pastoralists often mixed cheese production and milk sale according to personal convenience. Different from diversifiers in the civic market arrangement, reciprocity and gifts are very important ways of exchange (Polanyi, 1944). Moreover, there is more distance from touristic activities or engagement in political anti-capitalist movements. Community relations and the territory are more important in shaping identities, livelihoods, ways of production and engagement with markets. This reinforces an identity that is based on attachment to traditional norms and ways of production (even when these include purchasing external inputs).

The implication of seeing livelihood, production and market engagement as co-produced is that one cannot be analyzed without considering the other. Hence, if production has some 'peasant-like features' (family-run, extensive production, reducing seed purchase and use of natural pasture, labor intensive), this does not necessarily mean that these producers wish to build a diversified livelihood. Some pastoralists may want to engage in nested/artisanal markets and distance themselves from commodity chains, but others might prefer to keep their level of specialization (because of limited available labor) and sell milk to local cooperatives to maintain a good balance between drudgery and satisfaction (cf. van der Ploeg, 2013). The dichotomy between peasant-nested/artisanal and entrepreneurs-commodity markets is not a given, therefore, as it does not consider the reality and complexity on the ground. This complexity results from a number of interacting factors, which I analyze next.

9.3. Interacting factors that influence market arrangements and differentiated responses to uncertainty

As I have shown across the empirical chapters (3 to 7), pastoralists engage in markets in the way they do because of material, social and political factors, and decisions are always partly constrained or facilitated by external dynamics and possibilities within the farm. What are these factors in the context of Sardinia? How do possibilities for accumulation emerge within and across each category, and how does this affect pastoralists' class position and cross-sectional identity? Without trying to super-impose categories, I have tried to understand inductively the constraints and opportunities, experiences, difficulties and wishes in relation to their engagement with markets. As discussed across the empirical chapters, there are a variety of elements that influence how market engagement is co-created:

1. Material assets, access to natural resources and geography;
2. Labor quality and labor availability in the family and, related time available and quality of life;
3. Networks that people are part of and create;
4. Relationship with the state and bureaucracies including access to public funds and subsidies and
5. Politics and identity.

These will now be discussed in turn.

9.3.1. Material assets, access to natural resources and geography

"Politico-economic analysis (including class analysis) enters as soon as we analyze the operation of peasant units of production within the context in which they are located" (van der Ploeg, 2013: 61). Access to and control over natural resources, including land but also livestock and technology, are central to the way pastoralists construct their livelihoods, produce and therefore the way they engage in markets. Assessing class relations helped me to differentiate among the five categories of market arrangements. Class highlights the material relations of production and reproduction and as such it is constantly evolving, as are the possibilities for accumulation on the farm, and the market engagement. As mentioned in Chapter 2, the 1970s' agrarian reform resulted in a redistribution of land by breaking property concentration in the hands of big landowners, and by creating a very big class of what I have called 'middle pastoralists', who now constitute the largest group (Ismea, 2006). They are what Bernstein (2010) would call 'petty commodity producers'. However, their production is far from 'petty' or insignificant: they constitute the major group in the Sardinian rural landscape. These pastoralists own the land where they produce, and some rent a small percentage of total land utilized. Atzori et al. analyzed the different flock compositions, and, as elaborated in section 1.2, among medium-size sheep farms, the majority (around 40% of total dairy farms) have a flock size of 100-300 animals and around 20% have more than 300 animals.

Table 3. Distribution of sheep farms on the basis of flocksize (N. sheep heads/farm).

Source: Atzori et al. (nd:8).

Flock size class	N. sheep farms	% Tot. sheep farms	n. sheep heads	% Tot. sheep heads	Average flock size n. heads/farm
< 100	3,455	28.65	148,119	4.88	43
100-300	4,982	41.32	976,736	32.16	196
300-500	2,245	18.62	860,538	28.34	383
500-700	778	6.45	455,775	15.01	586
> 700	598	4.96	595,598	19.61	996
Total/Average	12,058		3,036,766		252

Slightly more than 10% of producers have a bigger flock of 500 animals and above (Atzori et al., nd). In Sardinia, large-scale producers generally have a flock of 700 animals and above, reaching up to 1500 barn-fed sheep. As seen in the table 2, the percentage of farms that have such big flocks is around 5%, and even in the lowlands plain areas alone, the number of producers with

more than 500 animals is never higher than 10%. A big percentage of pastoralists (around 30%) own fewer than 100 animals. As it emerges from my interviews, these pastoralists are either landless or own little land (less than 10 hectares) and they use either communal land (in mountainous areas) or gain access to land through customary informal agreements with landowners.

Intensive producers and middle farmers both rely on inherited land, land and livestock purchased throughout generations, and also thanks to capital coming from public subsidies that pay more to those who own more land and animals. Thus, middle and intensive producers differ in scale, but they both produce milk as a raw commodity for the industry. In this regard, the position of both intensive producers and middle pastoralists vis-à-vis industrial capital can be considered as subordinate to dairy industrial capital, as well as the distribution and retail fractions of capital. It is clear, however, that their starting material position makes them subordinate to capital in different ways, hence the need for them to be in different categories. Intensive producers are, for example, better positioned to acquire technologies to cut back on labor costs, and are willing to adopt more intensive production systems when compared to middle pastoralists.

Middle pastoralists produce in a 'peasant-like' way. They exploit and utilize territorial and family labor resources, and are reluctant to invest high levels of capital in production. Although this was enough in previous phases of capital accumulation and development, with changing policies and declining milk prices, this is, however, no longer enough. The squeeze between rising costs and declining milk prices is felt more. Compared to diversifiers (Chapter 7 and Chapter 8) these pastoralists have enough capital (financial capital, land and livestock) to invest in milking machines, seeds, gasoline, electricity, and so on. Nevertheless, due to limited capital and assets, investing in cost reduction technologies (such as genetic selection, barns and tractors to organize planned diets etc.) is too risky given uncertain milk prices. The relatively large scale of middle pastoralists does not allow them enough flexibility to diversify or meaningfully to cut on inputs. They reduce commercial inputs only if this does not put at risk the farm's survival. In fact, reduced output and income would not sustain farm costs (milking machine, agricultural production, bureaucratic expenditures, debts etc.) and the flock.

Compared to middle pastoralists, mini dairies owners also own the means of production to process milk and make cheese. Therefore, they are not subordinate and dependent on the dairy industry, or big distribution and retail companies. So, in the Sardinian case, on-farm cheese producers who sell formally in domestic markets cannot be automatically equated to 'small-scale' or 'poor'. Mini

dairies also represent capital, and they often have relatively good assets, as mentioned in Chapter 6. These are partly inherited, as is the case for intensive and middle pastoralists, and partly purchased with and without public subsidies. Some were middle pastoralists or even intensive producers before, and have invested the capital accumulated throughout their lives to start a mini dairy because their livelihood was unsustainable. It is important to remember that producing cheese on the farm and selling it on the formal market requires capital and a favorable starting condition. Without this, and little or no land, on-farm production and (formal) direct sales are hard to realize. Mini dairies are often built within family farms that own land, where family capital covers initial investments and high entry costs.

Land ownership is one of the most significant barriers to entry into the sector for those that I have called diversifiers. Diversification is, in fact, crucial for them to sustain their families and farm. Bernstein would identify this class of producers as "fragmented classes of labor". One of the most important characteristics is that social reproduction for these pastoralists is possible through different forms of production and wage labor (Bernstein, 2010). Fragmentation refers to the hybrid forms of livelihood diversification, as well as the intersecting forms of structural oppression that these producers face, including gender, race, etc. (Cousins et al., 2018:1066) – "the different experiences of the oppressed", as Bernstein (2010) observes. Bernstein underlines how the relations between different classes of capital and labor facilitates accumulation for some, and further oppression for others, thereby exacerbating social differentiation. For example, those who have to diversify because of their limited land and smaller flocks, often perform agricultural jobs for large-scale producers or for landowners who moved to the cities and do not work in agriculture, but still own the land in order to benefit from numerous public subsidies.

However, I have divided this diversifier category into two, because, as argued by Bernstein (2006), Bryceson (2004) and Cousins et al. (2018), producers try to socially reproduce themselves in different ways according to different constraints and opportunities. The first category, diversifiers and civic market arrangements', are generally located in peri-urban areas or close to touristic cities, and rely more on urban networks because of their geographical position. These are often young people, and especially for those who do not have a relatively wealthy family, access to land is a big obstacle for social reproduction (Sardegna Agricoltura, 2013). Without land as an asset, these young pastoralists also struggle to receive microcredit from banks. Access to land is often negotiated with the above-mentioned urban capital landowners.

