DIVULGA

r/03

Report: PDO Economy

The dynamics of food quality systems

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Index

1.

1. The circuits of food quality.
The institutional framework and the character of collective action

The system of denominations of origin has been growing for several years now. The aggregate reading of the data from the Qualivita foundation's annual report returns a comforting macroeconomic picture, characterised by the increase in turnover, exports and the positive effect that the denominations continue to have in their respective territories. This confirms the effectiveness of the regulatory intervention to protect geographical indications, supported by four main reasons:

- Market justification: the need to protect geographical indications lies in their objective difficulty of competing in a scenario of competition based only on costs, also given their importance in the production of public goods (Arfini et al., 2019).
- Justification of rural development: geographical indications denote an often multiplicative effect on the development of rural territories, acting as a driving force through the activation of resources in other sectors, such as tourism and food processing.
- Consumer justification: the role of consumers in the affirmation of typical products cannot be overlooked. The growing demand for quality linked to origin and traditional production techniques has stimulated the increase and diffusion of denominations of origin, fueling local

development models centred on these productions.

- Justification of fair competition: the protection granted by the European system represents an essential tool for defending recognised productions from the rampant agro-piracy activities, which particularly involve Italian productions.

This institutional framework not only regulates the recognition and protection of these products, but in fact certifies their belonging to unconventional development paths of agricultural activity, which inevitably involve higher costs. Starting with those deriving from the application of production specifications in the field, to which further items are added, as detailed below.

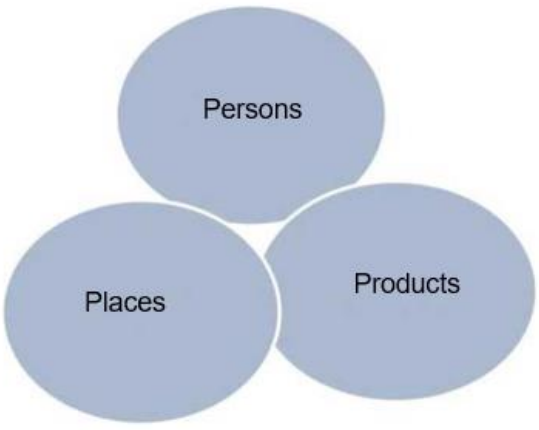
Fig. 1.1: Costs to join a PDO/PGI circuit

1.Preliminary costs	• costs prior to recognition and entry into operation of the Denomination
2.Direct costs	• costs for the performing of control and certification activities • costs of support for certification
3.Indirect costs	• costs of structural and reorganisation adaptation • costs of operational adaptation • costs of non-compliance
4.Complementary costs	• promotional costs • costs of surveillance and sanction

Source: Arfini, Belletti, Marescotti (2010)

The impact of the diversions can obviously vary from company to company and can have fundamental repercussions on the choices to enter or continue to join a PDO or PGI circuit. The possibility of fully recovering these costs passes through the ability to enhance the product on the market, which in turn depends on the connected ability to "root" the product in the territory through three dimensions: people, places and products (fig. 1.2).

Fig. 1.2: Typicality and link between people, places, products



Source: Vandecandelaere et al. (2010)

In the interaction between these three dimensions, collective action mechanisms are developed that involve local communities (producers, stakeholders, institutions, etc.) and are decisive for the outcome of the process of identification, specification and valorisation of local resources. This rests on two approaches, the physical and the human (Barjolle et al., 1998).

- The physical approach summarises the link between product and territory, demonstrated through physical, chemical, biological and agronomic research relating to the product, which allows the pedo-climatic and agro-ecological components that characterise its identity to emerge. This whole includes the vocation of a territory for a specific production, based on the exposure, the climate, the altitude and the composition of the soil. Furthermore, the identity of the product, through the physical approach, is also built by means of the uniqueness of the "artefacts" used in the production, such as for example traditional tools, specific maturing places, materials used (wicker for the *fuscelle*, or baskets, of the cheese, tops of a particular wood of the territory, marble for the maturing tanks, etc.).

Finally, the genetic resources of the territory are decisive, such as the native breed and cultivar and other essential components of the local ecosystem.

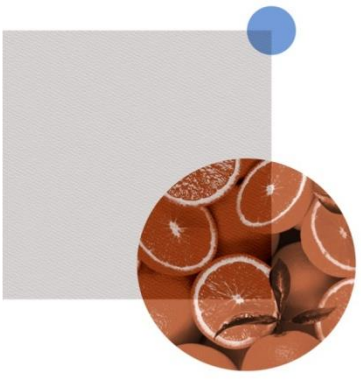
- Instead, the human approach springs from the process of collective action that accompanies the valorisation of the product and which is based on contextual knowledge, i.e. that heritage of shared knowledge and local practices, the result of historical memory and traditions handed down from generation to generation.(Tregear et al., 2003; 2007).

Based on these considerations, Belletti et al. (2006) state that *«a typical agri-food product is the result of a collective and localised historical process of accumulation of contextual knowledge which is based on a combination of specific territorial resources of both physical and anthropic nature which create a strong, unique and irreproducible bond with the territory of origin".*

This definition not only fully captures the importance of the relationship between the identified dimensions, but reveals all its complexity, which translates into the uniqueness of each single model and development trajectory.

Obviously, not all perform positively and not all in the same way.

The aim of this work is to investigate, through the available statistical sources, the contours of the phenomenon of PDO and PGI productions and in particular to read in more detail the strategies of the companies belonging to the quality circuits. The historic family characterisation, both of Italian agriculture as a whole, and of the production fabric of PDOs and PGIs, has suggested combining the structural dimension with the socio-demographic one and making the events of the agricultural family one of the pivots for the interpretation of the national quality product system and of its needs.

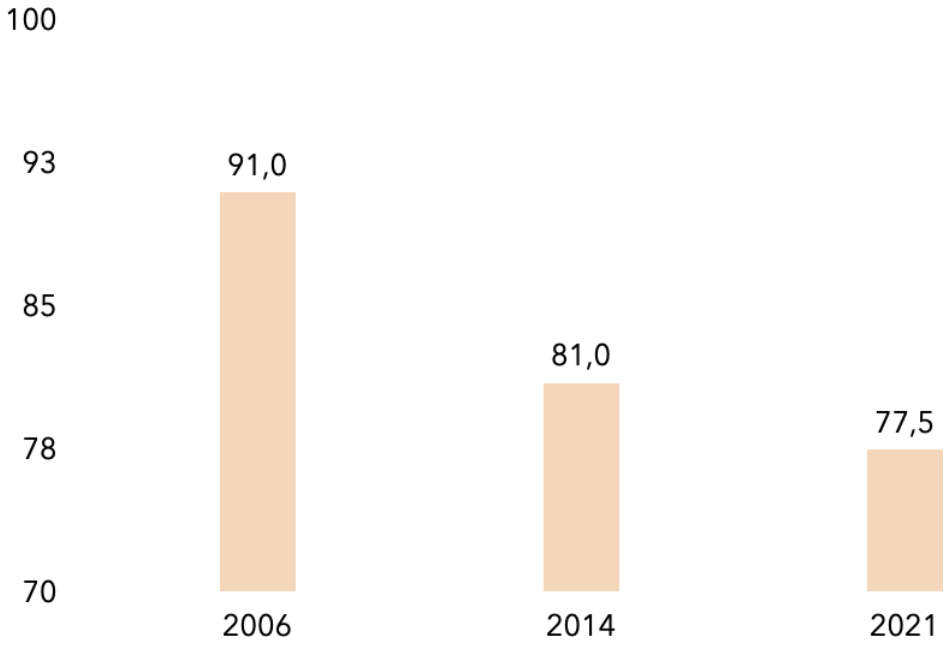


2.

2. Value, concentration and territorial distribution

For several years now, the data has shown a positive trend both in turnover and in the export dynamics of quality Italian products. This commercial success is concentrated above all in a number of important realities. The turnover concentrated in the first 10 products represents almost 80% of the total. As known, the cheeses and processed and seasoned meats excel. The distribution of performance is the consequence of many factors. Some reflect structural characteristics of the market: traditionally cheeses and processed meats are, together with wine, among the main drivers of national food exports. Others are due to the limited size of the distribution areas. Still others to the role played by the "collective capacities" with which the territories are endowed. In any case it should be noted that between 2006 and 2021 the level of concentration of turnover of Italian PDOs and PGIs fell from 91% to 77.5% and the ranking of the top 10 has changed substantially. In the period 2014 - 2021 only the first three positions, the prerogative of Grana Padano, Parmigiano Reggiano and Prosciutto di Parma, remained unchanged, albeit with different positions, and the trend confirms the relative importance of PDOs compared to PGIs in terms of production value.

