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European and Italian Pasta Industry: recent trends and firms  
performance



Relatore

Prof. Luigi Benfratello

Candidato

Vittorio Grimaldi

Matr. 232569

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## 0. ABSTRACT

The thesis aims to analyse the pasta industry, one of the most significant industries in Italy, both from a historical and industrial point of view, of which it is a world leader. Starting from the purely historical background, we then analyse the characteristics of the product. The world wheat production highlights the main producers, with particular reference to durum wheat, used for pasta production. Therefore, the classification of wheat is analysed both from a scientific and legal point of view in Italy and in the European Union.

We have analysed the various production phases that allow the realization of the finished product, examining the various phases individually. The section on the structure of supply and demand aims to provide a complete overview of what the pasta industry is, looking at the history of the industry and at the strategic determinants, to establish the strategies that companies today take in this particular sector.

The analysis of a sample of companies was compared to the evolution of the most important income indices, highlighting the differences between fresh and dried pasta. The sample itself was then used to evaluate changes in production, productivity and labour force values.

# 1. HISTORY, BACKGROUND AND PRODUCT FEATURES

## 1.1 Historical background

### **Pasta among legends and discoveries**

It's a very popular legendary story that Marco Polo, the famous Italian merchant and explorer born in the Republic of Venice, after he came back from Cina, took with him some Chinese noodles the ones that would have become the origin of the Italian pasta.

This legend began in 1938 on the *Macaroni Journal*, published by an association of American and Canadian industrialists with the aim of making pasta familiar to American consumers and favored by government circles committed to support the cultivation of durum wheat so that the eye of the average American pasta could become a more international food, trying to remove it from the natural context: that of the Italian and Little Italy ghettos scattered throughout the United States, from where it came from the early 800s and that were strongly criminalized from public opinion.

In Italian culture and literature there were also some stories and legend among the genius behind. In fact, a precedent is found in the works of Hortensius Lando, bizarre and paradoxical humanist of the sixteenth century, he instead attributed in his work the invention of ravioli to the Lombard peasant Livista, while that of lasagna, lasagnoule and other pinzocheri in Meluzza Comasca.

The origin of pasta is actually older than this famous legend and the Lombard inventors. Pasta was already known at the time of Magna Grecia and Etruria, respectively the south and central Italy regions, although it was named differently.

The term “Pasta” was in fact *làganon* (πάσση) in Greek, instead *makària* (μακαριος) was the Etruscan and Italic expression that meant “the blessed food”, it was offered in funeral ceremonies. The term passed the Latin vocabulary then to our present time, more likely was presented as a verb.

For the Arabs, Ziryab, a musician, but also a passionate gastronomist of the ninth century AC., describes mixtures of water and flour similar to pastes. In The beloved for whom Book of Roger published in 1154, Al-Idrisi, geographer by Roger II of Sicily, described Trabia, a town 30 km from Palermo, as one area with many mills, where it was made a pasta in the form of wires called itrya (from the Arabic itryah which means "sliced focaccia"), which driven sent with ships in abundant quantities for the whole Mediterranean area, both Muslim and Christian giving rise to a very active business. This is the first testimony written on pasta that will then enter history.

The origin of pasta is actually very old, there are the simplest forms in different parts of the Euro-Asia continent, developing in a parallel and different way in the Chinese valleys of the Far East up to the Mediterranean areas of the Italian peninsula. In the latter area in particular, it had a rapid and important gastronomic and traditional development, which lasted until actuality. At first glance the history of pasta is the history of human civilization: the agriculture, how human race gave birth to the domestication of plants and animals. Wild grains were collected and eaten from at least 20,000 BC from around 9,500 BC. We can locate the starting point of the pasta narrative on the same tracks of the progressive development of human agriculture in the 10,000 BC, when the first wheat crops started to be grown and harvested in the Fertile Crescent, also known as the “cradle of civilization”, that lies from Palestine to beginning spur of the Iranian Plateau.

Nowadays some genetics confirm that some wild wheat ancestries located on the mountains of the extreme border of turkey south-east borderline, were actually ancestors of recent crops species disseminate in the West Europe to the Est of Asia. The wheats are included in the domesticated crops classification, harvested and consumed by man from earliest date. The *Triticum* genus is in fact presented in his different species and varieties and can be called the “cereal of civilization”, how the French historian Fernand Braudel mean it. So, what are the first purposes of the first few grains? Initially the ears were roasted and their grains eaten without other preparations. The simplest method to reach the edible stone was to remove the thick shell with fire. Soon wheat started to begin transformed in some rough flour, then mixed to decorate cracker and bumpy bread cooked on a hot plate.

Pasta acquires a particular importance and development in Italy and in China where a real gastronomic tradition is established, even if they do not meet and do not contaminate, the two cultures produce similar foods simultaneously in two different continents, with different techniques and raw materials. It is impossible to establish or search for relationships between them before the present day although it is a tradition both of Southern Italy and China (also common in the rest of the East).

## **Evolution**

The introduction of a new cooking method and new formats is the most important novelty in the Middle Ages. The boiling system, used in classical antiquity for baby food or polenta of different cereals, replaced the passage to the oven where instead the old grips are placed directly with the sauce as cooking liquid. The first pasta pierced in Italy were essential in Middle South.

The first pasta was drilled in Italy, especially in Middle South. The invention of long-life dry pasta is historically attributed to the inhabitants of medieval Muslim Sicily, who in need of supplies to sell to Saracen merchants and Berbers made long journeys in the desert, developed effective methods of drying in the open air.

It was always in the Middle Ages that the first Italian shops were built for the professional preparation of pasta, which from the south of Italy moved towards the rest of the peninsula, North Africa, the Middle East, the Spanish Levant and the rest of Europe, already half in the thirteenth century they installed large pasta factories in Naples, Genoa and Salerno. Later they also opened in Puglia and Tuscany and in the fourteenth century were formed the first corporations of Italian Pasta manufacturers, controlled and regulated by the Pope.

## **Pasta in culture and society**

Pasta is considered by Italians, as well as a food, an element of union shared throughout Italy: it is an integral part of life, popular culture (simple but traditional) of all Italians, not only their cuisine, but their same essence, always. The environments, the phenomena and the atmospheres that revolve and are created around a plate of pasta, will enter the collective imagination concerning the average Italian throughout Europe, first in literature and music during the Middle Ages, then in the work and in the theater of the Renaissance period and, finally, in the cinema, offering the inspiration for many masterpieces of international fame, which have always been part of Italianisms.

## 1.2 Product feature

### The wheat

The set of plants that can be called <wheat> is *Triticum*, an extremely variegated set of ancient history. The evolution of these plants has been determined in large part by the man who has provided for the domestication of wild species, their selection and their crossing. The term wheat comes from the Latin *granum* (between the Irish *gràn* and the Albanian *gruni*, the gothic *kaurna*, the high-German ancient corn, similar to the English corn), from the Indo-European *radic gar-* meaning to "shred", "scrub", "flay" from which the ancient Greek *gûr-is* (*γῦρις*), "flour flower" (literally, "the cereal to be ground").

One of the classification was proposed by the Swedish botanist Carl Linnaeus that recognised five species, all domesticated:

- *T. aestivum* Bearded spring wheat
- *T. hybernum* Beardless winter wheat
- *T. turgidum* Rivet wheat
- *T. spelta* Spelt wheat
- *T. monococcum* Einkorn wheat

Hence, the classification of the genus *Triticum* is complex and that of van Slageren is the most recent- The genus *Triticum* includes six species classified according to the level of ploidy (number of chromosomes that make up the genome) and to the genomic composition. Two species are diploid with 14 chromosomes and two tetraploids with 28 chromosomes and two hexaploids with 42 chromosomes. Spontaneous species meet with great frequency and ease and tend to form natural hybrids to which, over the centuries, varieties suitable for industrial cultivation have been and are still being selected.

The most widely cultivated species for commercial purposes are those held from bread (*Triticum aestivum*), hard pasta (*Triticum durum*) and those called spelted wheat (*Triticum spelta*). In some regions rustic species are still cultivated (particularly suitable for local climatic and pedological conditions), which often constitute an important source of primary plant material for special breeding programs controlled. The species cultivated in the various regions of the planet are appropriately selected and selected on the basis of their productivity and the particular ability to adapt to local environmental conditions. In Russia, the United States and Canada (three of the main ones producers of wheat in the world) are mainly cultivated spring species (which come sown in spring and harvested in summer) and autumn species (sown in autumn and harvested in spring),



with grains of various colours. Generally the autumn varieties they have white beans, while the spring ones have red beans.

Currently, about 65 percent of the wheat crop is used for food, 17 percent for animal feed, and 12 percent in industrial applications, including biofuels.<sup>1</sup>

Durum wheat (*Triticum turgidum*), the one used to produce pasta, is grown on about 13 million hectares, about 60% of them located in the Mediterranean Basin, where it is considered a typical crop. Durum wheat is mostly used for pasta making, but it is also the raw material for producing other traditional goods of Mediterranean countries such as flat breads, couscous and bulgur.

## **Durum wheat components**

Durum wheat, *Triticum turgidum* (durum), accounts for 5 % of the total wheat production. Pasta can be made of common wheat, but due to his properties durum wheat is preferred. From the wheat crop, only the seeds – the karnels of grain, are used for food production. The main parts of a grain are the bran, the starchy endosperm and the germ.

The bran consists of several protective cell layers from the pericarp (epidermis, hypodermis, endocarp), testa, nucellar and aleurone layers.<sup>2</sup> The endosperm consists mainly of starch granules and protein bodies, which are grouped in a cellular structure surrounded by thin cell walls. It is the energy storage of the grain. The share of starch increases within the endosperm from the outer regions of the subaleurone layer to the central region.

To achieve homogeneous \_ours only the endosperm is used and thus bran and germ are often removed during milling. However, they are used in speciality products such as wholegrain food products.<sup>3</sup> The remaining endosperm is milled to four and for common and durum wheat these fours are called farina and semolina, respectively.

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<sup>1</sup> <http://www.fao.org/docrep/018/i3107e/i3107e03.pdf>

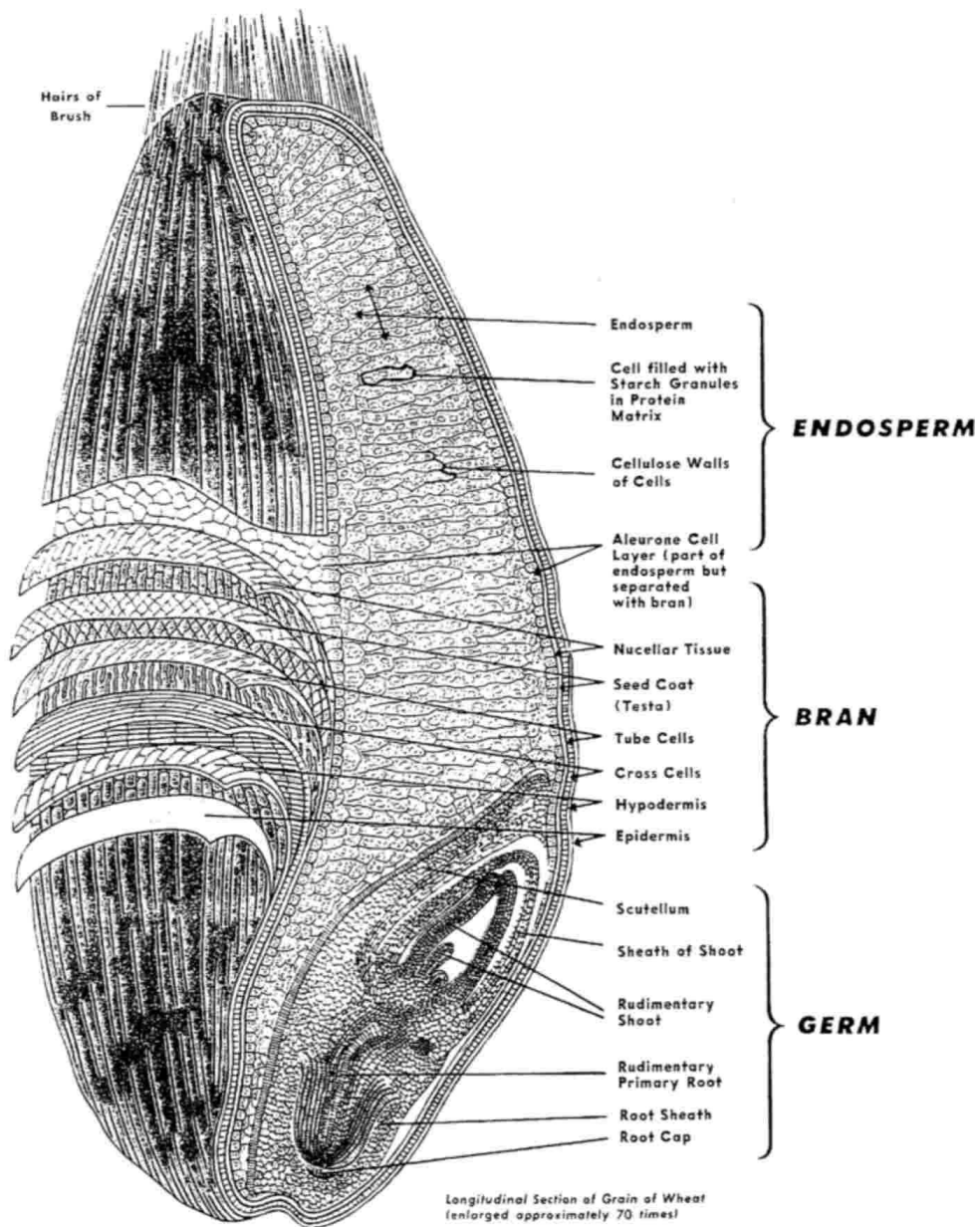
<sup>2</sup> Kill and Turnbull, 2001;

<sup>3</sup> Manthey and Schorno, 2002

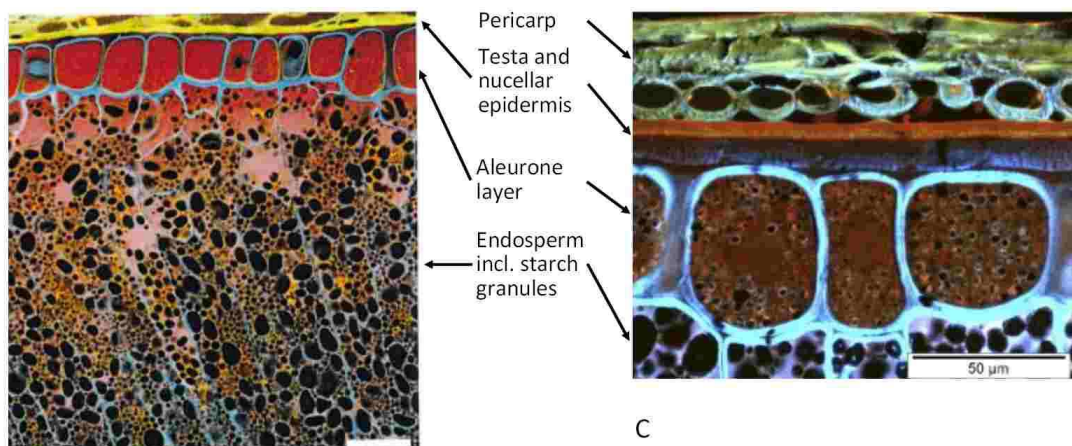
	Unit	Durum wheat	Common wheat	Sources
Carbohydrates	[%]	72.8	78.0	Anonymous (2010)
Damaged starch	[% <sup>1</sup> ]	11-12	7-10	Eliasson and Larsson (1999)
Amylose	[% <sup>1</sup> ]	26-28	23	Vansteelandt and Delcour (1999); Baik and Lee (2003)
	[% <sup>1</sup> ]	0-40		Sissons (2008)
Protein	[%]	12.7	10.6	Anonymous (2010)
	[%]	11-16		Kill and Turnbull (2001)
Gluten proteins	[% <sup>1</sup> ]		(60)-80	Gil-Humanes et al. (2011)
Gliadin:Glutenin		0.6-0.86	0.72	Rao et al. (2001); Aravind et al. (2011); Létang et al. (1999)
Water	[%]	12.7	10.5	Anonymous (2010)
Dietary fibre	[%]	3.9	1.9	Anonymous (2010)
Lipids	[%]	1.0	0.5	Anonymous (2010)
Ash	[%]	0.8	0.4	Anonymous (2010); Eliasson and Larsson (1999)
Kernel size length	[mm]	7		Troccoli et al. (2000)
Kernel size perimeter	[mm]	15		Troccoli et al. (2000)
Granule A-type	[µm]	13-16	22-36	Soh et al. (2006), Pérez and Bertoft (2010)
Granule B-type	[µm]	3-5	2-3	Soh et al. (2006), Pérez and Bertoft (2010)
Granule C-type	[µm]	< 1		Wilson et al. (2006)

<sup>1</sup>Percentage of specific major component

Figure 1. Selected representative properties of durum wheat (*semolina*) and common wheat (*farina*) flours



A



B

C

Figure 2 : Structure elements of a common wheat grain. (A) illustration of a grain, (B) light micrograph of an embedded section (length of scale bar is unknown), (C) fluorescence micrograph from bran layers. Figures reproduced from Slavin et al. (2000), Autio and Salmenkalliomarttila (2001) and Poutanen (2012).