Diversifiers who are part of more traditional market arrangements generally live in more remote mountainous areas where, even if they have access to communal land, the quality of the land and the harsh climatic conditions force producers to be partially dependent on external inputs, even if these are purchased in small quantities. This dependency must be seen in the context of the land redistribution and privatization, fencing of land, and the disappearing practice of transhumance. Following the land reform, those who did not have some initial capital to invest remained without land and without winter pasture to move to.

9.3.2. Labor versus technology, time and quality of life

Labor is another central factor that influences the way market arrangements emerge. Labor availability and "quality" influence what you can and cannot do on the farm, including diversification, on-farm production and engagement with markets. In Sardinia, the development of the pastoral sector over the last decades has also been possible thanks to the foreign labor force, in particular from Eastern Europe (Farinella and Mannia, 2017). The context is one where low-income prospects have accentuated the difficulty in finding local labor in a region that is already suffering from low population density and depopulation (*ibid.*: 408). Throughout the 1990s and 2000s, intensive producers and middle pastoralists used to have at least one external employer. Following the implementation of labor rights and increasing control by the state, however, labor costs have also increased, and it is now less common to find middle pastoralists who employ external labor. Intensive producers are increasingly investing in labor-replacing technology. Meanwhile, middle pastoralists rebalance scale according to availability of family labor. Considering their level of specialization, and the scale of their farms, 'distantiating' would mean working excruciating long hours (with an impact on quality of life) or hiring wage labor.

Large-scale intensive producers have employees (ranging from one to four) but they are also generally fully engaged in farm work. My data show that intensive producers are increasingly investing in labor-replacing technology as labor costs increase, and the quality of "cheap labor" to exploit decreases. Given the increasing quality of life that society is experiencing, it is difficult to find an affordable labor force that is willing to sustain the high-intensity work that is involved in pastoralism and livestock farming. However, large-scale intensive producers who can count on family labor also engage in diversification for profit accumulation, which also includes on-farm

cheese production and informal sale, hence engagement in domestic markets. In this regard, the involvement of women on the farm is essential. Cheese is, in fact, mainly produced and sold by women, while men focus on managing the animals.

Middle pastoralists are relatively large scale (ranging from 300 to 600 sheep for 100-130 hectares of land). Hence they are often unable to diversify livelihood activities or self-produce and sell on different markets, because this would mean hiring external labor. Moreover, given the labor available in the average family and the declining profitability of pastoralism, self-producing would mean reducing the flock and short-term family income and increasing the amount of work. It would mean exposing the farm to more risks (as increased revenue is not at all obvious) and having to work more. Middle pastoralists do not self-produce for informal sale because it would entail a reconfiguration of labor within the family. Rather than investing in technology, middle pastoralists rebalance their flocks according to the available family labor. It is less common than before to recur to external labor. It emerges that many middle pastoralists who generally had one employed worker have now cut back. Family labor and cheap labor has been the basis of middle pastoralists' expansion and accumulation. Before, cheap Romanian employees were crucial for capital accumulation. Women's, wives', and daughters' work is also essential to the social reproduction of the farm, although such contributions are never recognized. Reproductive work and care work is entirely delegated to women, but no specific value is attached to it, as it is taken for granted. Women also often fulfill bureaucratic and administrative tasks.

By contrast, diversifiers often sell their labor for wages both in civic and traditional market arrangements. Women completely take care of reproductive and care work, thereby freeing up space and time for men to engage in different activities. The centrality of labor greatly influences the way production, livelihoods and market engagement are co-constituted. Given their initial assets, the production, livestock load, land and other factors of production are all balanced with the available family labor and with the family needs, as no labor is mobilized from the labor market. As Felice says "I do everything that I am capable of doing" and "when I manage to produce and sell cheese, I might be able to buy some extra school material for my kids, otherwise maybe that month I won't top up my phone if need be" (DIV1). In other words, as Chayanov observed: "labor income [...] the income that results from the work done [...] is the only meaningful category of income for a peasant or artisan labor family unit" (Chayanov 1923, quoted in van der Ploeg 2013: 26).

With smaller flocks and little land available, they often decide to invest family time into processing farm products to make cheese and other products to sell and exchange within the community. Not all milk is always processed into cheese for two main reasons. Firstly, as I return to in Section 9.3.4, for pastoralists who cannot enter the formal market with artisanal production, processing all the milk on-farm and selling it would imply producing almost completely informally (without declaring it), and would thus expose the farm. Secondly, processing all the milk would expose the family to higher risks and uncertainties, because time available for diversification would decrease. Likewise, income diversification is considered an important strategy to reduce risks and uncertainties. Even if the income received for the sale of milk to industries is low and volatile; it remains a certain monetary entry. On the contrary, cheese could go partially unsold in some periods of the year, so diversification is safer. It is also possible to process part of the milk and sell it in informal networks. Therefore, social networks become key, as discussed next.

Mini dairies differ from diversifiers in civic and traditional market arrangement in that they generally do not need to sell their labor to sustain the farm. While intensive pastoralists mobilize technology and tend to hire labor from the market, mini dairies mobilize family labor rather than capital. The role of women is central and evident. They produce and sell cheese while men focus on animal care and milk production. Being labor-intensive, they are more resilient in times of crisis because, even if they lose part of the production, or income and value-added, their capacity to maintain the farm and the flock is less impacted. This is of course dependent on the ability to mobilize labor, and on the intergenerational exchange.

9.3.3. Social relations and social networks

Social relations and networks are often overlooked in discussions about milk crises and milk prices in Sardinia. Yet these are of major importance: they connect and influence issues around labor, identity, processes of accumulation and relationships with state and bureaucracies. Networks were the most difficult factor to assess, especially in times of COVID-19. Nonetheless, I was able to appreciate their importance, as pastoralists' networks tell us a lot about their production and market engagement.

Pastoralists who engage in industrial market arrangements often introduced me to experts such as nutritionists working for multinational feed companies, professors at the University of Sassari, trade union agronomists and project designers, veterinarians (both private and public), agricultural

machine traders, private dairy industrialists, and so on. They rely on these relationships to shape their production and engagement in the market. In a highly planned and industrially organized production mode, relations with experts become key to capital accumulation through access to public or private projects and knowledge. Moreover, relations with industrialists are often defined as quasi-familial relationships. These allow for the price of milk to be determined not only by "the market", but also by the type of social relationship. The price paid to pastoralists often takes into account their consistent quantity and quality. Where relations were built over generations, there is trust and even friendship, and this often translates into better treatment when paying for milk. These producers rarely engage in political struggles and have not developed strong networks in political movements.

As political protest is central for middle pastoralists, participating in movements is key. This is especially true for those who are part of a cooperative. But as we see from the MPS, cooperative members and pastoralists who sell to industries fight the same struggle against industrial capital and the speculation over milk and cheese price resulting in the declining price of milk. This is because the price of milk is determined by big industries, wholesalers, and big distribution companies (Farinella, 2008). Cooperation also takes the form of associations created to sell together and increase purchasing power. Rather than seeing self-production and short chains as a solution, middle pastoralists do not want to decrease their farm and flock size, and want to continue milk production for commercial sale. However, they want to negotiate better terms and receive more profit and, to this end, constant political struggle is considered the best solution.

The creation of networks is particularly important for direct sales, thus mini dairies strongly invest in social relations. They participate in town events and actively partake in community activities. They also directly connect with other nearby producers and small family businesses to multiply their selling points. Their cheese is sold through complex and diverse market networks. The diversification of clients and their proximity gives these pastoralists a higher leverage to decide on a price that is considered fair for both parties.

For diversifiers, networks and social relations have a more direct impact on the farm's survival. Building networks means working together to cut on costs, e.g. stopping at the bakery to collect old bread to feed the dogs or the sheep; borrowing agricultural machinery or receiving help in mechanics; receiving discounts on machineries or feed if you recommend friends etc. Diversifiers often adjust their livelihood, production, and engagement with markets according to their networks.

Networks are crucial to sell products and services informally, but also to assemble land and inputs for production at low cost or with customary agreements. The main difference between the civic and the traditional market arrangements is precisely in the types of networks they form.

In the civic market arrangement, diversifiers build relationships with critical consumers, anti-capitalist urban movements, sustainable tourism networks, etc. Often, diversifiers in civic market arrangements find better allies outside of "local" relations within the community, as these may be sites of inequalities and hegemonic relations (DuPuis and Goodman, 2005). Despite limited resources, they invest in tourism and make good use of their networks to diversify their income. In the traditional market arrangement, networks follow family lines and community alliances. They are often against the commodification of practices and activities to gain an income from tourism. They do not want to engage in agri-touristic activities so they rely more on informal sale of products to networks created through family lineages and thereby engage in off-farm diversification.