Fig. 2.1: Concentration of turnover (%) in the top 10 products



Source: Elaboration by Centro Studi Divulga on the Qualivita Foundation data (various years)

Fig. 2.2: Production values of the top 10 products (mln €) and % incidence on the production value of the category

Products	2014	Weight 2014	Products	2021	Weight 2021
Grana Padano PDO	1361	37%	Parmigiano Reggiano PDO	1607	34%
Parmigiano Reggiano PDO	1205	33%	Grana Padano PDO	1459	31%
Parma ham PDO	701	39%	Parma ham PDO	650	33%
Balsamic vinegar of Modena PGI	292	99%	Campania buffalo mozzarella PDO	459	10%
Campania buffalo mozzarella PDO	283	8%	Balsamic Vinegar of Modena PGI	402	99%
San Daniele ham PDO	278	15%	Gorgonzola PDO	377	8%
Bologna Mortadella PGI	277	15%	Bologna Mortadella PGI	342	18%
Gorgonzola PDO	267	7%	San Daniele ham PDO	333	17%
Valtellina Bresaola PGI	249	14%	Pecorino Romano PDO	302	6%
South Tyrolean Apple PGI	247	53%	Gragnano pasta PGI	245	100%

Source: Elaboration by Centro Studi Divulga on the Qualivita Foundation data (various years)

In terms of distribution of the values produced by the PDO and PGI system, the imbalance between the north and south of the country is evident. Lombardy and Emilia Romagna alone hold more than 61% of the total value generated. Alone, Emilia Romagna retains 39% of the total value, while Lombardy absorbs 22% of the total.

This asymmetry between regions is also confirmed by the concentration index, which is equal to 0.765.

The index is calculated according to the following formula:

$$\frac{\sum_{i=1}^{n-1}(pi - qi)}{\sum_{i=1}^{n-1} pi}$$

Having indicated with

$p_1 = \frac{1}{N}; p_2 = \frac{2}{N}; \ldots\ldots\ldots; p_i = \frac{i}{N}; \ldots\ldots\ldots\ldots; p_N = \frac{N}{N} = 1$

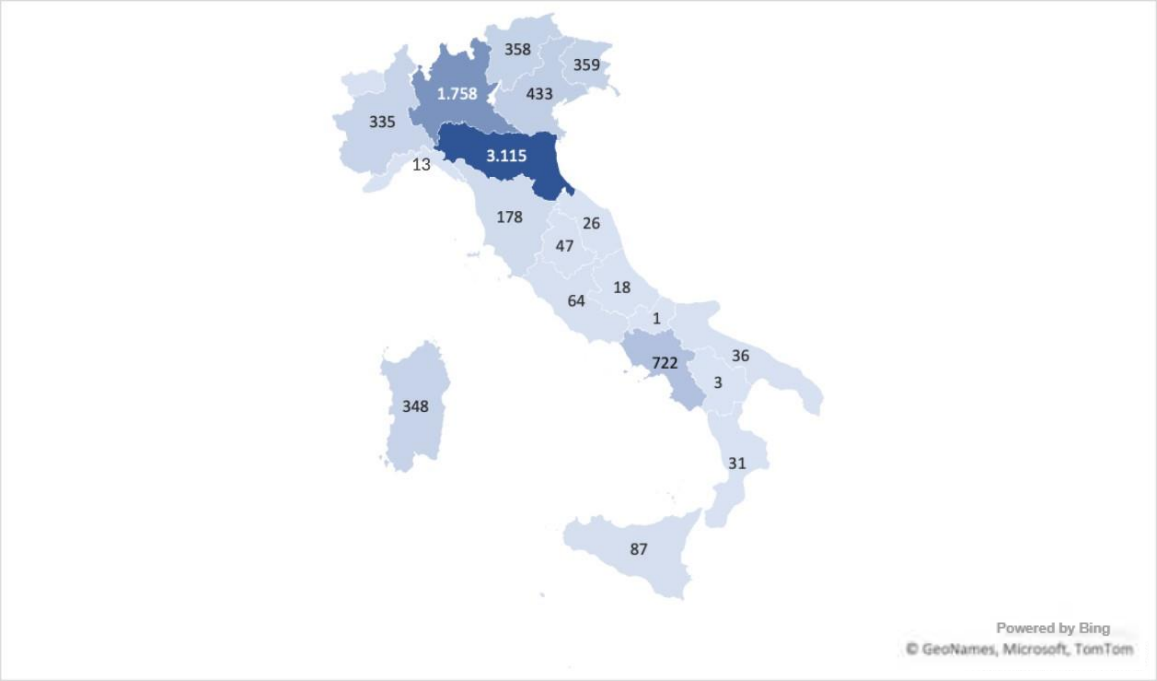
the cumulative relative frequencies of the N statistical units and with

$q_1 = \frac{X_1}{N*M_1}; q_2 = \frac{X_1 + X_2}{N*M_1}; \ldots\ldots\ldots; q_i = \frac{X_1 + X_2 + \ldots X_i}{N*M_1}; \ldots\ldots\ldots\ldots; q_N = \frac{N*M_1}{N*M_1} = 1$

the cumulative relative intensities - placed in ascending order- of the character considered, with M_1 the arithmetic mean and with $N*M_1$ the amount of the character

$$N*M_1 = \sum_{i=1}^{N} X_1$$

Fig. 2.3: Regional distribution of production values (millions €)



Source: Elaboration by Centro Studi Divulga on the Qualivita Foundation data (2021)

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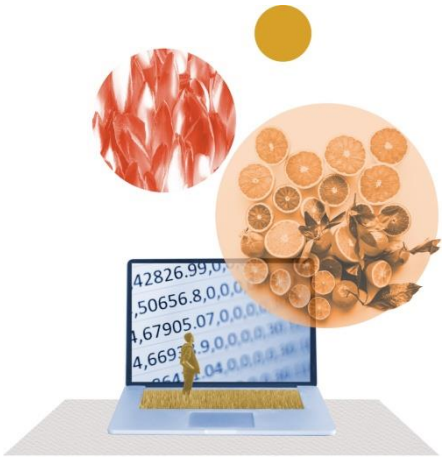
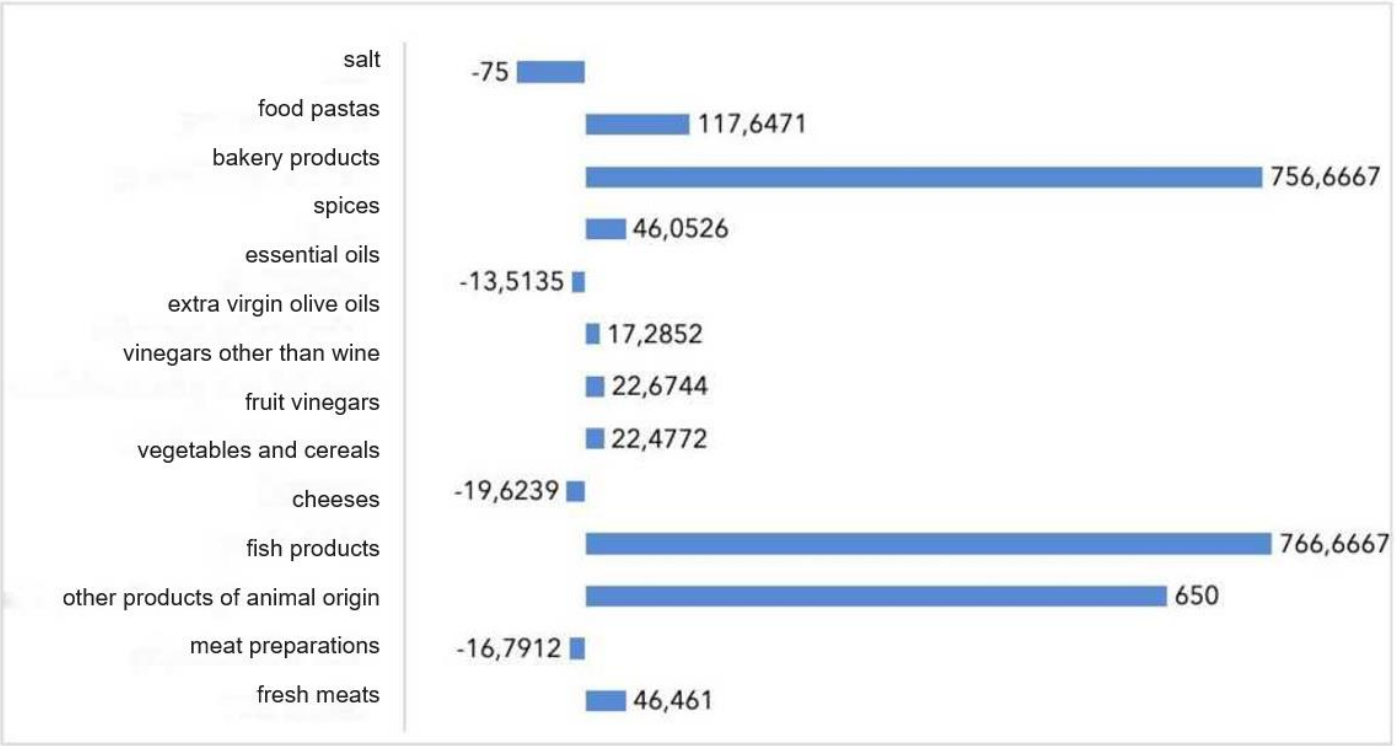


3. Operators adhering to the geographical indications system

The excellent results recorded in the geographical indications system in terms of turnover and exports can be supported by an analysis of the operators adhering to the PDO and PGI, with the aim of verifying the rate of attractiveness of the food quality circuits. We will try to describe these dynamics through the use of simple socio-demographic indicators. Subject of analysis are the following sectors: fresh meat, preparation of meat, other products of animal origin, fish products, cheeses, fruit and vegetables and cereals, vinegars other than wine vinegars, extra virgin olive oils, essential oils, spices, bakery products and food pastas. All data were obtained from the Istat source; the analysis concerns the period 2010 - 2018, with the exception of fish products, whose period ranges from 2011 to 2018, the food pastas and salt, where the period 2014-2018 is considered.