## Wheat Production worldwide and worldwide durum trade

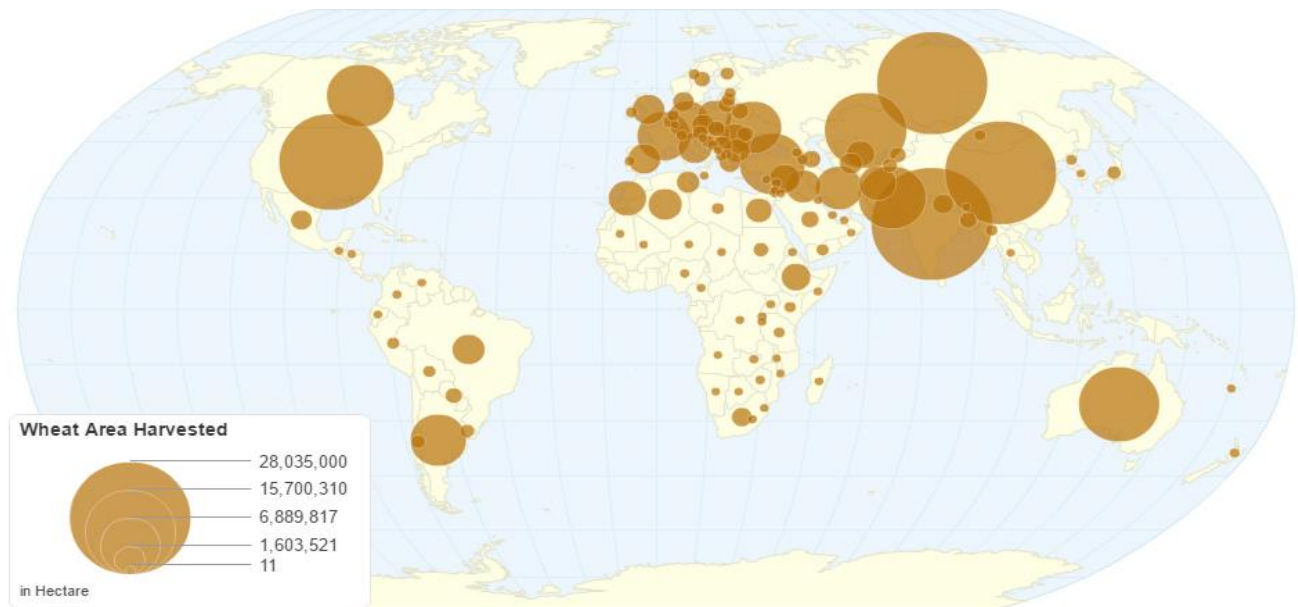


Figure 3 Worldwide wheat area harvested

Wheat is the primary food staple in North Africa and the Middle East, and is growing in uses in Asia. Unlike rice, wheat production is more widespread globally, though 47% of the is produced by just four countries – China, India, Russia and the United States.

Following the stats reported by the FAO, Food and Agriculture Organization of the United Nations, in 2017 the total area harvested was 218543071 ha, a total yield of 35312 hg/ha and a total production of 771 million tonnes.

The historical data (figure 4) instead follow what is the same development of industrial culture, it is not difficult to show that since 1961, the date when they began to take concrete data, the production of wheat has increased dramatically. The value of production in 1961 is 222 million tonnes while that of 2017 771 million as previously reported. The harvested area can be seen as constant in time with a maximum value of about 239 million hectares and an average of 221 million hectares. In 2017 the value of the cultivated area stands at 218.54 million hectares.

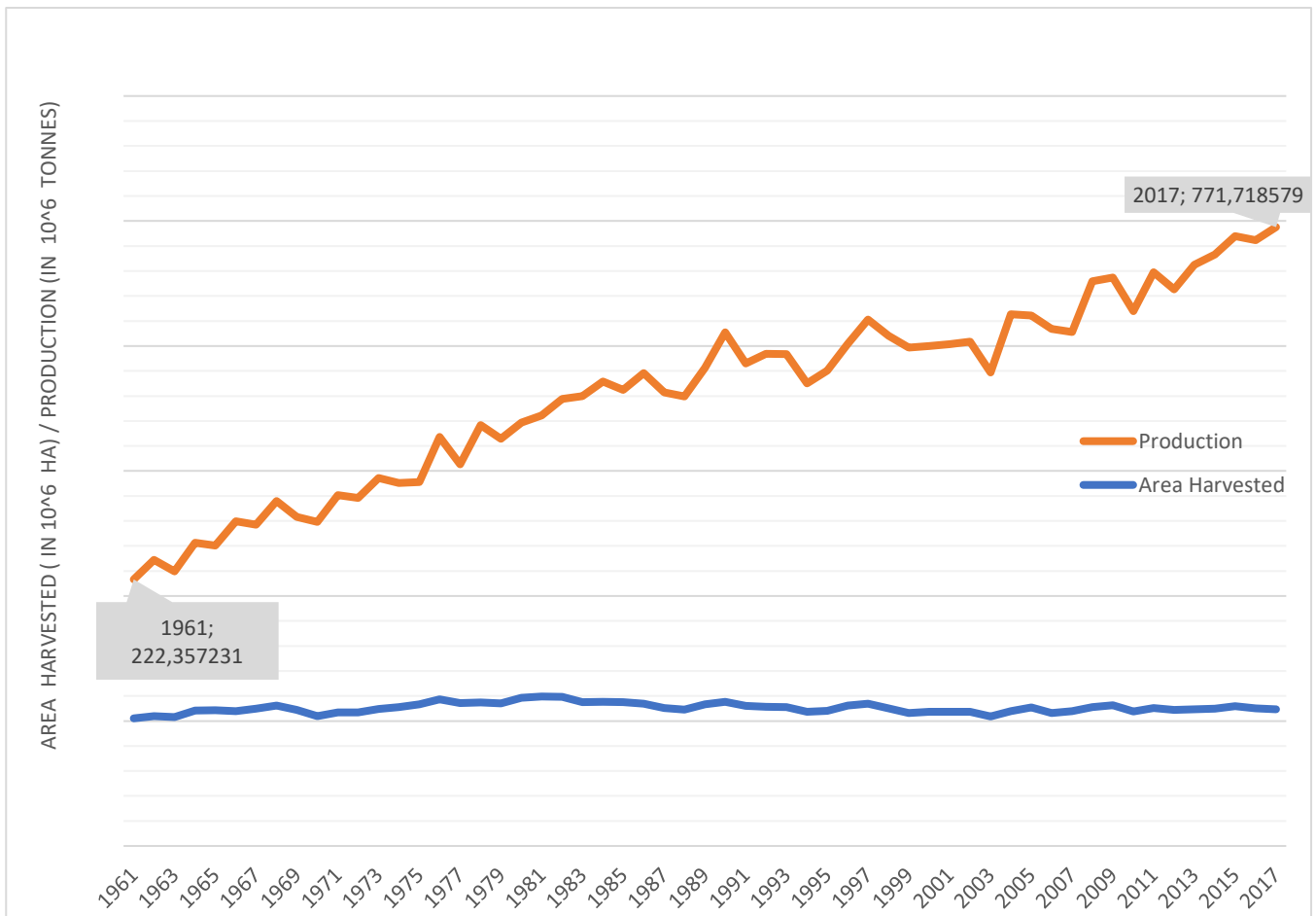


Figure 4 Wheat area harvested and production. FAO data 2018

On the other hand, by observing the data on the cultivated area, India, Russia and China, followed by the United States, present themselves as the regions with the most cultivated wheat. The European continent has a total harvest area of about 70 million (31% of the total world quantity), with France and Germany among the largest contributing, respectively, 6.4 million hectares and 5.5 million hectares. Italy, on the other hand, stands at 1.8 million hectares of wheat cultivated land.

If instead we go back to the production of durum wheat alone, in the world the area cultivated by durum wheat is 16.1 million hectares. The area in which there is maximum cultivation is Europe with 3.36 t / ha, Canada 3.28 t / ha and the United States 2.96 t / ha. The largest exporter is Canada, with a 55% discount compared to total production, followed by Mexico at 17% and Europe at 16%. Most of the markets are Italy with a percentage of the entire market of 21% followed by Algeria 14% and Germany at 8%. It is clear that the figure reflects the situation in Italy where the domestic market for raw materials is not compensated by the internal durum production.

Market	Share(%)
Italy	21
Algeria	14
Germany	8
Tunisia	7
United States	6
Marocco	6
Venezuela	5
Turkey	3
Belgium	3
Japan	2
Rest of World	25%

Figure 5 Major World Durum Export Destinations by value, 2015. Source: ITC TradeMap based on UN COMTRADE statistics, 2017

	Area Harvested
World	2,19E+08
India	3,06E+07
Russian Federation	2,75E+07
China, mainland	2,45E+07
United States of America	1,52E+07
Australia	1,22E+07
Kazakhstan	1,19E+07
Canada	9,04E+06
Pakistan	8,97E+06
Turkey	7,66E+06
Iran (Islamic Republic of)	6,70E+06
Ukraine	6,38E+06
Argentina	5,57E+06
France	5,46E+06
Morocco	3,38E+06
Germany	3,20E+06
Poland	2,39E+06
Algeria	2,12E+06
Afghanistan	2,10E+06
Spain	2,06E+06
Romania	2,05E+06
Brazil	1,90E+06
Italy	1,81E+06
United Kingdom	1,79E+06

Figure 6 General view on Area Harvested, FAO data 2018



## Wheat as a commodity<sup>4</sup>

A commodity in economics, is an economic good or service that has full substantial fungibility, that is, interchangeable with other commodities of the same grade regardless of who produced or farmed it. Wheat can be considered a commodity in all respects. In a different way than other commodities, wheat is the raw material of daily food. As the population increases, so do people and therefore the contenders for this commodity increase. It is in fact considered one of the most "political" commodities for this particular aspect.

Wheat production is highly sensitive to weather conditions around the world. Drought, floods or other weather or climate issues can decrease wheat production during crop years. In 2000, the price of wheat was around \$2.50 per bushel. Poor crop yields in 2008 lifted the price of over \$13 and in 2011; wheat peaked at around \$9.50 per bushel. Recently, due to bumper world harvests and favourable growing conditions, the price of wheat has returned to around the \$4.60 level as of late February 2016.

In poor countries, when the price of wheat rises because of poor crop yields, like it did in 2008, a decrease in availability and rising bread prices can cause huge political pressure on sitting governments. The Arab Spring in 2010 was partially a result of rising bread prices. If governments are unable to provide food to their citizenry, the results can be disastrous. Therefore, while we often hear about the highly political nature of crude oil, wheat has been a more political commodity on a historical basis.

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<sup>4</sup> <https://www.thebalance.com/wheat-historically-more-political-than-crude-oil-3876921> - <https://www.thebalance.com/what-are-commodities-356089> ; wheat is the most political commodity in the world: <https://seekingalpha.com/article/4162499-wheat-political-commodity-world>

## **The current legislation in Italy and the regulation in the EU zone**

The Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

In (3) < *The free movement of food and feed within the Community can be achieved only if food and feed safety requirements do not differ significantly from Member State to Member State* > is generalized that movement of food is not forbidden within the Community states but it has to follow some general principles, also in (1) it is considered as an essential aspect of the internal market.

Another important regulation that has also implemented the one previously described in the No 178/2002 is the n. 1169/2011 that regularly the food labeling in the European Union.

In the article (4) it is described Principles governing mandatory food information:

1. Where mandatory food information is required by food information law, it shall concern information that falls, in particular, into one of the following categories:

- (a) information on the identity and composition, properties or other characteristics of the food;
- (b) information on the protection of consumers' health and the safe use of a food
- (c) information on nutritional characteristics so as to enable consumers, including those with special dietary requirements, to make informed choices.

2. When considering the need for mandatory food information and to enable consumers to make informed choices, account shall be taken of a widespread need on the part of the majority of consumers for certain information to which they attach significant value or of any generally accepted benefits to the consumer.

Per Article (5): Any Union measure in the field of food information law which is likely to have an effect on public health shall be adopted after consultation of the European Food Safety Authority.

In Article (9) is reported the List of mandatory particulars: the name of the food, the list of ingredients, all the ingredients or processes or derived from products or products that include allergies or intolerances used in the production or preparation of food and still present in the final product, the quantity of food up to the country of origins.

Rules on naming food are reported in Article (17) and the List of ingredients in 18).

Every state in Europe has the right to enact a law on a particular product and its production. Obviously this must comply with the European Commission regulations just described.



In Italy the framework governing the production of pasta is as follows:

- **Law 4 July 1967, n. 580<sup>5</sup>**

Discipline for the processing and trade of cereals, flour, bread and pasta.

Article 28 defines the pasta: They are called "durum wheat semolina pasta" and "pasta di durum wheat semolina" products obtained by the extrusion, lamination and consequent drying of prepared doughs respectively and exclusively: a) with durum wheat semolina and water; b) with durum wheat and water.

- **The D.P.R. 9 February 2001, n.187<sup>6</sup>**

foresees in its first article regarding soft wheat flours:

1. The product obtained is called "soft wheat flour" from the grinding and consequent sifting of the common wheat freed from foreign substances and impurities.

2. The product is called "whole wheat flour" obtained directly from the milling of the liberated soft wheat from foreign substances and impurities.

3. The flour referred to in paragraphs 1 and 2 are intended for sale produced in the types and with the following characteristics:

A) Durum wheat semolina pasta

Maximum humidity%: 12.50

On 100 parts of dry matter:

minimum: -

maximum: 0.90

Protein min. (nitrogen x 5.70): 10.50

Maximum acidity in degrees \*: 4

B) Durum wheat semolina paste

Maximum humidity%: 12.50

On 100 parts of dry matter:

minimum: 0.90

maximum: 1.35

Protein min. (nitrogen x 5.70): 11.50

Maximum acidity in degrees \*: 5

C) Wholemeal durum wheat semolina pasta

Maximum humidity%: 12.50

On 100 parts of dry matter:

minimum: 1.40

maximum: 1.80

Protein min. (nitrogen x 5.70): 11.50

Maximum acidity in degrees \*: 6

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<sup>5</sup> <http://www.gazzettaufficiale.it/eli/id/1967/07/29/067U0580/sg>

<sup>6</sup> <http://gazzette.comune.jesi.an.it/2001/117/2.htm>

## Special pasta

The production of special pastes is allowed. For special pastes we refer to the pastes referred to in Article 6 containing food ingredients, other than wheat flour, complying with the sanitation standards.