Distinct types of market arrangements emerge from the context of different territories (as mentioned, territory is much more than just the geographical and biophysical configuration of a place. Geography interacts also with the social and cultural dimensions of a territory). The territory has a strong impact on the way social relations are created and maintained. For example, civic market arrangements are commonly found in peri urban and touristic areas. These areas are close to the larger cities in Sardinia and in the cities, more critical consumer groups develop that are more sensitive to the values of social justice, sustainability, and the importance of experiencing nature and eating healthy food for a healthier life. Universities are places where these issues are discussed and where these sensitivities and priorities in the political life of citizens are reproduced. For example, Slow Food has five branches in the major cities of Sardinia and, as Counigham (2019) says in the regional context of the island, includes middle-class activists with economic means, political interests and critical knowledge to support their desires for sustainable, fair and quality food.

Traditional market arrangements are mostly found in mountainous areas. Livelihoods are diversified and they are also strictly interdependent with the territory and what this offers. As already mentioned, in mountainous areas it is indeed typical to diversify by harvesting mountain products such as chestnuts and wood. Diversified production and the strong connection to the territory in itself create very strong social networks of interdependence and reciprocity (which are certainly not free from power relations). These networks are strongly rooted in the territory and the local

dimension and have less political overtones. Each village has its own type of wine, cheese, bread and each product is connected to said specific traditions or to the type of cultivation that is suitable for that specific territory. For example, Desulo is known for its ham production. When I talked with the shepherds of Desulo, their description of the flavors of ham and cheese was very much related to the territory. For ham, its typicality comes from the fact that the pigs graze in the undergrowth, eating chestnuts and acorns. It is also cured in ventilated cellars and the specific temperature of Desulo and the dry and not too humid wind from the mountains contribute to giving the ham its typical and unique flavor that can only be found in that town. Shepherds who have moved from Desulo to the plains bring their hams to season in Desulo because "the air is different there" (INT1). Rather than shared values around fairness, ecology and social justice, traditional market arrangements emerge around identities which are strongly connected to the specific local context.

9.3.4. Relationship with the state and bureaucracies, including access to public funds and subsidies

Intensive producers would like the state to have a laissez-faire approach and believe state intervention keeps alive "inefficient" farms, creating obstacles to their profit-making. In the government's linear scale of value of pastoralists, intensive producers are at the top, while pastoralists who engage in different jobs and informal market arrangements are at the bottom. Policies mostly incentivize intensification and specialization, while public regional institutions and extension agencies depict the ideal farm and production system in the image of intensive producers. Intensive producers who engage in industrial market arrangements are often dismissive of state policies and subsidies. They perceive subsidies as a market distortion because they keep "inefficient pastoralists" alive, creating more competition among milk producers that would otherwise not be there. However, they are also heavily dependent on public subsidies and regional projects, which allow them to subsidize investments in technology, cost-reduction techniques and land accumulation.

Middle pastoralists have an ambivalent relationship vis-à-vis public institutions. Pastoral narratives depict the state as an elite and predatory class that rules over pastoralists without having a concrete idea of what it means to be a pastoralist. The state is seen as a giant bureaucratic machine that keeps creating useless jobs, generally with an urban bias, using public money and with the main objective of keeping the bureaucratic monster alive and well fed. State institutions, particularly extension agencies, do not understand that their logic, priorities, and development policies – both

at the national and international level – are informed by scientific and technocratic know-how, and have been unable to integrate local and territorial knowledge. And yet the state is also crucial because it is the main source of funding when it comes to subsidizing declining milk prices and increasing input costs. For those middle pastoralists who try to socially-reproduce their farms in a market that demands ever-cheaper milk, dialogue with the state is vital. First, it is essential to subsidize production, while different fractions of capital – industrial, financial and big distribution – accumulate profits. The state's role is to regulate chains better so that industries do not accumulate profit at the expense of milk producers. Second, dialogue with the state is central to demands for reforms, which question the current way to determine the value of milk. In fact, movements demand that milk value be connected to the costs of production rather than market demand and supply.

Pastoralists who engage in civic and traditional market arrangements feel distant from the state, government institutions and extension services. They build their livelihoods through much informal engagement with markets. As mentioned before, according to the state's mainstream linear narratives, pastoralists should modernize and specialize: their success is measured around how efficiently they integrate into commodity chains. Pastoralists who do not substantially contribute to commodity chains are rendered invisible and marginalized. They are erased from the picture, so much so that, in small towns where this type of pastoralism is prevalent, the municipality told me that there were no pastoralists left there, i.e. that they all had migrated to the plains. Moreover, they are seen as opportunistic idlers and illegal producers. Thus, development and agricultural policy makers legislate based on an idea of development in which these do not have a place. To the pastoralists, the state represents the corrupted elite, the ones who defend the interest of big industrial and financial capital, multinationals, and agribusinesses, as policies concerning pastoralism often target big pastoralists and industrial livestock production. These pastoralists therefore approach subsidies in an opportunistic way, trying to cut themselves a small slice of public resources to support their diversified production and their life in often-difficult territories and circumstances.

9.3.5. Politics and identity

Throughout the empirical chapters, I have talked about different pastoralists' identities: the independent entrepreneur, the territorial and community life of middle pastoralists, and the resistance and alternative epistemologies that result in different rationales. Such rationales and logics, which are rooted in identity, in turn result in the construction of livelihoods, methods of

production, and ways to engage with markets. Identities are thus influenced by material and structural relations and by the individuals and their lived experiences. Markets not only influence how material exchanges are carried out, but they also enforce rules and norms that define the parameters by which the social and natural realms are organized (Schneider and Niederle, 2010:286), such as the definition of quality, animal beauty, success etc.

Van der Ploeg has dedicated a lot of time to understanding the different logics of production and how these are embedded in societies, cultures, economies and ecologies. He argues that:

"There are undoubtedly empirical correlations between size and scale of farming and the different modes of farming. The point is, though, that the essence of the difference resides somewhere else (i.e. in the different ways in which the social and the material are patterned). Peasants, for instance, create fields and breed cows that differ from those created by entrepreneurs and corporate farmers. Also, the mode of production differs between the three categories. And beyond this, peasants relate in a different way to the process of production than do the other two categories, just as they relate in a contrasting way to the outside world. Regardless of size, they constitute themselves as a social category that differs in many respects from those of corporate farmers and entrepreneurs" (2008:2).

In other words, while Bernstein would argue that scale and commodification of production and reproduction inevitably change the way pastoralists build livelihoods and produce, van der Ploeg argues that peasants, entrepreneurs and capitalist farmers have different logics. As a result, even when larger in scale, "peasants" will produce in a different way (see Table 3).

Table 4. The main differences between the peasant and entrepreneurial modes of farming.

Source: van der Ploeg, 2008:114.

Peasant mode	Entrepreneurial mode
Building upon and internalizing nature; co-production and co-evolution are central	Disconnecting from nature; 'artificial' modes of farming
Distancing from markets on the input side; differentiation on the output side (low degree of commoditization)	High market dependency; high degree of commoditization
Centrality of craft and skill-oriented technologies	Centrality of entrepreneurship and mechanical technologies
Ongoing intensification based on quantity and quality of labour	Scale enlargement as the dominant trajectory; intensity is a function of technology
Multifunctional	Specialized
Continuity of past, present and future	Ruptures between past, present and future
Increasing social wealth	Containing and redistributing social wealth

As the empirical cases have shown, the dichotomous contrasts of Table 3 are not always borne out in reality. Some intensive producers aim to distance themselves from reliance on industrial processors, while some small-scale, diversified producers engage with commodity markets. The configurations that emerge depend very much on context, rather than a singular, pre-defined logic. Indeed, as already discussed, given the uncertain conditions that characterize pastoralists' daily lives, rationales and logics change, and indeed, have to.

Thus, the assumption that multi-functionality and distantiation from input and output markets are intrinsic parts of a "peasant logic" does not consider the specific historical context of processes of commodification (Jansen, 2021). Middle farmers are quite dependent on inputs and specialized in milk production, but putting them in an "entrepreneur" category would be incorrect, as their production does not simply follow a profit-oriented logic. As one pastoralist once told me "if I have to calculate costs and revenue every year I should have left the farm ten years ago" (MID6). Their struggle for autonomy is expressed through overt protest vis-à-vis the government and organized resistance.

