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The pasta Industry in Italy. Competitive strategies and firm performances.

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Sommario

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ABSTRACT

This paper aims to analyze the pasta industry in Italy.

The first chapter examines the historical and cultural background, namely how the pasta concept has evolved from the Ancient Greeks times until today. It also mentions wheat, which is the primary raw material to make pasta, and explores the numerous types and shapes of pasta on the market.

The second chapter explains the durum wheat supply chain and all the production phases needed to transform wheat into the final product. The third chapter is focused on the market structure of pasta: it illustrates the characteristics of both the demand and the supply market, the emerging trends, the largest Italian pasta producers, the main strategies, the export and the analysis of costs and prices.

Lastly, the fourth chapter takes into consideration a sample of fresh and dry pasta firms based in Italy with two main objects: assessing the main profitability and productivity ratios and studying the growth rate.

1. HISTORICAL BACKGROUND AND PRODUCT FEATURES

1.1 Historical background

Pasta is a typical Italian dish made from semolina (wheat flour) and water with a tiny bit of salt. Its history dates back thousands of years. It is complicated to determine who invented pasta: it was known by the Greeks, then forgotten with the collapse of the Roman Empire and rediscovered by the Arabs and Chinese. It can be either dry or fresh, depending on the amount of water in the dough.

1.1.1 The origins

According to legend, pasta was introduced in Europe by the Venetian explorer Marco Polo, returning from Eastern Asia in 1295. Pasta noodles were traditionally eaten by Chinese, but it has been historically shown that this dish has its roots in the Mediterranean culture.

The word "pasta" comes from the Greek term πάστα (pasta), meaning "flour with sauce". The Greek playwright Aristophanes first mentioned it in the 5th century BC, when he described a form of pasta similar to today's ravioli. Historians have also found evidences of pasta consumption among the Etruscans: kitchen items needed to cook ravioli have been recreated in a tomb in Cerveteri. In the ancient Rome, many authors like Cicero and Apicius wrote about the so-called *lagane*, strips of pasta that were often stuffed with vegetables. [1]

1.1.2 The Middle Ages

The tradition of pasta seems to disappear for a few centuries. This is probably due to the fact that writers and chroniclers of the late Roman Empire did not pay particular attention to the customs and food habits. Furthermore, the economy, especially the agriculture sector, faced a period of crisis with the fall of the Empire, leading to a lower production of bread and pasta. However, in the 9th century pasta reappeared among the Arabs, that consumed it dry (before that

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[1] Treccani, "Pasta" (2006). https://bit.ly/3ngzRhu

period, pasta was eaten exclusively fresh). This kind of pasta was preferred also because it could be preserved for a longer time.
In one of the first cookbooks in history, the *De arte coquinaria* ("The Art of Cooking"), the cook Martino da Como illustrated the first recipe based on pasta, imported from Sicily that was, in turn, influenced by the Arabs. The island remained under Arab rule for many decades, and then it became a Norman possession. Its plains produced large quantities of wheat and cereals, the raw material for making flour. The introduction of mills facilitated this transformation and, consequently, leads to a larger production of pasta. The Arab historian al-Idrisi, in 1154, described the surroundings of Palermo, in particular Travia, where many mills were in action and pasta makers made string-shaped pasta (*tria*), perhaps the first spaghetti.
By the end of the 12th century, a whole industry was born around pasta. In fact, many historical sources witness to the departure of ships filled with pasta from the ports of western Sicily heading towards southern Italy, Sardinia and Provence.

1.1.3 Arrival in Italy

It was only in 1295, according to tradition, that Marco Polo imported pasta in Europe, after having eaten it in China. At the beginning of the 14th century, the earliest pasta manufacturers ("*fidelari*") were established in Genoa. Famous writer Boccaccio mentioned pasta in his masterpiece, The Decameron. In particular, he narrates a delicious fantasy concerning a mountain of Parmesan cheese down which pasta makers roll macaroni and ravioli to people waiting below. In the same period, Franco Sacchetti, another writer, tells how two friends meet up and eat macaroni from the same dish, according to the custom of the time.[2]

Until the end of the 16th century, despite the prosperity of some production centers, such as Sicily, Liguria and Campania, the consumption of pasta did not spread among the poor classes, also due to its high cost at the time.
However, in the 17th century, the pasta production became massive thanks to the *gramola*, a tool that makes pasta dough homogeneous and softer, and the

[2] National Geographic, "The Twisted History of Pasta". https://on.natgeo.com/3A5CpXi

mechanical press. As a result, prices dropped and consumption increased considerably. In this period, many pasta factories sprang up in the Neapolitan area, where the climatic conditions were suitable for a massive production of dry pasta. Until that time, common people ate pasta with vegetables and cheese whereas it was served as ravioli containing meat and vegetable in the wealthy classes.

1.1.4 Pasta after the discovery of America

At the beginning of the 17th century, a slow but progressive revolution occurred: tomatoes, which had been imported to Europe from the New World a few decades before, were introduced in the Neapolitan area, under Spanish rule. Pasta with tomato sauce, however, did not enter immediately into the dining rooms of the noble families: for a long time, in fact, pasta, in its new forms, was eaten by hand and sold for little money on street corners.

Image 1: People eating pasta in the streets of Naples.

Yet, in the 18th century, Gennaro Spadaccini, a chamberlain of King Ferdinand II of Naples, invented the fork with four short points: ever since the upper classes started to consume pasta as well. The success was immediate and soon, from the Neapolitan court, the dish spread throughout Italy and the rest of Europe.

1.1.5 Pasta culture today

Over the next two centuries, pasta production improved, first with hydraulic, then steam, then electric, and finally computerized machines. The pasta-making tradition, however, remained solidly Italian. Campania is definitely the most traditional region for pasta manufacturing, but other large firms were established in Emilia-Romagna and in the Centre-South. Italians are unsurprisingly the largest consumers of pasta, generally dressed with tomato or other typical sauces based on different ingredients, but also cooked in broth. In Italy, three quarters of total pasta consumption is represented by dry pasta, whereas the remaining quarter concerns fresh pasta.

The consumption of pasta, vegetables and fruit is the basis of the Mediterranean diet: this has become a worldwide model of correct nutrition, because it provides balanced carbohydrates, vitamins and mineral salts, while the contribution of fats and animal proteins is minimal. October 25 is the World Pasta Day, a global event that celebrates one of the most popular Italian dishes and, in general, the whole Mediterranean diet.[3]

Image 2: Italian film director Alberto Sordi eating spaghetti.

[3] https://en.wikipedia.org/wiki/Pasta

1.2 Product features

1.2.1 The raw material

The term "wheat" refers to the several species of annual herbaceous plants of the genus Triticum of the Gramineae family. Wheat is the basic raw material for the milling industry, which supplies flours for the agro-industrial sectors of pasta, bread and a wide variety of other products.

The wheat kernel consists of three parts:

- Bran: the hard outer layer of the grain, containing fiber, minerals and antioxidants.
- Germ: the core of the grain, containing mostly vitamins and minerals, but also proteins and fats in a smaller amount.
- Endosperm: the largest part of the grain, containing mostly carbohydrates and proteins.

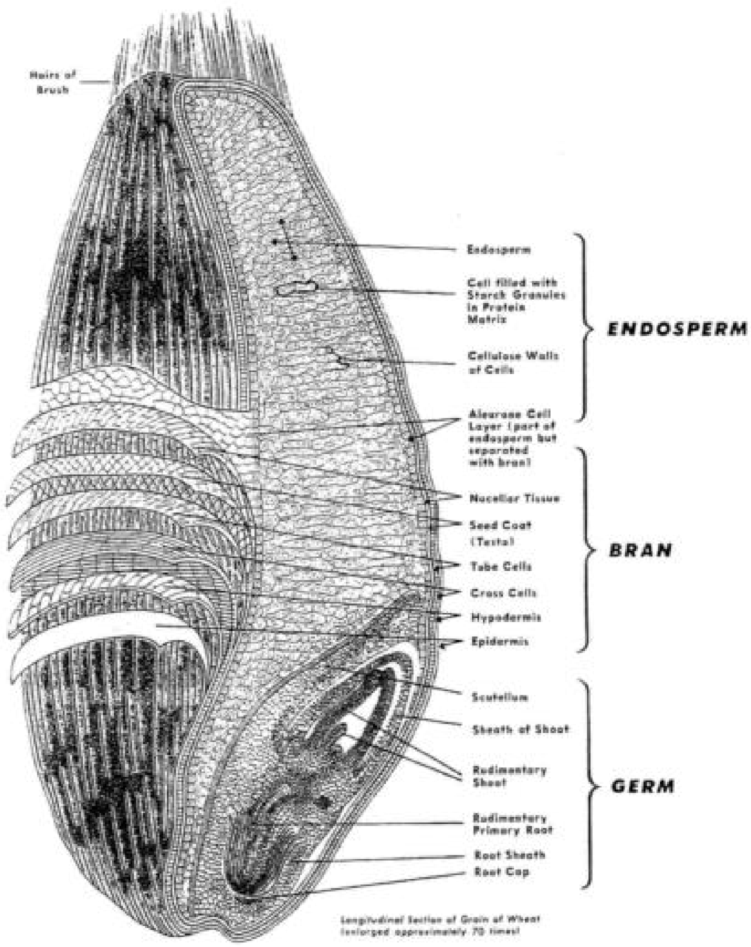

Image 3: Structure elements of a common wheat grain.

Wheat can be cultivated in all latitudes and altitudes (up to 1,200-1,400m). The central-northern Italy has always been characterized by a prevalence of soft wheat cultivations, whereas in southern Italy the durum wheat cultivation is more likely to be found. The ideal soil for the cultivation of wheat is deep, permeable, averagely clayey and fertile, even though wheat adapts itself to almost every kind of soil. Triticum considerably impoverishes the soil, therefore its productive cycle requires the periodical rotation with other renewal crops.[4]

The agricultural production of wheat is normally annual and includes nine essential steps:

- Tillage: preparation of soil performed by mechanical agitation such as digging, stirring, and overturning.
- Plowing: technique that aims to reduces soil compactness.
- Sowing: the seeds are disseminated all around the soil.
- Weeding: the weeds are cut and removed.
- Anti-parasitic spraying: chemicals are used for fighting pests such as mold.
- Weeding: again, the weeds are cut and removed.
- Harvesting: the mature grass is cut.
- Threshing: seeds are separated from the ears and stems.
- Storage: the wheat is kept in silos or warehouses with 13% of humidity and at a average and constant temperature.

The most widely cultivated species of wheat are:

- The Triticum aestivum, which is soft and used for bread;
- The Triticum durum, which is the hard and used for pasta;
- Triticum spelta or spelt wheat, used for the "black bread".

These species easily and frequently crossbreed, creating natural hybrids from which, the most suitable varieties have been selected depending on their productivity and ability to adapt to specific environments. There exists a substantial difference between soft and hard wheat. Soft wheat has a floury structure, which allows it to be milled into white

[4] Riccardo Borgacci, "Coltivazione del frumento - grano - Triticum e produzione della farina" (July 2019). https://bit.ly/3QKdIpv

flour, and it has a good extensibility and medium/low dough hardness. It is used to make bread and leavened products. Durum wheat has a medium extensibility of the dough and a high tenacity. It is characterized by a vitreous structure, which is milled to obtain amber yellow semolina and consequently pasta.

The species included in the genus Triticum can be classified depending on the number of chromosomes in their vegetative cells:

- The monococo (or diploid wheat) has 14 chromosomes;
- The dicocco or (tetraploid wheat) has 28 chromosomes;
- The hexaploid wheat has 42 chromosomes. [5]

1.2.2 Pasta dough classification

Pasta doughs can be classified into the following categories.

- Dry pasta: industrially produced dry pasta is traditionally made with water and durum wheat flour (semolina). It must meet certain characteristics, such as a maximum humidity of 12.5% and a certain minimum percentage of proteins, which also determine its quality. In case it contains different ingredients, they must be indicated in the label and the product will be classified as "special pasta". A feature of this type of pasta is the higher yield in cooking compared to fresh pasta.[6]

- Fresh pasta: besides durum wheat flour, fresh pasta can be made with soft wheat flour, which is usually used for bread as well. In order to be sold loose, fresh pasta must be kept at a temperature not higher than 4 degrees, with a tolerance of 3 degrees during transportation and 2 degrees in other cases. They must be consumed within five days from production. In case of packaging, fresh pasta must meet certain requirements, such as a minimum humidity of 24%, preservation at a temperature of at least 4 degrees with a tolerance of two units and it must have undergone a pasteurization process.

[5] https://it.wikipedia.org/wiki/Triticum

[6] ReD Academy, "La classificazione della pasta: fresca, secca e all'uovo". https://bit.ly/3ylS8jH

- Egg pasta: in the preparation of pasta dough, chicken eggs can be added. Also in this case, the maximum humidity must be 12.5%. Soft wheat flours are tolerated for a maximum of 3%. Egg pasta can be both dry and fresh (either home-made or industrially produced, but immediately frozen).

1.2.3 Pasta shape classification

There are about 250 of types of pasta consumed in Italy; however industrial production is gradually reducing the number of formats due to market needs. The different formats are not only a result of imagination, but they are also functional to the taste, which is linked to the consistency and the seasonings. The most common types of pasta are divided into the following categories.

- Short cut pasta: the most popular types of short pasta are conchiglie, fusilli, farfalle, orecchiette (from Puglia), passatelli (from Emilia Romagna), Sardinian gnocchetti and Ligurian trofie, which are generally prepared with pesto.

- Long pasta: among the shapes of long pasta, we find the ever-present spaghetti and a whole series of regional specialties: bigoli (from Veneto), pici (from Tuscany), troccoli (from Puglia), linguine and bavette (from Liguria).

- Pasta in nests or skeins: pasta can also be found in nests or skeins, usually dry and egg pasta. Some examples are: capelli d'angelo, fettuccine, lasagna; pasta paglia e fieno, tagliolini, pappardelle and tagliatelle (from Emilia Romagna).

- Tube-shaped pasta: another distinction concerns tube shaped pasta, available in many shapes: bucatini (used for amatriciana), calamarata, egg garganelli, stuffed cannelloni, paccheri. As well as the more classic rigatoni, penne and tortiglioni, ziti (from Sicily) and trennette (from Liguria).

- Pasta for minestrone and soups: there are also a whole series of small and tiny shapes, usually used to make soups and minestrone (like rings, filini, quadretti) or irregular shapes: canederli and spatzle (from Trentino Alto Adige), potato gnocchi and cous cous (widely used in eastern Sicily).

- Stuffed Pasta: this category includes: agnolotti with meat, vegetables or mushrooms (from Lombardy and Piedmont), casoncelli, mezzelune, culurgiones (from Sardinia), sacchettini, tortelli, tortellini and ravioli, stuffed with meat or ricotta cheese and spinach.

Image 4: most common types of pasta.

1.2.4 Pasta Legislation

According to the decree 187/01 of the President of the Republic, currently in force, *"Durum wheat semolina pasta and durum wheat semolina pasta are products obtained by drawing, rolling and consequent drying of doughs prepared respectively and exclusively with durum wheat semolina and water, or durum wheat semolina and water"* (D.Lgs. 187/01, art. 6, paragraph 1). In revision of art. 29 of law 580/67, decree 187, in art. 6, legislates that pasta can be destined for sale if produced in compliance with certain requirements. [7]

Italian legislation has obliged for over thirty years the exclusive use of durum wheat semolina in the production of dry pasta (Law 580 of 1967 and subsequent modifications) in order to preserve the tradition of pasta. However, the commercialization of pasta made from soft or mixed wheat has been authorized for fifteen years. After about thirty-four years, the old law of July 4, 1967, n. 580 (regulations for the processing and trade of cereals, flour, bread and pasta) has undergone a profound revision pursuant to Presidential Decree n. 187 of February 9, 2001, published in the Official Gazette n. 117 of May 22, 2001.

Paragraph 5 of art. 6 of Presidential Decree 187 states that:
"In the types of pasta referred to in paragraph 3 and articles 7 and 8, the presence of soft wheat flours in an amount not exceeding 3% is tolerated".

Paragraph 4 of art. 6 of Presidential Decree 187 states that:
"Without prejudice to the provisions of article 12, paragraphs 1 and 4, the manufacture of dry pasta prepared with soft wheat flour is prohibited".

Paragraph 1 of art 12 of Presidential Decree 187 states that:
"The production of flour and pasta products having requirements other than those prescribed by the norms of this regulation and by the measures of the administrative authority foreseen in this regulation is allowed, when it is intended for subsequent shipment to other countries of the European Union or to other countries which are contracting parties to the agreement on the European Economic Area, provided that they are not harmful to human health and that the producer, from time to time, sends in advance by registered letter with acknowledgement of receipt addressed to the Ministry of Agricultural and Forestry Policies, a written communication indicating the goods and the quantity to be produced, the requirements for deviation from the norms of this regulation, the quantity, type and characteristics of the raw materials and substances to be used, the date of the start of processing and its duration, as well as the country of final destination".