If we consider the percentage variation of the operators present in the various sectors, we observe a consistent increase for food pastas, bakery products, fish products and other products of animal origin (fig. 3.1 and fig. 3.2).

Fig. 3.1: % variation of operators for the period 2010-2018



Source: Centro Studi Divulga elaboration based on Istat data

Always positive variations, albeit minor, concern spices, extra virgin olive oils, vinegars, fruit and vegetables, cereals and the fresh meat sector. Instead, negative variations are evident for the cheese, meat preparation, essential oils and salt sectors.

Fig. 3.2: Distribution of the number of operators of births and terminations on the dates indicated by product sector

Dynamics of operators	*Operators present at 01/01/2010*	*Born 2010/2017*	*Terminated 2010/2017*	*Operators active on 01/01/2018*
PDO, PGI TGS sectors and products				
fresh meats	*6612*	*8437*	*5377*	*9672*
meat preparations	*4818*	*1970*	*2852*	*3936*
other products of animal origin	*70*	*684*	*229*	*525*
cheeses	*34249*	*19636*	*26352*	*27533*
fruit, vegetables and cereals	*16123*	*15684*	*12066*	*19741*
different vinegars from wine vinegars	*516*	*480*	*363*	*633*
extra virgin olive oils	*19589*	*25456*	*22074*	*22971*
essential oils	*37*	*28*	*33*	*32*
spices	*76*	*161*	*126*	*111*
bakery products	*30*	*391*	*164*	*257*
Total	*82120*	*72927*	*69636*	*85501*
Dynamics of operators	*Operators present at 01/01/2011*	*Born 2011/2017*	*Terminated 2011/2017*	*Operators active on 01/01/2018*
fish products	*6*	*79*	*33*	*52*
Dynamics of operators	*Operators present at 01/01/2014*	*Born 2014/2017*	*Terminated 2014/2017*	*Operators active on 01/01/2018*
food pastas	*17*	*24*	*4*	*37*
salt	*8*	*2*	*8*	*2*

Source: Centro Studi Divulga elaboration based on Istat data

Fig. 3.3: Average annual birth, death and natural growth rates

PDO, PGI TGS sectors and products	*tn*	*tm*	*tcn*
fresh meats	129.5	82.6	47.0
meat preparations	56.3	81.4	-25.2
other animal products	287.4	96.2	191.2
fish products	389.2	162.6	226.6
cheeses	79.5	106.6	-27.2
fruit, vegetables and cereals	109.3	84.1	25.2
vinegars other than wine vinegars	104.4	79.0	25.5
extra virgin olive oils	149.5	129.7	19.9
essential oils	101.4	119.6	-18.1
spices	215.2	168.4	46.8
bakery products	340.6	142.9	197.7
food pastas	222.2	37.0	185.2
salt	100.0	400.0	-300.0

Source: Centro Studi Divulga elaboration based on Istat data

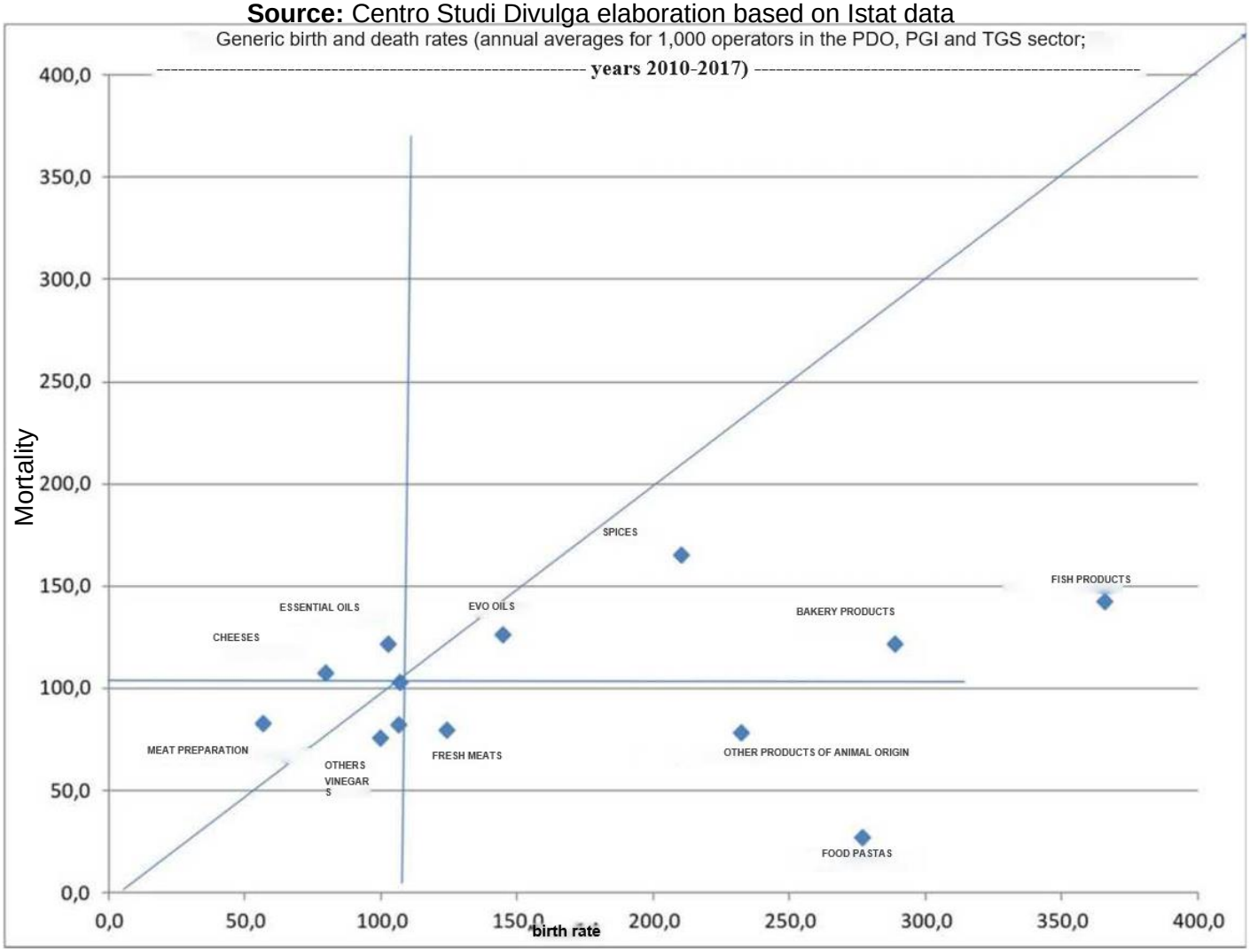
Observing the birth and death rates and natural balances, what is evident is that the sectors that show a negative natural growth rate in the period considered are in particular cheeses, prepared meats and the essential oils sector. On the other hand, sectors that show a positive and very high *tcn* are the sectors of fish products, pasta and bakery products.

The previous information can be summarised graphically to offer a clear picture of the dynamics just mentioned. In this regard, the figure below shows the generic birth and death rates calculated in the period 2010-2017 on annual averages for 1000 operators in the PDO and PGI sector. The figure shows the bisector that identifies the locus of the points where the birth rate and the death rate are equal, and, in this way, a growth equal to zero is determined. Above the bisector are the sectors in which the mortality rate is higher than the birth rate, thus identifying the area of decrease in the number of operators. Conversely, the area below the bisector shows the area where growth rates are positive. The further we move away from the bisector, the greater the growth/decrease will be for the sector in question. We can observe that the category of cheeses is located above the bisector in which the mortality rate is higher than the birth rate, thus identifying the area of decrease in the number of operators. In fact, in figure 3.2 it can be seen that the number of operators active on 1 January 2018 was approximately 27,533 compared to 34,249 operators present on 1 January 2010. The sector has 56 PDO and PGI products, many of which are among the top 15 PDO and PGI products by production value. Another important sector that sees a reduction in the natural balance is that of meat preparation where the operators surveyed in 2018 are 3,936, compared to 4,818 in 2010. Therefore, we observe a birth rate of 55.3 per thousand and a mortality rate of 81.4 per thousand, which corresponds to a negative average annual natural growth rate, more precisely equal to

-25.2 operators per thousand.