What does this all mean in relation to debates around commodification and class characteristics in the countryside? We see that class characteristics are evident, in terms of relations between labor and capital, but also that pastoralists with similar class characteristics may engage in markets in very different ways, for different reasons and with different outcomes. Moreover, engagement with specific markets (industrial or domestic) or delinking from the global commodity market is influenced by, but does not necessarily correspond to, a specific class position or a specific peasant or entrepreneurial 'logic'. This therefore requires a reflection around class and other dynamics internal to the farm that are key to understanding market engagement and differentiation in the

countryside. In other words, it is not only class that determines market engagement, and it is also not correct to assume that 'peasants' engage in less commoditized markets or local, artisanal markets through a particular logic.

In the next section, I reflect on these conceptual discussions and explain how they are key to analyzing the empirical material presented in the previous chapters.

9.4. Implications of thinking about market arrangements in the commodification – distantiation – differentiation debate

In this section, I discuss the implication of my findings in relation to the wider literature that looks at responses to market commodification. I will start by going back to the commodification debate introduced in Chapter 1 and Chapter 2 and I will argue that looking at class and producers' relationship to the means of production is important but not enough to understand how producers engage with markets. If we do not examine where pastoralists sell their products and how they engage with markets, we fail to understand the transformational potential that can hide behind a pastoralist who, for example, engages both with industrial and local markets in a flexible way. A focus on the agency of producers stresses that the ways in which people build livelihoods, produce and engage in markets matter.

According to Bernstein (2010:102), commodification is the "process through which the elements of production and reproduction are produced for, and obtained from, market exchange and subjected to its disciplines and compulsions; capitalism is distinctive as a system of generalized commodity production". Furthermore, following the commodification of subsistence, "key elements of the subsistence, hence reproduction, of previously "independent" small farmers become subject to the dynamics of market exchange and their compulsions (commodification)" (*ibid.*). Commodification of production and reproduction therefore leads to class differentiation. From such processes of social differentiation there are important processes of agrarian change that come into play, including the exploitation of labor and the emergence of international labor regimes, accumulation by dispossession (Harvey, 2004), de-agrarianization (Bryceson, 1996) and depastoralisation (Caravani, 2018).

Bernstein (2010:104) explains how, once locked into commodity production, peasants differentiate into social classes, including those who are able to accumulate and engage in expanded reproduction; those engaging in simple reproduction; and those struggling to reproduce themselves

as capital hence as labor from their own farming. In the categories of pastoral production and market engagement presented through this thesis, there are clear class characteristics and class relations that helped me differentiate pastoralists according to their different access to resources and ability to socially reproduce. My category of intensive producers is, for example, what Bernstein would define as 'capitalist farmers'. They engage in economies of scale, with access to natural resources and capital and they employ waged labor. Middle pastoralists are, analytically speaking, petty commodity producers; they combine both capital (they are landed and they are connected to input markets) and labor (they do not employ waged labor on their farms), but they struggle to reproduce themselves due to rising input costs and falling prices of milk. Understanding the position of mini dairies through class analytical tools is, however, more complex. They own the means of production, and they directly produce and sell cheese. They also inhabit both capital and labor positions on their farms, but contrary to middle pastoralists, they do not have a subordinate position vis-à-vis industrial dairy capital, as they self-produce cheese. The diversifiers who engage in both civic and traditional market arrangements are what Bernstein would term 'fragmented classes of labor', because they are forced to sell their labor force to keep the farm going.

Analyzing processes of commodification of production and reproduction is therefore important. However, this does not help us fully evaluate how producers actually engage in markets. Even if all producers in Sardinia are now connected to capitalist markets and no food producer is completely independent from market exchange, both for elements of production and reproduction, everyone interacts with "the market" in different ways. As the empirical chapters have shown, there are different markets and different dynamics that characterize them, and different ways pastoralists interact with them, each resulting in different patterns. Commodity markets are not the only markets in which pastoralists engage (Niederle, 2018), and other forms of exchange and social organization coexist together with capitalism (Gibson-Graham, 2006) in pastoralists' daily lives creating different market arrangements and different possibilities, as the case studies have highlighted.

Moreover, even if processes of commodification take place, some pastoralists are partially able to control the level of commodification at their farms by readjusting livelihoods, production, and their market engagement in upstream and downstream markets, so that they are not 'forced to' buy from the market. Some pastoralists rely on other forms of non-monetary exchange (reciprocity, gifts, favors) but they also sell part of their products informally on domestic markets. Not recognizing the importance of other exchange systems and of the creation and existence of other markets, implies failing to recognize pastoralists' heterogeneity, their agency in negotiating the system and surviving in it, and the complexity of how they socially reproduce, despite the squeeze they are subjected to.

We therefore cannot talk about markets without talking about the people who make them, and we cannot talk about pastoralists and uncertainties without looking at the markets they engage in and how. In different ways pastoralists struggle against the agricultural squeeze and manage to keep the farm going. Van der Ploeg, following a Chayanovian analytical lens, argues that peasants, and their interaction and engagement in markets and production depend on a set of interacting 'balances' that function with a different logic than that of capitalism (van der Ploeg, 2013: 6). Many pastoralists argue that "pastoralism is a way of living, it is not a job". Pastoralists "run against the clock" to plough and seed in time after the first rains and before the autumn arrives, they run against bureaucratic deadlines, and they run to make everything possible to maintain the balance between production and reproduction and to maintain the balance between internal and external resources (van der Ploeg, 2013). Engagement in markets is not made with the primary objective of capital accumulation (to produce surplus value in order to be reinvested and produce more surplus value) but rather to build a good farm and increase production to the point that production – but also non-agricultural work – insures the well-being and a dignified income for the family (van der Ploeg, 2013:15).

Van der Ploeg (2013, 2008) and other scholars (Schneider and Niederle, 2010; van der Ploeg and Schneider, 2022; Schneider et al., 2016) place the struggle for autonomy as a central characteristic of the peasant condition. Peasants, they argue, 'distantiate' from the input side and also from the output side by diversifying and selling in nested markets, while the entrepreneurial mode of farming has a high degree of market dependency and commodification. The two modes of production are generally put in opposition with each other. Yet, as the empirical chapters have repeatedly shown, it is often the engagement in both types of market that allow pastoralist to face market uncertainties. As I demonstrated in Chapter 7 and also partly in Chapter 8, selling milk to cooperatives or companies that export Pecorino Romano gives pastoralists who diversify some predictable – albeit low – income. Direct sale is necessary to increase the farm income and, in civic market arrangements, to build alternative circuits and networks. However, even when there is a direct critique of the exploitative nature of commercial commodity chains, participation therein is necessary to build a sustainable livelihood. Engagement in different markets happens by actively creating different market arrangements. These two markets are therefore not in contrast with one another, I conclude, but rather coexist in the life of many pastoralists. It is the hybrid engagement between different markets that allows pastoralists to create market arrangements and make a living. In the civic market arrangement, for instance, the interaction between commercial and domestic markets is key for the creation of a livelihood while the pastoralists try to construct something meaningful for them (like a mini dairy or an educational farm). They do not choose one

or the other as a result of a political or ideological position; they find compromises because building a sustainable livelihood is more important.

Distantiation is also framed as an act of resistance (van der Ploeg, 2008; Schneider and Niederle, 2010), implying that peasants reject some underlying values behind commodity-relations and the Empire and want to build something different. But scholars such as Brass (2003) and Jansen et al. (2021) invite us to look critically at the motive behind such distantiation, diversification and capital-labour relations. Sometimes, as in the case of diversifiers in the traditional market arrangements (Chapter 8), diversification and selling their own labor is a necessity to survive rather than an act of resistance framed in a political sense.

Conscious acts of resistance might be visible in the distantiation stance of some mini-dairies (such as Rita who frames her production of raw milk as a resistance vis-à-vis the tendency of standardization that the 'Empire' incentivizes). But other forms of distantiation among mini dairies who decide to engage in domestic market arrangements are not framed as an act of resistance. In fact, they are still very connected to input markets and some want to have technologically sound farms to be more competitive. Born out of a desire to accumulate, some intensive producers also want to distantiate from commodity chains to make more profit. They do not have an anti-capitalist, anti-empire or transformational motivation and their actions are not born out of a political struggle (see the case of Tonino, Chapter 4). Jansen et al (2021) point to this problematic interpretation in the literature on peasant autonomy. Some producers, even if they have some "peasant-like" characteristics, do engage in accumulation from below to ameliorate their condition, while simultaneously aiming for more autonomy and sustaining their livelihoods.

In other situations, distantiating from commodity circuits requires enough land, enough capital, and enough labor in the family. Diversifiers in civic market arrangements diversify out of necessity, but they are also politically motivated. Additionally, they decide to engage only partially with commercial market arrangements because the risk of complete distantiation would be too high. Without initial financial capital, it is difficult to meet the bureaucratic requirements and costs of self-production and direct sale. In sum, distantiating from commodity markets in Sardinia is costly.