[7] Decreto del Presidente Della Repubblica, n. 187, (09/02/2001). https://bit.ly/3xYfMBo

Paragraph 4 of Article 12 of Presidential Decree 187 states that:
"The production of flour and pasta products having requirements other than those prescribed by the norms of this regulation and by the provisions of the administrative authority foreseen by this regulation is also permitted, provided that these products are destined for export and are not harmful to human health, subject to authorization to be granted in accordance with the modalities established by a special decree of the Minister of Agriculture and Forestry Policies, in agreement with the Ministers of Industry, Commerce and Handicrafts and Health. Until the issuing of the aforesaid decree, the decree of the Minister of Agriculture and Forestry dated August 9, 1969, published in the Official Gazette of the Italian Republic no. 8 of January 10, 1970, shall continue to apply, it being understood that the references to Law no. 580 of July 4, 1967, contained therein, with reference to flour and pasta products, shall be replaced by references to the present regulation".

Paragraph 8 of art 6 DPR 187 states that:
"Pasta produced in other countries in whole or in part with soft wheat flour and offered for sale in Italy must bear one of the following sales names:
(a) common wheat flour pasta, if made wholly from common wheat flours;
(b) pasta made from durum wheat semolina and common wheat flour, if obtained by mixing the two products, with semolina predominating
(c) pasta made from common wheat flour and durum wheat semolina, if obtained by mixing the two products with a prevalence of common wheat flour."

This decree not only underlines the importance that Italy gives to pasta and its consumers, but it also represents a form of protection from importing products that do not meet the standards for being called "pasta".

The Italian regulation that obliges to indicate on labels the origin of the raw material for pasta (which is also applied to tomatoes, milk, cheese, dairy products, rice, pork meat) was established in 2018 and has been extended until the end of 2022. This is what says the decree of the Ministry of Agriculture together with the Ministry of Health published in the Official Gazette of February 8, 2022. The extension is related to the ongoing consultations on the amendment of Regulation (EU) n.1169/2011 concerning the information on the label intended for consumers. The regulation is definitely less stringent and could cause disadvantages both for consumers, who may not easily understand if the pasta is 100% Italian and for Italian wheat producers, that risk to cut their sales by two times.

According to several market researches, in fact, more than 80% of consumers believe it is important to know the origin of raw materials through a statement on the product label. Actually, this is one of the reasons why consumers prefer Italian products over those imported from other EU countries.[8] Not surprisingly, Riccardo Felicetti, president of the Italian pasta makers of Unione Italiana Food stated that, regardless of any regulatory framework on the matter, Italian pasta makers will continue to specify the origin of the wheat used to make their products.

[8] Pastai Italiani (21/02/2020). https://bit.ly/3A4dmns

2 PRODUCTION STRUCTURE

2.1 The wheat supply chain

Durum wheat supply chain, which is at the base of pasta production, involves more than 200 thousand Italian firms that allocate around 1.2 million hectares to this cultivation. Italy generates about 11% of the whole global wheat production, with 4.2 million tons per year out of an estimated 38.6 million tons in 2018, holding the record in Europe with 45% of production.[9]

The durum wheat supply chain can be subdivided into the following phases.

- **Production and marketing**
  Wheat producers and their forms of aggregation (agricultural consortia, cooperatives and producer associations) are the first actors in this phase and perform an initial marketing of the basic product. Then, private traders play the role of intermediaries between the agricultural firm and the industry, but they can also have their own storage facilities. Finally, trading companies, often belonging to multinational groups, carry out trading activities at the sea ports.

- **The first transformation**
  It is made up of the milling sector which processes the wheat grain into flour. The by-product of this process is bran, which is mainly used for animal feed. Again, the import of raw material is directly handled by the larger production units. Italy exports a limited amount of wheat flours, which is mainly sold to the EU market.

- **The second transformation**
  It consists of the pasta sector, which absorbs the majority of the durum wheat semolina, and the sweets and baking ones, which mainly require soft wheat flour. A significant portion of pasta is exported to overseas markets, both directly and through wholesalers and middlemen.

[9] Scheda progetto ISMEA 10.2: "La competitività della filiera del frumento duro." (Dicembre 2018). file:///C:/Users/Utente/Downloads/Competivit___filiera_frumento_duro_2%20(4).pdf

- **Distribution and marketing**

  Marketing for pasta items is mostly performed through large-scale retail commerce and is frequently controlled directly by big industrial organizations, including private label productions.

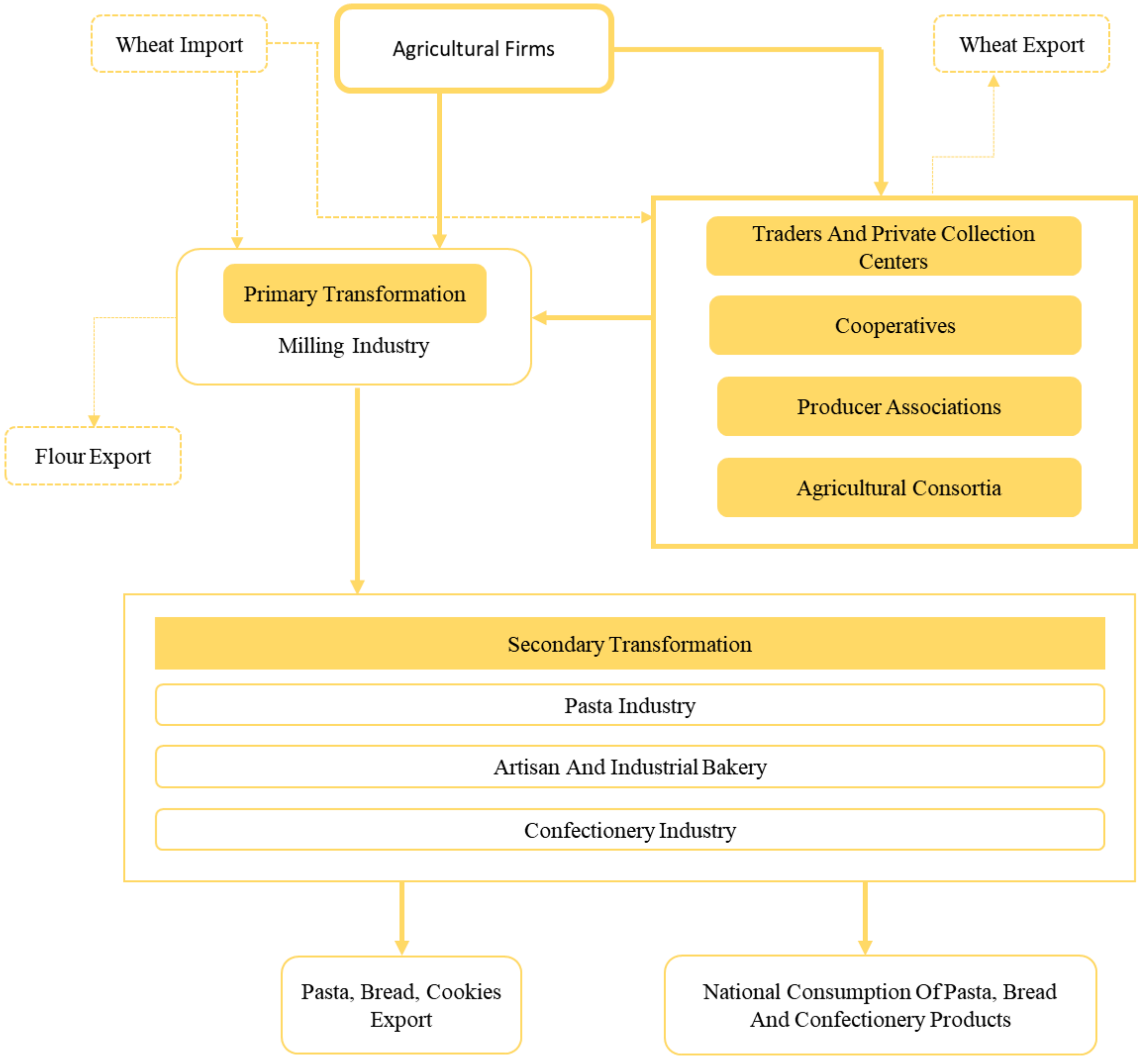

Image 5: The main players in the wheat supply chain (Source: ISMEA-RRN).

The quantitative flows of the entire durum wheat supply chain can be summarized as follows:

- Roughly half of wheat marketing is handled by agricultural consortia, cooperatives, and organizations that sell wheat exclusively to the milling sector. Private traders play an important role, accounting for around 35% of national supply, which is almost totally destined to mills and only a small amount is exported.

- Imports follow two channels. Approximately 60% of the quantities imported are immediately absorbed by the milling industry. The remaining 40% is imported by private traders or trading corporations that make direct supplies from non-EU countries.
- Around 10%, which may vary from year to year depending on the availability of raw material, is allocated to the mills so that their plants can smoothly operate.
- Approximately 95% of durum wheat semolina is destined for the pasta sector. The remaining part is intended to produce artisanal bread.
- Industrial production of pasta in Italy is close to 3.5 million tons. Approximately half of the national supply is placed on foreign markets, mostly EU countries; the remaining portion is destined for domestic consumption.
- About 70% of household consumption is achieved through organized distribution, of which over 70% is provided by Moderna Distribuzione, 17% by Dettaglio Tradizionale, and the remaining 5% is represented by other kinds of distribution.

Durum wheat supply chain, which strongly influences the pasta production, is strategic for Italian agroindustry, but has competitive, structural and organizational limits. The industrial phase of the durum wheat supply chain is highly appreciated by foreign markets for processed products. However, the agricultural phase underperforms since the national supply is structurally fragmented and inconstant over time, both in quantity and quality. Moreover, the market is regulated by uncertain variables that depend on international trends.

In order to contrast this phenomenon, Italy has started to import more and more raw material, which is mostly characterized by high quality and qualitatively homogeneous large batches. As a consequence, a gradual reduction in the national self-supply rate of durum wheat occurred. In particular, as shown by the histogram below, the domestic production of durum wheat decreased by approximately one million tons from 2016 to 2019, whereas the production of soft wheat remains steady.[10]

A large share of the durum wheat used is imported by Canada. Its product has a high

[10] Statista, "Production of wheat in Italy from 2016 to 2019, by type." (18/01/2022). https://www.statista.com/statistics/784052/production-of-wheat-by-type-in-italy/

protein intake, which allows the formation of the glutinous net and confers the tightness of cooking. Italy also imports from the US, other European countries (France, Greece and Spain) and Kazakhstan.

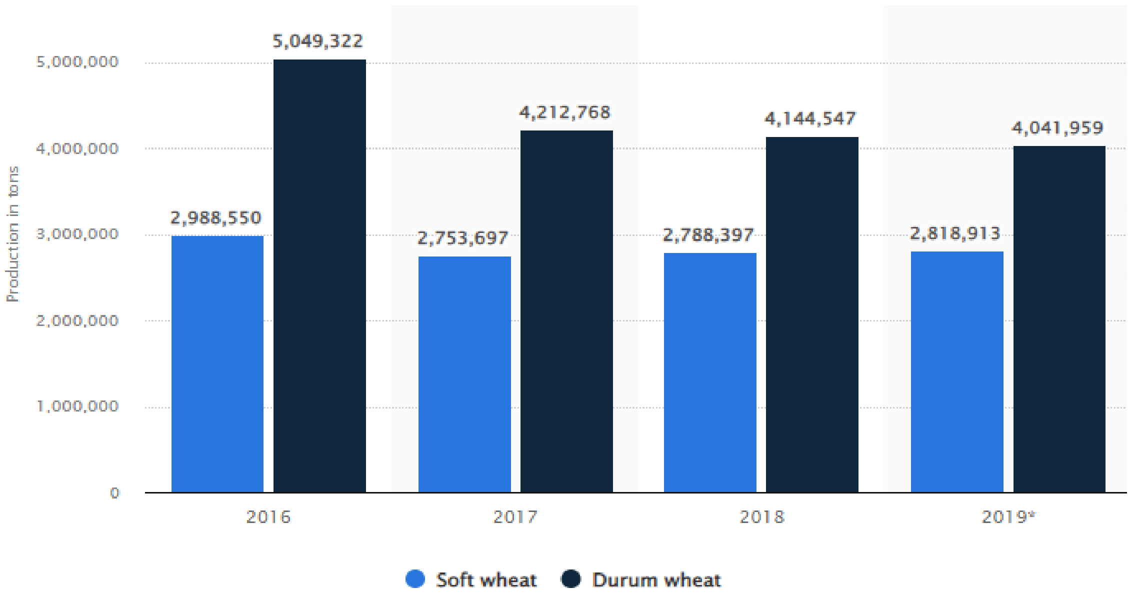

Table 1: annual production of wheat in Italy over the years from 2016 to 2019, by type (Source: Statista).

2.2 The production process organization

As mentioned before, pasta can be either dry or fresh. The substantial difference consists in the presence of a different percentage of humidity inside the packaged product: in case of dry pasta, the humidity must not be more than 12.5%, whereas the humidity in fresh pasta cannot be less than 24%, in accordance with current regulations.

In order to have a quality durum wheat semolina, it is necessary that the wheat has a high tenacity, so that it can withstand cooking, and that it has low extensibility and low swelling. This is guaranteed by the gluten, which is a protein made of gliadin and glutenin, naturally found in wheat. The quality and the content of gluten depend on the climatic factors, as well as on the variety of wheat sown and the composition of the soil.

The production process, especially in dry pasta, is characterized by strong automation and integration and, in many plants, ranges from milling to packaging of the finished product. It follows these steps:

- **Selection**

  The selection of durum wheat semolina is an important and delicate phase, since it impacts on the quality of the final product. For this reason, the raw semolina is accurately selected, taking into consideration both the physical and technological characteristics of the raw material. The raw semolina, obtained from the heart of the wheat grain, must be yellow, free of bran parts, with a high protein content and a high-quality gluten, in order to be used for pasta. The production of gluten free pasta is mostly outsourced to reduce the risk of contamination, however some companies (like Rummo Molino and Pastificio) have set up their own production lines.[11]

- **Milling**

  The wheat is sent to the mill to be sifted, cleaned of impurities and finally ground to obtain semolina of the best quality. During this process, the wheat passes through a series of *rolling mills*, which gradually break the wheat grains and remove the outer layers. After going through *the buratti,* the refined semolina is finally produced. Durum wheat is used exclusively for the production of pasta, while the soft wheat and therefore flour obtained from it, is destined for bakeries and the confectionery industry.

- **Kneading**

  Durum wheat semolina is then put into special kneading tanks and mixed with pure water. Here, gluten is formed by binding starch and proteins bind to water. The diameter of the particles into which the semolina is ground affects the dough: a coarse grain size semolina improves the technical properties of wheat, providing the dough a compact and homogenous aspect.

[11] Lucanella s.r.l, "Descrizione del processo produttivo della Pasta Fresca e Pasta Secca di semola di grano duro". https://bit.ly/3xZxxAe

- **Drawing**

  The dough is introduced into the *trafila* in order to give pasta the desired shape. The trafila is a cylindrical or parallelepiped tool, having inlet and outlet holes. It can be made of bronze or Teflon. The pasta obtained by bronze drawing has a rough and porous surface, which allows it to better retain some sauces, but has the disadvantage of getting darker easily. The pasta obtained by Teflon drawing is smoother, more polished and it better holds the cooking phase and is suited for other types of condiments.

- **Pasteurization**

  The dough is then loaded through a conveyor belt into the *Pasteurizer*. Here it is introduced into a steam chamber for the pasteurization process that is needed to eliminate any bacteria in the raw material. This process allows the elimination of any bacteria present in the raw materials. At the end of the pasteurization process, fans on the machinery permit an initial cooling of the pasta.

- **Drying**

  After the pasteurization phase, the pasta is loaded through a conveyor belt inside the machine called *Trabatto*, which allows to lower and reach the right degree of humidity and cooling of the dough, through a process of controlled ventilation. In the case of dry pasta, the dough is placed in special frames, loaded on suitable trolleys, and then introduced into the machines called *dryers*, in which the pasta follows a programmed cycle of forced ventilation with hot air, for a time that varies, depending on the size of pasta, between 20 and 36 hours. The drying process allows to lower the final humidity of the pasta, bringing it to the desired percentages.

- **Packing**

  Once the drying process is over, the fresh pasta is ready to be packaged by means of a machine called *packaging machine*, used to create packages according to the desired weight. The packaging process, through the use of suitable flexible plastic materials for food, is carried out in a modified atmosphere: the machine eliminates the oxygen present and introduces a mixture of gases for food use (Nitrogen and CO2) inside the package, to then seal the package. This type of packaging allows to increase the preservation time of fresh pasta, keeping the organoleptic characteristics of the product unaltered, up to 120 days.

- **Sterilization**

  After the packaging and labeling phase, the fresh pasta packages are placed on wooden or steel frames, loaded on special trolleys and placed inside the sterilizer. This cabinet-shaped machine brings the internal temperature to over 100°C through forced ventilation. In this way, the packages of fresh pasta are sterilized from any contamination that may have occurred during the packaging process and, since the packages have already been sealed, the product remains sterile inside the package.

- **Packaging**

  When the packages of fresh pasta have completed the sterilization phase, they cool down, return to room temperature and are then packed in special cardboard boxes, depending on the kind of format and the number of units required. Differently from the fresh pasta, the dried pasta is packaged right after the drying phase by means of a machine called *Confezionatrice* which, in a semi-automatic manner, weighs and packages the dried pasta using suitable flexible plastic materials for foodstuffs. Labeling and the affixing of the guarantee seal, if any, are then carried out.