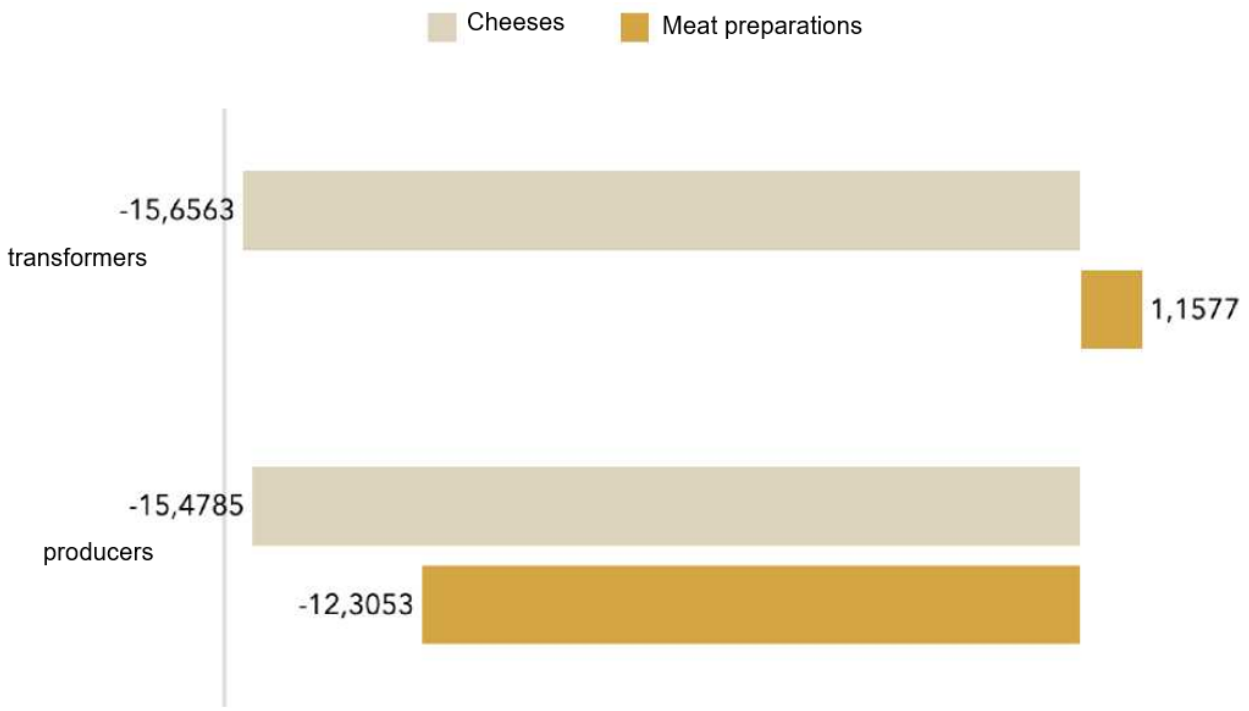
Fig. 3.4: Generic birth and death rates

Source: Centro Studi Divulga elaboration based on Istat data



As it is not possible to acquire disaggregated data on birth/death rates in these two important sectors, we can highlight the percentage variation of the operators over the reference period. Figure 3.5 highlights the data in question, showing how in the cheese sector there is a drop in both agricultural operators and of transformers, with a percentage variation of just under 16%. In terms of primary production, this fall also affects producers in the meat preparation sector, which decrease by 12.3%, however against a slight growth of processors equal to 1.2%.

Fig. 3.5: Variation of producers and processors in the cheese and meat preparation sector



Source: Centro Studi Divulga elaboration based on Istat data

With the exception of cheese, meat preparations, essential oils and salt, almost all sectors, however, recorded a positive trend; in contrast to the data for cheeses and prepared meats is the positive variation of agricultural operators recorded in some sectors that are important for Made in Italy, such as fruit and vegetables and cereals and extra virgin olive oil. Regarding fruit, vegetables and cereals, overall the number of new entries is very high, with an index of 109.3, against which the mortality rate is 84.1. The balance, albeit not high, remains positive at 25.2. The extra virgin olive oil sector is instead characterised by an overall positive balance of 19.9, the result of a birth rate of 149.5 and a mortality rate of 129.7. The dynamics affecting the fish products sector is also very important, a relatively new and growing sector in the field of quality products, where there is an average annual increase of 226.6 operators for every thousand on average present in the period considered. The data could be attributable to the fact that the launch of designation of origin brands in the sector is relatively recent and this has favoured the race for brands, typical of the initial phase of the life cycle of designations. There were approximately 52 active operators as of 1 January 2018, while only 6 operators were present as of 1 January 2011. Therefore, we can observe a birth rate of 389.2, compared with a mortality rate of 162.6 per thousand and the overall balance is positive, with an increase of 256.2 operators per thousand. Another sector where there is a very high growth rate is that of food pastas. In Italy there are only five PDO and PGI products in the sector, for a production value of 240 million Euro in 2020. The

most important product in terms of generated values is Gragnano pasta which is among the top fifteen PDO and PGI food products. The average annual growth of operators was approximately 185 per thousand. The birth and death rates are 222 and 37 respectively. A "mature" sector, where a slight decrease of -2% in production value was recorded, is that of meat-based products. The fresh meat sector records a birth rate of 129.5 per thousand and a mortality rate of 8 2 , 6 per thousand, therefore the general annual average trend remains positive, with a balance of 47 operators per thousand. Focusing on other products of animal origin, a birth rate of 287.4 and a mortality rate of 96.2 can be deduced. The balance between rates remains positive, showing an annual average natural growth rate of 191.2. Regarding the sector of vinegars other than wine vinegars, the trend is positive, equal to 25.5, showing birth and death rates of 104.4 and 79.0 respectively.

Box 1: Appendix to the chapter

Starting from data on the number of operators in the reference time frame, we calculated a number of demographic indicators (formulas 1, 2 and 3).

- Average annual birth rate: ratio between the average annual number of births and the average number of operators present, multiplied by one thousand.

$$tn = \frac{\textit{Mid-year births}}{\textit{Average number of operators present}} \times 1000 \quad (1)$$

- Average annual mortality rate: ratio between the average annual number of deaths and the average number of operators present, multiplied by 1,000.

$$tm = \frac{\textit{Average annual terminations}}{\textit{Average number of operators present}} \times 1000 \quad (2)$$

- Average annual rate of natural growth: difference between the birth rate and the death rate.

$$tcn = \textit{Mortality rate axonatality} \quad (3)$$

4.

4. A regional analysis of the dynamics of operators

The dynamics of the operators commented on above can be broken down on a regional basis in order to highlight any differences. This analysis is supported by a methodology described in the appendix to the chapter, the *shift and share* analysis. The working hypothesis is that the regional variation of a phenomenon can be influenced by a composite series of factors, including the evolution of demand, consumer preferences, the productivity of the various sectors and the structural composition of the agri-food sector. More precisely, the regional variation of a certain phenomenon, in this case, the variation of operators adhering to the system of geographical indications, can be made up of the two components described in the appendix, i.e. the structural one and the one linked to local (regional) competitiveness. The results deriving from the application of the method are clear and confirm an evident dichotomy between the northern and southern regions in the dynamics of the operators.

Observing the results (fig. 4.1), the positive value of the trend component emerges, which reaffirms the positive trend that the sector of denominations of origin records in terms of attractiveness of the production and processing operators. The breakdown of the data into the two effects, structure and local competition, instead reveals a number of differentiations in the regions of reference. In some regions, the negative change in the regional growth rate is attributable to both the structural effect and

to the local effect: this happens in Valle d'Aosta, Lombardy, Trentino Alto Adige, Veneto, Friuli Venezia Giulia and in Emilia Romagna. In these regions, the data shows the presence of specialisations in the PDO and PGI sectors which, at a national level, record negative variations in employment. In general, the DIF effect tends to be larger than the MIX effect in these regions, which shows a relatively steeper decline at the regional level than the national trend. On the opposite side we can observe the data of the regions for which both the structure effect and that of local competitiveness are positive. In Abruzzo, Puglia, Basilicata, Sicily and above all in Calabria, the denominations of origin record a local growth rate higher than the national growth, which underlines how these regions are specialised in denominations of origin driven by a positive and growing national demand. Instead, it can be stated that it is precisely these regions that provide a fundamental contribution to the attractiveness of the sector of geographical indications.