It is at this point of the analysis that looking at class dynamics is useful. Four of my categories have some of the "peasant-like" characteristics: the middle pastoralist, the mini dairies and the diversifiers who engage in civic and domestic market arrangements. Middle pastoralists may have a "peasant-like" logic, but we need to differentiate them from mini dairies, because the former

occupy a dependent position in relation to industrial capital. They are, nevertheless, very different from intensive producers, so we cannot say that they are 'entrepreneurs' just because they sell milk to the dairy industry, which processes it and exports it as a commodity. Both mini dairies and diversifiers engage in local direct sale, but they do it in very different ways, with different access to resources and different possibilities to formalize the sale of cheese.

Ultimately, both a class-analytical lens and an assessment of the different 'logics' of production and market engagement that are internal to a household are useful in understanding how pastoralists engage with markets and respond to uncertainty. As Ben White (1989, 2018) puts it, both classical analyses of differentiation and Chayanovian analytical tools to look at dynamics within the farm are useful to understand different aspects of the interaction between structure and agency, between markets and pastoralists.

In conclusion, rather than assuming that distantiation is a defining feature of the peasant condition, we should analyze how and when peasants can and cannot distantiate from commodity chains. If we agree that different markets coexist, and that pastoralists create different market arrangements by interacting in different ways and moments in different markets, then we can see that these two tendencies also coexist together in the life and reasoning of the pastoralists. In the next section I present the different responses to uncertainty and the different implications these have for thinking about agrarian change.

9.5. Differentiated responses to uncertainty

Intensive producers who engage in industrial market arrangements aim to contain uncertainty and manage variability as risk as something that can be predicted and managed with the help of experts and through technology. To respond to uncertainty, intensive producers organize themselves and invest capital to predict and prevent uncertainties that may disrupt the farm. The fluctuating milk price is responded to by increasing production and by cutting on costs per liter of milk. Irrigated production of feed is combined with managing the animals in stables and substituting external grazing. Preventive medicine is also part of the daily routines of minimization of uncertainty. For this reason, experts and the state are allies and not enemies, as public money and subsidies are essential to support scale enlargement and intensification. However, this is not the only response to uncertainty. In order to increase profit, capital is invested in technology to process milk and make cheese independently.

Middle pastoralists encounter uncertainties due to rising costs and declining prices of milk. They cannot respond to uncertainty through distantiation or increasing autonomy from input and output markets because this threatens their income and livelihood. For this reason, their struggle is a coordinated and collective struggle demanding market regulation. They coordinate through strong pastoralists' movements and create associations to gain leverage vis-à-vis industrial capital. This can be seen as a struggle for autonomy within the market, as Henderson (2019) puts it. Many aspects of their production follow "peasant-like" logics, including labor-intensive production, with a preference for extensive grazing and a reduction of external inputs. However, distantiating from the market, producing cheese and selling it locally is not seen as a viable alternative because of limited labor capacities and small local markets. If we understand the struggle for autonomy and distantiation as the main or only form of resistance, many pastoralists who do not have labor capacities to self-produce and who do not want to threaten their livelihoods will be left outside of the peasant struggle.

Mini dairies engage in 'deepening' their production as a response to uncertainty (cf. van der Ploeg, 2008). They focus on quality and niche products to enhance the value of agri-food production through the reorganization of the chain in a diversified way (e.g. direct farm-gate sale to consumers, sales in territorial markets or sales via the Internet and social media). While van der Ploeg and Roep (2003) see the substitution of conventional inputs as part of the deepening strategy, this is not always possible in the case of mini dairies in Sardinia because maintaining an economic balance within the farm is more important than ecological or ethical values (Jansen et al, 2021). This points to the fact that local sale and short chains are not to be seen necessarily as a political struggle against commodity markets. While they mostly sell locally, they also sell milk to industries to respond to uncertain market conditions. A case in point was the COVID-19 pandemic. When sale or production is disrupted, the easier strategy to contain uncertainty is to sell to industries rather than to sell directly to consumers.

Diversifiers are the most flexible in their responses to uncertainty. They interact with commercial and local markets in different ways and according to their needs. Diversification of production and interaction with different markets is key both for self-subsistence and income generation. They mix pastoralism with other activities to create a diversified portfolio, but they do so for different reasons and in different ways. Diversifiers who engage in civic market arrangements are motivated by a political rationale. Selling products at the local level is for them a political act. So they connect with urban networks and consumers who are sensitive to discourses of sustainability, local economies

of solidarity and so on. They also diversify in that direction, engaging in sustainable and cultural agritourism, educational farms etc. But this diversification is highly connected to public financial incentives. Diversifiers who engage in traditional market arrangements engage in a different type of diversification to respond to uncertainty, which is more connected to the territories – they sell their labor in other rural and non-rural activities. They first ensure their self-subsistence and then they produce for the market.

Both diversifier categories also sell milk to industries (private or cooperatives) because it guarantees them access to a secure, if variable, monthly revenue from milk sale. This revenue is then utilized to build the necessary infrastructure within the farm to produce and sell cheese. By selling to industries, they also can gain access to public resources. It means having invoices to show, and paying correct taxation on at least a proportion of the production.

On the premise that pastoralists can produce more, more effectively, and improve their income with the correct planning, the state infrastructure, mainstream research, and development organizations work to minimize uncertainty. Research organizations, legislators, and professionals that execute state policies attempt to manage and address the crises plaguing the pastoral sector as if every circumstance were stable and predictable in a very uncertain environment. This assumption is founded on a conception of development and modernization that subordinated pastoralists in global commodity markets and responds to market crises by elevating productivity, productivism, and profit.

For instance, in reaction to the crisis in milk prices, experts and politicians urge pastoralists to raise investments in their farms and to boost productivity by focusing on lowering the price per litre of milk. Agronomists and experts in animal nutrition, who frequently work for large feed corporations, advise keeping track of how much milk each animal produces and getting rid of any animal that is under-performant to maximize resource use (such as feed and fodder). Technology is seen as a key instrument to prevent uncertainty and control risk. The latest milking machine models can precisely track the amount of food supplied to each animal and the amount of milk produced by each sheep. The governmental approach is disconnected from the different realities of the territories and provides a one-size-fits-all to face market uncertainty in the context of Sardinia. In this regard, one model predominates, ignoring the diversity between pastoralists in the mountainous area (who live in a difficult geographical landscape where cultivating crops is not always possible, who have different social networks and connections, specific traditions,

knowledge and cultures) and those who live in the lowlands (who produce in a capital intensive way, have availability of land and resources and so on).

This viewpoint is based on a number of assumptions. The first is that the lack of efficiency, rather than an issue with how resources and revenues are distributed along the commodity chain, is to blame for the current crisis. The dominant model, “the Empire” to use the word of Van der Ploeg, does not recognize that the current dominant structure benefits some while disadvantaging others and it does not recognize the diverse knowledges linked to the different territories (different ways of producing; understandings of quality, taste, good production, sustainability and living with nature; different ways of cooperating; different interactions with consumers and communities). The second supposition is that pastoralists live in stable conditions. From these assumptions, the proposed solution is that producers must maximize their milk output in order to be profitable and plan large capital investments.

The empirical evidence has demonstrated that intensive producers follow a productivist and developmental trajectory based on the presumption that production intensification, rationalization, and efficiency improvements can result in the control and prevention of uncertainty as well as an increase in income. The reality, meanwhile, is that the intensification of production leaves little room and space for flexibility and places a heavy reliance on outside resources, advice, and expert intervention. Producers in this situation similarly rely on personal connections with the industry to negotiate a fair price for their goods, while simultaneously attempting to escape the technological treadmill trap by developing alternatives and gaining more control over their products.

On the other hand, pastoralists that are less dependent on inputs and revenues from the international market generally move away from a control-oriented mindset and are more able to respond to uncertain situations interacting between the global and the local specificities. In this different framework, less productive animals are valued for their ability to maintain the biodiversity of the flock and to boost its resistance in uncertain environments since they are thought to be more resilient to diseases, seasons with less food availability and so on. According to pastoralists, the ability to withstand and survive in harsh conditions and scarce pasture resources is an essential trait that goes beyond an animal's productivity. It is incorrect to assume that the guiding concept for pastoral farms is economic efficiency and rationality (considered in an economic sense and a linear understanding of demand and supply, cost and benefit). This view does not see the interaction between the needs of living within the context of a global commodity chain and the local

and territorial context. Pastoral farms operate within a complex system that is influenced by numerous factors.