Special pastes must be sold under the denomination of semolina pasta durum wheat completed by the mention of the ingredient used and, in the case of several ingredients, of that or those characterizing.

## Fresh pasta

Egg pasta must be produced exclusively with semolina and at least four eggs whole hen, without shell, for a total weight of not less than two hundred grams of egg for every kilogram of semolina. Eggs can be replaced by one corresponding amount of liquid egg product made exclusively from whole hen's eggs, meeting the requirements set by Legislative Decree 4 February 1993, n. 65.

## 2. PRODUCTION STRUCTURE OF THE PASTARIAN INDUSTRY

### 2.1 The role of the pasta industry in the wheat supply chain

To study the pasta sector in more detail, it is necessary to go and trace the entire course of the wheat supply chain. The durum wheat chain involves the production of grain and its marketing, the production of semolina and that of pasta. The latter are configured as a basic product of our diet and one of the pre-eminent symbols of the Made in Italy food industry.

The pasta industry has in Italy 125 plants that give employment to 7,500 employees. National pasta production in 2017 stood at just under 3,361 million tonnes, corresponding to a turnover of 4,735 million euro with 5,267 tonnes of agricultural raw materials used.<sup>7</sup>

The wheat supply chain can be divided into four segments:

#### 1) Production and marketing of grain <sup>8</sup>

In this segment wheat producers operate and their various forms of aggregation (agricultural consortia, cooperatives and producer groups) that support the production base and make a first commercialization of the basic agricultural product. To these are added the private traders, who can be equipped with their own storage facilities or act as mere intermediaries between the agricultural enterprise and the industry, and the trading companies that operate at the naval ports and that carry out trading activities. This is a limited number of large companies, often part of multinational groups (Cargill, Louis Dreyfus, Conagra, etc.), which operate mainly on non-EU markets.

#### 2) The industrial sector of the first transformation

It consists of the milling sector that provides for the transformation of the grain of wheat into flour. From this process it is derived as a by-product, the bran, which is essentially intended for animal feed. Also at this level there is an import channel of the raw material that is directly managed by the largest production units that absorb, mainly from the EU countries, around 60%

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<sup>7</sup> <http://www.aidepi.it/associazione/in-cifre.html> 2017

<sup>8</sup>

<http://www.pianidisetore.it/flex/cm/pages/ServeAttachment.php/L/IT/D/9%252Fa%252F7%252FD.c6d710c9224ad48f979d/P/BLOB%3AID%3D705>

of the total national grain import. Italy exports limited quantities of wheat flours which are mainly placed on the Community markets.

### 3) The industrial sector of the second transformation

It consists of the sectors of the pastoral industry, confectionery (baked goods) and bakery (industrial and artisan); the former absorbs almost all durum wheat semolina, while the other two mainly contain soft wheat flour. The sector places a significant part of its pastoral and confectionery production on foreign markets both directly and through a network of wholesalers and intermediaries. On the contrary, the bakery sector is mainly oriented towards domestic demand.

### 4) Distribution and marketing.

For pasta products, marketing takes place largely through large-scale retail trade and is often managed directly by large industrial groups, including through private label production. On the contrary, the bakery sector is characterized by a dense network of artisan laboratories; only the industrial bakery shows a high presence within the mass distribution.

The national availability of wheat is strongly influenced by the trend in domestic production, which shows strong variations from one year to the next, especially with reference to durum wheat. Apart from these dynamics, in order to satisfy the demand of the first and second processing industries, it is necessary to resort to the importation of considerable quantities of raw material, which represent a share between 30% and 35% of the total availability of durum wheat. and about 60% of that of soft wheat.

The quantitative flows of the entire wheat supply chain can be summarized in the following points:

- the marketing of wheat is carried out for about 50% by the agrarian consortia, which fully confer the product to the milling industry. Private dealers have a significant role, carrying around 35% of the national offer, almost totally directed towards the mills and only to a residual extent destined for export. The direct conferral of grain by farms to the milling industry is limited to about 15% of the total;
- imports follow essentially two channels. The milling industry directly absorbs about 60% of the imported quantities coming almost exclusively from the Community countries. The remaining 40% is imported from private traders / trading companies that make direct supplies from non-EU countries;

- a quota of about 10% may vary from year to year due to the availability of raw material, consists of the stocks needed by the mills to ensure the physiological operation of the plants;
- exclusively for common wheat, a quota, which on average can be identified in 15% of national availability, is used in the composition of feed, with particular reference to the grain of poor-quality profile.

## 2.2 Product flows in the wheat supply chain

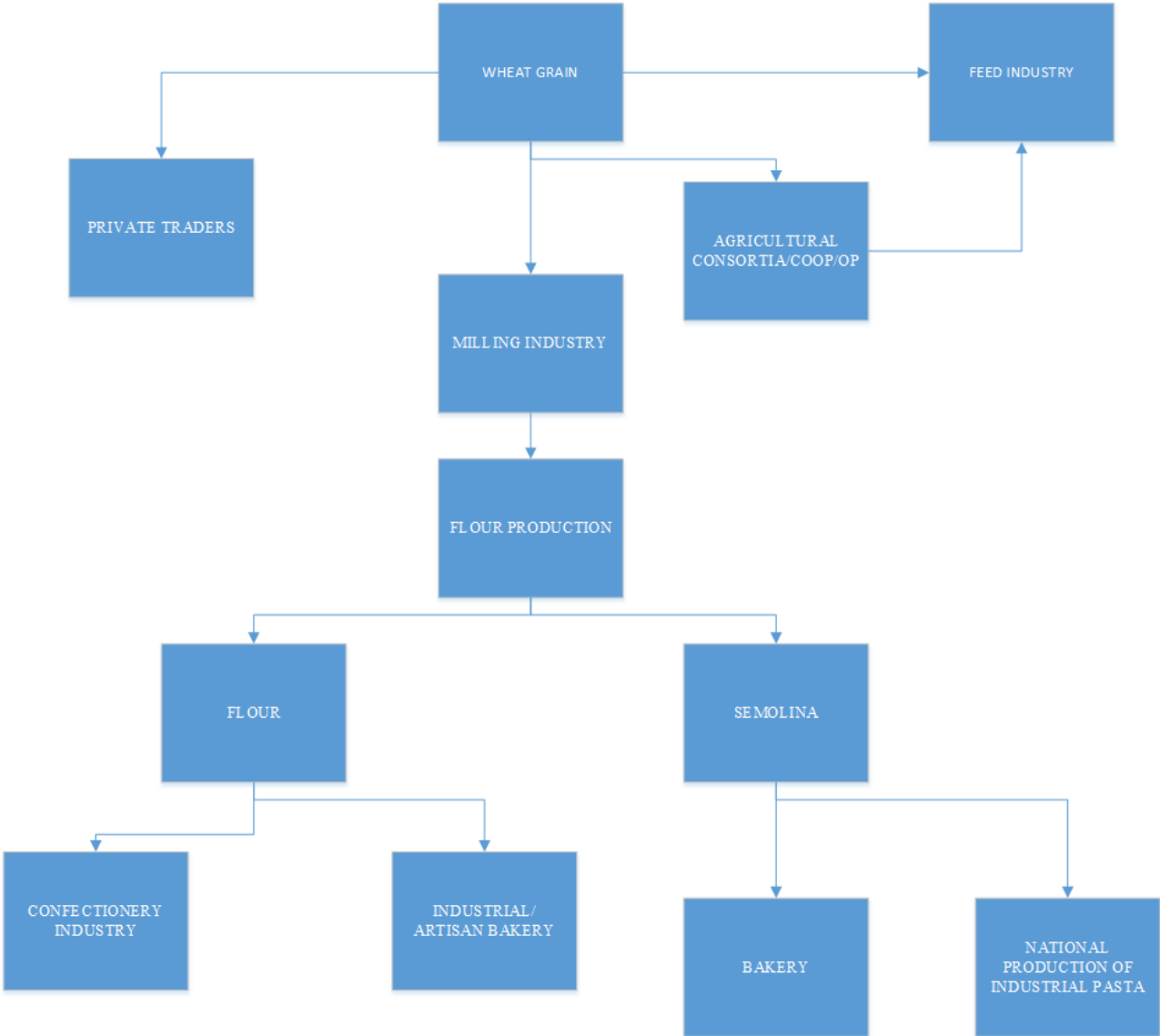


Figure 7 Elaboration on ISMA report

In Italy the national availability of wheat is strongly influenced by domestic production which shows strong variations from one year to another. Regardless of the internal production of wheat, it is necessary to import considerable quantities of raw material, between 25-35% of durum wheat.

The destination of durum wheat semolina prevails employment in the pastoral industry (95%); a residual quota (around 5%) is used, at a local level, for the production of artisanal bread. In the case of soft wheat flour, about 85% is used for industrial and, above all, artisanal bread-making, while the remaining 15% for the confectionery industry.

The industrial production of pasta exceeds 3 million tons. Over 50% of the national offer is placed on foreign markets in which the EU countries prevail (65%); the remaining portion is destined for internal consumption. The national production of bread is estimated at around 3 million tons destined entirely for domestic consumption.

Domestic consumption is largely satisfied through organized distribution with a share that can be estimated at around 70%. Of this, over 70% is represented by the Modern Distribution, about 17% from the Traditional Retail, while the other forms of distribution (free services, hard discounters, cash & carry, etc.) represent a residual share of around 5% of the total.

## 2.3 Organization of pasta production<sup>9</sup>

The pasta manufacturing process has changed over the years, but the product has remained the same: a simple mixture of durum wheat semolina and water. While fresh pasta is also prepared with soft wheat flour, only durum wheat semolina is used for dry pasta in Italy.

Italian law states that only durum wheat semolina may be used to produce dried pasta. This is because durum wheat semolina contains that tough gluten that allows dry pasta to keep cooking and to have a fine hardness after being cooked.

Starting from the first phase of the first transformation sector: the supply of raw material consists in evaluating the quality, quantity and timing of the grain supply process. So what are the qualities that must have of the grain purchased?

The compliance of wheat with the health and hygiene requirements set at Community level is the primary element in the raw material purchase strategy. The other characteristics are linked to the needs of the customer and to the destination of the flour that is not a standard product but must respond to specific characteristics depending on the use of the product. Since the flour is essentially used for bread making, it is necessary to have soft wheats of good protein content and with appropriate W (strength index) and P / L indices (the P / L ratio determines the balance between toughness and elasticity) . Even the specific weight, however, is a feature of primary importance.

The values of W can vary between the greater than 360 W: in this case they will be called very strong flours, and less than 130W, non-breadmaking flours.

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<sup>9</sup> MACCHINE ED IMPIANTI PER LA PRODUZIONE DELLA PASTA – Paolo Amirante

Based on the number of proteins, it can be summarized schematically:

<b>Protein (Per 100g of flour)</b>	<b>P/L</b>	<b>W</b>
9/10.5 g	0.4/0.5	90/130
10/11 g	0.4/0.5	130/200
10.5/11.5 g	0.45/0.5	170/220
12/12.5 g	0.45/0.5	220/240
13 g	0.55	300/320
13.5/15	0.55/0.6	340/400

Figure 8 Estimations on the P/L ratio

Since the P/L and W parameters are used in commercial applications. To have a overview of an index of the total quality of the wheat, a scale classification describes all the characteristics can be as follow:

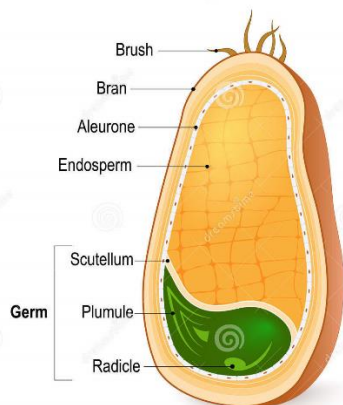
1. commercial quality (humidity, impurities, pregermination, critical mass);
2. milling quality (specific weight / hectolitre, weight 1000 seeds, whitening, and the treatment of wheat caries;
3. technological quality (aptitude for processing into a foodstuff);
4. dietetic and nutritional quality.



## Stages of the milling industry

The milling industry is based on the principle of separating the endosperm as much as possible from the other parts of the caryopsis and therefore can be defined as an extraction and purification industry. The grinding of wheat supplies, in addition to flour suitable for the production of bread, pasta and other products for human consumption, bran which, together with the bran and flour, grouped under the heading 'derived from the bran' are currently used for the preparation of feed.

### ANATOMY OF A GRAIN



Processing steps:

#### 1) Cleaning or cleaning

It serves to separate all foreign substances from the cereal (dust, sand, stones, twine, straw, semi-strangers ...). Currently dry cleaning is used and no longer for wetting, because it is faster (the wetting also lasted 2-3 days), then the kiloxide absorbs the water in an uncontrolled way and the flours that were obtained were darker (problem of residual impurities). The operations performed are:

- sieving;
- ventilation (aspirators);
- magnetic separation (metal fractions can cause damage to equipment or cause sparks and therefore fire);
- use of dry stone destemakers;
- switching of cotton wools (eliminates vetch seeds); - passage to the vertical peeling machine (brushing and peeling of the grain)

## 2) Conditioning

It is a matter of moistening the kernels at a controlled temperature making them pass through double-walled augers to circulate the water vapor. The grain then passes to the conditioning cells or resting boxes, where it stays for 24 hours at room temperature (at 46 ° C only 2 hours). The preferential passage way of water is through the germ.

Targets:

1. The bran becomes hard to less fragile (it separates better from the endosperm);
2. The endosperm is more friable (it requires less power to crush it, and is contaminated less by shrapnel of bran, resulting in a whiter flour).

Optimum moisture content at the end of conditioning:

Common wheat: 16%

Durum wheat: 17,5%

It is not necessary to exceed with humidity otherwise the cohesion between the endosperm and the bran particles is encouraged and the subsequent sieving is difficult.

The loss of moisture in the intermediate steps means that the flour comes out at about 14% humidity (optimal for storage).

After moistening, further cleaning is carried out using a grain-stripping brush and a magnetic separator.

## 3) Grinding, cleaning groats, wrapping and re-millilling

It occurs in several steps:

1. striped cylindrical rolling mills (with a surface striped by helical parallel grooves) for the first break;
2. sieving of particles according to size;
3. separation of the bran;
4. further separation of bran (“wheat strip”);
5. re-milling operations with smooth rolling mills.

From the grinding of the wheat a coarse flour is obtained, with sharp edges, a product suitable for the production of pasta; from the rebuckle of the semolina one obtains the durum wheat semolina or flour, which is used to make durum wheat bread.

### 3) Drying

The drying phase aims to progressively reduce the amount of water contained in the pasta, up to the rate of less than 12.50%, which is the one imposed by law. To dry the pasta it is necessary to produce heat, which is generally obtained with superheated water that passes through the coils and the radiators inside the dryers and releases the necessary heat; in the driers, electrically operated ventilation units are installed which, by blowing on the radiators, generate hot air streams which invest the dough by drying it.

### 5) Packaging and delivery to consumption

After drying, the pasta is sent, by means of conveyors and electric elevators, to the packaging department; the packaging of dry pasta, the most consumed on the Italian and world market, generally takes place with sealed packs of three standard sizes (250 g, 500 g and 1000 g) and with two categories of packaging: carton boxes (45%) and bags of plastic (55%). The cartons in white or gray stretched cardboard are the most used for the packaging of premium dry pasta of medium / high range, while the plastic bags are made of a double film in hermetically sealed propylene.