- **Storage**

  The fresh pasta, packaged in cardboard boxes and placed on pallets, is introduced into its own warehouse, the Cold Storage Room, where it is stored at a controlled temperature (that is at most +5 °C). The dry pasta follows the same process but it is stored at room temperature.

- **Transport / sales / display**

  The fresh pasta is now ready for sale and is loaded onto isothermal vans, equipped with suitable instruments that allow refrigeration during transport, in order to maintain the cold chain unaltered. The product is then distributed to customers and displayed in the refrigerated display case for sale. The dry pasta follows the same process but the costumers will find it on the shelves.

Image 6: Automatic machine for shaping long pasta (Source: https:/www.italpast.it/).

Image 7: heating machine used during the drying phase pasta (Source: https://www.italpast.it/).

2.3 Environmental impact

The environmental impact of pasta, including the production and processing stage, is really low (1 global square meter per serving of pasta), making this product particularly sustainable. In recent years, according to the AIDEPI sustainability report, the pasta sector has embarked on a path of responsibility that has recorded a 20% decrease in water consumption and a 21% decrease in CO2 equivalent emissions. Nowadays, the carbon footprint of an 80-gram portion of pasta is minimal, amounting to just 150 grams of CO2 equivalent. A pasta factory generally produces a kilo of pasta uses at most three liters of water. [12]

The pasta industry made strong efforts also concerning the cultivation of durum wheat, which accounts for 50% of the environmental impact of producing a kilo of pasta. In fact, it is optimizing cultivation practices, identifying the most sustainable ones. For example, long crop rotations and quality certified seeds are applied while the use of fertilizers and pesticides is minimal and rational.

Pasta packaging (6% of CO2 equivalent emissions) is made of easily recyclable materials, such as cardboard or classic plastic film, so as to further reduce the environmental impact of pasta consumption.

In the production phase of the pasta package, the environmental impact is low: in fact, industrial processing, which also includes milling, is below 15% of CO2 equivalent emissions. Even distribution carves out only 4% of the carbon footprint of the pasta package.

Surprisingly, the cooking phase at home is the step that can impact the environment the most of the entire pasta cycle, as much as 38% of the total carbon footprint along the entire supply chain.

Finally, pasta, whose leftovers can be turned into new dishes the next day, weighs just 3.5% by value and 12.5% by volume on total household waste; in environmental impacts the percentages drop to just 6.6% of total CO2 emissions and 8.6% of water consumption.

[12] L'Espresso Food and Wine, "Earth Day, la pasta amica dell'ambiente" (05/04/2022). https://bit.ly/3IwXGeV

3. MARKET STRUCTURE

The pasta industry generates the 3.5% of the Italian national turnover of the food industry, making our country a reference point for production, consumption and export in this sector.[13] In particular, Italy is the largest pasta producer worldwide, with about 4 million tons of pasta produced every year, of which 1.43 million are intended for domestic consumption (43.5%) and 1.93 million for export (56.5%).

According the graph below, in 2019 the manufacturing of macaroni, noodles, couscous and similar farinaceous products held the seventh position amongst the other food sectors in Italy with around 8 billion euros revenues.

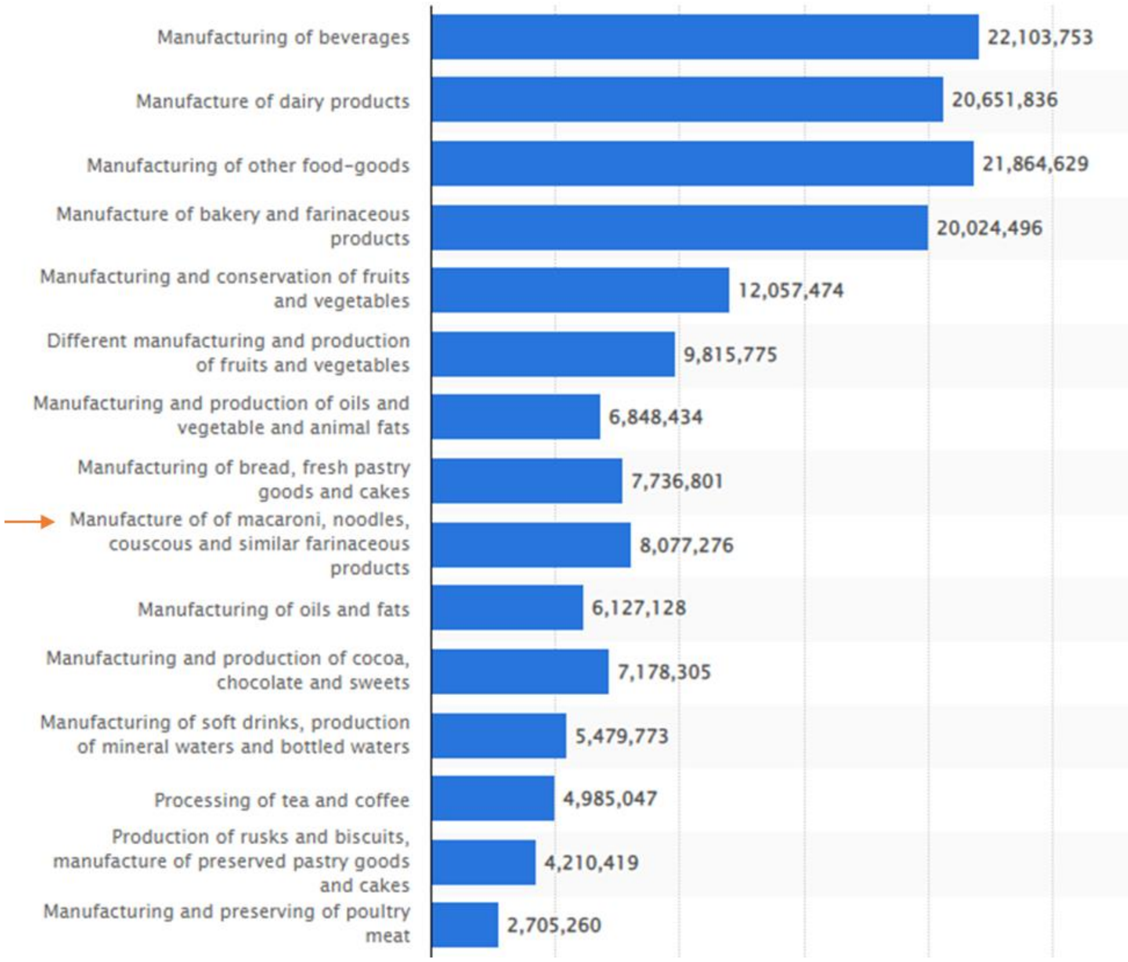

Image 8: annual revenue of the food industry in Italy in 2019, by sector in 1000 euros (Source: Statista).

[13] L'analisi di Euler Hermes-Il settore della pasta (March 2020). EH_Study_PASTA2020.pdf

3.1 Market Demand

Italians eat the highest percentage of pasta in Europe, with per capita consumption of around 23 kg per year. Dry pasta is the most consumed segment, followed by egg pasta and fresh pasta.

1.1.1 Main characteristics

The pasta market in Italy is at a mature stage and is characterized by a strong penetration. In 2018, the domestic market had a 1.6% reduction in volume, but a lesser loss in value (-1.1%) due to increase of selling prices. The performance of dry pasta, which is the main segment, continues to be penalized and dropped by -1.9% in real terms. In the same year, after a period of growth, also fresh pasta registered a slight decline in volume (-1%).[14]

On the other hand, the consumption of frozen pasta boosted thanks to recovery of the catering sector (+3.6%).

PRODUCT	INCIDENCE %	CONSUPTION VARIATION %
DRY PASTA	84.2	-1.9
FRESH PASTA	12.7	-1.0
FROZEN PASTA	2.8	3.6
STUFFED DRY PASTA	0.3	-2.0
TOTAL	100.0	-1.6

Table 2: data related to the market composition per segments in 2017/2018 (Source: Cerved).

The main characteristics of the demand for dry pasta are:

- poor cyclicity: pasta in Italy is considered as a versatile, practical and cheap food, with a household penetration of over 90% for semolina pasta. Given the low cost per unit and simplicity of preparation, it follows a barely cyclical pattern. Non-domestic consumption suffers during any economic recession, as occurs for any outdoor consumption.
- stable/slightly decreasing long-term trend: this sector is mature in Italy, therefore there are no significant margins for growth. Moreover, customers have started to consume less carbohydrates and, consequently, the demand for pasta diminished.

[14] Cerved, Analisi di settore: PASTA (April 2019). Pasta_2019.pdf

On the other hand, pasta has a major growth potential abroad since the penetration rate is lower and Italian products are largely appreciated for their quality.

The main characteristics for fresh pasta are:

- seasonality: the demand is concentrated in the fall-winter months, registering high peaks during holidays;
- inconstant consumption trends: the economic crisis has had a little impact on fresh pasta demand because of the competition with cheaper dry pasta, which snatches space in particular from non-filled fresh pasta.
- discrete growth prospects in the long term: the demand is constantly revitalized thanks to the significant adaptability and continuous reinterpretations, with new flavors and shapes being released on a regular basis. Being a complete and quickly prepared meal makes this product attractive.

Frozen pasta, as well as the outdoor consumptions, are definitively more affected by the economic context since it is mainly distributed in the catering channel.

3.1.2 External factors

Protectionist regulations in some foreign countries strongly impact the non-domestic demand of pasta. Thus, moving part of the production in these areas can be a winning strategy. For example, during the "Trump Era" in the United States, the risk of customs duties on imported products visibly rose, but fortunately no new duties were introduced on Italian pasta imports.

Another factor that impacts on the market demand of pasta in Italy is the plastic tax. This measure, whose entry into force has been postponed until 2023, aims to significantly reduce the environmental impact of plastic consumption by taxing the amount of plastic placed on the market by packaging manufacturers and users. Since the majority of products within the pasta production chain are packaged with materials containing plastic, the application of taxes on single-use plastic items, by increasing the price, is likely to entail a decrease in the domestic demand unless pasta companies start to devise and use plastic-free packaging.

3.1.3 Emerging trends

Pasta demand is evolving: per capita consumption is decreasing over the years as a result of lifestyle changes that include sedentary work, aging of population and spread of diets with a high protein intake. [15]

During the World Pasta Day 2019, Unione Italiana Food identified some characteristics that pasta will be required to have in the next decades:

- Tradition**:** pasta with tomato sauce is not only a dish, but also a symbol of conviviality while eating and represents a lifestyle that Italy will continue to export worldwide, together with the uniqueness and quality of its durum wheat pasta.
- Ethics: many traditional recipes will give way to new vegetable-based classics. In fact, the market is already appreciating the launch of green pasta with spinach or red pasta with tomatoes. Moreover, there will be more and more organic and anti-waste recipes to encourage a more responsible and sustainable approach.
- Internationality**:** pasta is definitely capable of adapting to different gastronomic cultures, so, unsurprisingly, it will be more and more contaminated by other cuisines.
- New tastes**:** in the beginning, only the traditional wheat pasta existed. Then, legume flour pasta, spelt pasta, kamut pasta and gluten-free pasta were successfully introduced onto the market. Some experts already predict that the popularity of spirulina algae noodles, pennette with flour made of insects or even 3D printed pasta will boost in the next years. Thus, it is clear that pasta will have to deal with less standardized and more evolved consumer demands in the future.
- Simplicity**:** pasta dishes will meet the need of consumers to eat healthy meals in a shorter period of time and they will win over gourmet ones thanks to simple sauces.

[15] ItalianFOOD.net, "World Pasta Day 2019: Italy lighting up the way". https://bit.ly/3Onl00x

Also Franco Antoniazzi, Food Technology Professor at University of Parma and International Food Marketing Consultant, confirms these emergent trends at the 1st Storci Convention in Egypt for pasta technology, held in April 28th, 2018. As shown by the pasta life cycle below, spaghetti and short pasta are going through a decline phase. On the contrary, the market of whole meal pasta, pasta for children, colored and gluten-free pasta, lasagna and cannelloni is growing.[16]

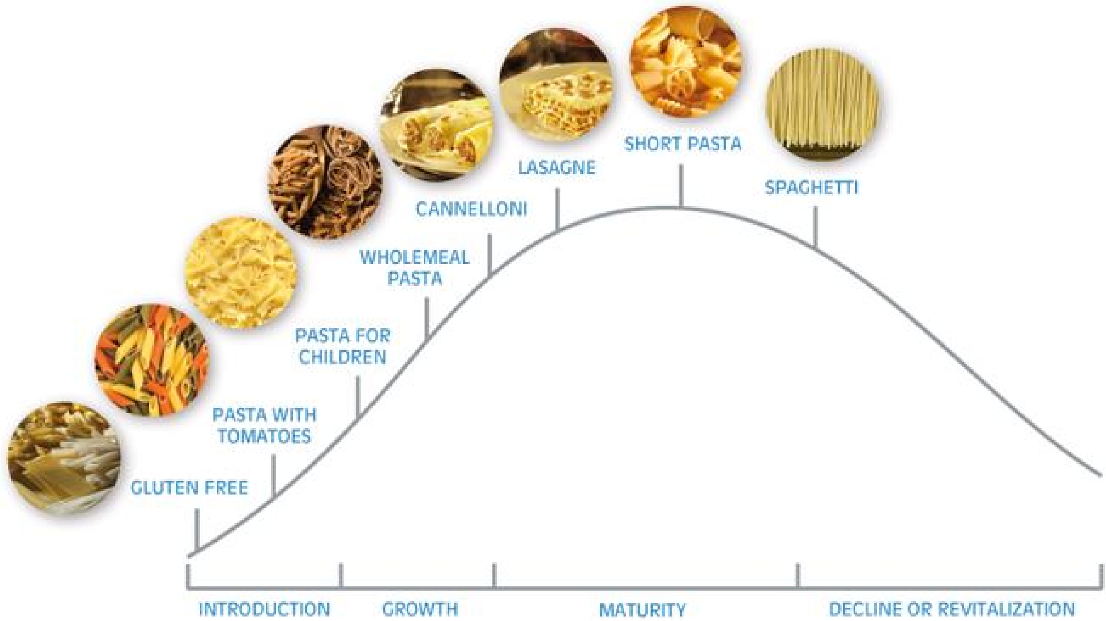

Image 9: life cycle of some pasta-based products (Source: Storci Convention).

On the economic side, after a period of growth, consumption of gluten-free pasta has registered a 2.1% reduction in value sales (-2.6% in quantity). The downturn is related to the non-premium segment (-3.3% in volume and - 2.7% in value) whereas the premium segment, which accounts for just over 13%, increased by 1.8%.

The reduction in expenditure limits concerning the supplying of gluten-free products applied by the Ministry of Health's partially contributed to a drop in consumption. This decision has led to confusion among regions, supply chain operators, large-scale retailers and pharmacists.

According to Alessia Fraulino, business insights director at IRI, who spoke in the Cibus Lab webinar produced by GDONews in collaboration with Fiere Parma, "First courses, pasta, sauces, ready-made sauces and reds: the colors of Italy in the world":

[16] Franco Antoniazzi, "Storci convention in Egypt for pasta technology" (April 2018). https://bit.ly/3nokAeo

"We must expect a polarization of consumption: there will be a segment of the population that will turn even more to premium products, going for certifications and sustainability that are increasingly attractive to the consumer. There will also, unfortunately, be an ever-important segment of people who will turn instead to products with a lower, cheaper beating. Pasta, which is healthy, tasty, and inexpensive, will certainly be able to have a revitalization even vis-à-vis markets such as ready-made meals, which have instead had the upper hand in this period."

Fraulino also pointed out that:

"The peculiarity of the pasta market that we have been observing since pre-pandemic years is the gap of almost five percentage points between value and volume growth, that is, the market is shifting to value segments and prices are increasing, basically for two reasons. The first has to do with promotional pressure that has been reduced by almost five percentage points in 2020, which is a phenomenon of the whole consumer packaged goods market, which has had great difficulty in making promotional plans, flyers and shelves. Promotional pressure that is trying to recover but is still down 3% in 2021 compared to 2019. A market in which 50% of sales are obtained through promotional dynamics anyway. Another element that comes from the past is the shift toward products that have a higher cash line. On average, in fact, prices have increased by 4% in 2020, a figure that rises to 6% if we look at 2019."

3.2 Market Supply

Italy counts about 120-130 pasta factories, of which only 10-20 are specialized in both the fresh pasta segment and the dry pasta one. There are factories all over Italy, but a large number of them is concentrated in the south, near where durum wheat is produced. In particular, some relevant areas are: Gragnano for dry pasta, Barese for both fresh and dry pasta, and Veneto for fresh egg pasta. The plant utilization rate is 69%. The fresh pasta segment has had a very sharp contraction in the number of factories: it counted around 1,000 after the war, whereas only 100 today.

3.2.1 Main characteristics

The production structure changes according to the segment considered:

- the dry pasta segment is characterized by the presence of a world leader, Barilla, and two large diversified groups, Colussi (diversified mainly in bakery products) and Newlat Group (diversified mainly in dairy products). Besides them, Italy counts about forty medium-sized companies and several smaller producers, that make the offer fragmented.
- the fresh pasta segment is dominated by a leading producer, Pastificio Rana, two multinational food company, Nestle' Italiana and Buitoni, three medium-sized companies and about thirty small companies.
- the frozen pasta segment is run by a limited number of medium or medium-small sized companies.