The majority of pastoralists work and live in unstable and occasionally precarious conditions with limited access to natural and financial resources, as opposed to living in stable, controlled conditions with abundant supplies of feed and fodder. They create their livings by making use of the resources that are available in their own territories. Since they are very aware that they live and survive in uncertain circumstances, these pastoralists work with a vision of multiple contingent futures and typically leave several doors open. This makes them very skeptical of top-down programs and incentives, not because they are ignorant or backward, as they are frequently portrayed, but rather because they are aware of the context in which they live (material, cultural, social, natural). They are aware that spending 200,000 euros on an electronic milking machine would be to fall into a production/technological trap that would force them to make additional investments to create more and earn more to pay off such a big debt.

While there are many similar uncertainties, pastoralists who inhabit diverse class situations, different genders, who have diverse access to natural resources, age, and identities live, perceive, and experience these uncertainties differently. Responses to uncertainty are therefore constructed and experienced in the social milieu, reflecting social differences and material constraints and possibilities. Uncertainty is not price volatility – uncertainty is what price volatility means for different pastoralists, according to their class position, identity, relationship with the state and so on. As the empirical material presented in this thesis has shown, to understand market engagement, market uncertainties and responses to uncertainties it is therefore necessary to see them in this interconnected way.

9.6. Conclusion

In this chapter I have demonstrated, based on the empirical material presented in chapters 4 to 8, that production, market engagement and livelihoods are intertwined and should be seen and analyzed in this way. I have looked at the different categories of market engagement that make up an overall typology of Sardinian pastoralism, showing how, in each category, there is a different configuration of production, market engagement and livelihood construction. I have shown how both Marxist and Chayanovian theoretical traditions are key to understanding the interaction between the micro level and the macro level, the interaction between actors that form markets and

market structures and dynamics that enable and constrain 'real markets' on the ground. Market engagement is therefore seen as relational; it is co-constituted with production and livelihood construction, and is embedded in societies and institutions governed by rules and regulations. Likewise, uncertainties (including market uncertainties) are lived, experienced and faced in different ways. To understand how different pastoralists engaging in different markets respond to uncertainties (perceived in different ways), I conclude that both class positions and pastoralists' own economic, social and cultural logics and identities must be taken into account.

Both traditions of critical agrarian studies are useful and important, but they were not enough to look at the interaction between structures and global commodity chains and how agency is expressed in the different territories. In fact, having a closer look at the different territories (understood as the context of production which includes the culture, tradition, knowledge system and natural landscape of a territory) was also important throughout my research. By tracing, over time, the key social, economic, political, and cultural influences on the links between milk and diverse territories in Sardinia, I elaborated five different typologies that are context specific. These typologies were not only focused on "the local" as if this existed in a vacuum but attempted to link how the local and the global coexist in a specific place and how agency is expressed within different contexts.

A limitation of this thesis is that not enough attention was given to the key importance of social reproduction and of care work for the creation of market arrangements. But my attempt to show how different market arrangements coexist and interact in diverse territories, has gone in the same direction of feminist political economists whose aim has been to show how different economies, relations, markets exist and co-exist beyond the capitalist one (Gibson-Graham, 2008; Nelson and Power, 2018) -which finds its main expression in the commodity chain of Pecorino Romano. I demonstrated how different forms of exchange, different understandings of production and different knowledge, social relations and social networks, are key to respond to uncertainty. I showed that local, territorial and non-capitalist practices are key to survive within global commodity chains. Other forms of exchange and social organization coexist with capitalism (Gibson-Graham, 2006) in pastoralists' daily lives, creating different market arrangements and different opportunities, as the case studies have highlighted. Commodity markets are not the only markets in which pastoralists participate and market engagements are embedded in different and coexisting values (Niederle, 2018). If literatures on territory and feminist political economy scholars are given more importance and complement critical agrarian studies there is the potential to abandon normative

understandings of global and local and look at the politics of how these interact in diverse territorial contexts.

In Chapter 10 I summarize my thesis argument and briefly extend this discussion by reflecting on implications for other key audiences.

Chapter 10 - Conclusion

Agricultural globalization and the introduction of policies incentivizing the inclusion of pastoralists in global commodity chains over decades have culminated in an increasingly uncertain context for producers, to declining incomes, and to the concentration of profits in the hands of a few. The increasing distance between producers and consumers, together with the powerful position of some actors in the chain has resulted in oligopolistic markets where profits are concentrated and where the bargaining power of producers is reduced. These global dynamics are articulated in diverse ways in different territories; my research looked at the situation in Sardinia.

In response to these centralizing forces, there was a widespread call for food system transformation led by local and international movements. This was supported by a number of agrarian scholars placing local markets and alternative economies in juxtaposition with international chains and industrial production. The assumption is that when markets are more local, as opposed to global, and more 'peasant-like' as opposed to 'capitalist' then small scale producers would benefit more. These narratives, both in academia and in grassroots mobilizations, have created a dichotomy that often serves to delineate political struggles and demands, but that is much less separated and antagonistic when we look at 'real markets' and at the everyday life of pastoralists.

This thesis explored how this dichotomy exists in real life by asking: *how do different pastoralists navigate and create diverse market arrangements in a context of uncertainty?* To explore this question, I looked at different pastoralists coming from mountainous, hilly and flatland areas of Sardinia. I considered pastoralists in their diversity, including different social classes, different production types, flock sizes, and geographical positions. I was interested in pastoralists' interaction with markets, their agency and diversified interests, and the different factors that influence pastoralists' decisions in a very uncertain context. I analyzed the interaction between different livelihoods, types of production, and engagements with markets.

When we look at 'real markets' the distinction between 'industrial' and 'artisanal' is not as clear cut as it is commonly claimed. Pastoralists interact with markets in flexible and hybrid ways building different arrangements that work in their own contexts and this helps them navigate ever-changing uncertainties. This often means that some pastoralists engage both with large industries and international commodity chains, as well as in local sale as part of their strategies to respond to uncertainties. Based on the empirical data collected and presented in the empirical chapters, I

argue that, when we analyze the way pastoralists engage in markets and respond to uncertainties (market uncertainties in particular), livelihoods, production, and markets should always be seen as co-produced, intertwined, and embedded. Analyzing this co-production, I have differentiated between five different market arrangements, and I demonstrated that within each market arrangement, pastoralists engage with markets in different ways creating multiple pathways that are all social, political, and contested.

Coming up with these five typologies and understanding commonalities and diversities within them is a first attempt to understand the complexity of pastoralists' interaction with markets on the ground. This goes beyond narratives that see, on the one hand, the state arguing that 'real pastoralists' are those who managed to specialize and intensify production, and on the other hand are supporters of pastoralism arguing that 'real pastoralists' are only those who distance themselves from global commodity chains, self-produce and sell in local and domestic markets. There are potentially a hundred ways of being a pastoralist as the title of this thesis suggests, a hundred ways of engaging with markets, and these are all perceived differently by pastoralists according to their class position, and the way they build their livelihoods. Why does this matter? I will reflect on why this is important in relation to three key audiences: researchers, social movements, and policy makers.

Researchers

This thesis contributes to understanding the different pathways that lead to more sustainable production or to distantiation¹⁸ from commodity chains and the political dimensions behind it. Often, it is assumed that only small-scale pastoralists or diversifiers produce on-farm and engage in local sale, but as I have demonstrated, intensive producers also distantiate from commodity chains to increase their possibility for accumulation. In some cases, it is easier for intensive producers with high capital availability to produce on-farm and engage in local sale than it is for small-scale producers. What does this tell us about the class position of those who can afford to enter local markets at current entry costs? As researchers, I believe it is important to further investigate this. If we consider the complexity on the ground, our understanding of the actors involved in a potential transformation of the food system, and the different pathways that lead to it, can change in different contexts.

¹⁸ The term used by van der Ploeg (2008:49)

Therefore, we should look critically at the concept of peasantry understood as producers who are distant from commodity chains or who want to distantiate. In this regard, peasants, and their engagement in commodity chains, their responses to uncertainties, their flexible interaction between different markets and different market arrangements, should all be explored more at an empirical level. This is important in terms of understanding the diversity and plurality of transitions to more sustainable food systems starting from the different ways in which producers build their own livelihoods in an uncertain context.