### 6) Final disposal

This phase includes the procedures for the disposal of packaging waste (cardboard boxes, plastic, etc.); in fact, their correct disposal excludes negative impacts on the environment, and it would be advisable, instead of disposing of the waste in landfill, to provide for its reuse, as recommended by the European Union Committee Directives.

## **Plants for the production of dry pasta**

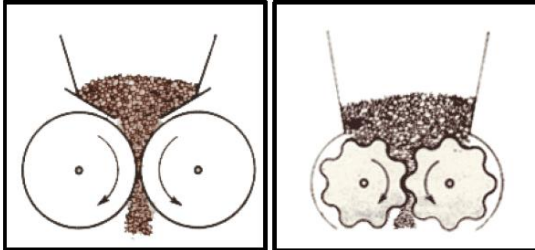
### Grinding of kernels

The modern industry performs grinding of the grain by means of rollers which act on the peripheral layer of the grain followed by sieving by silk fibers.

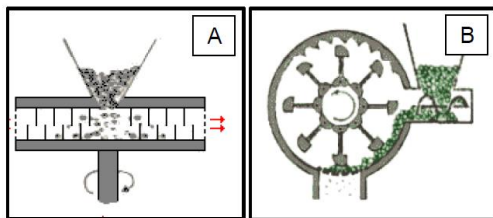
Cylinder mills allow high quantities of grain to be processed, but the excessive degree of refining and overheating due to high grinding speed must be avoided.

The material to be ground is fed continuously and regularly into the grinding chamber from the feeder.

The cylinders of these mills can be smooth or grooved. The particle size is regulated by the spacing between the two cylinders; the substances are dragged and crushed in this space. In the case where the two cylinders are smooth, one of these rotates faster than the other, so as to add a stretching action to the compression action.



For the grinding process, other types of mills can also be used: blades (A), hammers (B), fluid energy and spray atomization.



Overall view of a mill and construction details of the transmission of motion:



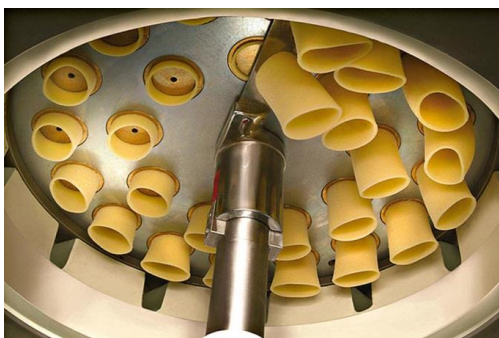
## 2.4 Dry pasta production process - Process cycle for dry pasta production<sup>10</sup>

The equipment destined for the production of dry pasta, after the choice of raw materials, foresees the following operational succession:

- preparation of the mixture;
- forming with dies;
- pasteurization;
- drying;
- packaging;
- distribution to the market.

The industrial plant, for the preparation of large quantities of dry pasta, can consist of a mixing tank in which liquid ingredients are sent through a centrifugal pump and liquids and flour are mixed with a screw feeder.

Once the dough is finished, a tool pushes the dough against the die which, thanks to shaped holes, allows the pasta to exit with the desired shape.



The paste is then pasteurized with a thermal rehabilitation process necessary for the purpose of eliminating pathogenic microorganisms. Unlike sterilization, pasteurization eliminates only vegetative cells (not in the form of spores); the heating initially adopted at 63 ° C for 30 minutes, in fact allows the elimination of the most heat-resistant pathogens.

Subsequently the fresh pasta is dried with hot air. In continuous automatic dryers, the humidity of the paste is eliminated as follows:

- transfer of heat from the air to the pasta through a continuous flow of hot and dry air;
- transfer of moisture (in the form of steam) from pasta to air.

Once the water is removed from pasta, the humid air is cooled and in order to be reused, it must be dehumidified and then brought back to the temperature level required for heating the product.

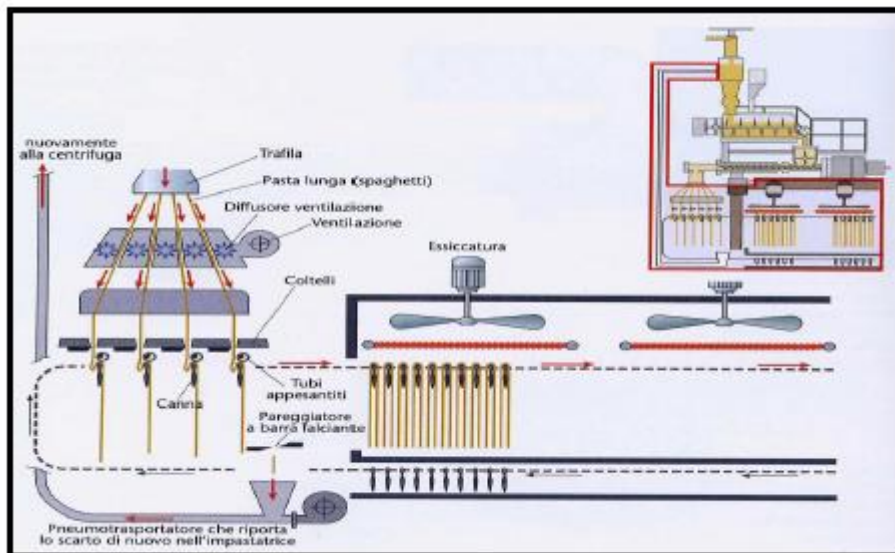
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<sup>10</sup> MACCHINE ED IMPIANTI PER LA PRODUZIONE DELLA PASTA – Paolo Amirante

The dehumidification of the air is obtained by passing it through a condensation coil, where water is collected and eliminated.

If we take as an example the process of drying spaghetti, it is made with the succession of the following elementary operations:

- the spaghetti coming out of the die are conveyed towards a partition where they are hit by the first flow of hot air;
- a divider divides them by placing them on movable rods moved by a conveyor belt conveyor which conveys to a jogger;
- the jogger is equipped with a mowing bar which provides to equalize them according to a predetermined length;
- a pneumatic conveyor returns the waste to the mixer;
- the dough is then conveyed to the drying chamber where a group of fans positioned in succession moves the hot air towards the dough to be dried.



With cycles at low air temperature ( $LT = 40-50\text{ }^{\circ}\text{C}$ ) drying times are 20-40 hours for short pasta and 40-50 hours for long pasta. High temperatures can cause protein coagulation problems due to bacterial development, starch gelatinization and protein coagulation during the cooking of the raw material. With high temperature cycles ( $HT = 75\text{ }^{\circ}\text{C}$ ) the drying times are 7-8 hours for the short pasta and 8-10 hours for the long one.

The high temperatures cause the coagulation of the proteins and the formation of a lattice similar to that one that is in cooking with contrast of the swelling of the starch granules. With very high temperature cycles (HHT - HHT / ST) according to recent techniques, treatment times are reduced by 4-5 hours for long pasta and 3-4 hours for the short and the necessary spaces result in reduced motion.

The dried pasta is generally placed in sealed packages of three standard sizes (250 g, 500 g and 1000 g) and with coloured or transparent paper packaging, cardboard or plastic bags and trays.



### 3. MARKET STRUCTURE IN ITALY

The pasta industry plays a role of primary importance within the wheat supply chain, representing the basic structure of the products of our food and symbol of Made in Italy. The oldest pasta factory dates back to 1827, the Buitoni pasta factory in Borgo Sansepolcro (AR). These represent the oldest mechanical pasta factory in Italy.

The first hydraulic presses date back to 1845 from the Gragnano company, the first patent for an electric machine instead is from 1917. In 2014 in Italy there are 125 industrial pasta factories of which more than 80% are dry pasta producers. To these must be added numerous artisan pasta factories of less production.

#### 3.1 Market Demand

If we consider the consumption of pasta pro-capita this is obviously much higher in Italy than elsewhere, Italy is no less a maximum producer and consumer worldwide. The per capita consumption in Italy stands at 23.5 kg, while the second largest country in the world has half of Italian consumption, in fact Tunisia has a per capita consumption of 16 kg. Among the countries that consume less pasta, there is Japan with a per capita value of 1.7 kg. The consumption of pasta is fairly constant. With reference to world consumption per capita in 2018 it rose to 8.7 kg and the value could rise to 10 kg within 5 years.<sup>11</sup>

As already seen in the introductory part, the "pasta" product is not a recent invention, rather it is one of those products that are difficult to differentiate, practically not at all differentiable, whose characteristics given the simplicity of the product are easily detectable and verifiable by anyone. In going to define the market demand for pasta it is easy to say that this depends purely on the price of the product itself. We can therefore divide the market demand into three segments, the factors influencing the various sectors are related to the quality of the product perceived by the individual. The consumer can associate the quality of the product with the high price, the company's branding strategy and the distribution channel used.

In the first sector we find consumers who are conditioned by the affordability of the purchase and its immediate availability at the point of sale: in this case we are looking for a product that is always present and always cheaper, loyalty to a certain brand or brand is not a factor decisive for this sector.

The second sector in which consumers are divided is instead influenced by consumer loyalty for the product, in this case the consumer searches for the desired product rather than looking for a lower price, looking for a store with characteristics that are peculiar to him.

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<sup>11</sup> <http://www.magazinebbm.com/english/?p=1629>



The last sector, on the other hand, is a middle ground between the first and the second. Here the consumer is not necessarily conditioned by price or loyalty, research into the quality product without causing too much economic or rapid distribution.

### 3.2 Market Supply

#### EU market value and concentration

The European pasta and noodles market generated total revenues of \$ 11,245.5 M in 2017, with a (CAGR) of 3.4%<sup>12</sup>. German and UK markets reported respective CAGRs of 1.8% and 6.9% to value \$1.366.4 M and \$ 1,237.4 M. The situation in Italy instead is similar with the average of EU in terms of compound annual growth rate with a value of 3.4%, with total revenue estimation of \$3.341.4 M in 2017.

Market EU consumption registered a CAGR of 1.5 % to total 5,365.4 M Kg in 2017. Although in EU the value is positive, in Italy is the volume of consumption declined of a -0.35% to total a 1,340.3 M Kg in 2017.

The European pasta and noodles market value growth up from € 8,701.1 million in 2013, to the € 9,934.2 million of the 2017.

Year	€ million	% Growth
2013	8,701.1	
2014	8,989.9	3.3%
2015	9,296.2	3.4%
2016	9,624.1	3.5%
2017	9,934.2	3.2%

Figure 9 Europe pasta and noodles market value. Marketline 2017

In volume of the market grew by 1.5% in 2017 to reach a volume of 5,364.4 million kilograms.

Year	Million kilograms	% Growth
2013	5,054.1	
2014	5,128.0	1.5%
2015	5,205.6	1.5%
2016	5,287.3	1.6%
2017	5,365.4	1.5%

Figure 10 Europe pasta and noodles production. Marketline 2017

<sup>12</sup> During the estimation period of: 2013-2017

Dried pasta is the largest segment of the pasta and noodles market in Europe, accounting for the 68% of the market's total value.

Dried pasta sales accounted for the highest value in the European pasta and noodles market in 2017, with total sales of \$7,647.6m, equivalent to 68.0% of the market's overall value. In comparison, sales of chilled pasta reached a value of \$2,492.3m, equal to 22.2%.

## Geographic segmentation

As we have already said before, being a product of Italian tradition, 29.7% of market value is recorded in Italy, followed by Germany with 12.2%, United Kingdom with the 11%.

## Italian market and his segmentation

The pasta product was already in the Italian pasta factories of the Garofalo in 1789, the Barilla pasta factory is instead from 1877 and the De Cecco pasta factory date of birth was 1886. The pasta product and therefore the pasta industry in Italy have now been consolidated for over a hundred years. It can be said that the market is what the demand is able to distinguish in their choice and to understand what is meant by "quality of pasta".

In Italy the product of the pasta sector compared to the total manufacturing industry is represented by 0.6%. Con un export di € 1.794 million, un import di € 43 milioni

Starting from the first part of the production chain, in Italy 1.2 million hectares of durum wheat are sown, of which 4.2 million tons of durum wheat are produced each year. Each year, 5.6 million tons of durum wheat for pasta are transformed into semolina. Since the durum wheat generated by the internal supply is not enough, 2 million tons are imported per year.

As for pasta factories, the Unipi report of 1996, in Italy there were 159 pasta factories, 50% of which were located in southern regions and islands, 34% in northern regions and 16% in central Italy. The production potential was 131 thousands quintals, and was destroyed at 38% in the North, 15% in the Center and 46% in the South and on the islands.

Region of production	1981	1986	1991	1996
NORTH	71	57	55	51
CENTER	38	27	27	24
SOUTH	86	69	62	53
ISLAND	43	32	27	21
TOTAL	238	185	171	149

Figure 11 Unipi dry pasta industry data

ISMEA is reporting more recent data on the number of pasta factories divided by dry pasta and fresh industrial pasta:

N°	2008	2009	2010	2011	2012	2013	2014
Dry Pasta	128	127	121	100	100	100	100
Fresh Pasta	31	31	29	29	25	25	25

*Figure 12 ISMEA report on dry and fresh pasta manufacturers*

Of which 11 dry pasta producers are also producers of fresh industrial pasta.

Comparing Unipi data from 1996 with ISMEA data from 2014 it is therefore possible to summarize that the pasta industry in Italy is at its most mature state in which the number of companies remains almost the same over the years. The reason is that the increasingly fierce competitiveness has led companies to upgrade production plants thanks to process innovation, thus guaranteeing ever greater economies of scale so that the improvements strengthen the company's production and allow it to remain on the market. In addition to the competitiveness linked to the production factors, there is the advent of the large-scale retail trade, whose contracts and methods do not guarantee following the over-sizing of the pasta factories to buy the quantity of finished product the contract that linked the distribution to the company, leaving company in an oversized "status" destined to be purchased or destined to cease its activity.

The geographical distribution of industrial pasta factories in 2011 saw the predominance of the Northern and Southern regions, which respectively represent 42% and 43% of the national plants, while 15% are located in central Italy.

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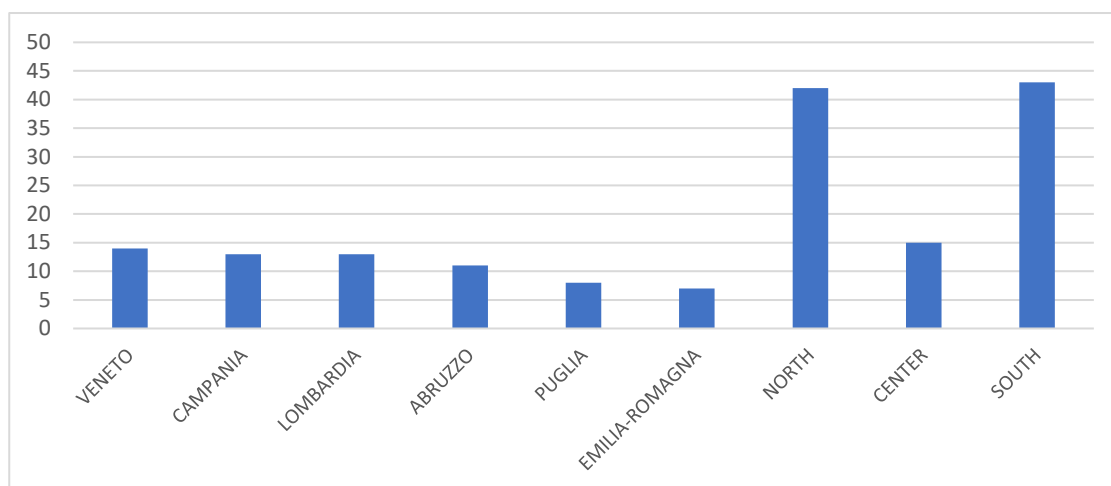


Figure 13 Localization of Italian firms (ISMEA report)

Other considerations can be derived from the report on the structure of companies in 2012 on the segmentation of the Italian pasta market. The table shows the number of artisan businesses, not artisan, the number of employees and the production of each.