Almost all medium-sized companies operate at least partially on behalf of third parties. Third-party production makes it possible to pursue economies of scale, reducing fixed costs, as well as representing a key entry point for the modern channel.

3.2.3 External factors

In August 2017, a Ministerial Decree introduced the obligation to indicate the origin of wheat for pasta on the label, anticipating the full implementation of European Regulation 1169 of 2011. The decree stipulates that packages of dry pasta produced in Italy will have to indicate the following wordings on the label:

- Name of the country where the wheat is grown;
- Name of the country where the wheat was milled;
- If the durum wheat is cultivated for at least 50% in one country, such as Italy, the wording: "Italy and other EU and/or non-EU countries" can be used.

The final obligation to apply the decree was triggered on February 17, 2018. As of April 5, 2018, it is also mandatory to indicate on the label the location and address of the food production or packaging facility, according to Legislative Decree 145/2017 of the Ministry of Agricultural Food and Forestry Policies. This indication is in addition to those compulsorily provided for by the European regulation (name, ingredients, presence of allergens, quantity, expiry date, name of the person responsible for the information, country of origin, instructions for use, alcoholic strength and nutritional declaration). The obligation concerns food produced in Italy and intended for the Italian market.

3.2.4 Emerging trends

In recent years, according to an estimate by AIDEPI, Italian pasta factories have focused on innovation and quality by allocating about 10% of their turnover in research and development. These significant investments allowed them to have more modern, safe and sustainable plants and intercept new trends in lifestyles, tastes and nutrition. Alongside the traditional pasta, which accounts for over 90% of the market and comes in over 300 different forms, companies have started to produce wholemeal, gluten free pasta, alternative flours, and superfood-based pasta in order to meet new consumer needs. Even pasta created using 3D printers has been launched on the market.

Traditionally, pasta companies are focused on the segment to which they belong: the only exceptions so far were Divella and Newlat Food, which also operated to a modest extent in the fresh pasta segment. In May 2017, Pastificio di Martino Gaetano e F.lli entered the fresh gnocchi business by purchasing Grandi Pastai Italiani. It then launched fresh and frozen pasta under the Antonio Amato brand. In March 2018, Mosconi Luciana (egg pasta specialist) introduced a new line of fresh filled and non-filled pasta, produced in a new plant in Ancona. Since the logistics management of fresh pasta significantly differs from for the dry pasta one, it is normal that, at least initially, distribution will involve the region of origin only.

On foreign markets, there is a progressive tendency for Italian pasta producers to acquire local producers or to move their production in loco in order to avoid any protectionist laws, to reduce production and transport costs and to cover the market with local brands in addition to their own. For instance, both Barilla and Pastificio Rana have production plants in the United States, while De Cecco is also based in Russia.

3.2.5 Main Italian companies

The first pasta factories were established in the middle of the 19th century. Some examples are the Garofalo pasta factory (1789), the Barilla pasta factory (1877) and the De Cecco pasta factory (1886). The pasta industry went on consolidating in time over a century, making the aforementioned companies leaders in the sector both in Italy and worldwide. The degree of concentration is high, with the top four companies absorbing around 54% of the total value of the domestic market. In recent years, there has been a phenomenon of selection of players in the sector and concentration through mergers and acquisitions.

COMPANY	SHARE %
Barilla Holding	24.5
De Cecco	14
Garofalo (Ebro Foods)	8
La Molisana	7.8
Rummo	7.6
Divella	6.5
Voiello	6.5
Other	25.1
TOTAL	100

Table 3: pasta companies with the highest market share in Italy (Source: AgenFood).

Barilla

Barilla is a family-owned food company, founded in Parma by Pietro Barilla in 1877. With the advent of the two brothers Pietro and Gianni Barilla, the company experienced a phase of great development: in 1952 the production of bread was suspended in order to concentrate solely on the production of semolina and egg pasta. In this period, Barilla rapidly transformed itself into a company with a strong presence in the North of Italy, thanks to the quality of its products sold at balanced prices and to its innovative capacity. In 1955 Barilla increased its production reaching 600 tons of product per day, becoming leading company in the production and in the national market of pasta. In 1960 Barilla turned into a joint stock company. Barilla is made of two entities: Barilla g. and R. Fratelli Joint Stock Company and Italian Kitchen. The company produces over 120 different shapes and sizes of pasta, exports its products to over 100 countries and has 29 production facilities across nine nations.

In 2019, the Group recorded a turnover of 3.627 billion euros, with a net profit of 227 million euros. In 2020, turnover was 3.890 billion euros (+ 7% compared to 2019), 57%of which was generated abroad, while net profit reached 351 million euros (+55% compared to 2019). The turnover consists of 55.2% from first course products and 44.6% from bakery products. The rest from miscellaneous products. In 2020, Italy was confirmed as the first market for Barilla, accounting for 42.6% of revenues, but down 2 points. The Italian turnover reached 1.65 billion (+2.4%). The second largest market is Europe plus Russia reported 1.29 billion (+10.9%). This is followed by the Americas with 762 million, (+10.5%) then Asia, Africa and Australia with 179 million (+14.7%).[17]

De Cecco

The company was founded in 1886 in Fara San Martino in Chieti (Abruzzo), by the De Cecco brothers that originally produced flour at their stone mill. In 1950, De Cecco completed a new factory in Pescara to meet the increased demand that occurred after the war. In 1980, a new production facility in Fara San Martino was established in order to double the company's output. Significant investments were made in the 90's: a new mill, capable of processing 1100 metric tons of wheat daily and in 1997 the new Ortona plant was launched. In 2020 De Cecco registered an increase in sales (+6% from 481 to 510 million), in profit (+60% from 13 to 21 million) and EBITDA (from 53.7 to 64.6 million).[18]

Pastificio Garofalo (Ebro foods)

The company was established in 1935 in Gragnano, then the Pastificio built a more advanced branch in the industrial area. [19]In 2003 Garofalo could count on eight production lines, a total annual capacity of about 80000 tons and over 120 employees. In 2012 the company completed an investment of 18 million euros for two new production lines, increasing production capacity by 40,000 tons per year, and acquired two new plots of land. In 2010, Garofalo pasta reached a national market share of 3.2% in volume and 4.6% in value. In June 2014, the control of Pastificio Garofalo passed to the Spanish multinational Ebro Foods, which acquires 52% of the share capital for a total value of €62.5 million. In 2020 Garofalo registered a turnover of 220 million euros (+35% compared to 2019) and a stable EBITDA just below 13%, but growing in absolute value. Exports represents 60% of Garofalo's turnover. A growth of 48% was recorded in this area, compared to 15% for the Italian market.

[17] https://it.wikipedia.org/wiki/Barilla
[18] https://it.wikipedia.org/wiki/De_Cecco_(azienda)
[19] https://it.wikipedia.org/wiki/Pastificio_Lucio_Garofalo

3.3 Market strategies

3.3.1 SWOT analysis

STRENGTHS:

- high-quality pasta supply, which places all Italian brands in the premium segment in foreign markets;
- rising trend for internationalization due to the appreciation of Italian-made products abroad.

WEAKNESSES:

- The majority of pasta firms are small sized;
- Difficulties in distributing the product in the domestic and foreign markets, due to the contractual power of large-scale distribution and the required investments;
- High advertising and promotional investments, needed to build brand awareness;
- Growing adaptation of the population to U.S. eating habits (like fast meals).

OPPORTUNITIES:

- low cyclicality of domestic demand;
- growth in demand of made in Italy pasta abroad;
- current debate related to the health standards related to food products.

THREATS:

- mature market with little room for growth;
- lower carbohydrate consumption due to new habits;
- high cost impact of durum wheat prices;
- high consumer sensitivity to promotions and, consequently, lower margins for distributors;
- excess production capacity;
- high international competition;
- competition in the market for "imitation" products;
- fake belief that bread or rice are substitutes of pasta.

Image 10: SWOT Analysis of the pasta industry in Italy.

3.3.2 Porter's five forces

Porter's Five Forces is a model that identifies and analyzes the five competitive forces characterizing every industry.

- **Barriers to entry: average**

  The barriers to entry are represented by the production know-how, the economies of scale and the costs of access to large-scale distribution. The referencing costs for pasta are, on average, five times higher than the ones related to more differentiated products, like bakery products. Moreover, referencing a brand entails the launch of an entire product line and not a single product.

- **Competitive rivalry: high**

  This sector is characterized by stagnation of demand in real terms and excess production capacity, thus the competition tends to shift onto price in order to achieve high sales volumes. At a local level, the competitive scenario may differ from the national framework, since a large number of operators own a leadership position in their region of origin. As already mentioned, Italian producers enjoy a strong competitive advantage abroad thanks to their high reputation worldwide.

In fact, they usually have a premium positioning. Moreover, some Italian pasta companies tend to acquire local producers or build their own production facilities in the countries where protectionist laws are likely to be introduced.

- **Bargaining power of suppliers: average**
  The supply of raw materials is not particularly challenging: companies operating in the milling sector have an extremely fragmented supply structure and their average size is small. Furthermore, several pasta factories are integrated upstream.
- **Bargaining power of buyers: high**
  The bargaining power of modern distribution is significant. The limited size of orders reduces the bargaining power of traditional retailers, wholesalers and caterers.
- **Threat of substitutes: low**
  On the domestic market, competition of substitute products is still low but growing. In fact, since the consumption of pasta is strongly influenced by the eating habits of Italians, the ongoing change in lifestyles leads to a shift in consumption towards ready meals or protein products at the expense of carbohydrate consumption.

3.3.3 Critical variables

For dry pasta producers:

- production efficiency;
- brand image and consistent product positioning;
- presence and quality of presence on foreign markets;
- balanced use of subcontracting;
- correctness and sustainability of communication investments;
- presence in the most dynamic segments.

For fresh pasta producers are:

- capillary and efficient distribution network;
- good control of the modern channel;
- strong brand image;
- support for the brand advertising;
- innovative content, with frequent entry of new products.

Finally, for frozen pasta are:

- strong focus on quality/price ratio and service level;
- diversification in the frozen food sector allowing for distribution synergies.

3.3.4 Main strategies

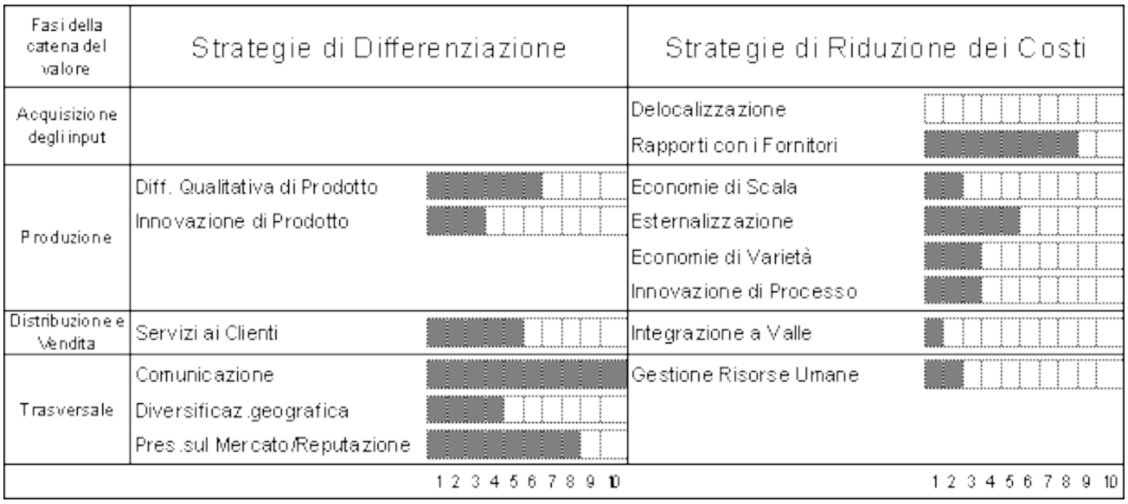

Table 4: level of concentration of the two main competitive strategies with respect to the four steps of the value chain (Source: Prometeia).

The pasta sector is mature. The table above is taken from the Prometeia Report and illustrates the level of concentration of these two competitive strategies, product differentiation and cost leadership, with respect to the four steps of the value chain: acquisition of inputs, production, distribution/sales and transversal. The major competition levers in the industry are reputation, communication and relations with suppliers and distributors. Firms, particularly the bigger ones, try to preserve their market share by focusing on product quality and advertising so as to inform customers of quality differentiation, build brand loyalty and revitalize the market.[20]

Two distinct pricing strategies can be identified:

- Penetration strategy: it is pursued reducing the price with the goal of considerably and rapidly boosting sales in order to gain market shares.
- Skimming strategy: its goal is to keep the price of the items advertised relatively high in order to "skim" the market while also limiting the number of costumers.

The common elements are:

[20] Prometeia, Analisi di settore: PASTA (May 2014). Prometeia_pasta_2014_05.pdf

- Continuous search for new spaces on foreign markets, where growth prospects are better. For this reason, some companies have acquired or built factories for local production, but commercial branches are also growing;
- Diversification into nearby sectors. For dry pasta producers, diversification usually occurs towards products linked to the Mediterranean tradition, such as tomato preserves and olive oil, or towards bakery products. For fresh pasta producers with products linked to the fresh chain, such as refrigerated sauces and ready-to-eat gastronomy, and frozen pasta producers with frozen ready-to-eat pasta meals;
- Support for the image through investment in communication;
- Subcontracting. If applied in a balanced way, contract production can be an effective strategy to boost turnover and saturate production capacity;
- Innovation. With the tendency to eat healthy, this industry has started to focus on products made with functional flours (for instance, gluten free and whole wheat).

In the frozen pasta segment, the strategies are based on relationships with professional operators and a strong focus on the quality/price ratio and service level.

Companies can be subdivided into three main strategic groups:

- small firms considering price as a strategic variable. They supply the local market with first price products or are specialized in export activity. Transport costs are contained for both raw material and finished product.
- large or medium-sized firms, pursuing a medium-high quality. They apply brand policies to enhance their image.
- firms having a solid tradition of artisan production and considering quality as a strategic variable. Their target is made of costumers that demand high standard of quality and are not particularly price-sensitive.

The level of product innovation is low, with the exception of the fresh pasta sector. New products are, in general, launched by market leaders, which largely invest in the development process and advertising. However, in most cases, competitors can easily imitate them. As a result, low product differentiation and the need to achieve large sales volumes tend to shift the competition to price and consequently profit margins are generally low.

In order to get rid of the strong price competition in the domestic market, Italian companies often enter international markets where all pasta exported from Italy has a premium positioning. However, the main threat of competition abroad is represented by the phenomenon of "Italian sounding," namely foreign competitors selling low quality pasta in Italian-look packages so as to mislead costumers.

Furthermore, many pasta companies have introduced other products of the cereal chain or pasta complements. In particular, both Barilla and Rana (respectively leader companies in dry pasta and fresh pasta) have entered the pasta-based ready meals sector, considering it more profitable and with better development prospects. In contrast, producers with a weaker brand image avoid the competition with better-known companies and turn to the private label market commercial brands.

Finally, several dry pasta producers are strategically integrated upstream in the milling industry so as to intensify control over the different stages of the production process and cut the transportation costs related to the supplies.

3.3.5 Mergers and acquisitions: the Barilla case

The abbreviation M&A stands for "mergers and acquisitions" and refers to the consolidation of two separate companies. These transactions are performed with the purpose of increasing the value of a company or accelerating its growth by diversifying into new markets, improving market share or expanding geographically.[21]

A merger is an arrangement that combines two separate companies into a new entity in order to create a stronger company. On the other hand, an acquisition is a transfer of ownership of one company (or parts of it) under the control of another through the purchase of stock or the acquisition of assets. The main difference between mergers and acquisitions is the balance of power in the new entity. Within a merger, the original companies become equal partners in the new organization. In contrast, an acquisition always results in one company relinquishing control to the other. However, the combined

[21] SumUp, "Mergers & Acquisitions (M&A) - Cosa sono le M&A?".
https://sumup.it/fatture/dizionario/mergers-and-acquisitions/

concept of M&A is slowly replacing the individual terms “acquisition” and “merger” and is generally applied to any type of business in which companies merge.

M&A have both benefits and risks. For this reason, a company that plans to undertake this type of transaction must necessarily weigh the pros and cons through a thorough market analysis.

Benefits of mergers and acquisitions:

- access to new technologies;
- access to a larger customer base through the target company's established distribution channels;
- access to intellectual property such as brands, trademarks, or patents;
- additional staff with specialized skills, knowledge, and experience;
- reduction in competition.

Risks of mergers and acquisitions:

- clash of corporate cultures;
- less valuable resources than expected;
- higher M&A costs than expected;
- key personnel reluctant to join a new company.

As mentioned before, the pasta industry in Italy has a strong international vocation and the competitive rivalry is high, with larger companies contending domestic and foreign market share. Furthermore, prices of wheat and semolina are boosting and it will soon affect the cost of pasta as well. As a result, the phenomenon of M&A has lately boosted.