Following the invitation of Ben White (1989), we should explore the relevance of classical debates in practice rather than starting from theoretical models and assuming that, for example, 'peasants' everywhere distantiate or want to do so, as a response to market uncertainties. So, rather than using a definition of peasantry understood as autonomy from commodity chains and engagement in local domestic markets, we should empirically look at how peasants and producers navigate uncertainties in different contexts, and why. As researchers, we should go beyond a normative or technical framing of pastoralism and peasantry and polarized views of development, and we should focus on understanding livelihoods in context (Scoones, 2015). There are a myriad of ways pastoralists construct their livelihoods, and these are flexible and do not follow strict ideological or political framings. My thesis contributes to an improved understanding of 'real markets' and how they intersect in a changing economy, examining how local, artisanal, and industrial markets interconnect in complex arrangements, linked to livelihoods.

Social movements and Activists

Understanding the complexity of real markets is also relevant for social movements and activists. In their internal analysis, global social movements, NGOs, and activists should go beyond the dichotomized view that producers engaging in industrial and commercial market arrangements are always opponents and that those who engage in artisanal/local chains are always allies. Movements should develop a more nuanced strategy for support across the different types of pastoralism and production and acknowledge diversity of market engagement as connected with different livelihoods. Broader support can help pastoralists who engage in commodity chains move towards more sustainable production in the long-term.

The normative argument (e.g. industrial/artisanal, bad/good) often creates polarizations and prevents the construction of alliances between movements that might have important struggles in

common and that could lead to a broader transformation of food systems in the long term. My findings have demonstrated that 'peasant-like' production does not operate completely outside commodity chains and industrial market arrangements. This has already been demonstrated by other scholars as well, who stress that the food sovereignty discourse can sometimes essentialize peasant agriculture (see Soper, 2019 among others). For example, diversifiers who engage in civic market arrangements have many peasant-like characteristics, yet they still find it necessary to sell milk to industries to ensure some predictable monthly income on the farm. This income is sometimes reinvested to secure the necessary tools for more autonomous production and local sale. In the transition towards increasing the sale in local markets, the interaction with private dairy industries and engagement in industrial market arrangements is important and it is a way to diversify risk and navigate uncertainty. In this regard, interacting with industrial market arrangements and commodity chains per se should not be demonized. The focus rather should be on addressing the concentration of profits and power in the hands of input, processing, and distribution nodes of commodity chains. It is important to have a more comprehensive discussion about profit concentration and control, and how this leads to speculation. Nevertheless, the tussle between what the market sets for a product and the ability of producers to sell at a price that reflects the real cost of production is an ongoing reality for many pastoralists who struggle to break even.

Pastoralists find that completely abandoning feed or fertilizers would result in significant income drop, higher costs, and higher risks in a context (Sardinia) where consumers are not so sensible to organic production and not always willing to pay more to support small scale farmers and more sustainable production. This should not be demonized, rather social movements should find ways to include these producers in the struggle for a long-term strategy of change. In this regard, it is important to reflect on who will bear the costs of a transition to a more sustainable food system. Social movements struggling for food sovereignty should support alternative marketing strategies that allow greater resilience in the face of market volatility. These could envisage engagement with industrial market arrangements as part of a diversification strategy, and do not necessarily include only agroecology or sale in territorial and local markets.

Moreover, middle pastoralists have much in common with the food sovereignty movement: the struggle against the concentration of power and profits in commodity chains, against monopolies in markets and the view that farmers' unions do not represent their interests and struggles for instance. Middle pastoralists' production is mostly extensive and labor intensive rather than completely dependent on industrial chemical inputs. However, these producers feel alienated from

the international struggle for food sovereignty because it demonizes commodity chains and it does not adequately consider all those producers that engage within commodity chains and sell their milk to industry, even when these are cooperatives.

Going beyond the simplistic dichotomy and normative argument, is essential to understand how markets arrangements are constructed through different livelihood configurations and in different geographical and historical settings. Therefore, to go beyond the above-mentioned dichotomised view, movements should develop a more nuanced support strategy across the different types of pastoralism. This includes reflecting on what food sovereignty means in the context of international export, what the role of cooperatives could be and what kind of regulations. Expanding the array of 'pastoralists' associated with the food sovereignty movement will result in contestations over values, politics and directions of the struggle, but it will also help update the struggles in line with the contemporary, more diverse, and more uncertain setting.

Policy makers

Pastoralism has changed, and it will continue to adapt to multiple uncertainties (climate, market, animal diseases, changing policies etc.). Having flexible engagement with multiple markets is essential for many, so this should be acknowledged and supported by policies; policy makers should learn from the way pastoralists deal with uncertainty.

Rather than focusing on an 'ideal type' of pastoralism and on one linear idea of development going towards the intensification of production, the subsidy framework should be rethought to enhance the diversity of pastoral livelihoods acknowledging different types of pastoralism and the different benefits they bring to society. For example, pastoralism in mountainous areas is often judged against productivity criteria without acknowledging the invaluable environmental and socio-economic benefits it brings. From a socio-economic point of view, pastoralism provides an alternative livelihood that increases people's incomes, their food security and nutrition, as well as their autonomy and self-subsistence. It also complements pensions for those that otherwise would be hovering around poverty lines. This is an invaluable benefit on an island where the unemployment rate reaches 40% for young people (La Nuova Sardegna, 2021), and it should be duly acknowledged by accommodating policies.

It is also key to recognize that pastoralists provide environmental benefits. Pastoralists are guardians of vast territories that would be too costly to keep under state control. By grazing on forests' undergrowth and on common land, they keep the land clean and, above all, supervised and well taken care of. Maintaining life on the land prevents the reckless development of undergrowth and weeds, which are fuel for highly damaging summer fires the likes of which occur in Sardinia every year. They also reduce the abandonment of inner territories. The environmental benefit of pastoralism is partly recognized in the last CAP reform (Nori, 2022) but subsidizing public environmental goods is only one part of what policies should do. In fact, if the focus remains only on subsidies without recognition and a fair remuneration of high-quality products, the risk is to go towards a polarization that sees intensive producers receiving subsidies to produce milk on one side and having pastoralists recognized for their environmental, social, and cultural role on the other, but still leaving them with the reality that production for them is simply too expensive. As demonstrated in Chapter 7 and 8, but also looking at middle pastoralists in Chapter 5 and mini dairies in Chapter 6, pastoralists need financial support and recognition for their sustainable production and for the environmental role they play. But beyond this recognition, they want to produce, and they want their sustainability recognized in the price of their products rather than by subsidies. Environmental benefits might increase the dependence of diversifier pastoralists on subsidies and can disincentivize production of sustainable, high-quality milk and cheese. So, it is important to recognize that the environmental, social, economic, and cultural role of pastoralists should start from a fair remuneration of milk and cheese that takes into account the costs of production. This also means that intensive producers should be held accountable for the environmental and social costs of intensive production, and they should not be subsidized by governments as much as they are now.

Over the years, with the modernization and rationalization of the sector, some practices have been discouraged or even become illegal. This has increased costs for pastoral farms and discouraged small-scale production, direct sales, mobility, and flexible livelihoods in favor of a food system geared mainly to specialization and international exports. As an alternative, certain more embedded, traditional, and flexible practices should be re-incentivized for example by reintroducing communal slaughterhouses so that shepherds can slaughter their lambs and sell them directly to consumers. This would make small producers less dependent on large slaughterhouses that buy in bulk and have the power to determine prices. The sanitary requirements for processing milk in large quantities and at industrial level and the health policies for processing milk on the farm must be differentiated. For small-scale production there must be more flexibility on the sanitary

conditionalities of production. The requirements for industries and small scale on-farm production cannot be the same.

For middle pastoralists, policies could incentivize milk storage and refrigeration centers run by pastoralist cooperatives so that they themselves can sell milk at European level. This would take the power from milk sale out of the hands of private processing factories. This should be accompanied by public support and training in the management of large companies so that pastoralists can self-manage cooperatives in a successful way.

Policies should also focus on new entrant support, not just envisaging full-time (male) pastoralists, but envisaging diverse engagements in production and markets, often part-time, as part of diversified livelihoods that include agri-touristic activities, artisanal activities, and the creation of social and solidarity economies where pastoralists are in direct contact with consumers (Chapter 7 and Chapter 8). New entrants should have facilitated access to markets, not assuming that this means inclusion in commodity chains that produce and sell in international markets and supermarkets. Long term policies should recognize the diversity of food systems including the value of local, diverse, territorial food systems. A way to support new entrants access to markets could be to incentivize public communal mapping of local producers so that consumers and producers can have a direct connection, and to incentivize community supported agriculture groups in cities. This should be accompanied by consumer education, starting in schools and universities, underlining the value of diverse food systems and the value of forms of pastoralism that are low energy intensive and biodiverse. Governments should invest in more diverse distribution systems, particularly infrastructure that supports territorial markets, to increase the ability of local and regional markets to directly meet food demand without passing through commodity chains. This could potentially also make our food systems more resilient in the advent of global crises and uncertainties such as global pandemics, wars (the war in Ukraine and its association with the concentration of wheat production), global financial crises etc.