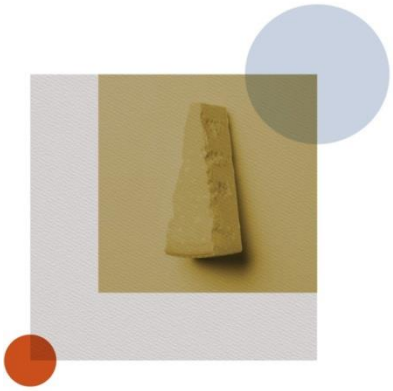


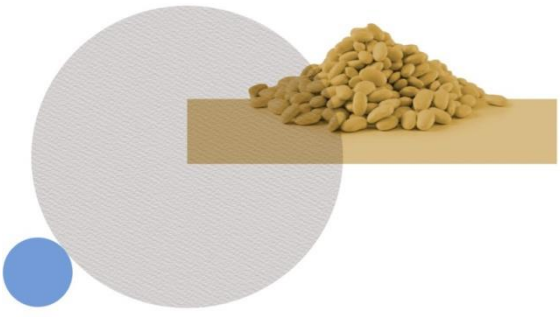
Fig. 4.1: Breakdown of regional variation in employment

	y	y*	*MIX*	*DIF*
Piedmont	0.304	0.0744	-0.0257	0.2555
Valle d'Aosta	-0.159	0.0744	-0.0224	-0.2111
Liguria	-0.197	0.0744	0.0648	-0.3361
Lombardy	-0.100	0.0744	-0.0264	-0.1479
Trentino A.A.	-0.108	0.0744	-0.0086	-0.1739
Veneto	-0.180	0.0744	-0.0090	-0.2454
Friuli V.G.	-0.162	0.0744	-0.0265	-0.2099
Emilia Romagna	-0.019	0.0744	-0.0246	-0.0686
Tuscany	-0.065	0.0744	0.0525	-0.1924
Umbria	-0.060	0.0744	0.0261	-0.1602
Marche	0.113	0.0744	-0.0415	0.0799
Lazio	0.147	0.0744	-0.0145	0.0869
Abruzzo	0.390	0.0744	0.0088	0.3068
Molise	0.072	0.0744	0.0147	-0.0169
Campania	0.153	0.0744	-0.0129	0.0910
Puglia	0.479	0.0744	0.0608	0.3440
Basilicata	0.142	0.0744	0.0037	0.0413
Calabria	1.380	0.0744	0.0021	1.3036
Sicily	0.843	0.0744	0.0224	0.7461
Sardinia	0.222	0.0744	-0.0290	0.1766

Source: Centro Studi Divulga elaboration based on Istat data

Going into the details of the productions, the two MIX and DIF effects are highlighted in the Italian regions, distinguished by product categories (fig. 4.2). Overall, negative structural effects emerge in almost all the Italian regions for the fresh meat, meat preparations and cheese sectors. This means that in many regions these areas are structurally present and which are characterised by a negative trend in terms of operators. Even the fruit and vegetable sector records negative data in almost all regions (with the exception of Valle d'Aosta, Molise and Sardinia). Only the extra virgin olive oil sector shows positive data in all Italian regions, with relatively higher values in regions traditionally specialised in the production of PDO extra virgin olive oils, such as Liguria, Tuscany, Umbria and Puglia.

Moving on to the DIF effect, which measures local competitiveness, it can be seen that the southern regions show positive values, especially in Calabria and Sicily. This means that in these regions the effect of local competitiveness causes a greater dynamism to populate the areas of



reference to higher rates than the national average.
Going into the details of the sectors, the extra virgin olive oil sector offers a significant contribution on the local competitiveness effect, not only in Calabria and Sicily, but also in Puglia, while in Sardinia the boost comes above all from the cheese sector. In central Italy, Lazio, Marche and above all Abruzzo record a positive DIF effect: in Abruzzo, all the sectors are positive but that of fruit, vegetables and cereals are prominent. In Lazio, cheeses and fruit and vegetables and cereals provide a decisive push for a positive local effect, while the sectors of meat preparation and extra virgin olive oil record a negative figure. Instead, in Le Marche it is precisely the olive sector that shows good performance, together with fruit and vegetables and cereals and the dairy sector, while cured meats and fresh meat show negative data. In the north, almost all the regions show a negative DIF effect, with the exception of Piedmont which, thanks above all to the fruit and vegetable and cereal sector, can boast a positive local competition effect.

Fig. 4.2: Shift and share analysis – structural effects and local effects

MIX effect

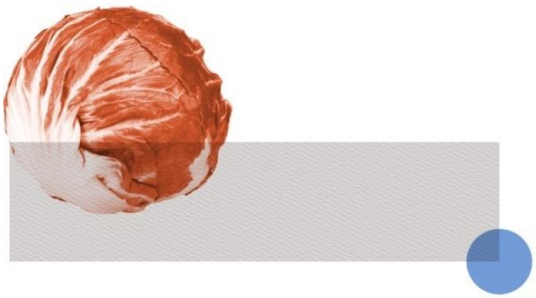
	fresh meats	*meat preparations*	*cheeses*	*Fruit, vegetables and cereals*	*extra virgin olive oils*	*Total*
Piedmont	*0.0000*	-0.0152	-0.0076	-0.0028	0.0000	-0.0257
Valle d'Aosta	*0.0000*	-0.0003	-0.0221	0.0000	0.0000	-0.0224
Liguria	-0.0001	0.0000	0.0000	-0.0003	0.0651	0.0648
Lombardy	-0.0001	-0.0134	-0.0144	-0.0006	0.0021	-0.0264
Trentino A.A.	0.0000	-0.0002	-0.0022	-0.0065	0.0003	-0.0086
Veneto	-0.0001	-0.0043	-0.0135	-0.0012	0.0101	-0.0090
Friuli V.G.	-0.0001	-0.0097	-0.0178	-0.0001	0.0011	-0.0265
Emilia Romagna	-0.0030	-0.0081	-0.0140	-0.0010	0.0015	-0.0246
Tuscany	-0.0031	-0.0006	-0.0012	-0.0002	0.0576	0.0525
Umbria	-0.0136	-0.0027	-0.0001	-0.0002	0.0426	0.0261
Marche	-0.0344	-0.0069	-0.0015	-0.0002	0.0014	-0.0415
Lazio	-0.0202	-0.0006	-0.0061	-0.0006	0.0130	-0.0145
Abruzzo	-0.0220	-0.0015	0.0000	-0.0001	0.0324	0.0088
Molise	-0.0119	-0.0038	-0.0038	0.0000	0.0341	0.0147
Campania	-0.0077	-0.0002	-0.0080	-0.0028	0.0058	-0.0129
Puglia	-0.0002	-0.0001	-0.0006	-0.0004	0.0621	0.0608
Basilicata	0.0000	-0.0017	-0.0075	-0.0030	0.0158	0.0037
Calabria	-0.0006	-0.0034	-0.0018	-0.0048	0.0127	0.0021
Sicily	0.0000	-0.0002	-0.0007	-0.0041	0.0274	0.0224
Sardinia	-0.0139	0.0000	-0.0152	0.0000	0.0002	-0.0290

DIF effect

	fresh meats	*meat preparations*	*cheeses*	*fruit, vegetables and cereals*	*extra virgin olive oils*	*Total*
Piedmont	0.0053	0.0030	-0.0649	0.3121	-	0.2555
Valle d'Aosta	-	0.0013	-0.2124	-	-	-0.2111
Liguria	0.0107	-	-	-0.0001	-0.3468	-0.3361
Lombardy	0.0030	0.0047	-0.1146	-0.0343	-0.0068	-0.1479
Trentino A.A.	-	-0.0002	-0.0081	-0.1649	-0.0007	-0.1739
Veneto	0.0053	-0.0070	-0.1714	-0.0243	-0.0480	-0.2454
Friuli V.G.	0.0105	-0.0031	-0.2132	-0.0018	-0.0023	-0.2099
Emilia Romagna	-0.0046	-0.0063	-0.1069	0.0523	-0.0030	-0.0686
Tuscany	-0.0066	-0.0001	-0.0018	-0.0021	-0.1817	-0.1924
Umbria	-0.0175	0.0037	0.0003	0.0008	-0.1475	-0.1602
Marche	-0.0352	-0.0093	0.0047	0.0475	0.0722	0.0799
Lazio	0.0039	-0.0002	0.0439	0.0853	-0.0459	0.0869
Abruzzo	0.0138	0.0025	-	0.2334	0.0570	0.3068
Molise	0.1109	0.0091	-0.0140	-	-0.1229	-0.0169
Campania	0.0553	0.0053	-0.0549	0.0606	0.0248	0.0910
Puglia	0.0033	0.0013	0.0061	0.0223	0.3109	0.3440
Basilicata	-	0.0442	-0.0026	0.0252	-0.0255	0.0413
Calabria	0.0033	0.0118	0.0364	0.0038	1.2483	1.3036
Sicily	0.0003	-0.0004	0.0034	0.1234	0.6194	0.7461
Sardinia	-0.0084	-	0.1822	0.0004	0.0025	0.1766

Source: Centro Studi Divulga elaboration based on Istat data

Overall, therefore, from the data analyzed it can be deduced that in some regions of the country (especially the north) and in some sectors (cheese and prepared meats) the driving force is attenuating, as if these productions were stabilising in an ideal life cycle that places them in the maturity stage. Instead, in the southern areas a dynamic more favourable to participation in quality circuits would seem to be apparent, typical of the development phase of the life cycle.