As you can see the craft enterprises have a production that is half of those of the non-artisan sector, although they are almost similar in number of employees. In total, between craft and non-craft enterprises there are 4410 companies with a total of 22,334 employees and a production of 5,695 million euro.

Value of Production	<2	2 to 5	5 to 50	>50	Total
<b>Artisan business</b>					
Number of enterprises (number)	3260	134	3	0	3397
Employees (number)	8487	2150	93	0	10730
Production (mln €)	1278	385	21	0	1685
<b>Non-Artisan business</b>					
Number of enterprises (number)	820	98	82	13	1013
Employees (number)	2803	1881	3986	2934	11604
Production (mln €)	421	330	1346	1913	4010
<b>Total</b>					
Number of enterprises (number)	4080	232	85	13	4410
Employees (number)	11290	4031	4079	2934	22334
Production (mln €)	1699	715	1368	1913	5695
Share	29.8	12.2	24.0	33.6	100.0

Figure 14 Artisan and non-artisan business. Prometeia

## Breaking Down Market Share

Analysing the market value of the pasta sector, it describes an oligopolistic market with the largest first four companies accounting for almost 20% of the market share, where three of them are Italian company.

Company	% Share
Barilla	9.6
Ebro Foods SA	4.8
Flli De Cecco de filippo Fara San Martino SpA	4
Pastificio Rana S.P.A.	2.8
Other	79.7
Total	100%

Figure 15 Europe Industrial pasta and noodles market share. Marketline 2017

### - Barilla Holding S.p.A.

As the first company with 9% market share we find Barilla holding Spa operating through two entities: Barilla g. and R. Fratelli Joint stock company and Italian Kitchen. The group has direct operation in 26 countries, exports its products to more than 100 countries and owns 29 production facilities across nine countries.

The company was founded in 1877 as a bakery shop in Parma, Italy by Pietro Barilla. The company is privately held, and remains in the fourth generation of Barilla family ownership and control through three brothers, chairman Guido Barilla, and vice chairmen Luca Barilla and Paolo Barilla.

The group produces many kind of pasta, with over 120 shapes and sizes. Barilla brand pasta is sold in numerous restaurants worldwide, such as those belonging to the pastamania chain.

The company estimated revenues of € 3,545.68 million in the fiscal year ending December 2016, an increase of 0.9% compared to fiscal 2015. Its net income was € 248.4 million in the fiscal 2016, compared to a net income of €181.78 million in the preceding year.

## - **Ebro Foods SA**

Ebro Foods SA is the leading company in the Spanish food processing sector. Ebro Foods is the world's largest traders and miller of rice and the second pasta manufacturer in the world. Ebro operates through 23 subsidiaries in 76 countries across Africa, North America, Europe and Asia.

The company was founded in 1998 but in the 2000s Ebro Foods has completed its most expansionary process, internationalization and divestment from sectors that meticulously dealt with the international leadership that the company wanted to take. In particular, in 2005 he sold Catesa Foods for 37.9 million dollars, specializing in tropical fruits, flowers and ornamental plants. In 2010, he sold his dairy products business unit for 630 million euros. It was the largest Spanish sugar producer before this divestment.

The company classifies its business operations into two reportable segments: Rice and Pasta.

Under the Rice segment, Ebro is involved in the production and distribution of rice, rice-based products and complementary food products. It also engages in industrial and branding activities under a multi-brand model. The segment operates through two of the company's subsidiaries, Herba Group and Riviana Group.

Under Pasta segment, Ebro is involved in the production and marketing of fresh and dry pasta, sauces, semolina, semolina-based products and complementary food products. The segment operates through three subsidiaries, Panzani Group, Garofalo Group and New World Pasta Group.

The major brands of the company include Garofalo and Santa Lucia. The Garofalo group is a leader in the Italian premium dry pasta segment. Its brands are sold in several European markets, the US, and Africa. The New World Pasta Group is a leader in dry pasta segment in the US and Canada.

The company recorded revenues of € 2,554.84 in the fiscal year ending December 2016. Its net income was \$192 million in fiscal 192, compared to the 153.668 of the previous year.

## - **Flli De Cecco de filippo Fara San Martino SpA**

The De Cecco Group is an Italian company active in the food sector; in particular it deals with producing dry pasta, extra virgin olive oil, ready sauces and tomato derivatives. Born in 1886 in Fara San Martino (province of Chieti) from Filipp De Cecco, it has its administrative headquarters in Pescara and production facilities located in Fara San Martino and Caldari (Chieti).

The story of De Cecco goes back to when Italy was not yet united, with a municipal flour mill that produced flour, in 1886 Filippo the son of the first founder Nicola was able to buy a milling plant and from which the current industry is based . They were among the first to experiment the dough with warm water, heated with a steam machine, and the bronze dies.

The old but important company in 2017 shows a turnover of 436 million euros (plus 0.6 in value, plus 1.3 in volumes compared to the previous year) and a net profit of 50 million proves to be one of the most prominent competitors not only in terms of production but also of quality offered.<sup>13</sup>

## - **Pastificio Rana S.p.A.**

The Pastificio Rana owes its name to Giovanni Rana, an Italian entrepreneur born in 1937. Rana only 24 years old decides to found a small workshop for the production of handmade tortellini in San Giovanni Lupatolo in the province of Verona (Veneto), where the production is made to order. After a first artisan phase Rana starts a phase of industrialization of the production always in the same place, where even today the headquarters of the company is located. Rana is always sensitive to the quality of the product, which it protects with constant commitment in the search for ever new technologies for storage and packaging, as well as in the name of hygienic-sanitary safety.

Growing up, the company is able to acquire more and more competitiveness in the industrial world and receives the attention of operators and food giants from Kraft to Unilever, as well as from the Italian competitor Barilla himself.

The marketing initiative proposed by the company, of which Giovanni Rana was the testimonial,

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<sup>13</sup> <https://www.repubblica.it/economia/affari-e-finanza/2018/04/16/news/de-cecco-la-famiglia-vuole-lipo-ed-apre-a-un-manager-esterno-193999132/>

was very impressive in the following years, combining the brand with the values of quality and authenticity of the product.

Pastificio Rana S.P.A has revenues of 378 million euros in 2017 with an increase of 5% compared to the previous year of 361 million euros. In 2017 it reported a net profit of 12,091 million euros.<sup>14</sup>

### 3.3 Market Strategies

Fasi della catena del valore	Strategie di Differenziazione		Strategie di Riduzione dei Costi	
Acquisizione degli input			Delocalizzazione	
			Rapporti con i Fornitori	
Produzione	Diff. Qualitativa di Prodotto Innovazione di Prodotto		Economie di Scala	
			Esternalizzazione	
			Economie di Varietà	
			Innovazione di Processo	
Distribuzione e Vendita	Servizi ai Clienti		Integrazione a Valle	
Trasversale	Comunicazione		Gestione Risorse Umane	
	Diversificaz. geografica			
	Pres. sul Mercato/Reputazione			
		1 2 3 4 5 6 7 8 9 10		1 2 3 4 5 6 7 8 9 10

Figure 16 Market Strategies Prometeia Report

The graph above taken from the Prometeia report shows how it is possible to use market strategies in the reference sector. The pasta sector is a solid sector, consequently the two strategies pursued by companies, in terms of product and cost reduction.

The descriptive table shows four distinct levels by value chain (acquisition of inputs, production, distribution / sales and transversal) so as to identify those phases in the business activity in which the most relevant competitive strategies are most concentrated. In the sector the main levers on which companies can base their competition are reputation, communication and relationships with

<sup>14</sup> [https://www.reportaziende.it/pastificio\\_rana\\_spa](https://www.reportaziende.it/pastificio_rana_spa)



suppliers and distributors. In the sector the main levers on which companies can base their competition are reputation, communication and relationships with suppliers and distributors.

In the sector, the main levers on which companies can base their competition are reputation, communication and relationships with suppliers and distributors.

Companies, especially those of a larger size, try to maintain market share by focusing on the quality of the products and on the advertising message that, on the one hand, informs the customer of qualitative differentiation and loyalty to the brand and, on the other, allows revitalize the market. The possibility of differentiating the product is limited; companies tend to differentiate the offer by communicating the distinctive elements of the brand. The growing interest in the quality of food production and the certification of processes has led companies to pursue upstream integration to control the quality of the raw material and contain transport costs, and to invest in process innovation to improve production efficiency.

As in many other food sectors, managing relations with the distribution is the most problematic area. The product is marketed according to different methods and techniques depending on whether you are looking for access to large-scale distribution, traditional trade or the channel that allows you to reach customers such as restaurants and hotels (Horeca channel).

Effective brand policies seem to be the only possible strategies for companies that want to market their products through large-scale organized distribution, without suffering a subordinated relationship. For small businesses, the possibility of accessing the large-scale retail distribution channel can come from the creation of products with a commercial brand, which allows advantages in terms of production volumes but at the expense of brand visibility. Finally, the growing importance of the Horeca channel has prompted, in recent years, some companies to implement integration strategies.

With reference to price strategies it is possible in relation to the market objective that the company sets itself, to identify two different pricing strategies:

- Penetration strategy: it is pursued containing, as much as possible, the price with the aim of significantly and rapidly increasing sales to acquire significant market shares
- Skimming strategy: its objective is to maintain a relatively high price of the goods marketed in order to "skim" the market while also containing the number of buyers

The price policy can follow two different logics with respect to the choices made in the domestic market:

- Standardization: the company adopts the same price level in all markets in which it markets products (comparison is facilitated by online channels; avoids parallel imports and unofficial channels)
- Adaptation: the company present in international markets modifies the price and the related policies by making different choices in the various countries
- Hybrid forms: it is widespread that companies, especially those present in a large number of countries, resort to hybrid forms compared to the two previous strategies in relation to the peculiarities of the different markets.

### 3.3 Pasta distribution channels.

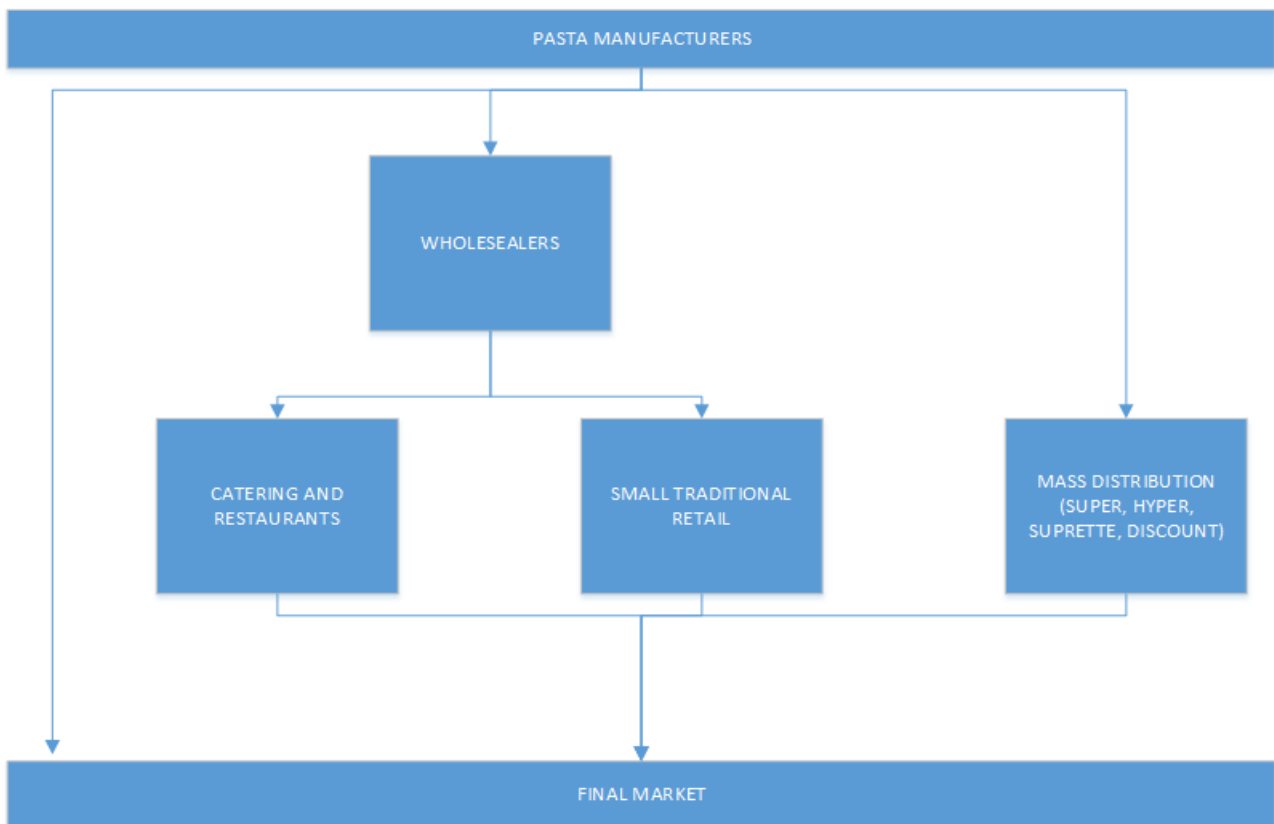


Figure 17 Prometeia elaboration

The sector is characterized by a different supply structure depending on the type of product (dry pasta and fresh pasta). The segment of dried pasta is very fragmented and presents a strong territorial inhomogeneity. Alongside the market leaders, companies coexist that, given their local roots, excel in some regions. The fresh pasta segment, on the other hand, sees the presence of few operators, very active in supporting the purchases of this type of product through continuous innovations on the side of recipes and strong advertising support.

The distribution channels are mainly short: the producers directly convey most of their offer to the mass distribution companies, the rest to the wholesale companies, which supply the traditional retail and the Horeca channel customers.

The sales leadership in this channel is of MD companies.

The big brand producers find in the MD the possibility of conveying the products in a less expensive way compared to the sale in the traditional distribution (very fragmented and difficult to manage, without the intermediary of the wholesaler). With regard to dried semolina pasta, around 90% of retail volumes in 2011 were purchased in the modern channel format, including the discount store.

The high promotional pressure applied to branded products by these distributors has forced manufacturers to invest heavily in communication to support brand differentiation. Furthermore,

MD usually offers branded producers the possibility of implementing dual branding strategies - simultaneous production of their own product line and a branded one (private label).

The realization of these products allows companies to saturate the production capacity of the plants and to turn to a more attentive price range without affecting the image of their brand but above all to obtain from distributors a better allocation of products on the shelves, one of the main critical elements in the relationship between brand industry and the MD. Given the high penetration reached in this sector by private labels, the major distributors have begun to implement differentiation strategies for lines of private label products, through the creation of lines of typical products, opening spaces also for small and medium-sized producers, operating at local level, otherwise unable to access this channel given the high investments required. However, these producers must guarantee high quality standards.

The tables below show the distribution channels and their distribution by value in Europe and Italy for the pasta and noodles market.<sup>15</sup> The small shops sector is a feature of the Italian distribution market, whose consumer prefers a smaller but more welcoming store than the big supermarket.

	% Share	
	EU	Italy
Hypermarkets & Supermarkets	64.9%	57.7%
Convenience Stores	26.0%	28.3%
Food & drinks specialists	3.2%	9.7%
eRetailers	1.9%	2.0%
Other	4.0%	2.3%

Figure 18 Europe and Italy pasta & noodles market distribution, % share by value 2017

## The export

The sale of pasta to customers of this channel takes place both directly (45%) and through the intermediary of the wholesaler (55%). The lively evolution of out-of-home pasta consumption recorded in recent years, in parallel with the tendency to deconstruct the meals of Italian families, is offering the sector's producers new opportunities to expand activity levels, against a mature domestic consumption. In this sense, a strategy is represented by the opening of restaurants / trattorias or corners within shopping centers, already positively tested by some large manufacturers.