Barilla is an Italian multinational food company, operating in the market of dry pasta, ready-made sauces, bakery products, flour and bread. Its approach towards acquisitions is very rigorous, organized and intended to impose its systems on the acquired company. The company has always been interested in expanding its foreign markets: in fact, in 1991, it acquired Misko, a leading pasta brand in Greece, while in 1999 it bought Swedish company WASA, which has specific expertise in the bakery products sector.

Image 11: Barilla brands in the world.

Its expansion continued with the acquisition of Sanson, historic company active in the ice cream market serving about 20,000 bars and public establishments (2001) and Harry's, a French giant specialized in the production and distribution of bread and bakery products (2002). In the same period, it signed a joint venture in Mexico with the Herdez group in order to sell durum wheat pastas, egg pastas and sauces throughout the central America. Barilla also acquired Mexican pasta brands Yemina and Vesta, through an agreement with Kraft Foods.

In 2021 the Group acquired a majority stake in Pasta Evangelists, a small London-based start-up specialized in the production of fresh pasta and condiments with home delivery. During last year, it also announced the acquisition of Catelli Dry Pasta, a historic Canadian firm. The deal includes the Catelli, Lancia and Splendor brands and the plant in Montreal, Quebec. Claudio Colzani, CEO of Barilla Group, states: *"Catelli Dry Pasta is a natural choice for our expansion, given the synergies between our business strategies, commitment and values. This acquisition not only underscores our sense of responsibility in responding, through innovation, to the needs of an evolving consumer, but also our willingness to anticipate them."*

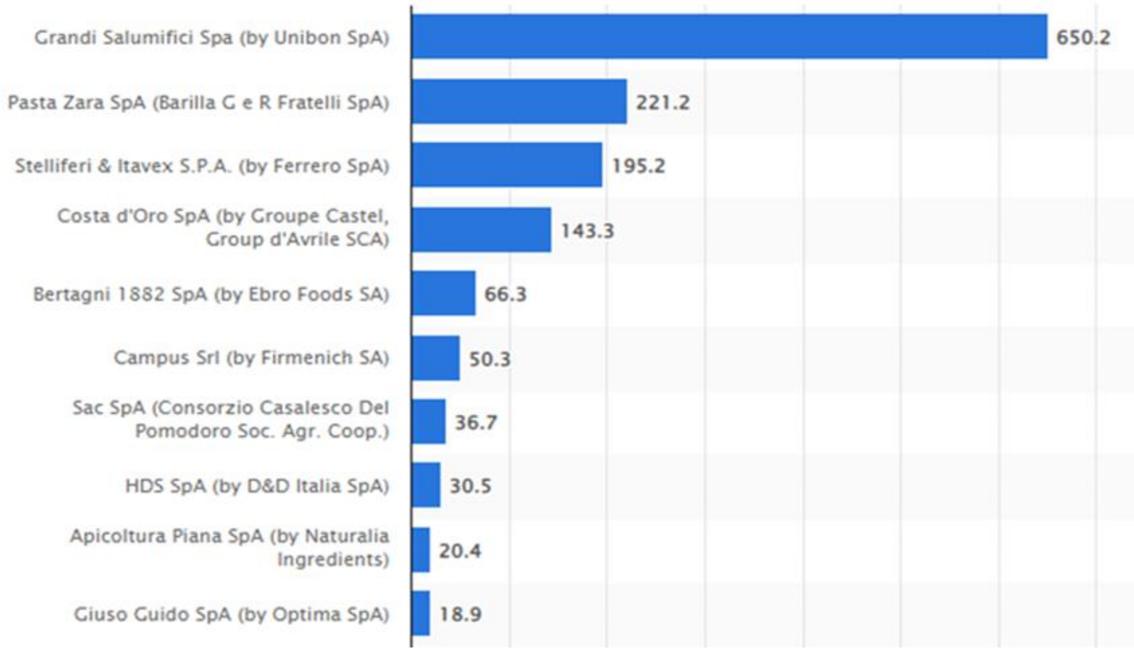

Table 5: Main M&A deals in the food processing industry in Italy in 2018, by target revenue in million Euro (Source: Statista).

According to the histogram above, the economically most relevant deal in the food processing industry in Italy in 2018 was closed by Unibon S.p.A., for the acquisition of Salumifici S.p.A. (650.2 million euro), followed by from Barilla G. e R. Fratelli S.p.A., which acquired Pasta Zara S.p.A. (221.2 million euro) and Ferrero S.p.A., which bought Stelliferi & Itavex S.p.A. (195.2 million euro).

As reported above, in 2020 Barilla closed the agreement with Italian Pasta Zara plant in Muggia (Trieste), an agribusiness company based in Treviso that has slipped into deep financial distress in recent years.[22] The transaction is worth 118 million euros and aims to *"ensure the continuity of the business with the maintenance of employment levels and marks the start of a path of investment by the Group with important positive repercussions on the territory"*, as announced by Barilla. The plant is one of the world's largest in the pasta industry and boasts a 65,000-pallet self-supporting warehouse, only one-third of which has been used so far. It counts 150 employees, whose job will be preserved under the new management as well. The food giant's proposal included a contract for "co-paking," meaning packaging, packing and labeling of Zara products, for a period of five

[22] SkyTG24, "Barilla acquisisce stabilimento Pasta Zara a Muggia per 118 milioni." (06/10/2020). https://bit.ly/3P15qrz

years. Pasta Zara will continue to operate independently at its headquarters in Treviso, whereas its subsidiary Pasta Zara 3 in Brescia was permanently closed in 2021.

Barilla invested €1 billion in the period 2020-2024 to enhance its growth and development path in Italy as well. This represents the Group's largest investment and is committed to three strategic actions: acquisitions in Italy and abroad (like the aforementioned pasta plant in Muggia), production and technology strengthening and supply chain development.

3.4 distribution channels

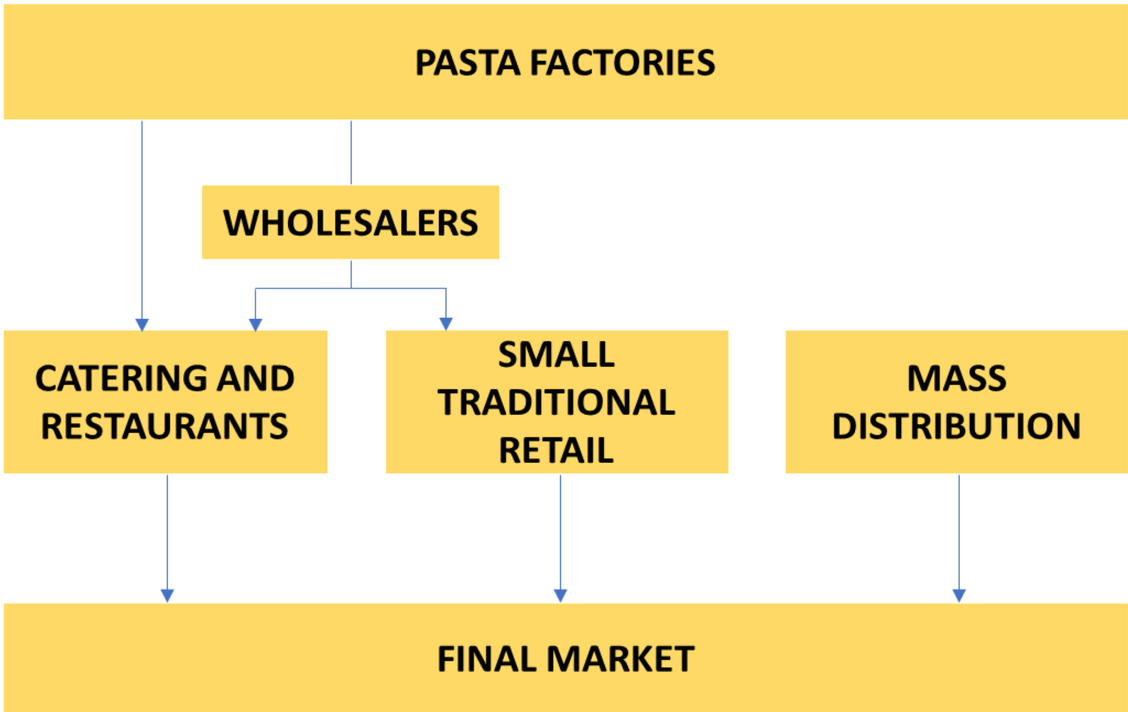

Image 12: pasta distribution channels (Source: Prometeia).

The dry pasta market is characterized by a significant geographical inhomogeneity, showing a wide fragmentation. Some industries are able to compete with the market leaders in certain areas thanks to their solid local roots. In the fresh pasta segment, on the other hand, a limited number of operators are particularly active in boosting purchases through constant recipe innovation and considerable promotional support. The distribution channels are principally short: producers address most of their offer to large-scale distribution companies, whereas the remaining portion is delivered to companies operating in the wholesale sector, which serve traditional retail and HORECA channel clients.

3.4.1 The domestic consumption channel

Large-scale distribution and discount stores dominate the sales in this channel, accounting for 71% of total consumption in terms of quantity. In fact, they allow huge pasta producers to offer their products at a lower cost with respect to the traditional distribution, that is extremely fragmented and can be controlled with the intermediation of the wholesaler only. Producers have been compelled to make significant investments to enhance brand differentiation because of the high promotional pressure related to the branded products. Considering the high penetration reached by private labels, large-scale retailers have begun to apply strategies to differentiate private label product lines. In particular, they created lines of typical products, letting small and medium local producers enter this channel without making high investments, but only ensuring high quality standards. Approximately 14% of consumption is absorbed by traditional retail, while an insignificant part, involving frozen pasta only, is distributed by the door-to-door channel.

3.4.2 The non-domestic consumption channel.

Non-domestic consumption, which includes restaurants and canteens, accounts for 15% of consumption and is regaining ground after the crisis of recent years, thanks to the growth in the number of meals consumed outdoor. In this channel, 45% of pasta is sold directly while the remaining 55% is distributed through wholesalers. The de-structuration of meals in the Italian families and the increasing tendency of eating outdoor have represented an opportunity for producers to expand business levels, in the face of mature domestic consumption. The ways to conquer foreign markets are not unique and each company has to exploit its own competitive factors to succeed. They might decide to focus on differentiated and superior quality products, productive efficiency, technological innovation, marketing or distribution network.

	INCIDENCE %
Large-scale distribution and discount stores	71.0
Catering	15.0
Traditional retail	13.8
Door-to-door channel	0.2

Table 6: breakdown of sales by distribution channel (source: Prometeia).

3.4.3 Competition for shelf space and consumer behavior

Doxa and Food Insider conducted a survey from May 17 to 24, 2017, regarding the space dedicated to dry pasta in 115 supermarkets and hypermarkets of 8 Italian large-scale retailers (Carrefour, Conad, Coop, Despar, Esselunga, Pam, Simply, Unes), and also studied the main habits and trends of pasta consumers. [23]

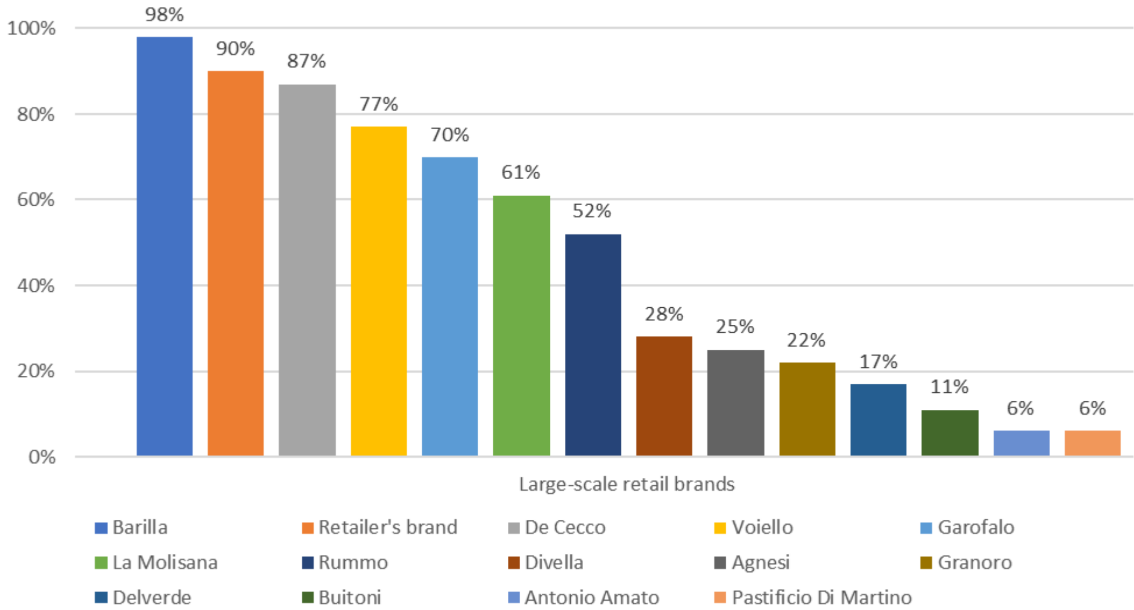

Table 7: shelf-presence of the main pasta brands in the large-scale retailers analyzed (Source: Doxa).

As can be seen from the graph, Barilla has a widespread distribution capillarity throughout the territory, with its products being displayed in 98% of the stores within the sample. Only the retailer's brand shows a similar percentage of shelf presence. The second place is held by De Cecco, whose pasta was detected in 87% of the stores. Voiello, which is owned by Barilla, and Garofalo, owned by Ebro Foods, are respectively at the third and fourth position with 77% and 70% of shelf-presence. Other relevant national brands are La Molisana (61%) and Rummo (52%). In contrast, other well-known industrial brands such as Divella, Agnesi, Granoro, Delverde, and Buitoni were less frequently found on the shelves. Lastly, Pastificio Di Martino and Antonio Amato, a brand also owned by Di Martino, stood at 6%.

[23] Food Insider, "Pasta, viaggio nella categoria regina dell'alimentare." (14/07/2017). https://bit.ly/3P6msEW

In brief, premium dry pasta finds shelf space because a share of customers regularly purchases it. Besides, it fully meets the need of large-scale retailers to segment the offering, especially in a market that competes on price and therefore has a low margin.

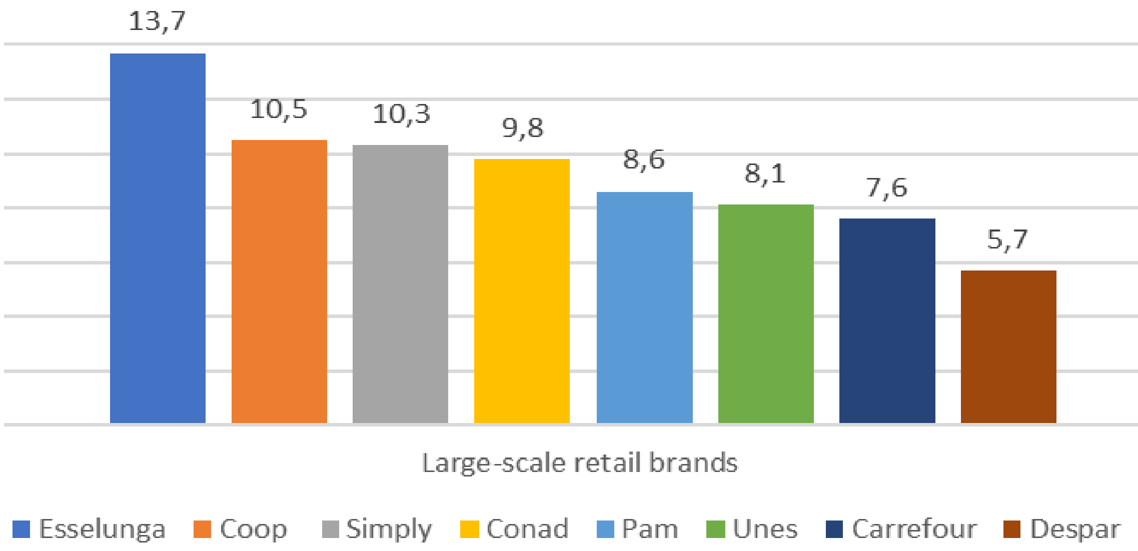

Table 8: Length of pasta shelf in the large-scale retailers within the sample (Source: Doxa).

According to the graph above, Esselunga, with 13.7 meters, is the large-scale retailer that devotes the most shelf-space to dry pasta. It is followed by Coop (10.5 meters), Simply (10.3 meters), Conad (9.8 meters), in line with the overall average, Pam (8.6 meters), Unes (8.1 meters), Carrefour (7.6 meters) and finally Despar (5.7 meters).

Another aspect highlighted by the survey is the balance in terms of space between the retailer's brand and individual industrial brands. According to the data, Esselunga is the large-scale retailer that displays more of its brands than industrial brands in 61% of its stores. It is followed by Unes (46%), Coop (43%) and Pam (40%). In contrast, the other large-scale retailers in the sample prefer to display an equal or superior number of industrial products with respect to their private labels.

Furthermore, traditional formats (500 g and 1 kg) dominated the pasta department, being found in 79% of the shelves analyzed. However, the average hides big differences: Carrefour and Esselunga have expanded their offerings to alternative formats in 47% and 40% of their retail points, respectively, while this phenomenon has never involved Conad. Coop, Unes, Pam, Simply and Despar seem to have a less "pushy" strategy in this respect.