Box 2: Methodological appendix

A useful methodology for breaking down the variations of a certain variable, intercepting the territorial dimensions of the phenomenon, is provided by the *shift and share* analysis (Casler, 1989). The *shift and share* methodology, starting from the hypothesis that the variation of a phenomenon at an aggregate territorial level influences the same phenomenon at a local level (e.g. provincial or municipal), allows the aggregate variation to be broken down into various components, linked, in addition to a trend factor (equal for all regions), to a structural effect and a local effect. The analysis therefore makes it possible to understand the territorial differences with respect to the aggregate variations of a specific phenomenon. In this document, the reference variable is the number of operators adhering to GI circuits. If there were no regional differences, the regional growth rate of the operators would equal the national one, while the presence of regional differences can be explained by a differential *s*, as is evident from the following formula (Capello, 2004):

$$Yr = y^* s$$

Where:
Y = growth rate
r = region (or territorial partition)
y* = growth rate that the region should have to equal the national one
s = differential between the aggregate growth rate and the territorial one

This differential can be broken down into two effects which, together with the (national) trend component, explain the variation in the intertemporal period considered. The first effect is called the composition effect (or even structure or even MIX) and defines the share of variation (positive or negative) due to the presence in a given geographical area of a production structure based on sectors which, at the aggregate level, show a strong (weak) dynamic; this effect is indicated according to the following formula:

Composition effect (or structure or MIX) = $$\sum_{i=1}^{n} \frac{E_{ir}^{0}}{E_{r}^{0}} \left(\frac{E_{in}^{1}}{E_{in}^{0}} - \frac{E_{n}^{1}}{E_{n}^{0}} \right)$$

Where:
E = farms (or areas or animals reared, etc.) i = sector
r = territorial level n =
aggregate level
0 and 1 = 2015 and 2019, respectively

As can be seen from the formula, the difference between the variation of employees in the sector is measured in brackets over the reference period *i* at national level and the national average variation in the sector of denominations of origin. The value in parentheses is then multiplied by the relative weight of that sector in each region.

The second effect, instead, is the competition effect (or differential or local or DIF) and highlights an ability of the sectors present in the territory to develop at a faster rate than the aggregated ones. In formula:

Competition effect (or local or DIF) = $$\sum_{i=1}^{n} \frac{E_{ir}^{0}}{E_{r}^{0}} \left(\frac{E_{ir}^{1}}{E_{ir}^{0}} - \frac{E_{in}^{1}}{E_{in}^{0}} \right)$$

Regarding the DIF effect, the variation in the reference period of employment in the sector is measured in brackets *i* at the regional level compared to the variation recorded at the national level in the same sector. Also in this case, the figure is multiplied by the relative weight of the sector at the regional level.

5.

5. Composition of the family and human capital in Italian quality companies

The picture that emerges suggests the need to further investigate the demographic aspects of the agricultural family, which are decisive in the composition of the corporate strategy (Jervell, 1999; 2011; De Rosa, Bartoli, 2013). For this purpose, it may be useful to integrate the information previously illustrated with an analysis of some characteristics of the *family farm business* inserted in the circuits of typicality. More precisely, this part of the work analyzes the following dimensions:

- type and form of management,
- family composition and life cycle,
- educational qualification of the operator and
  of family members.

Reconstruction of this information was possible thanks to the sample data of the Rica network, from which the more than 28,000 companies belonging to the PDO (14,076) and PGI (13,929) quality circuits were extracted.
Regarding management, male entrepreneurship prevails, while in over 26% of cases the companies are led by women. Overall, the family imprint of agriculture practised in the PDO and PGI areas is clearly evident. Approximately 48% of the companies in the sample are run directly, with the help of only family labour. In this case, the incidence of female management is around 32%. In another 40% the family contribution remains prevalent but not exclusive and the weight of female management drops to just over 20%.

The data on gender differences also confirms for typical products what is emerging in the agricultural sector, with companies run by women usually more fragmented than those run by men: if, in fact, the average agricultural land of companies run by men is equal to 6, 4 ha, in those run by women it drops to 3.5 ha. A slightly different situation can be observed with regard to livestock farms, where women's farms are relatively larger than men's (36.7, against 33.3). In all forms of management, the total value produced by PDO and PGI livestock farms is systematically higher than in those specialised in crops. The value of production in companies with denominations of origin is on average equal to 26,329€, with a slightly higher value in the case of PGIs (26,971€) compared to PDOs (25,687€). If the data is distinguished between crops and livestock, profound differences emerge to the advantage of the zootechnical sector, above all for the forms of management that mainly employ wage labour.

A further articulation of the sample in terms of demographics can be performed by operating a stratification by family typology according to the scheme suggested by Bartoli and De Rosa (2013), shown below:

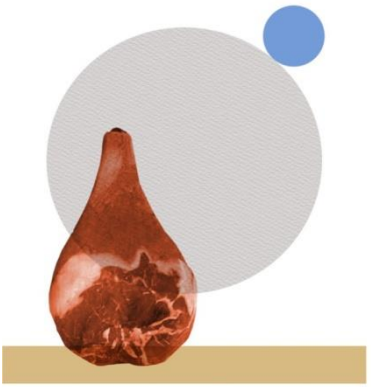


Fig. 5.1: Family typologies detected

FAMILY TYPE	DESCRIPTION
Single-person	Presence of the operator only
Childless couple	Young operator and spouse
Couple with children	Operator, spouse and children
Couple with operator child	Operator and presence of parents
Single parent	Operator without spouse and children
Single parent with operator child	Operator without spouse and one parent
Other families	Presence of several families and/or of additional persons

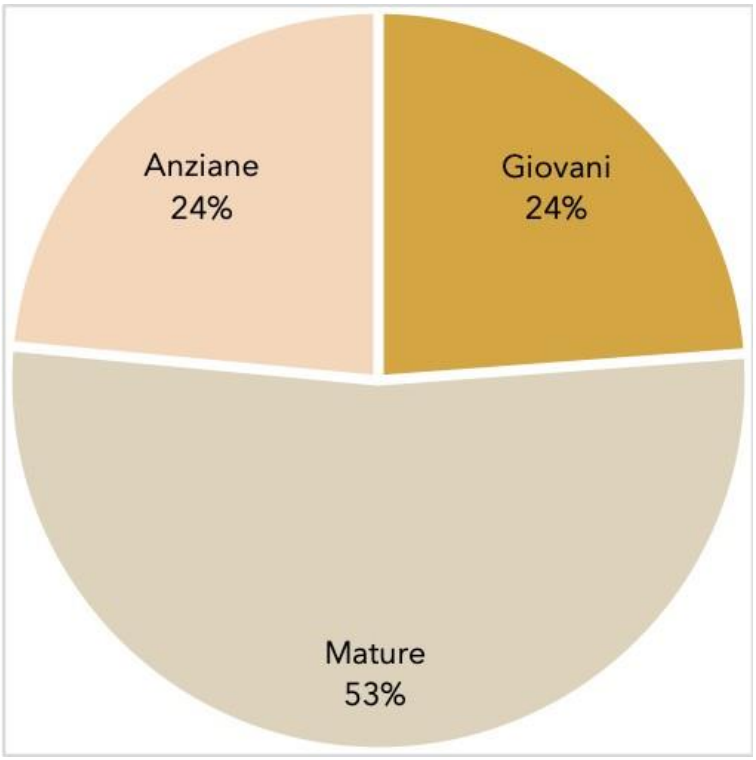
Source: Centro Studi Divulga elaborations on Rica data

These are associated with a further interpretative key offered by the location of the families within a life cycle broken down as follows:

- young families, under the age of 40;
- mature families, aged between 41 and 65 years;
- elderly families, aged over 65.

The hypothesis that we intend to support is that the phase of the life cycle and the composition of the family nucleus can interfere in the strategic family processes, redefining the corporate 'room for manoeuvre'. A further hypothesis, widely confirmed in the literature on family businesses, is that the decision-making process itself takes on the connotations of a collective process in which all family members (even if not closely involved in production) have a role of influence. Looking at the data on the location of the life cycle, the clear prevalence of companies of mature age emerges, between 41 and 65 years of age. Approximately 53% of the total companies are in fact run by individuals in this age group. Firms run by young people represent 24% and constitute the second largest group, although slightly higher than firms run by the elderly, which absorb 23% of the total.

Fig. 5.2: Localisation of companies in the phases of the life cycle



Source: Centro Studi Divulga elaborations on Rica data

Fig. 5.3: Family typologies and life cycle

	companies	%
1a.Single personnel G	3,650	13.0
1b.Single personnel M	9,051	32.3
1c.Single-person A	3,597	12.8
2a.Childless couple G	361	1.3
2b.Childless couple M	2042	7.3
2c.Childless couple A	1292	4.6
3b.Couple with children M	770	2.7
3c.Couple with children A	590	2.1
4a.Couple with operator child G	185	0.7
4b.Couple with operator child M	308	1.1
4c.Couple with operator child A	21	0.1
5b.Single parent M	376	1.3
5c.Single parent A	498	1.8
6a.Single parent with operator child G	1163	4.2
6b.Single parent with operator child M	727	2.6
6c.Single parent with operator child A	46	0.2
7a.Other families G	1314	4.7
7b.Other families M	1470	5.2
7c.Other families A	542	1.9
Total	28005	100.0

Source: Centro Studi Divulga elaborations on Rica data

Figure 5.3 shows the details of the family typologies: more than 50% of the companies in the sample fall into the one-person typology. Going into the details of the life cycle, the clear prevalence of mature single-personnel households emerges: in fact, 3,650 are young single-personnel companies, 9,051 mature single-personnel companies and 3,597 elderly single-personnel companies.