The strategies proposed by companies to cope with exports can be many and varied. In a broadly

<sup>15</sup> MarketLine Pasta & Noodles report (in EU and Italy)

open context abroad, the 2012 ISTAT survey shows that, in order to improve competitiveness on international markets over the past two years, the set of Italian manufacturing companies has to a large extent favoured both strategies for improving quality or increasing the range and technological content of the products, and measures to contain sales prices.<sup>16</sup>

The destination of exports by geographical area highlights the primacy of Western Europe as the largest destination market for Italian exports, with a weight equal to 60.02%, a moderate decrease compared to the beginning of the 2000s. An intensification of the flows has interested in recent times almost all the areas with different intensities with the exception of Oceania and Central and Southern Africa. The substantial resilience of exports directed by the Western European markets confirms the presence of viscosity linked to the costs of penetration and promotion of typical products in foreign markets, whose costs borne by the companies are aggravated by the structural absence of international projection in the large Italian distribution.

The analysis of the ranking of the top ten destination countries confirms the centrality of the advanced countries as major outlet markets, including the substantial weight held by Germany, France and the United Kingdom. This result is attributable to a contamination of the culinary tradition among countries that are geographically close, originating from the intensity of the migratory and tourist flows that have affected the relations in continuous mode. The ranking of the first commercial partners does not show a particular dynamism, signaling a consolidated composition of the target markets. The entry of Russia and the Swiss margin should be highlighted with respect to the beginning of the last decade. The analysis of the distribution of imports by geographical area shows a strong concentration. Consistently with the findings for the manufacturing industry as a whole, the majority of the sector's imports originated from Western Europe, with a weight of 91.9%, significantly higher than the average for the industrial sectors in these markets. A recent growth of the New EU Countries is evident, which reached in 2013 a weight close to 3% on national purchases, and an Asia seal after the deterioration experienced in the period 2003-08, which is confirmed as second supplier with a weight of 4% on domestic purchases.

Within the ranking of the main world exporters, Italy is in first position, holding with a share over 35% an undisputed leadership on the international scene, affected by a moderate deterioration during the last two years.

Among the main competitors in the relevant markets for Italy we note China with a growing share. Two other Asian countries are positioned within this ranking, both with increasing shares, namely Thailand and South Korea.

The less dynamic character of the competitive arena is linked to the presence of high levels of production specialization of Italian companies and to the typical Made in Italy of the reference product, which configure competitive assets that are difficult to imitate.

The data referring to the Netherlands and Belgium and Luxembourg is not exempt from the

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<sup>16</sup> [https://www.istat.it/it/files/2013/02/cap3\\_nuovo.pdf](https://www.istat.it/it/files/2013/02/cap3_nuovo.pdf) Internazionalizzazione delle imprese e performance

presence of critical statistics, linked to the commercial hub activity of the ports located throughout the territory.

The ranking of the major world import markets shows the United States in first position with a substantially stable weight. It should be noted that between the two-year period 2007-2008 and the two-year period 2012-2013 the major European markets such as Germany, France and the United Kingdom lose weight while remaining at the top of the ranking.

The sector has shown in recent years a fair international competitiveness, as evidenced by the growth of exports at constant prices, in line with market demand. In general, the good alignment with the world demand for exported quantities is an indicator of the ability of companies in the sector to take advantage in a timely manner of the opportunities offered by foreign markets, which open for the first time to import pasta and therefore have margins for growth important compared to the already saturated internal market.

Italy is a country of strong specialization and also for this reason the incidence of imports on domestic demand is a marginal aspect. In 2013, however, imports grew more than recorded by the trend in consumption, a trend that led to an increase in the sector's import penetration, but above all an indication of an appeal through purchases from abroad to more convenient supplies to satisfy a demand that is increasingly attentive to saving. Much of the growth in imports is attributable to flows from Western Europe and only secondarily from Asia from the area of North Africa and the Middle East. The analysis shows a more sustained variation of the exported values, fed a little from all the monitored areas. Given also the size of the markets and the affinities in the diets, Europe and North America have offered the greatest contribution.

Faced with an expected foreign demand to gain a bit of liveliness, in 2014 and 2015 it is estimated that the dynamics of exported volumes can further accelerate, remaining above the historical average also in 2016. Imports in volume should assume in the two-year period 2014- 15 a trend on rates lower than those of exports, although improving thanks to a livelier consumption scenario along the scenario. The sector balance is therefore expected to continue its growth path throughout the forecast period.

Overall we can outline various strengths, including the very high level quality achieved, the image and recognition of Made in Italy, the variety of the offer combined with good innovation skills and in-depth knowledge of the product, and various weaknesses including the basic unit margins due to the high costs of Italian raw material , the strong pulverization of Italian industry, as well as the scarce presence abroad due to greater product orientation instead of distribution orientation.

			micro sector	manufacturing index
	2003	2008	2013	2013
Western Eu	61.60	64.6	60.2	20.9
New countries EU	2.90	3.8	4.8	8.9
Other countries EU	1.90	3.6	5	7.6
NAFTA	13.70	9.5	11.4	9.1
Asia	8.40	7.8	8.1	10.1
Afr. Cent.South-Oceania	7.10	5.2	3.4	2.6
North Africa-Middle East	2.80	3.3	4.5	7.8
America Latina	1.60	2.2	2.7	3.1

Figure 19 Geographical export distribution by area

			micro sector	manufacturing index
	weight	weight	weight	weight
	2003	2008	2013	2013
Germany	19.10	19.20	17.50	12.80
France	14.30	14.50	13.70	11.10
UK	11.10	12.90	11.60	5.30
US	11.50	7.60	9.30	7.30
Japan	6.70	5.80	4.60	1.70
Russia	0.80	1.60	2.80	3.00
Netherland	3.00	3.40	2.70	2.30
Sweden	2.60	2.60	2.70	1.00
Belgium and Luxembourg	2.30	2.10	2.40	3.20
Switzerland	1.90	2.00	2.20	5.30

Figure 20 Ranking of the top 10 destination countries and weight of each country on total exports

			micro sector	manufacturing index
	2003	2008	2013	2013
Western Eu	83.60	94.4	91.9	60.3
New countries EU	0.30	0.3	2.6	9.9
Other countries EU	0.00	0	0	4.8
NAFTA	0.30	0.1	0.1	4.1
Asia	12.60	4.4	4	15.1
Afr. Cent.South-Oceania	0.80	0.3	0.1	1.5
North Africa-Middle East	2.20	0.4	1.3	2.5
America Latina	0.10	0.1	0	2

Figure 21 Geographical import distribution by area

	Values in million euros					
Values in million euros	2013.00	2012	2013	2014	2015	2016
IMPORT	42	9.9	3.5	2.49	4.3	3.8
EXPORT	1730	2.7	3.9	4.6	6.2	4.2
Trade balance	0	1614	1688	1751	1840	1897

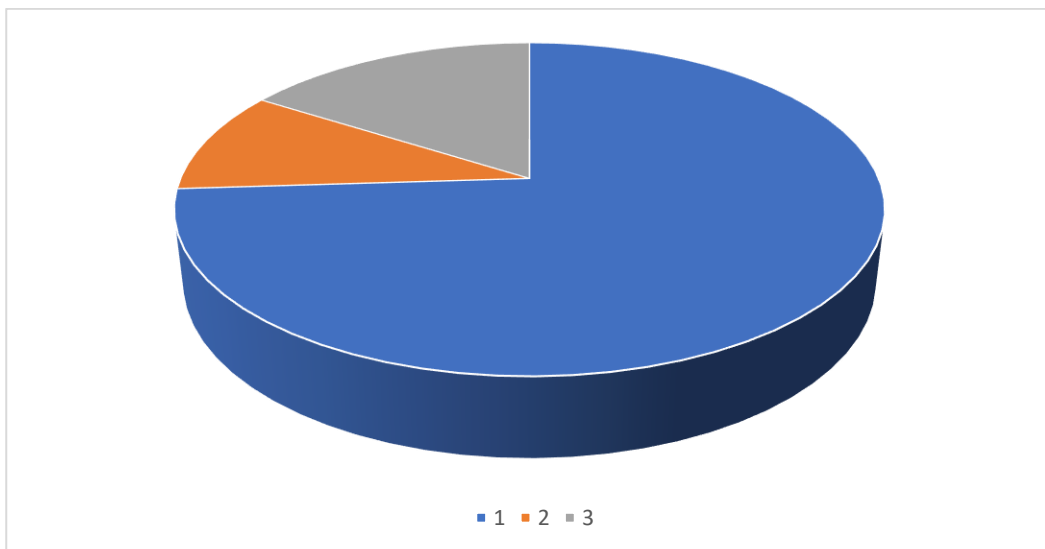
Figure 22 Foreign Trade, Average Annual Variations (constant Prices)



### 3.4 Cost and Price Analysis

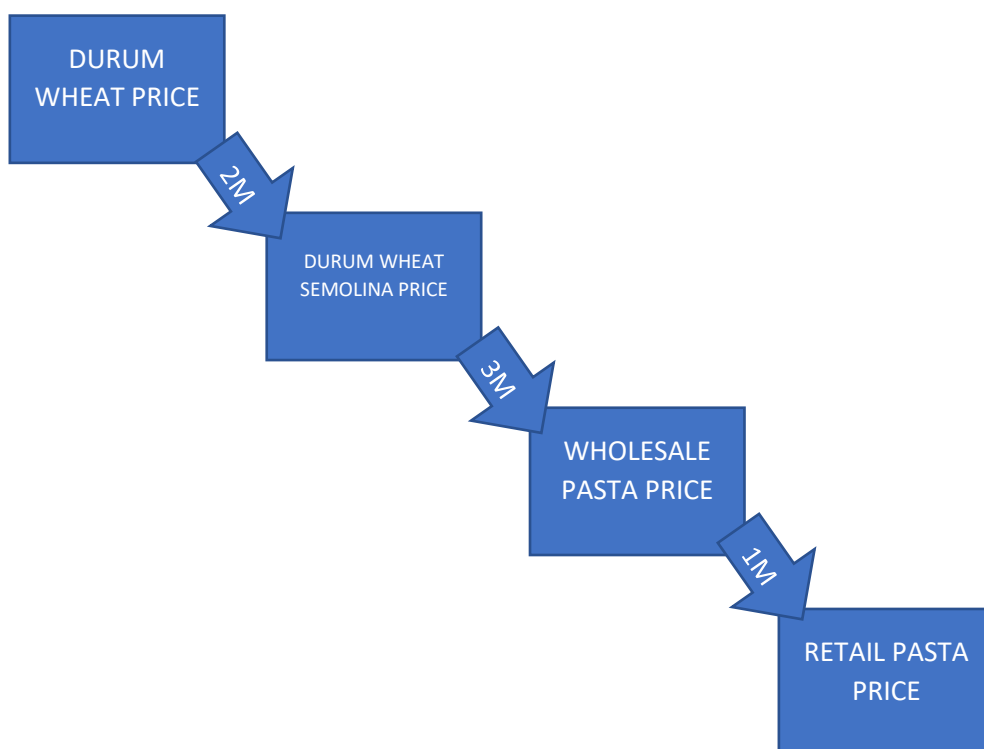
In determining the final price, three different types of cost factors fundamentally affect: the cost of wheat for the milling industry, the cost of semolina for the pastoral industry and the cost of pasta for the distribution sector. The price is transmitted starting from the raw material to the consumption of the finished product (food product).

1. Incidence of pasta manufacture 73.50 %
2. Incidence of semolina production 10.20 %
3. Incidence of durum wheat: 16.30 %



The transmission of prices along the wheat-pasta chain can be summarized as follow.

The time in the arrows is expressed in months.



A regularity that characterizes the mature market economies, the various phases of production absorb the impulses on prices: the oscillations that start from the prices of the raw materials, are transmitted with delay and with a more reduced intensity to the production prices. Then, with further delay and lower intensity the impulses are transferred to consumer prices.

To date, the effects of the increases in raw materials are still limited, since the prices of industrial production have begun to grow late only for wheat flours. However, should the tensions at the origin continue to grow with this speed and intensity, it seems obvious that they should also impact on prices downstream of the supply chain (phase of production and consumption of bread and pasta).<sup>17</sup>

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<sup>17</sup> [https://www.mise.gov.it/images/stories/prezzi/audizione\\_senato\\_commissione\\_prezzi.pdf](https://www.mise.gov.it/images/stories/prezzi/audizione_senato_commissione_prezzi.pdf)

To investigate the characteristics related to pasta prices, we found some retail selling prices of dry pasta and egg pasta in Turin, in two different supermarkets: CRAI and Carrefour.

The two supermarkets have been chosen because they are close to each other, less than a kilometre, which means that customers will be almost the same. Both for the pasta product have a private label that try to support keeping a reasonable low price, competing directly with pasta suppliers who are suppliers but from this point of view also competitors. In both cases the price of CRAI and Carrefour pasta is significantly lower than the same type of pasta from another brand: CRAI brand pasta costs € 0.59 (€ 1.18 per kg) and with the Carrefour brand € 0.55 (€ 1.1 per kg ).

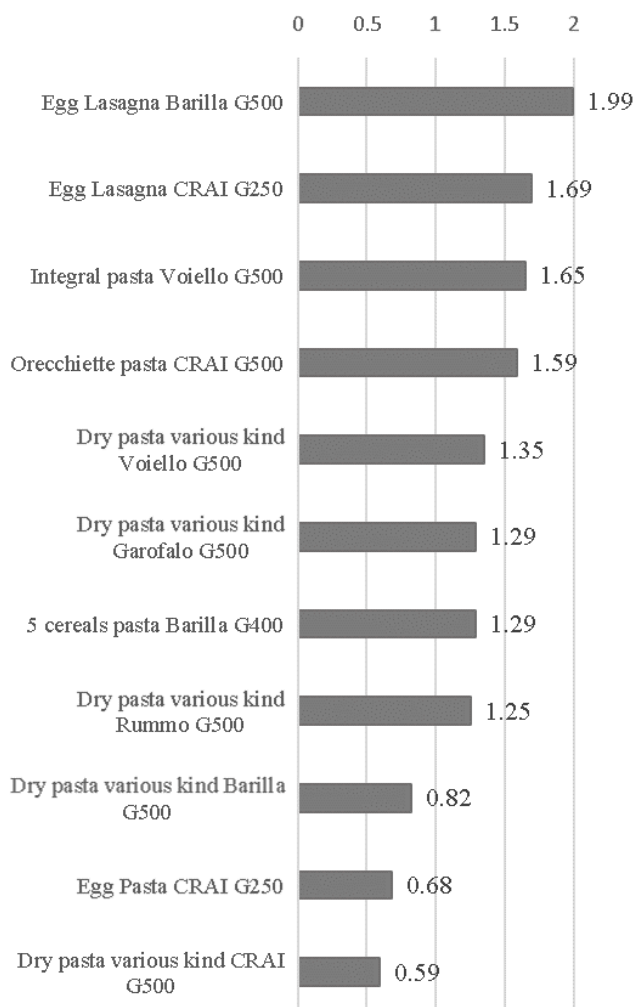


Figure 23 Pasta prices observations, CRAI Supermarket in Turin (December 2018)

As for the most famous pasta brand in the world "Barilla" well it does not hold the highest price, rather it is that type of pasta that can be considered by the consumer as "not too expensive quality pasta". The price varies between € 0.82 and € 0.89 per half kg, € 1.64 and € 1.78 per kg.