The second part of the research concerns the consumers behavior and involved an identical share of male and female respondents. Pasta is confirmed as the "queen of Italian tables": as reported by the graph below, 63% of the sample (71% of men and 57% of women) eat pasta every day or almost every day, while 27% (18% of men and 32% of women) eat it several times a week. Only 10% (11% of men and 11% of women) eat pasta once a week or less. In addition, 38% of our sample said they eat these "special" pastas, exclusively in 12% of cases and alternating with durum wheat semolina in the remaining 26%. The difference by gender and age is minimal. Aware of this trend, large-scale retailers have provided a greater on-shelf offerings of these alternatives in the following years.

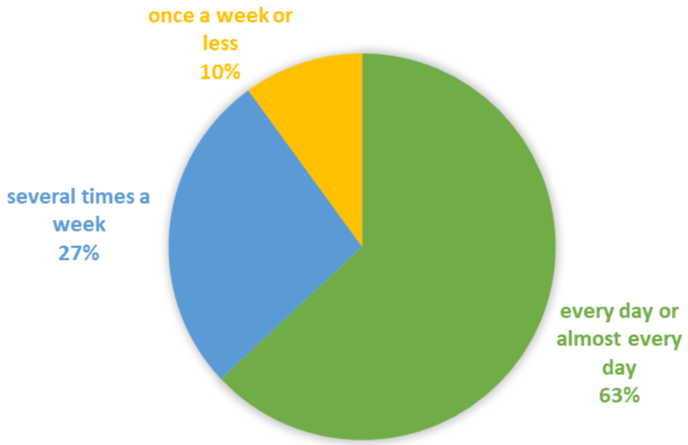

Table 9: frequency of pasta consumption (Source: Doxa).

Brand loyalty is weakening in dry pasta: 54% of the sample declare that they do not have a favorite brand, with the exception of Barilla, which is preferred in one out of three cases. However, combining this data together with the one related to purchases, it emerges that a significant share of Italians is still loyal, but no longer to a single brand, rather to a cluster of brands from which they choose according to their economic convenience. This behavior is certainly due to the very high promotiveness of the sector, which ensures that consumers always find one of their favorite brands on promotion.

However, this phenomenon may also be a sign of a progressive homogenization of taste and loss of sensitivity to typical products, which were once perceived and considered relevant by Italians. Surprisingly, the data show an unexpected lower product culture with respect to the very high frequency of consumption. Finally, that 17% of people who only purchase brands on promotion is not interesting from a strategic point of view since any loyalty is practically impossible.

Lastly, the majority of the sample (59%) prefers short pasta, although the top position of the podium is held by spaghetti, which with 26% of preferences beats penne (20%) and fusilli (18%). The victory of spaghetti is due to women, whose propensity for long pasta (31%) is significantly higher than the one referred to men, who indicate spaghetti as their preferred format in only 17% of cases. One possible explanation for this phenomenon could be in the greater difficulty of preparation: in fact, spaghetti requires more attention when cooking and a sauce to mix well with, so men probably prefer a type of pasta that is easier to cook.

3.5 The global export

Global pasta exports reached US$ 11.9 billion in 2020, an increase of 37% for all pasta shippers over the past five years. In addition, the value of worldwide exported pasta rose by 14.6% from 2019 to 2020. The largest exporters of pasta are Italy, China, South Korea, Turkey and Thailand, which together collected 56.3% of exported pasta by value in 2020. European suppliers sold the highest dollar worth of exported pasta during 2020 with shipments valued at $6.1 billion, meaning 51.4% of the total, whereas Asian exporters are at the second place with 40.4%. Smaller percentages came from Africa (2%), Latin America (1.5%) and Oceania (0.2%). [24]

3.5.1 Italy

Italian pasta exports grew by 16% in 2020 as reported by ISTAT data. Both inside and outside Europe, there are interesting rising trends that confirm the strength of Italian food and beverage, globally recognized as synonymous with quality and reliability. This positive image has certainly contributed to make Italy the world's top pasta exporter with over 3.5 billion exports in 2020. In addition, pasta was Italy's 34th most exported commodity in the same year. According to the Unione Italiana Food, Italy sells 56% of its pasta production (meaning two million tons) in over 200 destinations worldwide: as can be seen from the histogram below, the European Union continues to be a key market with Germany, France and the United Kingdom being the main consumers. Exports in these countries grew by 16%, 4.3% and 19% respectively in 2020. Italian pasta is also largely consumed in Eastern Europe, while the Netherlands, Spain, Austria and Belgium

[24] Ranking Royals, "Largest Pasta Exporters". https://rankingroyals.com/largest-pasta-exporters-in-2020/

remain significant destinations. A huge growth has been recorded in the United States, with a growth of 40%. An increasing trend is also emerging in Asia: sales in Japan have grown by 16%, while China (+23%) continues to be extremely receptive to Italian pasta. Another attractive destination is Australia, which recorded an increase of 39% in 2020.

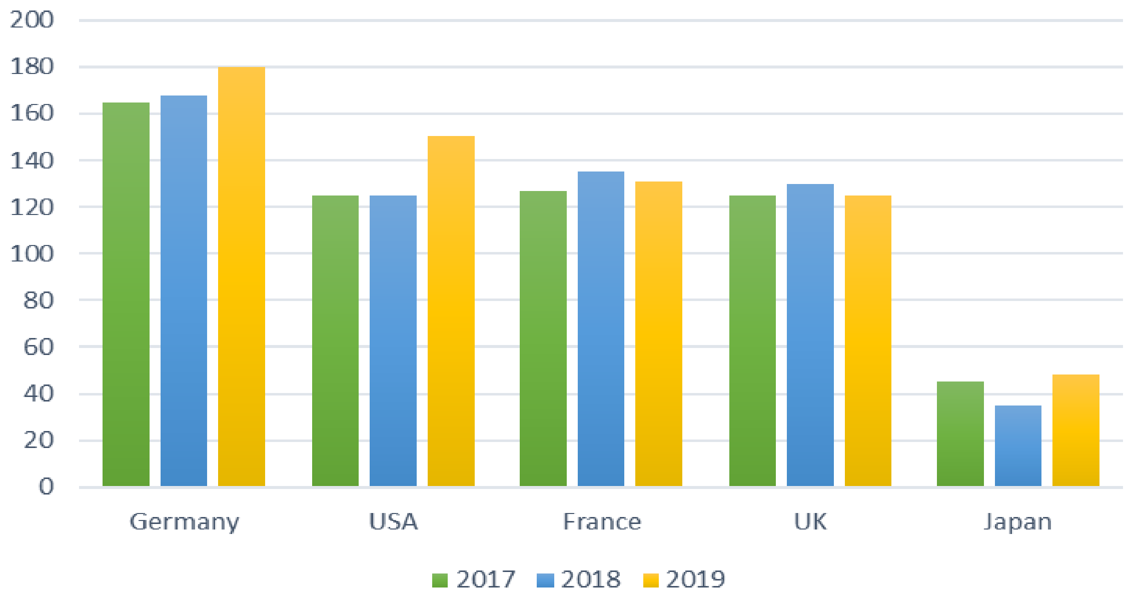

Table 10: top 5 countries to which Italy exports pasta. (Source: ISTAT)

3.5.2 China

China exported $980.2 million pasta in 2021, making it the world's second-largest exporter. This country exported 929.87 million dollars of pasta in 2019, up 0.70% from 923.43 million dollars in 2018. Between 2017 and 2018, the value of China's Pasta increased by 6.675% annually. Pasta was China's 374th most exported product in the same year. The top destinations for Chinese pasta exports are Hong Kong ($177 million), the United States ($116 million), South Korea ($103 million), Japan ($75.6 million) and Canada ($47.6 million). Between 2018 and 2019, the fastest-growing export markets for Chinese Pasta were Canada ($11.6 million), the United Kingdom ($6 million) and Russia ($4.62 million).

3.5.3 South Korea

South Korea is the third pasta exporter ($792.3 million). In 2020, the export value of South Korean pasta (cooked or stuffed), was over 792.26 million dollars, up from around 290.26 million dollars in 2011. Pasta exports increased by 18.41% between 2017 and 2019, netting South Korea US$612.14 million in 2019. This country exported 612.14 million dollars of pasta in 2019, up 10.10% from 555.994 million dollars in 2018.

Between 2017 and 2018, the value of South Korean pasta boosted by 8.067%. Between 2017 and 2019, the annual change in the quantity of South Korean pasta exports was 18.41%, compared to a variation of 12.933% between 2018 and 2019. In 2019, South Korea counted a 1.5% share of global total pasta exports, being rated ninth globally.

3.5.4 Turkey

In 2021 Turkey's export of pasta reached $761.3 million, which brought it in fourth place. Despite discriminatory trade quotas imposed by EU countries, Turkey placed second in exports behind Italy. Turkey, which placed fifth in world pasta production in 2010 (with a 606-thousand-ton output amount and a 5% production share), experienced a substantial growth in production in 2013, boosting its output to 1 million tons and raising its production share by 7.4%. However, Turkey's position as the world's leading pasta producer has remained unchanged. Turkey's annual export volume to European Union countries is roughly 20,000 tons.

3.5.5. Thailand

Thailand is the fifth pasta exporter with $595.5 million in 2021. Thailand's stuffed pasta and couscous exports increased by $595.5 million in 2021, confirming a rising trend for the sixth consecutive year. The highest growth rate occurred in 2008 when exports climbed year over year. Exports are likely to grow steadily in the next years ahead after a peak that was registered in 2020. According to the United Nations database on international commerce, Thailand exported US$9.84 thousand worth of pasta (spaghetti, macaroni, noodle, lasagna) and couscous to Honduras in 2020.

3.6 Costs and Prices

The cost structure of pasta sector is mostly determined by the durum wheat, which accounts for roughly 40-50% of turnover. In particular, around 60% for dry pasta, around 40% for fresh pasta and around 42% for frozen pasta. The price trend of the final product is therefore strongly influenced by the price of semolina, especially for dry pasta. Durum wheat is also essential because it affects the color, taste and cooking time, which are the main characteristics of the product.

As with most agricultural commodities, durum wheat prices are extremely volatile and depend on the areas of land cultivated, the weather conditions, harvest trends, exchange rates. They are also amplified by speculative phenomena.

In 2018, the average price of semolina dropped slightly, after two years of consistent declines.

Compared to dry pasta, the fresh pasta segment is characterized by:

- higher labor intensity, since the production processes are less automated and necessarily more flexible, due to the greater variety of raw materials (for fillings) and shapes;
- high incidence of product preservation costs (pasteurization and cooling);
- lower dependence of profit margins on the price trend of durum wheat (the importance of other raw materials used like eggs, cheese and herbs is greater);
- importance of logistics network management costs since the cold chain has to be respected.

The histogram below shows the average price for one kilogram of pasta in Italy, broken down by type, in 2018, 2019 and 2020. As can be observed, prices rose for all types of pasta, with the exception of fresh non-stuffed pasta, which decreased from €3.64 per kilogram in 2018 to €3.26 per kilogram in 2020, and egg pasta, whose price fell from €3.79 per kilogram in 2019 to €3.71 in 2020. Fresh pasta continues to be the most expensive segment, hitting a price of €5.46 per kilogram in 2020. [25]

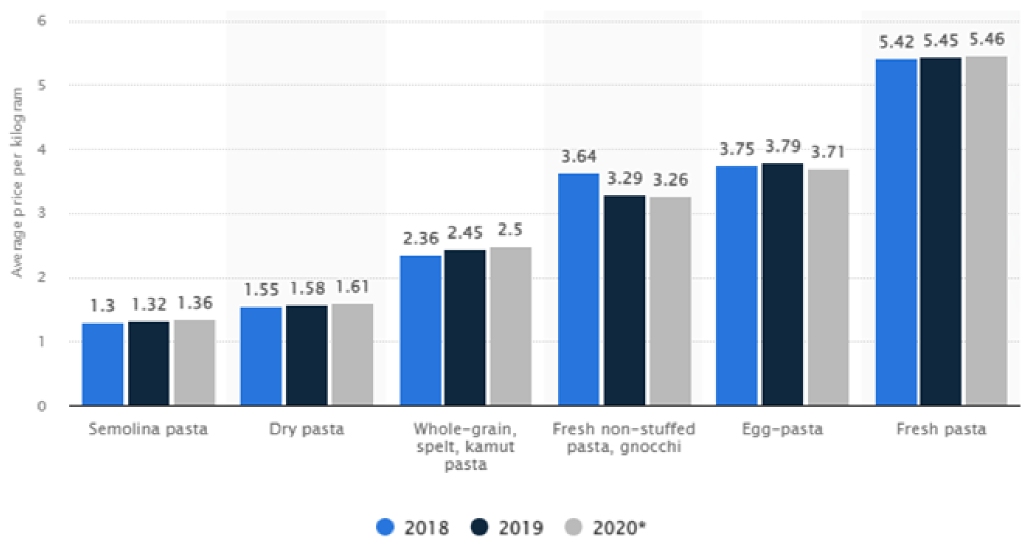

*Table 11: average price for pasta in Italy from 2018 to 2020, by type (Source: Statista)***.**

[25] Statista, "Average price for pasta in Italy from 2018 to 2020, by type." (18/01/2022). https://www.statista.com/statistics/1010096/average-pasta-price-by-type-of-wheat-in-italy/

As Italy imports huge quantities of soft wheat from both Ukraine and Russia, recent Russia's invasion made the prices for it skyrocket at the end of February 2022. In fact, according to agricultural organization CAI (Consorzi Agrari d'Italia), the cost of soft wheat worldwide increased by 13% in the first week of war in Ukraine.

On the other hand, the price of durum wheat, used for pasta, has been stable so far since Italy imports just a smaller share of it from Ukraine and Russia with respect to soft wheat. In particular, from January to November 2021, Italy imported 122,000 tons of soft wheat from Ukraine and 72,000 tons from Russia (and zero tons of durum wheat from Ukraine and 51,000 tons from Russia), according to ISTAT data. Consequently, these two countries account for about 5% of total Italian imports for soft wheat (and 2.5% for durum wheat). However, CAI specifies that the cost of wheat only contributes for 10% to the price of pasta or bread. In fact, most of the cost is strongly influenced by price spikes in energy, fuel, packaging and transport. So, rising energy bills paradoxically cost more than wheat itself and Italy should be ready to look for alternative countries from which to import.

As a result of all these factors, the price of wheat products rose worldwide. Coldiretti pointed out that, right after Russia's attack on Ukraine, wheat prices boosted by 5.7% on February 24th, which is the highest value in nine years at $9.34 per bushel. Yet, before the Ukraine crisis, bread and pasta prices were already increasing because of the spike in energy and gas bills, which impacts on the operations of machines and ovens, as also stated by the national bread-making association, Assopanificatori-Fiesa Confesercenti.

Consequently, the Italian demand for wheat products is already falling. CAI, on the other hand, predicts that pasta and bread prices could soar to as much as 50% more. Italy does not produce more of its own pasta ingredients because of the increasing of fuel and equipment costs. Moreover, imported durum wheat is cheaper. According to the president of Coldiretti Ettore Prandini, Italy would have the potential to be self-sufficient in wheat production, if only Italian farmers had better conditions.[26]

[26] The local, "War and energy prices: why the cost of pasta could rise in Italy." (03/03/2022). https://bit.ly/3I17Vb6

According to ISTAT data, pasta prices have increased by 22% in three years (January 2019 to January 2022). Specifically:

- 1.22€ per kg in January 2019;
- 1.25€ per kg in January 2020, +2% compared to January 2019;
- 1.31€ per kg in January 2021, +5% compared to January 2020;
- 1.49€ per kg in January 2022, +14% compared to January 2021.

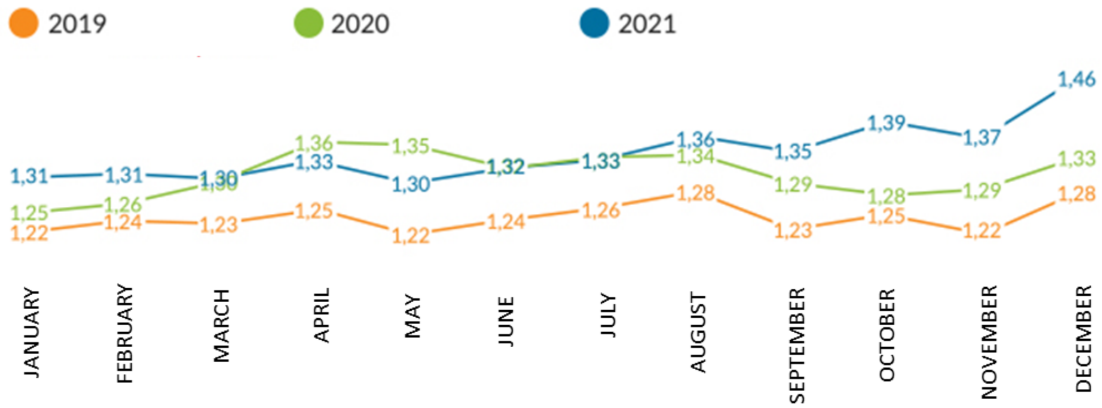

Table 12: Average price of pasta per kg in 2019, 2020, 2021 (Source: IRI Infoscan).