To conclude, understanding the complexity of real markets on the ground and the different ways pastoralists respond to uncertainty has implications for researchers, social movements, and policy makers. Researchers, especially those engaged in critical agrarian studies, should investigate the different pathways that can lead to food systems transformation and the different actors involved taking into account the interconnection of production, livelihood and market engagement. This further investigation should not assume that pastoralists and 'peasant-like' producers want to

operate outside of commodity chains and industrial market arrangements. Social movements should also have internal discussions on how to open spaces of alliance with peasant-like producers and pastoralists who engage both in industrial and local/domestic market arrangements. Sometimes engagement in industrial market arrangements is essential to sustain family incomes and to maintain engagement in local markets. Policy makers should recognize the great diversity of pastoral systems and the multiple benefits these have on society. The richness and diversity on the field should first be recognized and then supported with policies and public services that valorize what already exists rather than implementing top-down models of development.

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Appendix

Appendix A: Table of interviews divided by location and category

Interview location	Respondents' category	Number	Details
Desulo	Institutional	4	1 mayor 2 technical municipality officers 1 police officer
	Pastoralists and/or members of pastoral families	33	Women (5) Men (28) <u>Of which:</u> Cooperative (0) Private industry (28) Mini dairies (5)
	Town citizens	18	
	Veterinarians	2	
	Other food producers	2	
	Academics/formal experts' of the territory	3	1 historian 1 veterinarian who wrote an ethnographic book on transhumance
Other cities in the area			2 pastoralists, 1 citizen Fonni (1), Nuoro (2), Orune (7), Ollolai (3), Bitti (3),
Ittiri	Institutional	10	Municipality, police officers
	Pastoralists and/or members of pastoral families	70	Women (10) Men (60) <u>Of which:</u> Cooperative (59), Private industry (1), Mini dairies (10)
	Town citizens	20	
	Veterinarians	1	
	Other food producers	1	
	Academics/formal experts from the territory	4	2 university professors
Other cities in the area	Other cities in the area		Alghero (2) Uri (3), Sassari (3)
Villamassargia	Institutional	3	Local municipality
	Pastoralists and/or	24	Women (5) Men (19)

	members of pastoral families		<u>Of which:</u> Cooperative (4), Private industry (19), Mini dairies (1)
	Town citizens	13	
	Veterinarians	3	
	Other food producers	0	
	Academics/formal experts from the territory	3	
Other cities in the area			Iglesias (2), Teulada (2), Domusnovas (2), Vallermosa (1), Siliqua (4), Sant'Anna Arresi (1), Sanluri (4),

Appendix B: Focus of in-depth interviews

In the in-depth interviews – most repeated engagements over several visits, and adding in many cases to several hours of conversation across different family members - I have focused on the following points.

1. Personal characteristics of pastoralists, family relations and networks - division of labor within the family; family characteristics and history;
2. The influence of the geographical location - plain/hills/mountains
3. Characteristics of the farm and livelihood profile - Single or family farm; Assets owned including machinery and stables; Land owned/rented/used and where/what type of land (plain, irrigated, cultivated, organic); flock size; what do they do? agriculture as well? What animals? What products?
4. Production –looking at: livestock production system; genetic selection/flock and pasture biodiversity; production/purchase of farm inputs, in particular feed; capital investments and labor investments
5. Markets - which markets they engage in (including informal market)?; Which products? How? Understanding of markets; Problems and difficulties; Responses to uncertainties; Wishes and future
6. Relationship to the state and bureaucracies – subsidies; institutional and political regulations of production and markets; relationship and networks with local authorities.

Appendix C: Table of interviews' codes with pseudonyms of respondents

Codes' list	
AR – Academic Researchers VET – Veterinarian FT – Feed trader INT – Intensive producers MID – Middle pastoralist MINI – Mini Dairies DIV – diversifiers RI – Regional Institutions	SSI - Semi-structured interview PI - Phone interview IE- Informal exchange PO - Participant observation

Code	Pseudonym*	Details	Time and type of exchange	Place
FT1	Francesco	Feed trader from Purina, Cargill	Oct 2020, SSI March 2021, SSI	Sassari
FT2	-	Feed trader from Purina, Cargill	Oct 2020, SSI March 2021, SSI	Sassari
VET1	-	Veterinarian (public)	Dec 2020, PI	Villamassargia
VET2	-	Veterinarian (public)	Oct 2019, IE	Desulo
VET3	-	Veterinarian (public)	Nov 2019, SSI Nov 2019, PO Nov 2020, IE	Villamassargia
VET4	-	Veterinarian (private)	Jan 2020, PO	Villamassargia
INT1	Tonino	-	Dic 2019, PO Feb 2021, SSI Oct 2021, PO	Villamassargia,
INT2	Pietro	-	Jan 2020, SSI	Ittiri/Alghero
INT3	Enrico	-	Feb 2021, PI	Ittiri/Alghero
INT4		-	Oct 2021, PO	Sassari
INT5	Luca	-	Nov 2020, SSI	Villamassargia
INT6	Angelica	-	Nov 2020, PO Feb 2021, SSI Oct 2021, PO	Villamassargia
INT7	Piergiuseppe	-	Nov 2020, PO	Villamassargia
INT8	Gabriele	-	Nov 2020, PO	Villamassargia
MID1	Gino	-	Oct 2019, SSI, PO Apr 2020, PI June 2020, PO	Ittiri
MID2	Luisa	-	Oct 2019, SSI, PO March 2020, PI June 2020, PO	Ittiri
MID3	Aldo	-	Dec 2019, SSI, PO	Villamassargia
MID4	Rosa	-	Dec 2019, SSI, PO	Villamassargia
MID5	Gavino	-	June 2020, SSI	Uri

MID6	Enrico	-	Sept 2019, PO	Ittiri
MID7	Bachisio	-	April 2021, PI	Ittiri
MID8	Piero	-	April 2021, PI	
MID9	Giacomo	-	Sept 2019, SSI June 2020, PO Oct 2021, PO	Ittiri
MID10	Alberto	-	Sept 2019, SSI	Ittiri
MINI1	Rita	-	Oct 2019, PO, SSI April 2020, PI Sept 2021, SSI	Ittiri
-	Anna	-	Oct 2019, PO	Ittiri
-	Giorgia	-	Oct 2019, PO	Ittiri
-	Tonio	-	July 2021, SSI	Ittiri
-	Alessandro	-	July 2021, SSI	Ittiri
-	Giulio	-	Nov 2019, PI	Ittiri
-	Mariangela	-	Oct 2019, IE	Ittiri
MINI2	Miriam	-	Sept 2019, SSI	Ittiri
MINI3	Salvatore	-	Oct 2020, SSI, PO	Iglesias
MINI4	Costanzo Farina	-	Aug, 2020, SSI, PO	Iglesias
AR1	Professor Piras	Professor of animal nutrition	Sept 2020, IE	Sassari
AR2	-	Researcher of animal nutrition	Oct 2019, IE	Sassari
AR3	-	Professor of animal husbandry	Nov 2019, SSI	Sassari
AR4	-	Researcher of rural development	April 2019, PI Dec 2020, PI	-
AR5	Andrea	-	Sept 2019, IE Oct 2019, PO	Sassari, Desulo
RI1	-	Former mayor	Nov 2019, SSI	Desulo
RI2	-	Writer and former local authority	Nov 2019, SSI	Desulo
RI3	Laore	Regional agency for rural development	May 2021, PI	-
DIV1	Felice	-	Jan 2020, IE, SSI, PO May 2021, PI June 2021, PI Oct 2021, PO	Sorso
DIV2	Matteo	-	Oct 2020, PI Nov 2020, PO	Fluminimaggiore
DIV3	Tonino	-	Nov 2019, SSI May 2021, PI	Desulo
DIV4	Gavino	-	Nov 2019, PO	Desulo

DIV5	Luigi	-	Nov 2019, PO Dec 2019, SSI	Desulo
DIV6	Francesco	-	Nov 2019, PO	Desulo
DIV7	Antonio	-	Nov 2019, PO	Desulo
DIV8	Vittorio	-	March 2020, PI July 2021, IE	Bitti
DIV9	Mariella	-	Jan 2020, PO, SSI	Ittiri/Alghero
DIV10	Elisa	-	Nov 2019, PO Dec 2019, SSI	Desulo
DIV11	Michele	-	Jan 2021, PO,	Iglesias
DIV12	Efisio	-	Nov, 2019	Desulo

*when the person is not mentioned in the thesis, then a pseudonym is not provided