Turning to the family typologies managed by couples, there are 361 couples without young children, of which 250 belong to the PDO circuit and 111 to the PGI one. The mature family type couple without children tends to be more present in the PGIs, with 1,356 companies, compared to the 686 PDOs, for a total of 2,042 companies. The third typology, i.e. an elderly childless couple, is made up of 1 . 292 companies, of which 653 belonging to the PDO circuit and 639 to the PGI circuit. Firms run by couples with children only fall into the mature and elderly stages of the life cycle. Roughly 770 companies belong to the first group while the remaining 590 are part of the second group. There are 514 couples with an operator child, less than 2% of the sample and the single-parent family typology, just over 3%.

Turning to the structural dimensions, the average size of the companies operating in the typical production circuits is 5.6 hectares of agricultural land and 34.2 livestock units, dimensions which vary according to the type of family:

- Regarding single-person farms, the young ones have an average agricultural land of 6.9 hectares and 37 livestock units, those of mature age 7.8 hectares and 30.6 livestock units, while the older ones 4.9 hectares of livestock units and 38 livestock units.
- In family businesses managed by couples with and without children, it can be seen that, in couples without children, the businesses run by young people denote a relatively larger corporate mesh, while in those with children it is the mature businesses that have the largest dimensions.
- Mature single-parent farms manage businesses of around 2.6 ha compared to 2.4 ha of farms run by elderly people. Adult livestock units also show the same differences. Instead, there are approximately 5.7 hectares owned by single-parent farms with young managing children, 5.8 hectares owned by farms with the same type of family but consisting of mature farms and 0.7 livestock units of single-parent farms with an elderly operator child. Regarding livestock units, those belonging to the

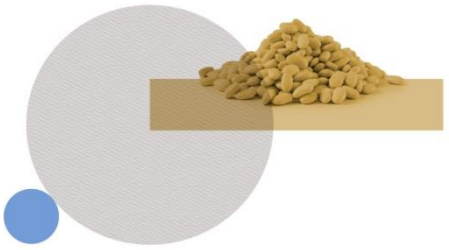
single-parent group with a young manager child are 37.6 compared to 38.2 belonging to the same group, but consisting of mature farms.

Regarding the value of production, this tends to decrease with the life cycle: in fact, it is equal to € 30,697 in young one-man companies, € 28,596 in mature companies and € 18,862 in older ones. In couples without children, the figure changes in favour of companies of mature age: the figure for companies with couples without young children is 29,443€ compared to 37,369€ of mature companies. The figure for older companies is much lower, equal to 10,350€. Instead, in couples with a young operator child there is a very high value compared to the other phases of the life cycle, equal to 55,151€. An opposite trend distinguishes single-parent companies, other families and single-parents with child operators, where there is a higher value in the mature phase of the life cycle.

The analysis highlighted a number of basic trends that distinguish gender differences in Italian agriculture: in the first place, the incidence of female management and the presence of women in smaller farms, with reference to farms specialised in crops.

In this case, the choice to focus on the designation of origin brands appears

to be strategically effective, in the sense that it allows companies to compete not so much on costs as on product quality: this means adopting strategies to valorise “specific” quality, i.e. linked to the origin of the products. Secondly, the data underlines the multifunctional role of female agricultural entrepreneurship which, in addition to expressing social value (custody of the traditions and historical memory of the places), also contributes to improving the environmental sustainability of the productions involved, preserving biodiversity and through the adoption of more sustainable agricultural practices compared to conventional products.



Regarding localisation in the phases of the life cycle, if on the one hand, the juvenile component is equal to less than half compared to management in mature age, on the other hand it cannot be underestimated that this incidence (24%) is well above the data relating to all farms. The preliminary results extracted from the last agriculture census show that the incidence of youth management is around 13%, however down compared to 17% of the previous census in 2010 (Istat, 2022). But this incidence is much lower, 12 percentage points, compared to that which characterises the productions with denomination of origin (a). This means that the youth presence in the PDO and PGI circuits is relatively greater and, therefore, that young people consider the denominations of origin products on which to focus and invest in order to increase their competitiveness on the markets. The strengthening of interventions to support young people, both in the first and second pillars of the Pac, fuels the possibility that an increasing number of young people in the future will be able to choose GIs as their prevailing corporate strategy.

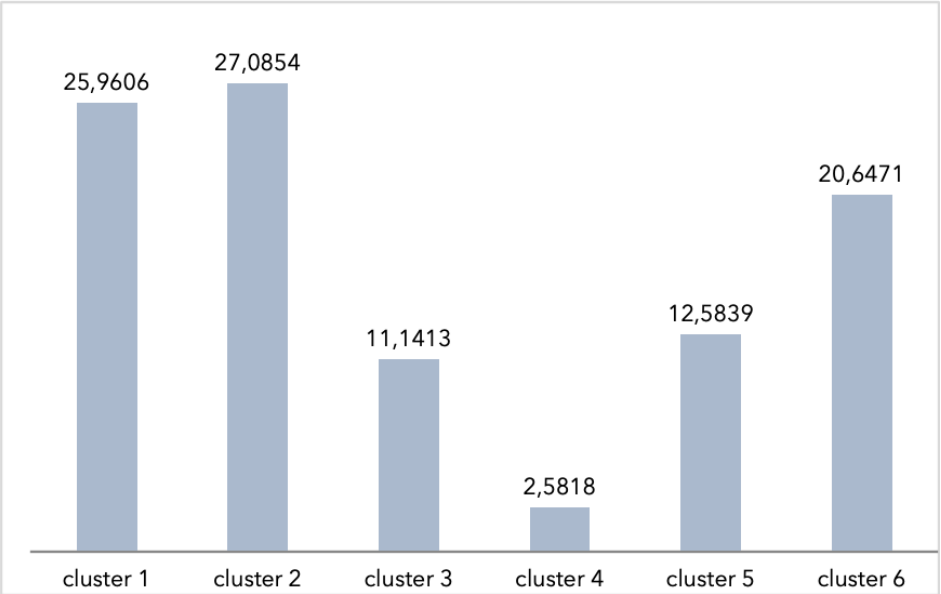
6.

6. A socio-demographic classification of the companies adhering to the designations of origin

The objective of this part is to classify companies, defining their corporate styles, through a multivariate analysis that has taken the same 28,000. companies of the Rica sample as a reference. The classification method is presented in the appendix to the chapter.

The results of the analysis made it possible to identify six macro business typologies (fig. 6.1) to which the universe of PDO and PGI producers can be traced.

Fig. 6.1: Distribution of companies in clusters (%)



Source: Centro Studi Divulga elaborations on Rica data

cluster 1 - Young single-parent companies specialised in tree cultivation

The 7,270 companies in the first cluster absorb 26% of the total and mainly operate in the tree cultivation sector, within which the olive growing sector stands out. The companies belonging to this group are located above all in areas with a vocation for olive growing, such as Liguria, Campania, Umbria, Sicily and, to a lesser extent, Abruzzo. The companies of the group mainly make use of family labour and are run by entrepreneurs with a medium level of education: in particular, a high school diploma

is the prevailing title. The families in question are single parents and are located above all in the young phase of the life cycle: this aspect could be associated with the particular dynamism of these companies in the field of company diversification and quality paths.

Cluster 2 - Older companies with low educational qualifications

The second cluster is the largest and consists of 7,585 companies, equal to 27% of the total. The companies in the cluster include highly specialised profiles, as in the case of Piedmont hazelnuts and, again, a portion of quality olive growing. The regions in which this type stands out, in addition to Piedmont, are Sicily and Veneto, where there are approximately a third of the companies in the cluster, while the presence of this type of company stands at 30% in Tuscany.

The group is characterised by companies of very small size, both physical and economic. In this cluster direct management prevails, with exclusive contribution of the family workforce. Regarding educational qualifications, many operators have no academic qualifications and the lower middle school diploma is prevalent in the remainder. This characteristic is linked to the age of the operator, mainly located in the elderly phase of the life cycle, and to the prevailing family characterisation. In fact, single-personnel companies located in the senior phase absorb 64% of group companies.

Cluster 3 – Young companies with a high level of education

The third group includes 3,120 companies, equal to 11.1% of the total. What distinguishes this company profile is undoubtedly the company's high level of education. In fact, the operator has a degree in 96% of the cases included in this cluster. The presence of women is also significant, accounting for 15% of the companies that make up the cluster, which however involves around 66% of women-run companies. The companies are run by entrepreneurs with an average age of less than 40 years.

Cluster 4 – Companies with strategies of broadening and deepening

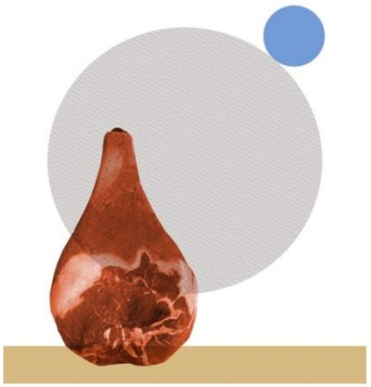
The fourth group extracted is the smallest, comprising 723 companies, with a percentage contribution of 2.6%. All the companies in the cluster are characterised by a relatively high qualification of the operator: 100% of the companies in the cluster are run by entrepreneurs with a university degree and all the companies with this qualification are in the cluster in question. Another distinctive element is the type of certification, which appears to be the typical geographical indication, which characterises many products of national agricultural crops, in particular in some areas both in the north (Emilia Romagna), in the centre (Tuscany) and in southern Italy (Campania and Sicily). The companies in the cluster adopt strategies that are partly similar to those of the previous cluster, in particular, those linked not only to the valorisation of the product, but also to the diversification of the company's product portfolio stand out. This occurs in particular by linking the product to other initiatives aimed at enhancing the company's territorial resources, for example through rural hospitality and the use of the rural landscape. This guarantees the companies in the cluster discrete economic performances and therefore a fair remuneration for the resources employed in the production processes.