The higher prices, on the other hand, are represented by the most valuable type of pasta, such as Rummo, Voiello, Garofalo or De Cecco, which are industrial pasta but with a longer processing and a more elegant brand. The price here is much higher than that of the more common Barilla pasta of around 40-50 cents.

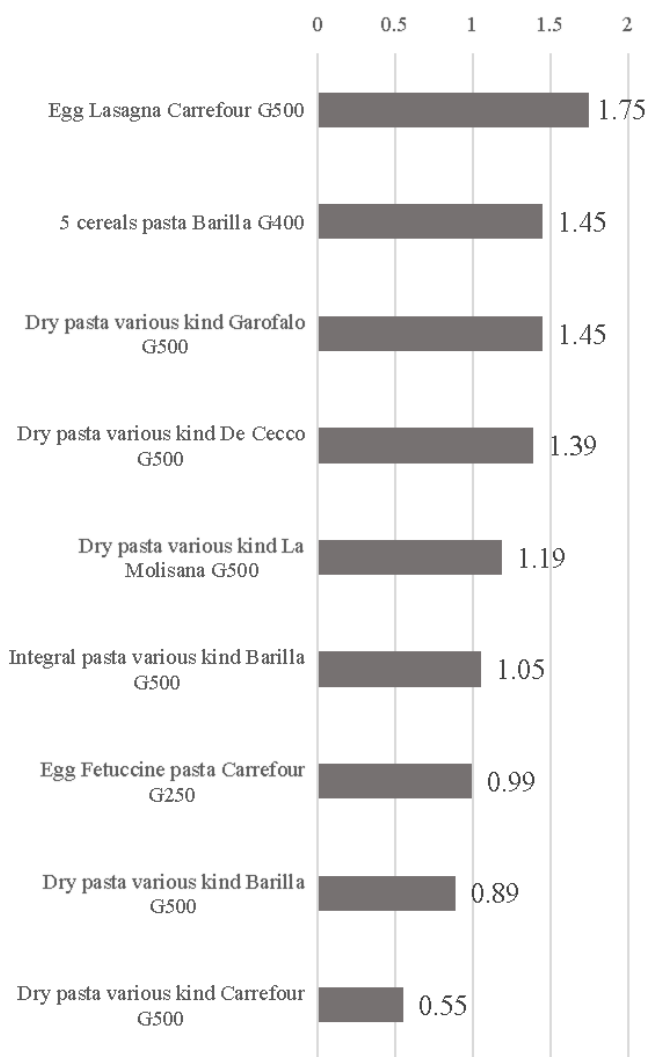


Figure 24 Pasta prices observations, Carrefour Supermarket in Turin (December 2018)

For egg pasta, on the other hand, it is completely another story, in fact there are many types of it, here for simplicity reported in a few. Each type can have its price, egg pasta is not a common object

of purchase compared to the most common dry pasta. The trend value per kg is about 2 or 3 times higher than the dry pasta for the same type of brand.

Whole wheat pasta and 5 cereals pasta is the most popular dough for the customer, as it is not as expensive as egg pasta and offers more fiber than common pasta, nevertheless it is healthier than both. It turns out to be more expensive than the dry pasta branded by the same brand for about € 0.40 - € 0.50 per kg.

## 4. ANALYSIS OF A FIRMS' SAMPLE

In this chapter we propose to analyse a number of companies and some financial statements are correlated for the pasta sector.

The data is taken from the AIDA database for the years 2008 and following until 2017 for Italian companies. All companies in the sector were selected based on the ATECO code: 107300 - Production of pasta, couscous and similar starchy products. From a larger sample of 1000 companies, a smaller sample was taken at a time, trying to exclude bankrupt companies, in liquidation or for one reason or another, no longer on the Italian pasta market.

A sample of 100 of the largest companies was examined to invoice in the Italian pasta market in 2017 and went back every year until 2008. They operate in the fresh pasta market for about 40% in the market of fresh pasta, dry pasta, or both for the remaining 60%. Each firm and his location is reported in the Appendix.

From a geographical point of view, the sample branches out for 60 companies in the center-north, 30 in the south and 9 in central Italy. Pasta producers therefore seem to be quite polarized between north and south.

## 4.1 Financial Ratios and Trends

The analysis in question wanted to take into account the index regarding the return of an investment and its trend in the pasta industry.

### - ROI

The first financial statement taken into consideration is the ROI (Return On Investment). The ROI is a ratio between the net profit and the investment resulting from an investment of some resources. A High ROI means the investment's gains favourably to its cost. As a performance measure, ROI is used to evaluate the efficiency of an investment or to compare the efficiencies of several different investments.

The return on investment is usually evaluated as:

$$ROI = \frac{Net\ Income}{Investment} * 100$$

The ROI analysis initially focused on the entire sample of companies, then we focused on a sample of 30 companies up to a sample of the top 10 companies by total revenues.

The highest ROI value for the entire sample of companies occurred in 2009 with an average value of 8.59 %, while for the single sample of the 10 companies there was in 2008 with an ROI of 11.22 %.

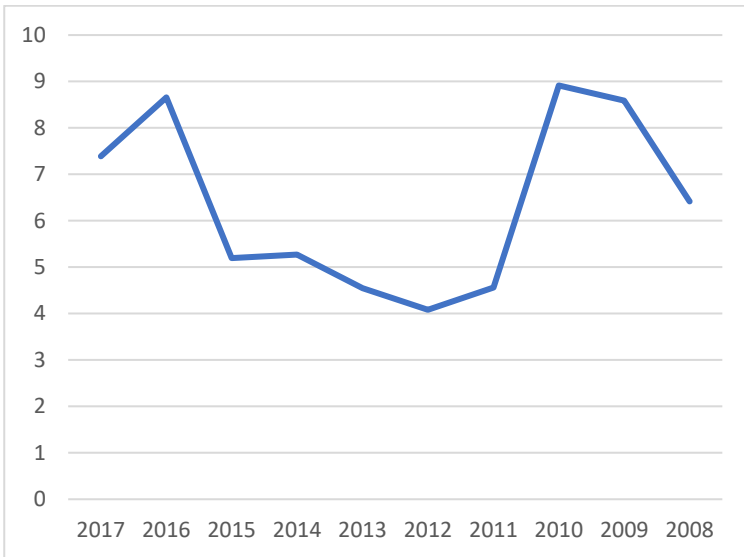


Figure 25 average ROI evaluated on 100 firms

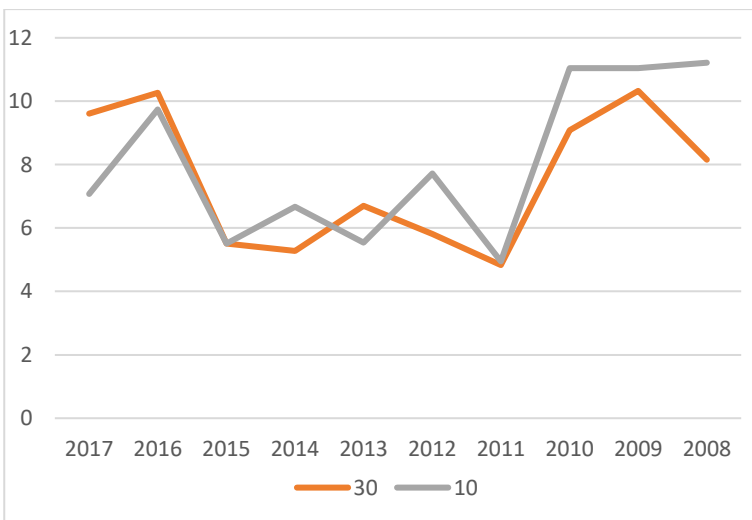


Figure 26 average ROI evaluated the first 30 and 10 firms.



## - ROS

Another index is the Return on sales (ROS). This ratio is used to evaluate a company's operational efficiency, it provides insight into how much profit is being produced per dollar of sales. An increasing ROS indicates that a company is growing more efficiently, while a decreasing ROS could signal impending financial troubles.

As for the other ratio the first sample Ratio of 10 firms is generally better than the second and third sample.

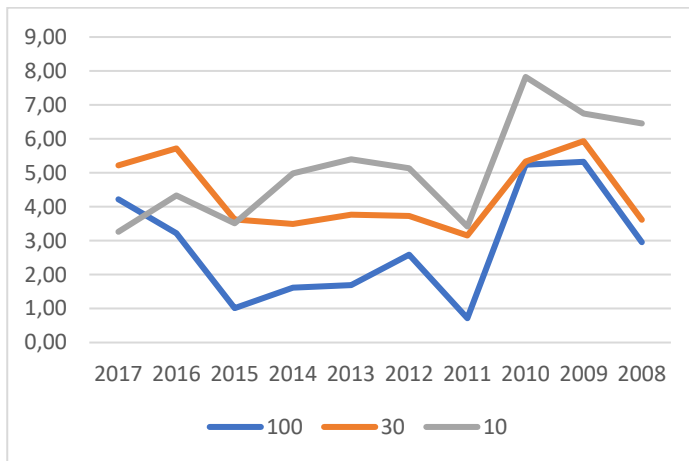


Figure 27 Average ROS evaluated on 100,30 and 10 firms

## - ROA

Another financial index is the Return on assets (ROA). Return on assets is a profitability ratio that provides how much profit a company is able to generate from its assets. In other words, return on assets (ROA) measures how efficient a company's management is in generating earnings from their economic resources or assets on their balance sheet.

Comparing the average ROA on the different sample size it can be summarized that the actual top 10 firms generating more revenues, also have tendentially a higher return on assets that the smallest firms quite similar to the average on the 30 firms' sample

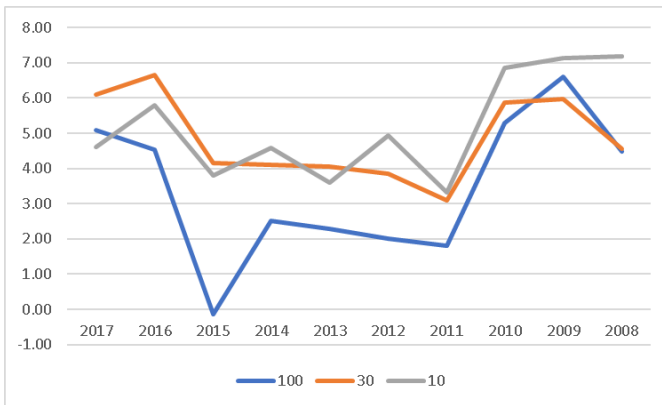


Figure 28 average ROA evaluated on 100, 30 and 10 firms

After having carried out the analysis at an income level, we continued the analysis to understand the evolution and the real growth rates of the companies.

The following changes were calculated at constant prices:

- 1) Growth rate
- 2) Percentage variation of the workforce

## 4.2 The average growth rate

In the analysis we set ourselves the problem of quantifying how much Italian companies have grown in terms of market from 2008 to 2017. To do this we used a rate such as the ratio between the difference between the current turnover and that of the previous year, and the previous year's turnover in the formula:

$$\text{Revenue growth rate} = \frac{\text{Revenue}_t - \text{Revenue}_{t-1}}{\text{Revenue}_{t-1}} * 100$$

n sample number	2017	2016	2015	2014	2013	2012	2011	2010	2009
100	8.8%	10.4%	12.5%	10.9%	12.5%	9.3%	17.0%	4.0%	-3.8%
30	2.9%	7.7%	6.6%	6.9%	1.3%	10.3%	8.7%	2.7%	-6.9%
10	1.6%	1.2%	7.9%	4.5%	-3.3%	13.6%	9.1%	5.9%	-7.5%

Figure 29 Average revenue growth rate on different n sample number

It is clear that for the totality of the sample a growth rate for most of the years is analysed much more than in the case in which a sector of 30 or 10 companies was analysed. The growth rate considering the turnover of medium-small companies in the pasta sector is on average much greater than that of the large ones in the market, although this index is in percentage terms: the largest companies still hold a substantial part of revenues and market.

	17	16	15	14	13	12	11	10	9	Average 17-9
<b>BARILLA G. E R. FRATELLI - SOCIETA'</b>	0.010	-0.005	0.010	0.010	0.008	0.021	0.024	-0.024	-0.046	0.000874
<b>F.LLI DE CECCO DI FILIPPO - FARA SAN</b>	0.014	0.046	0.058	0.000	-1.000	0.047	0.104	0.101	-0.055	-0.076190
<b>PASTIFICIO RANA S.P.A.</b>	0.046	0.070	0.082	0.105	-0.041	-0.017	0.036	0.074	0.037	0.043529
<b>F. DIVELLA S.P.A.</b>	-0.040	-0.063	0.040	0.007	0.036	0.093	0.153	0.062	-0.096	0.021147
<b>PASTA ZARA S.P.A.</b>	-0.077	-0.159	0.093	0.105	0.101	0.142	0.095	-0.037	-0.159	0.011492
<b>PASTIFICIO LUCIO GAROFALO S.P.A</b>	-0.046	0.021	0.172	0.047	0.097	0.111	0.110	0.016	-0.069	0.051029
<b>LA MOLISANA - S.P.A.</b>	0.021	0.309	0.184	0.108	0.260	0.972	0.000	0.000	0.000	0.206036
<b>MOLINO E PASTIFICIO DE CECCO S.P.A. -</b>	0.013	0.054	0.001	0.064	0.162	0.034	0.103	0.180	-0.070	0.060189
<b>PASTIFICIO DI MARTINO GAETANO &amp;</b>	-0.041	0.034	0.117	0.091	0.025	0.201	0.215	-0.041	-0.194	0.045144
<b>RUMMO S.P.A. - SOCIETA' PER AZIONI</b>	0.255	-0.286	-0.024	0.008	-0.042	0.152	0.192	-0.058	-0.258	-0.006734
<b>SURGITAL S.P.A</b>	0.052	0.101	0.089	0.061	0.037	-0.017	0.037	0.129	0.021	0.056738

Figure 30 Revenue Growth rage and average Revenue Growth rate per year for the sample of 10 firms. Nominal Values

The company that won the record with the best growth rate in this time frame between the sample reduced to only the largest 10 companies was La Molisana SPA, having tripled sales in three years with an average growth value of 0.206% . The worst is instead F.lli De Cecco with a negative average value of -0.07%, due to the fact that in 2013 it reported a zero turnover.

Barilla's situation, on the other hand, has remained stable over time with an average growth rate of almost zero, but has in any case registered a 1% growth in the last one.

## Average percentage change in the workforce

Always using the same approach, we have calculated how much strength has changed in terms of company employees.

$$\text{Perc. change in workforce} = \frac{\text{Number of employees}_t - \text{Number of employees}_{t-1}}{\text{Number of employees}_{t-1}} * 100$$

Data show that every year the dry pasta and fresh pasta industry is ready to hire new employees every year.

n sample number	2017	2016	2015	2014	2013	2012	2011	2010	2009
100	19.4%	5.7%	0.7%	-6.3%	1.5%	37.2%	28.2%	2.8%	2.9%
30	5.2%	5.1%	2.0%	2.2%	1.4%	32.3%	-2.5%	3.4%	2.7%
10	4.4%	-0.6%	9.9%	-0.4%	-8.1%	4.6%	1.6%	5.4%	13.5%

Figure 31 Average percentage change in the workforce

Data show that every year the dry pasta and fresh pasta industry is ready to hire new employees every year.