Altroconsumo analyzed in detail the price trend of one of the industry's leading products: spaghetti made by Barilla. In January 2019, its average price in hypermarkets, supermarkets and discount stores was €1.28 per kg. In January 2020, the price dropped by 3% (1.24€ per kg). It then increased by 10% in January 2021 (1.37€ per kg) and by 20% in January 2022 (1.64€ per kg). In total, the price of Barilla spaghetti boosted by 28% between January 2019 and January 2022.[27]

3.7 Market forecast

Undoubtedly the period between 2020 and 2021 is anomalous, making the market analysis and data interpretation more challenging. In fact, Covid-19 pandemic and the intermittent closings of catering businesses have changed not only the eating habits of Italian consumers, but also the spending volumes of families.

[27]Altroconsumo, "Prezzi della pasta ancora su a gennaio. Ma l'Ucraina non c'entra." (18/02/2022). https://bit.ly/3ai3gVH

2020 was a record year for domestic consumption (with an exceptional growth rate of +11%) and brought into Italian pantries almost 4 million tons of pasta, which means 50 million packages more than the previous year. In 2021, with the end of the home confinement due to covid-19, there has been an expectable reduction compared to the previous year.[28] The Italian pasta production recorded the total value of €9.7 billion, which corresponds to the 8.9% of the global market.

According to Statista, revenues related to the pasta sector in Italy amount to €3.96 billion in 2022 and the market is expected to grow annually by 5.91% (CAGR 2022-2027). Volume is expected to be 2,560.9mkg by 2027, meaning a 33.8kg average volume per person in 2022 and a 17.2% volume growth in 2023.

Lastly, the online sales market is still small (only 1.03% of the total) but showed a significant growth rate of +150%, with a turnover of 17 million euros in 2020. The formats are mainly the half kilo, which represents the 80% of the market, and the kilo, which is worth an average of 14% growing up to 23% in value in South-Italy.[29]

[28] Il Fatto Alimentare, "2020 anno record per i consumi di pasta. All'estero, è italiano un piatto ogni quattro." (02/11/2021). https://bit.ly/3OIWXZP

[29] GDO News, "IRI: nel mercato della pasta esiste un gap del 5% tra crescita a valore ed a volume. Forte il trend del 100% italiano." (30/05/2020). https://bit.ly/3uzXBB8

4 ANALYSIS OF A SAMPLE OF FIRMS

4.1 Overview of the sample

The data are taken from the AIDA database and cover the 2011-2020 period. [30] Starting from the ATECO code 107300 (Manufacture of macaroni, noodles, couscous and similar farinaceous products) a sample of 300 Italian firms operating in the sector were selected and three main sub-groups were subsequently created:

- producers of dry pasta,
- producers of fresh pasta,
- producers of other types of pasta (frozen, gluten-free, etc.).

27 firms are no longer on the market due to different reasons (like merger into other companies or bankruptcy), therefore they were excluded from each sub-group. Furthermore, the third sub-group has not been considered because of the high variability of the 57 other types of pasta makers. As a result, the final sample includes 216 companies: 115 in the dry pasta industry and 101 in the fresh pasta industry.

From a geographical perspective, 48% of the dry pasta makers within the sample is located in the Southern Italy, especially in Campania, 38% in the Northern Italy and 14% in the central Italy. On the other hand, 71% of fresh pasta is produced in Northern Italy, 22% in the Central Italy and 9% in Southern Italy.

	Northern Italy	Center Italy	Southern Italy	Total
Dry Pasta Firms	44	17	54	115
Fresh Pasta Firms	70	22	9	101

Table 13: Italian dry pasta firms and fresh pasta firms, by production area.

4.2 Profitability ratios

Profitability ratios are financial metrics that evaluate a company's ability to produce revenue relative to its revenue, operating costs, balance sheet assets, and shareholders' equity during a specific period of time. In other words, they show how well companies use their assets to generate profit and value for shareholders. For the analysis of the

[30] AIDA database (24/05/2022)

profitability ratios, both dry pasta firms and fresh pasta firms were classified into three categories based on their revenues: the top 10, the top 30, and all of them.

4.2.1 ROA

ROA (Return on assets) shows how efficiently the assets are used to generate earnings. It is calculated by dividing a company's net income by its average total assets. This index also measures the asset intensity of a business. The higher the ROA, the better.[31]

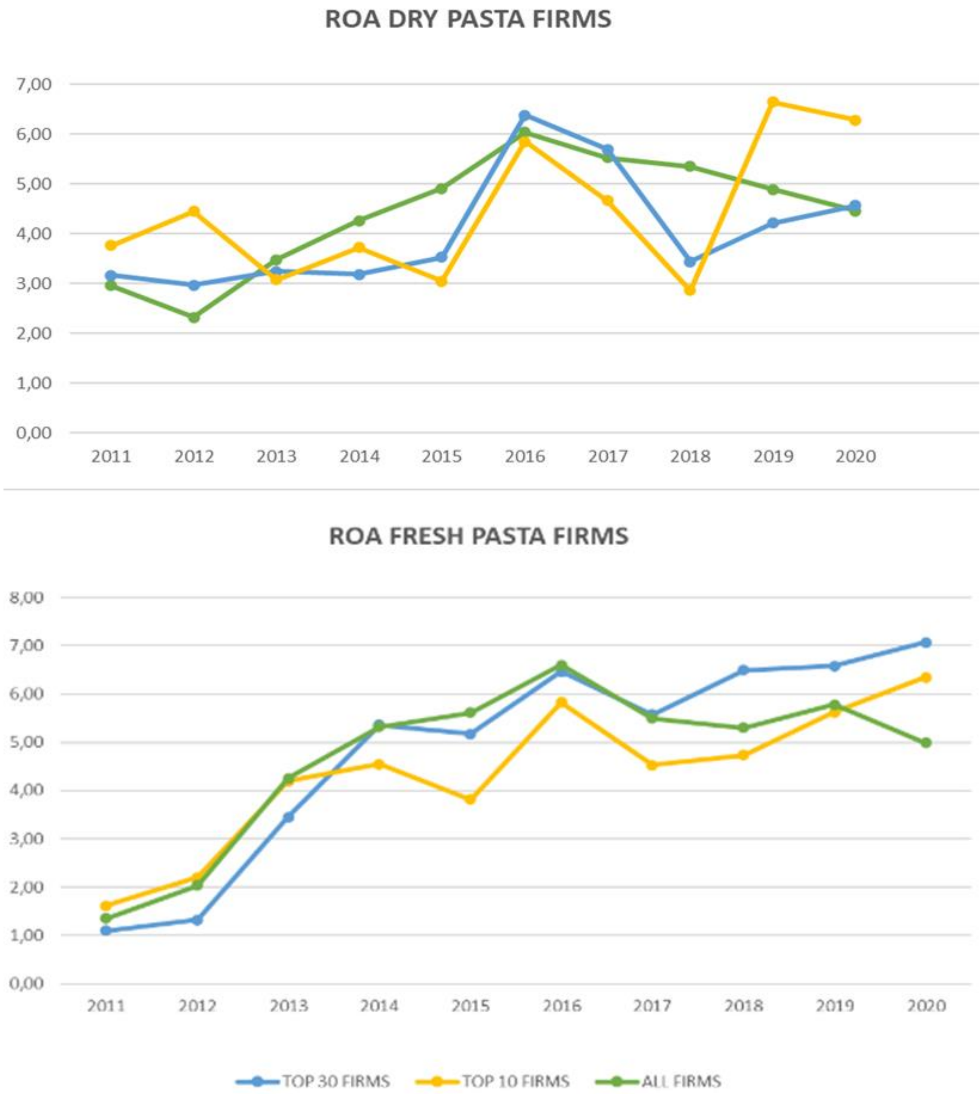

Table 14: average ROA for both dry pasta firms and fresh pasta firms from 2011 to 2020.

As can be seen from the graphs, average ROA generally shows an increasing trend between 2011 and 2020 passing from 3% to 4.5% for all dry pasta firms and from 1% to

[31] Investopedia, Return on Assets (ROA). https://bit.ly/3tYWJWD

5% for all fresh pasta firms. This means that the analyzed companies have been able to create value through their assets. However, the top 10 dry pasta firms generating more revenues, have a higher ROA with respect to the top 30 firms in the sample only from 2018 on. A similar trend has occurred for firms producing fresh pasta.

4.1.2 ROE

ROE (Return on equity) represents a company's profitability by revealing how much profit a company generates with the money shareholders have invested. It is calculated by dividing net income by shareholders' equity. The higher the ROE, the better.[32]

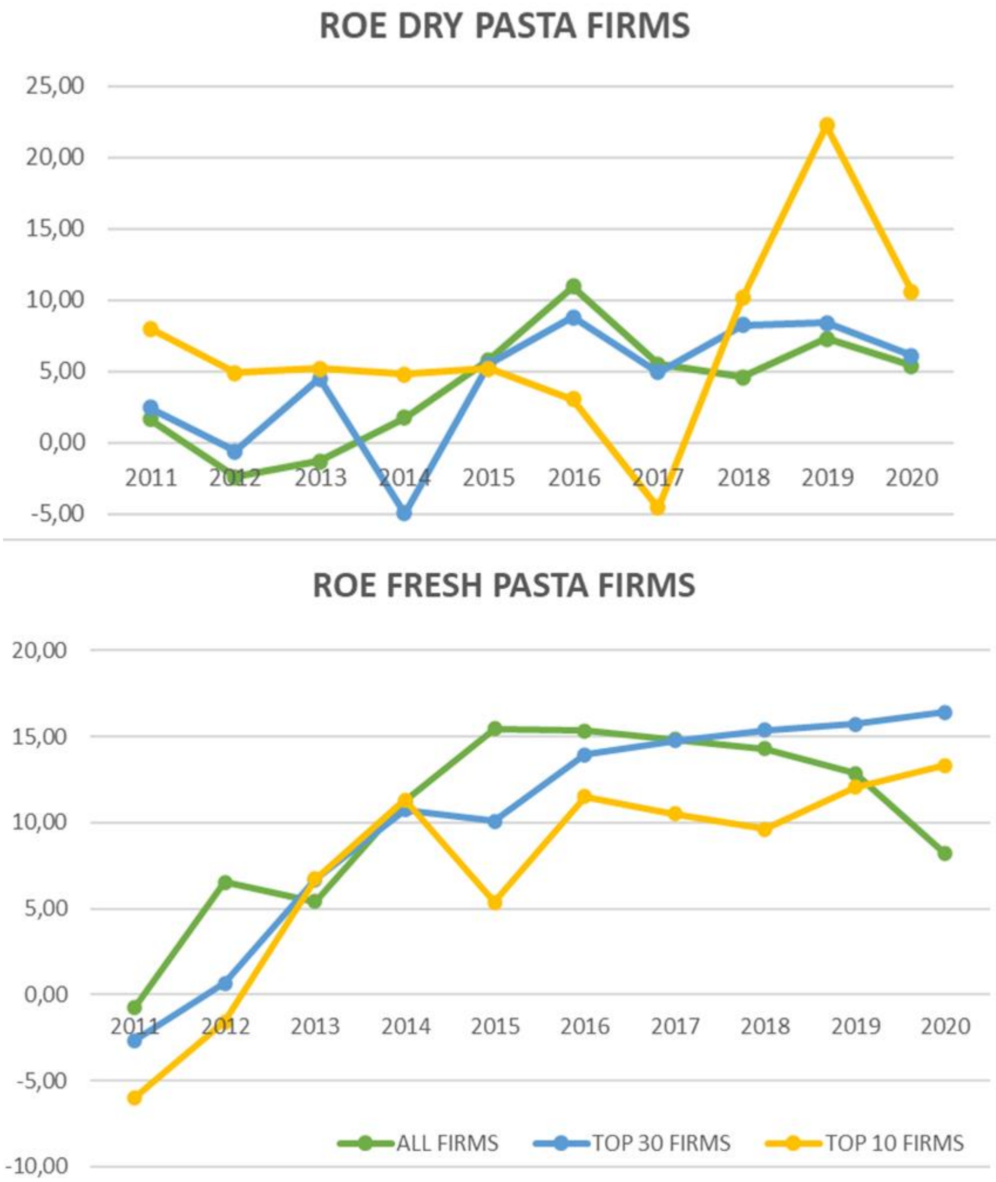

Table 15: average ROE for both dry pasta firms and fresh pasta firms from 2011 to 2020.

[32] Investopedia, Return on Equity (ROE). https://bit.ly/3u7KoiP

According to the graphs, the average ROE follows an increasing trend both for dry pasta firms and fresh pasta firms, even though a slight decrease has been registered after 2017. In particular, negative peaks of ROE were recorded for dry pasta firms in 2012 and 2013, and for fresh pasta firms in 2011, so companies were generally at a loss. In the next years, ROE became positive, meaning that the investments allowed to create more value. The top 10 firms producing dry pasta experienced a -5% ROE in 2017, but they have been able to rapidly recover, reaching a 22% ROE in 2019. A similar phenomenon occurred in 2011 for firms producing fresh pasta.

4.1.3 ROI

ROI (Return on investment) shows the benefit an investor will have with respect to their investment cost, namely the ability to make both shareholders' capital (equity) and third-party lenders' capital (debt) pay off. It is calculated by dividing net income (difference between production value and production cost) by the original capital cost of the investment. The higher the ROI, the greater the benefit earned. [33]

In order to improve ROI:

- firms that have low margin on sales (low prices) have to generate a high turnover of invested capital, which means having high sales volumes.
- firms that have low turnover of invested capital (low sales volumes) have to raise prices so as to achieve higher sales margins.

[33] Investopedia, Return on Investment (ROI). https://bit.ly/3Nk5L7j

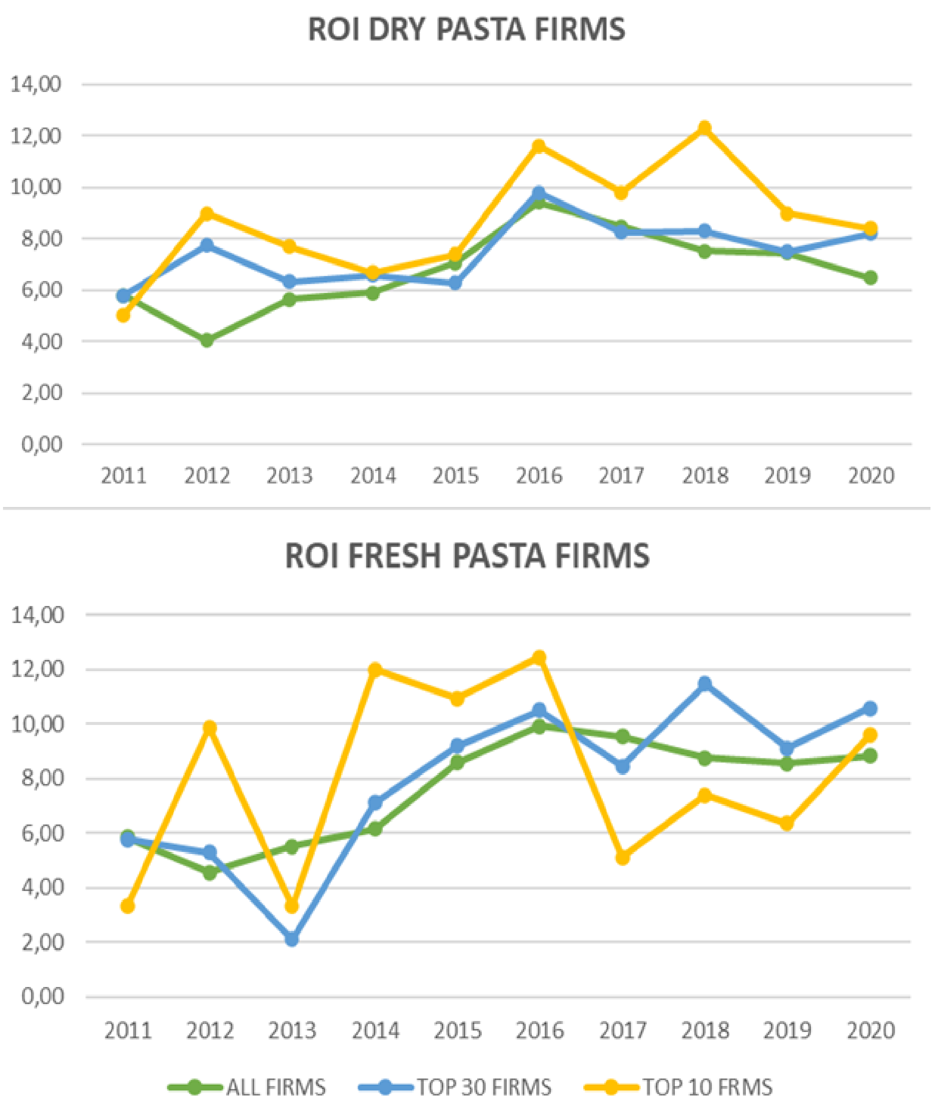

Table 16: average ROI for both dry pasta firms and fresh pasta firms from 2011 to 2020.