Cluster 5 – Specialised mature companies

The fifth cluster includes 3,524 companies, equal to 12.6% of the total.
Most of these companies specialise in crops, with a prevalence of Trentino companies dedicated to the production of apples (more than 70% of the companies in the cluster). It is therefore not surprising that many companies in the cluster are located in Trentino, although the share of companies located in Emilia Romagna and Sicily is not negligible.
These are companies characterised by a certain internal polarisation: on the one hand, there are companies which, although with very small physical dimensions, present good economic performances; on the other, but with a much lower percentage incidence, we find large companies.
The operators above all possess a professional qualification diploma and work within companies where the contribution of family labour prevails.
The family typology sees the prevalence of couples with or without children, often of mature age and led by male entrepreneurs.
However, single-person households and young single-parent households also have a certain importance within the group.

Cluster 6 – Farms specialised in breeding

The last cluster includes 5,782 companies, which absorb 20.6% of the total. These are above all livestock farms, with a certain prevalence of sheep farms. Consequently, the areas of quality pecorino cheeses and in particular the farms of Sardinia characterise the cluster. However, the presence of farms located in Abruzzo and Emilia Romagna is not negligible. In terms of human capital, the title of the lower diploma not only distinguishes the operator, but also represents the prevailing educational qualification within the agricultural family, from which all the company's work contribution comes. Management is generally entrusted to male entrepreneurs and, in almost half of the cases, generates very positive economic results.



Box 3: Appendix

The analysis methodology is based on the hierarchical classification method according to Ward's method, through 10 consolidation iterations with mobile centres. The list of active and illustrative variables considered is as follows:

Active variables	
Region	(20 modes)
Form of Management	(5 modes)
Type	(2 modes)
Settlement	(7 modes)
Strategic_Profile	(6 modes)
Economic Size_BDR	(3 modes)
Certification_Type	(2 modes)
PDO/PGI product	(23 modes)
PDO/PGI typology	(2 modes)
Operator age class	(3 modes)
Family type no age	(7 modes)
Operator study title	(7 modes)
Highest family educational qualification	(7 modes)
Nominal illustrative variables	
Child typology with age	(19 modes)
Continuous illustrative variables	
Company Standard Production	
corporate livestock units	
Total Hours	
Agricultural land to PDO-PGI	
Total gross production PDO-PGI	
PDO-PGI working hours	
QT_PDO_PGI	
ML_PDO_PGI	
MO_PDO_PGI	
LU_PDO_PGI	

Conclusions

The report sought to highlight a number of aspects not always covered in the narrative on designations of origin, with particular attention to the socio-demographic variables that distinguish the companies included in the typical production circuits.
The survey suggests some food for thought, which can be divided into three main dimensions: operators adhering to the PDO and PGI brands, composition of the family nucleus, business styles.

1) Regarding the operators belonging to the typicality circuit, the system shows a positive trend, with a growth of the members recorded in the reference time frame. However, we cannot hide the fact that in some PDOs and PGIs, precisely the most important ones in the Italian scenario, there is a drop in operators, which cannot be classified as a mere economic phenomenon. There may be a variety of causes and this deserves further investigation. The phenomena of restructuring of the productive fabric are one of the explanations. But also the level of costs related to participation in the quality circuits may have played, in some cases, a determining role. What can be stated here is that a sort of life cycle of geographical indications seems to be emerging, in which the more developed ("mature") PDOs and PGIs seem to be experiencing a slowdown in the growth of operators, also due to the effect of the saturation of the spaces offered by the production areas. The longest-lived and most established PDO and PGI products on the markets could, in fact, have exhausted the agricultural and natural potential made available by the area. The regulations, especially for the PDOs, provide that local agricultural resources feed the production process above all, as in the example of the school of the obligatory quota of local fodder for Parmigiano Reggiano. In fact, the expansion of production has, in the case of quality productions, natural limits. Once these limits are reached, it is equally natural that development takes place through processes of reorganisation of the apparatus that seeks to optimise production scales. This can lead to the reduction of operators, favouring business transfer processes especially in the family typologies for which the

business continuity is more at risk. For this reason, the large Italian PDOs are particularly affected by the negative balances of the entrepreneurial population, which however continue to grow in the values generated. Obviously, processes of disaffection with quality circuits can also be insinuated into this picture, as evidenced by the abandonment of some entrepreneurs. The request is in particular to give acknowledgment to further qualitative characterisations of the production and/or to particular territorial conditions. In the latter case, a partial response came from the possibility of introducing the optional indication "mountain product". Instead, in the younger areas the entrepreneurial population is growing. In practice, the existence of a life cycle of the entrepreneurial population emerges, which grows in the development phase of the PDO/PGI and then stabilises and possibly decreases in the maturity phase.

2) Regarding the family variables, the report detailed the composition of the agricultural family, the acquisition of educational qualifications and their location within the family life cycle. This approach has made it possible to highlight three points:

   a. The first concerns the importance of women's management, which often opts for quality production linked to the origin as a tool to remedy a structural weakness which sees women's businesses smaller than men's ones. The choice of geographical indications therefore becomes strategic for fueling corporate development paths marked by multifunctionality. Proof of this is the fact that product enhancement strategies are often associated with diversification of the company's product portfolio.
   b. The second point of reflection concerns the relevance of youth management, which seems relatively higher than conventional companies. The presence of young food handlers for a more "entrepreneurial" handle, in which the innovative drive, combined with a greater

propensity for risk and a long-term vision, allows the foundations to be laid for more solid corporate styles rooted in the territory.

c. The third concerns the importance of the family type, an aspect too often overlooked in the analyses of agricultural realities specialised in denominations of origin. The link between business and family is indissoluble and must be analyzed with the necessary detail, to highlight any strategic ties. The structural gaps between young and mature companies, on the one hand, and older companies on the other, suggests that in the latter processes of corporate deactivation and de-structuring can be triggered, which can negatively affect the preservation of direct and indirect externalities produced by geographical indications.

3) In the last part of the work we sought to classify the companies of the sample under study through multivariate analysis techniques, which revealed a variety of corporate styles that confirm the complexity of the agricultural structures operating in the quality circuits. Behind the denominations of origin there is a variety of strategies, company characteristics and often diversified objectives, both on a territorial and socio-demographic basis.

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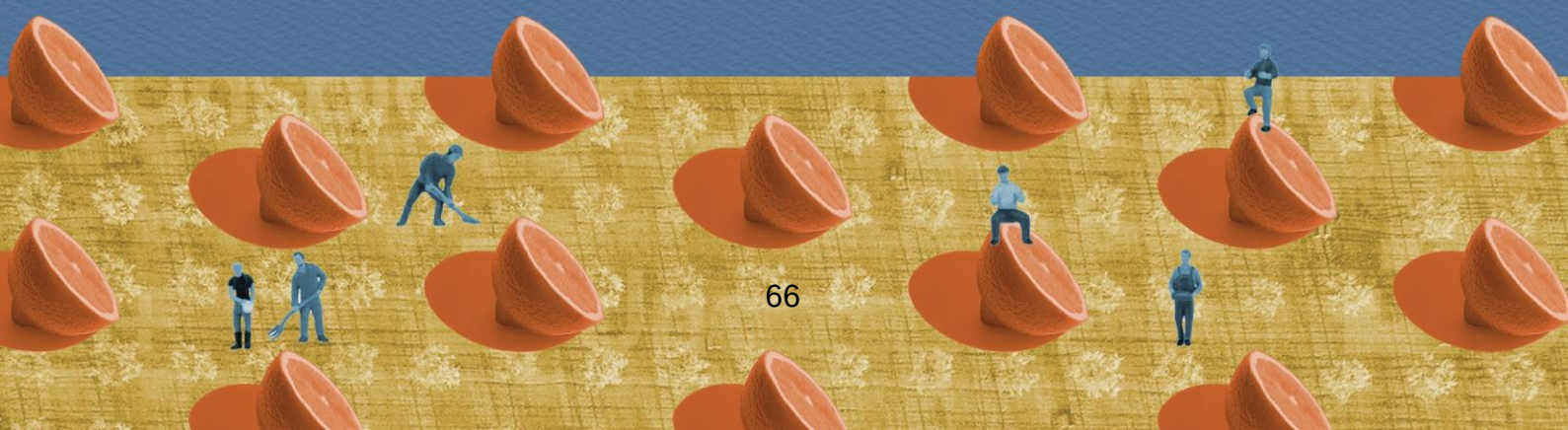

Notes

a) It should also be noted that the census data consider youth entrepreneurship in the age group up to 44 years.

b.

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