Finally, for a sample of 30 and 10 companies, the table below shows the revenues per employee.

n sample number	2017	2016	2015	2014	2013	2012	2011	2010	2009
30	548072	583818	576146	585697	559818	564328	971836	493418	458449
10	708160	754888	701870	701734	650844	640396	590161	573891	581431

Figure 32 Revenues per employee generated per year nominal values of revenues

## CONCLUSIONS

As presented in the first part of the work and repeated several times Italy is the most important nation for the production of fresh and dry pasta. From the analysis of the demand and supply we have seen that this position has been conquered with company goals. The sector like pasta, which is more than one hundred and fifty years old, is not yet in its state of decline, consumption is slightly declining, but the market is still stable and growing. The pasta manufacturers, in particular the Italian ones, are great exporters of pasta and compete not only within the nation but also internationally. This study has revealed the current state of pasta production, the achievement of a good state of production quality is not always an easy task for pasta producers. The margins of the pasta sector have come out very low and often the mass distribution is both a distribution channel and for certain points of view a trap for manufacturers. Moreover, the analysis on the sample of Italians' firm has ended with the conclusion that the big pasta producers in Italy are by a large amount running better their business than the medium ones, in fact the medium ones still struggle in the pasta market.



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[www.pianidisettoe.it](http://www.pianidisettoe.it)

[www.gazzettaufficiale.it](http://www.gazzettaufficiale.it)

[www.fao.org](http://www.fao.org)

[www.wikipedia.org](http://www.wikipedia.org)



## APPENDIX

	Address	Registered office address	Region
<b>BARILLA G. E R. FRATELLI - SOCIETA' PER AZIONI</b>	VIA MANTOVA, 166	Parma	Emilia-Romagna
<b>F.LLI DE CECCO DI FILIPPO - FARA SAN MARTINO - S.P.A.</b>	VIA FILIPPO DE CECCO	Fara San Martino	Abruzzo
<b>PASTIFICIO RANA S.P.A.</b>	VIA ANTONIO PACINOTTI, 25	San Giovanni Lupatoto	Veneto
<b>F. DIVELLA S.P.A.</b>	LGO DOMENICO DIVELLA, 1	Rutigliano	Puglia
<b>PASTA ZARA S.P.A.</b>	VIA CASTELLANA, 34	Riese Pio X	Veneto
<b>PASTIFICIO LUCIO GAROFALO S.P.A</b>	VIA DEI PASTAI, 42	Gragnano	Campania
<b>LA MOLISANA - S.P.A.</b>	CNT COLLE DELLE API, 100/A	Campobasso	Molise
<b>MOLINO E PASTIFICIO DE CECCO S.P.A. - PESCARA</b>	VIA GIUSEPPE MISTICONI, 5	Pescara	Abruzzo
<b>PASTIFICIO DI MARTINO GAETANO &amp; F.LLI S.P.A.</b>	VIA CASTELLAMMARE, 82	Gragnano	Campania
<b>RUMMO S.P.A. - SOCIETA' PER AZIONI</b>	Z. I. PONTE VALENTINO AREA ASI, SN	Benevento	Campania
<b>SURGITAL S.P.A</b>	VIA BASTIA, 16/1	Conselice	Emilia-Romagna
<b>PASTIFICIO GUIDO FERRARA S.P.A.</b>	ZINIndustr.LE POLVICA DI NOLA	Nola	Campania
<b>BERTAGNI 1882 S.P.A.</b>	VIA SANT'AGOSTINO, 12/13	Arcugnano	Veneto
<b>PASTIFICIO ATTILIO MASTROMAURO - GRANORO SOCIETA' A RESPONSABILITA' LIMITATA</b>	STP 231	Corato	Puglia
<b>PASTIFICIO ANTONIO PALLANTE S.R.L.</b>	STS SANNITICA, SC	Capodrise	Campania
<b>GRANDI PASTAI ITALIANI S.P.A.</b>	VIA SANT'ORSOLA, 2/A	Correggio	Emilia-Romagna
<b>VOLTAN S.P.A.</b>	VIA DOSA, 24	Martellago	Veneto
<b>PASTA LENSI S.R.L.</b>	VIA DON LUIGI STURZO, 21/23	Verolanuova	Lombardia
<b>PASTIFICIO MENNUCCI SOCIETA' PER AZIONI OPPURE: PASTIFICIO MENNUCCI S.P.A.</b>	VIA EMANUELE BALESTRIERI, 236	Lucca	Toscana
<b>PASTIFICIO F.LLI CELLINO S.R.L.</b>	LOC CIRRAS, SNC	Santa Giusta	Veneto
<b>VALDIGRANO DI FLAVIO PAGANI S.R.L.</b>	VIA PAOLO BORSELLINO, 35/37	Rovato	Lombardia
<b>GRUPPO FINI S.P.A.</b>	VIA CONFINE, 1583	Ravarino	Emilia-Romagna

<b>MAFIN S.R.L.</b>	STR DEGLI ALBERI, 7	Galliera Veneta	Veneto
<b>PASTIFICIO FELICETTI S.P.A.</b>	VIA DON LORENZO FELICETTI, 9	Predazzo	Trentino-Alto Adige
<b>PASTIFICIO LIGUORI S.P.A.</b>	VIA DEI PASTAI, 50	Gragnano	Campania
<b>PASTA BERRUTO S.P.A.</b>	VIA SOMMARIVA BOSCO, 139/141	Carmagnola	Piemonte
<b>PASTIFICIO RISCOSSA F.LLI MASTROMAURO S.P.A.</b>	STP 231 EX S.S. 98, KM48+360	Corato	Puglia
<b>MODECOR ITALIANA S.R.L.</b>	VIA GINO MAGGI, 2	Cuvio	Lombardia
<b>INDUSTRIA ALIMENTARE FERRARO S.R.L.</b>	VIA BONAGGE, 26/A	Mussolente	Veneto
<b>BIA S.P.A.</b>	STS 16 ADRIATICA, 1/A	Argenta	Emilia-Romagna
<b>FRANCESCO TAMMA S.P.A.</b>	CSO DEL MEZZOGIORNO, 15	Foggia	Puglia
<b>PASTIFICIO FAZION S.P.A.</b>	VIA EUGENIO MONTALE, 21	Casaleone	Veneto
<b>ARMANDO DE ANGELIS SRL</b>	VIA OLANDA, 2	Villafranca di Verona	Veneto
<b>GEA INDUSTRIE ALIMENTARI S.R.L. SIGLABILE GEA S.R.L.</b>	VIA GADAMES, 128	Milano	Lombardia
<b>POIATTI SOCIETA' PER AZIONI O IN FORMA ABBREVIATA POIATTI S.P.A. OPPURE INDUSTRIE ALIMENTARI POIATTI S.P.A. O PIU' SEMPLICEMENTE I.A.P. S.P.A.</b>	VIA GIOVANNI FALCONE, 39	Mazara del Vallo	Sicilia
<b>DELVERDE INDUSTRIE ALIMENTARI S.P.A.</b>	INDUSTRIALE, SN	Fara San Martino	Abruzzo
<b>ALBERTO POIATTI S.P.A.</b>	LOC LUMINARIA, SN	Santa Venerina	Sicilia
<b>IL PASTAIO S.R.L.</b>	VIA MOIE, 56/C	Rodengo Saiano	Lombardia
<b>PASTIFICIO MEDITERRANEA S.R.L.</b>	VIA DELLO SCALO, 10/6	Bologna	Emilia-Romagna
<b>ANTICA PASTERIA S.R.L.</b>	CSO EUROPA, 9	Lainate	Lombardia
<b>SGAMBARO SPA</b>	VIA CHIOGGIA, 11/A	Castello di Godego	Veneto
<b>PASTIFICIO ANDALINI S.P.A.</b>	VIA MARTIRI DI BELFIORE, 13	Cento	Emilia-Romagna
<b>RAVIOLIFICIO LO SCOIATTOLO S.P.A.</b>	VIA PRIVATA MARIA TERESA, 7	Milano	Lombardia
<b>REY PASTIFICIO S.R.L.</b>	REG SAN VINCENZO, 1	San Damiano d'Asti	Piemonte
<b>CASA DEI CAPPELLETTI - S.R.L.</b>	STR DRUENTO, 270	Venaria Reale	Piemonte
<b>BUONA COMPAGNIA GOURMET S.P.A.</b>	VIA CESARE CANTU', 1	Milano	Lombardia
<b>PASTIFICIO AVESANI S.R.L.</b>	VIA PIETRO VASSANELLI, 19/A	Bussolengo	Veneto
<b>ZINI PRODOTTI ALIMENTARI S.P.A.</b>	VIA DELLA LIBERTA', 36	Cesano Boscone	Lombardia

<b>A.S.T.R.A. BIO S.R.L.</b>	STP 9, CM	Casteldidone	Lombardia
<b>GR.A.M.M. GRUPPO ALIMENTARE MEDITERRANEO MILO S.R.L.</b>	VIA TEOLOGO VALENTE, N.C.	Bitonto	Puglia
<b>ITALFOOD ALA S.R.L.</b>	VLO SAN BERNARDINO, 5/A	Verona	Veneto
<b>MASTER S.R.L.</b>	VIA DEL LAVORO, 12	Vedelago	Veneto
<b>FONTANETO S.R.L.</b>	LOC MARCO MOLINO, 20	Fontaneto d'Agogna	Piemonte
<b>PASTAI IN BRIANZA S.R.L.</b>	VIA MARCO BIAGI, 46	Lomagna	Lombardia
<b>PASTIFICIO FABIANELLI S.P.A.</b>	VIA SANT'ANTONINO, 107	Castiglion Fiorentino	Toscana
<b>PASTIFICIO DI CHIAVENNA S.R.L.</b>	VIA NAZIONALE, 4	Prata Camportaccio	Lombardia
<b>GHIGI 1870 S.P.A.</b>	VIA GIOVANNI FALCONE, 188	San Clemente	Emilia-Romagna
<b>DALLA COSTA ALIMENTARE S.R.L.</b>	VIA DELLA FORNACE, 131	Resana	Veneto
<b>FOOD SERVICE SOCIETA' A RESPONSABILITA' LIMITATA</b>	VIA ADAMELLO, 10	Altamura	Puglia
<b>PASTIFICIO GALLO NATALE &amp; F.LLI SOCIETA' A RESPONSABILITA' LIMITATA O IN FORMA ABBREVIATA PASTIFICIO GALLO NATALE &amp; F.LLI S.R.L. OPPURE PASTIFICIO GALLO S.R.L.</b>	VIA ALBERT EINSTEIN, 3	Mazara del Vallo	Sicilia
<b>BERTONCELLO S.R.L.</b>	VIA MONTE TOMBA, 20	Romano d'Ezzelino	Veneto
<b>PAGANI INDUSTRIE ALIMENTARI S.P.A.</b>	VIA FIORBELLINA	Vimercate	Lombardia
<b>CIEMME ALIMENTARI S.R.L.</b>	VIA FOGGIA, 28/30	Barletta	Puglia
<b>S.I.P.A. INTERNATIONAL S.R.L.</b>	VIA FERRARI, 72	Campobasso	Molise
<b>PASTIFICIO LE MANTOVANELLE - S.R.L.</b>	VIA ROPPI DI MEZZO, 1	Castel d'Ario	Lombardia
<b>LE CASELLE S.P.A.</b>	VIA ENRICO MATTEI, 2	Ponteveico	Lombardia
<b>FARMO S.P.A.</b>	VIA FETONTE, 12	Milano	Lombardia
<b>GASTRONOMIA PICCININI - SAPORI DELLA COLLINA S.R.L.</b>	VIA CARNIONE, 12/A	Baiso	Emilia-Romagna
<b>LA SORGENTE S.R.L. PRODOTTI ALIMENTARI PIU' BREVEMENTE LA SORGENTE S.R.L.</b>	VIA ALDO MORO, 6	Pessano con Bornago	Lombardia
<b>RUSTICHELLA D'ABRUZZO S.P.A.</b>	PZA DEI VESTINI, 20	Pianella	Abruzzo
<b>PASTA &amp; COMPANY SOCIETA' A RESPONSABILITA' LIMITATA</b>	CSO DUCA DEGLI ABRUZZI, 2	Torino	Piemonte
<b>LA FABBRICA DELLA PASTA DI GRAGNANO S.R.L.</b>	VLE SAN FRANCESCO, 30	Gragnano	Campania
<b>IPAFOOD SRL</b>	VIA DI PORTA PINCIANA, 6	Roma	Lazio
<b>PASTIFICIO DI BARI TARALL'ORO S.R.L.</b>	ZONA PIP SS 100 KM 33 LOTTO, 13/15	Sammichele di Bari	Puglia
<b>DALI' S.P.A.</b>	VIA DEGLI ARTIGIANI, 3	Crocetta del Montello	Veneto

<b>P.A.C. S.R.L.</b>	VIA A. VOLTA, C.DA PONTICELLI, 1	Melfi	Basilicata
<b>FAVELLATO SOCIETA' A RESPONSABILITA' LIMITATA</b>	1	Isernia	Molise
<b>GIGLIO SPECIALITA' PASTE ALIMENTARI S.R.L.</b>	STR SANTI FORTUNATO E LAZZARO, 105	Bassano del Grappa	Veneto
<b>B.&amp; G. ALIMENTARE DI MANFREDO PENNAZZI &amp; C. S.R.L.</b>	VOC CAVALIERI	Matelica	Marche
<b>INDUSTRIA ALIMENTARE COLAVITA - IND.AL.CO. - SOCIETA' PER AZIONI</b>	CNT IONTAPEDE, 11-12	Ripalimosani	Molise
<b>PIUMA D'ORO SRL</b>	VIA MONTE SANTO, 6	Treviglio	Lombardia
<b>PASTIFICIO CERATI SRL</b>	VIA ISONZO, 3	Limbrate	Lombardia
<b>SORRENTO SAPORI E TRADIZIONI S.R.L.</b>	VIA SAN TOMMASO D'AQUINO, 36	Napoli	Campania
<b>PASTIFICIO RIGO S.P.A.</b>	VIA ASOLANA, 28/L	Crespano del Grappa	Veneto
<b>BRE.MA. GROUP S.R.L.</b>	VIA FORNACE, 20	San Pietro in Gu	Veneto
<b>ENTROTERRA - SOCIETA' COOPERATIVA</b>	LOC TORRE DEL PARCO, SNC	Camerino	Marche
<b>MYLENA TORTELLINI SRL</b>	VIA DEL LAVORO, 2	Caravaggio	Lombardia
<b>PASTIFICIO GRANAROLO S.R.L.</b>	VIA DELL'ARTIGIANATO, 12	Granarolo dell'Emilia	Emilia-Romagna
<b>CANUTI TRADIZIONE ITALIANA S.R.L.</b>	VIA SASSONIA, 16	Rimini	Emilia-Romagna
<b>PIZZA SPRINT S.R.L.</b>	STP 27	Castiglione d'Adda	Lombardia
<b>P.A.P. S.R.L.</b>	VIA LUIGI CANNELONGA, ZONA P.I.P.	San Severo	Puglia
<b>ALIBERT 1967 S.P.A.</b>	VIA FRATELLI BANDIERA, 30	Preganziol	Veneto
<b>MARCHESI S.R.L.</b>	VIA LICURGO FAVA, 150/A	Medicina	Emilia-Romagna
<b>STEMARPAST S.R.L.</b>	LUNGOTORRENTE SECCA, 3/H	Genova	Liguria
<b>DE MATTEIS NATURAL FOOD S.R.L.</b>	VIA AMORETTA P.CO S.NICOLA, 6/E	Avellino	Campania
<b>NUOVA TORT UOVO S.R.L.</b>	VIA PASQUALE ALECCE, 13	Roma	Lazio
<b>PASTIFICIO ARTIGIANO CAV. GIUSEPPE COCCO S.R.L.</b>	ZONA ARTIGIANALE, N. 15	Fara San Martino	Abruzzo
<b>PASTIFICIO LA SOVRANA DI PUGLIA - S.R.L.</b>	VIA CERIGNOLA	Canosa di Puglia	Puglia
<b>PASTIFICIO FIDELIA S.R.L.</b>	VIA DEL PASTIFICIO, 1	Spello	Umbria
<b>TESA S.R.L.</b>	VIA AGOSTINO CAMPI, 10	Foligno	Umbria