According to the graphs, the average ROI of the top 10 firms has always been higher than the one related to the top 30 firms and all firm from 2012 to 2020, registering a peak of 12% in 2018. On the other hand, average ROI for the top 10 fresh pasta firms is higher than the one related to the top 30 firms and all firm only in 2012 and from 2014 to 2016. This means that dry pasta firms are able to use their financial resources more efficiently with respect to the fresh pasta firms.

4.1.4 ROS

ROS (Return on sales) evaluates both the profitability and efficiency of a company, providing insight into how much profit is being produced per dollar of sales. It is calculated by dividing operative income by net sales; so, this ratio increases as revenues increase and costs decrease. Revenues can increase either by increasing sales volume or by increasing sales prices.[34]

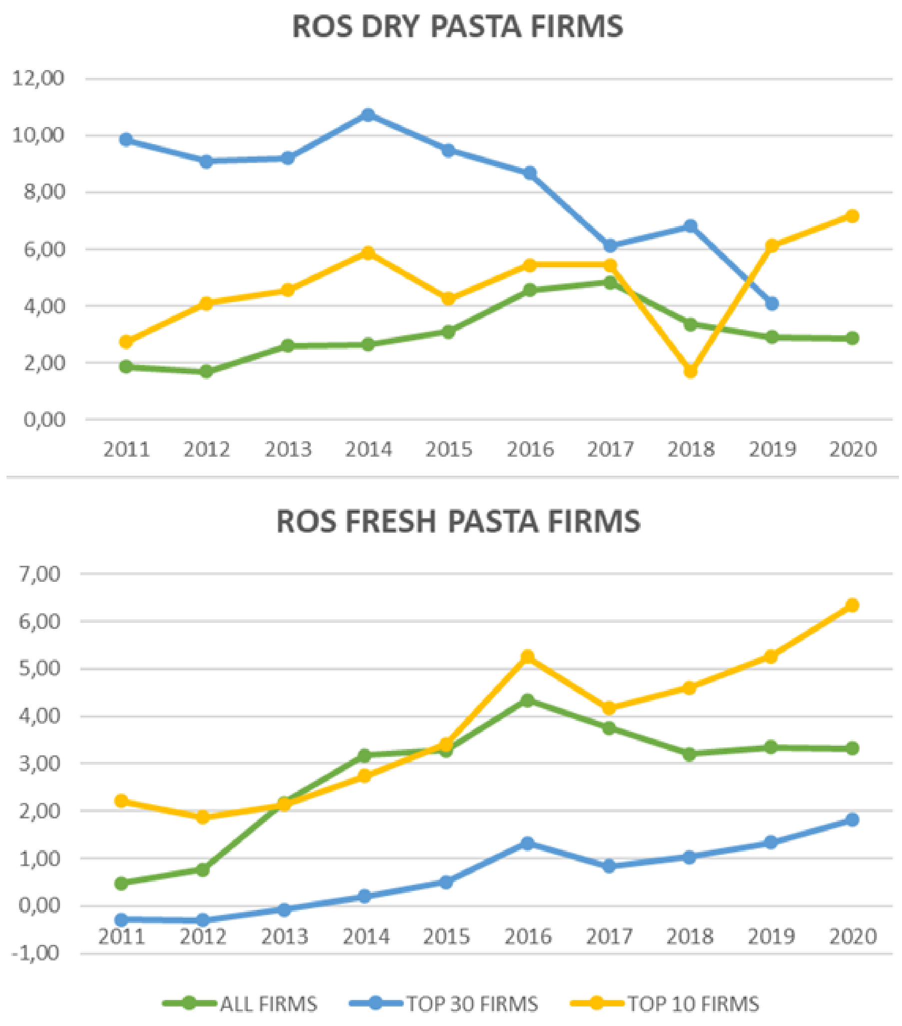

Table 17: average ROS for both dry pasta firms and fresh pasta firms from 2011 to 2020.

The graphs above show that the average ROS is around 3-4% and is slightly increasing between 2011 and 2020 for both dry pasta firms and fresh pasta firms. This means that companies in the sample are improving their efficiency. Furthermore, ROS of the top 10 dry pasta firms have a decreasing trend, passing from 10% in 2011 to 4% in 2020, while the top 10 fresh pasta firms show an increasing trend, but lower with respect to the top 30 fresh pasta firms.

[34] Investopedia, Return on Sales (ROS). https://bit.ly/3ngYT03

4.3 Productivity ratios

Productivity ratios or KPI (Key Performance Indicator) measure how efficiently a company is using its financial and non-financial resources in order to produce a given output. Therefore, they are useful to decide if modify, revise or confirm existing strategies. For the analysis of the productivity ratios, both dry pasta firms and fresh pasta firms were classified into two categories based on their sales revenues in 2020: higher than 50,000 Euro (18 dry pasta firms and 5 fresh pasta firms) and lower than 50,000 Euro (97 dry pasta firms and 96 fresh pasta firms).

4.3.1 Added Value Per Employee

Value-Added Productivity Per Employee measures the value generated on average by each employee, thus the extent to which a company is utilizing your employee's strengths. It is calculated by dividing operating profit added to salaries, wages and payroll expenses by the average number of employees. The higher the Added Value Per Employee, the better.[35]

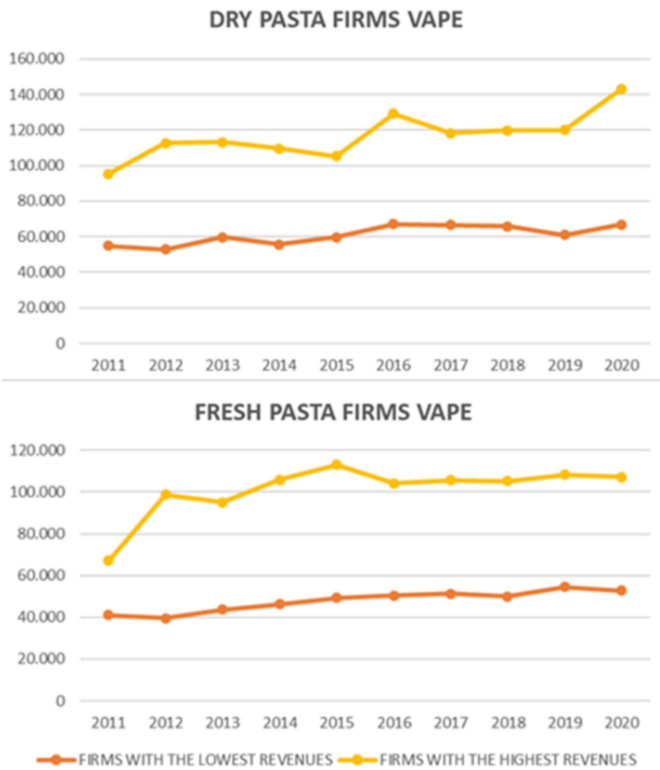

Table 18: average Value Added Per Employee for both dry pasta firms and fresh pasta firms from 2011 to 2020.

[35] MBA Skool, "Value-Added Productivity Per Employee". https://bit.ly/39RHO9I

The graph above shows that the average Value Added Per Employee, between 2011 and 2020, has an increasing trend for both dry pasta firms and fresh pasta firms within the sample, meaning that the general productivity is also increasing. In particular, firms producing dry pasta are generally bigger and generate higher revenues, therefore a higher VAPE, with respect to fresh pasta firms. Following the same logics, VAPE for dry pasta firms with the highest revenues (avg: 116.000 euro) is around 55.000 euro higher than VAPE for dry pasta firms with the lowest revenues (avg: 60.000 euro). Unsurprisingly, the same phenomenon occurs for fresh pasta firms, with a gap of 53.000 euro between the VAPE for fresh pasta firms with the highest revenues (avg: 101.000 euro) and the VAPE for fresh pasta firms with the lowest revenues (avg: 47.000 euro).

4.3.2 Turnover Per Employee

Turnover Per Employee measures the revenue generated on average by each employee, thus it is important to determine the efficiency and productivity of the average employee of a company. It is calculated by dividing sales revenues by the average number of employees. The higher the Turnover Per Employee, the better.[36]

[36] Corporate Finance Institute, "Revenue per Employee". https://bit.ly/3A65Jgf

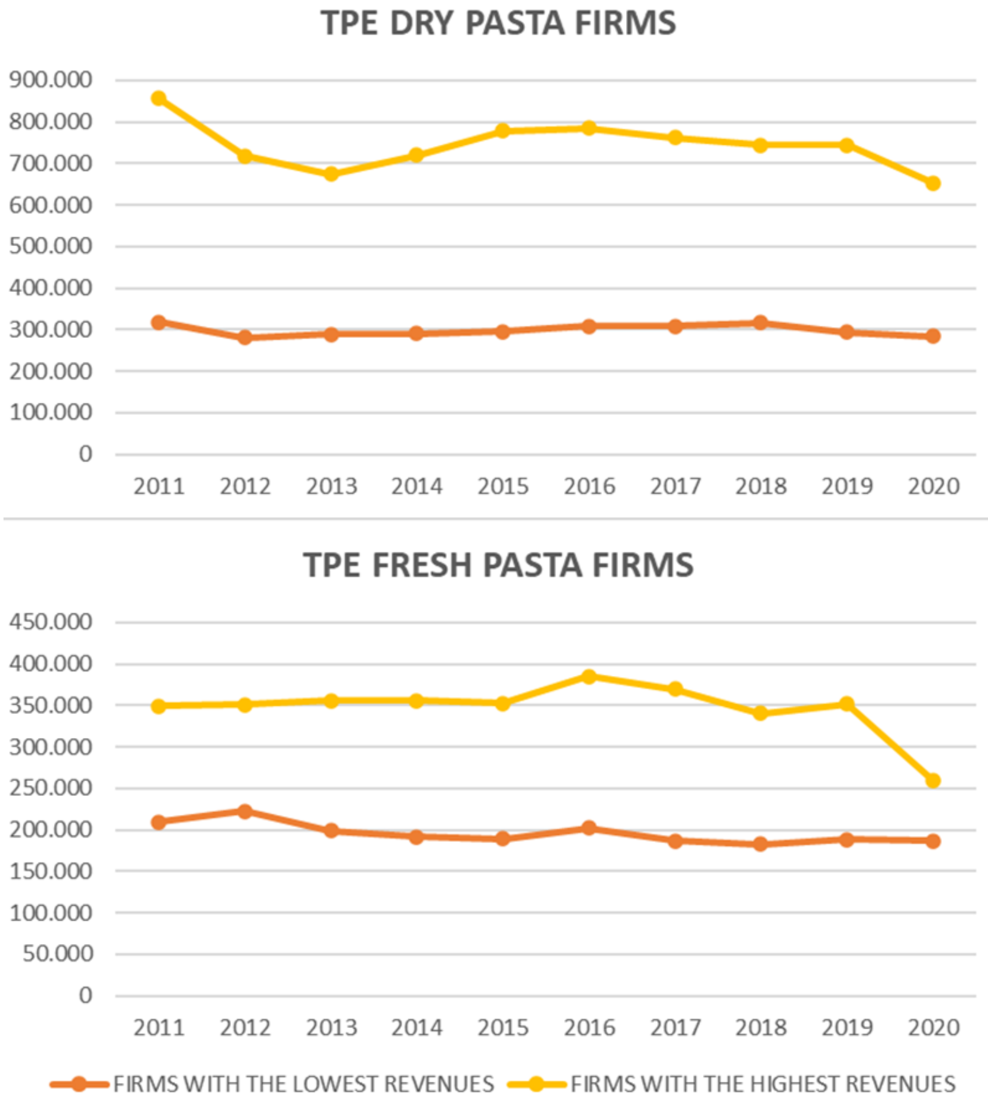

Table 19: average Turnover Per Employee for both dry pasta firms and fresh pasta firms from 2011 to 2020.

According to the graphs, the average Turnover Per Employee, between 2011 and 2020, has an almost constant trend for both dry pasta firms and fresh pasta firms, even if TPE of firms with the highest revenues registered a decrease from 2019. Nevertheless, all the values are positive, meaning that companies are using its human resources wisely by forming very productive workers. In particular, firms producing dry pasta generate higher revenues, therefore a higher TPE, with respect to fresh pasta firms. Following the same logics, TPE for dry pasta firms with the highest revenues (avg: 743.000 euro) is around 445.000 euro higher than TPE for dry pasta firms with the lowest revenues (avg: 298.000 euro). Unsurprisingly, the same phenomenon occurs for fresh pasta firms, with a gap of 151.000 euro between the TPE for fresh pasta firms with the highest revenues (avg:

347.000 euro) and the TPE for fresh pasta firms with the lowest revenues (avg: 195.000 euro).

4.4 Average growth rate

The annual average growth rate has been calculated as the difference between the current average revenues and the previous year's one, divided by the previous year's average revenues. For this analysis as well, both dry pasta firms and fresh pasta firms were classified into two categories based on their sales revenues in 2020: higher than 50,000 Euro (18 dry pasta firms and 5 fresh pasta firms) and lower than 50,000 Euro (97 dry pasta firms and 96 fresh pasta firms).

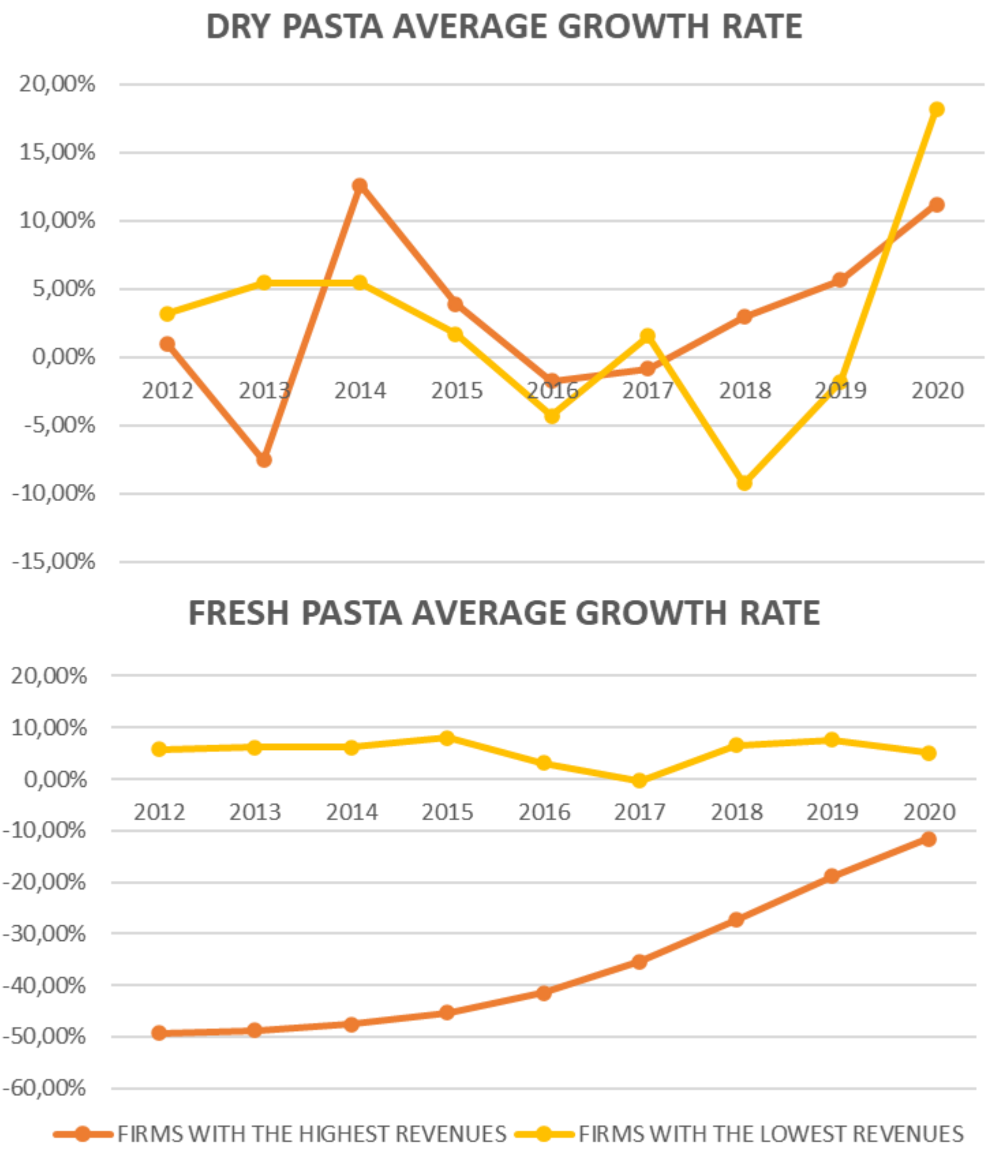

Table 20: average growth rate for both dry pasta firms and fresh pasta firms from 2011 to 2020.

As can be seen in the first graph, dry pasta firms with the highest revenues follow a similar trend with respect to the ones with lowest revenues. In particular, both categories increased their growth rate in the last years: dry firms generating higher turnover passed from -0,87% in 2017 to +11.23% in 2020 whereas dry firms generating lower turnover boosted from -9.27% in 2018 to +18.20% in 2020. According to the second graph, fresh pasta firms with the highest revenues have a constant trend with the average growth rate fluctuating between 0% and 8%. In contrast, fresh pasta firms with the lowest revenues follows an increasing trend, even if values remain below 0 (from -50% in 2012 to -10% in 2020).

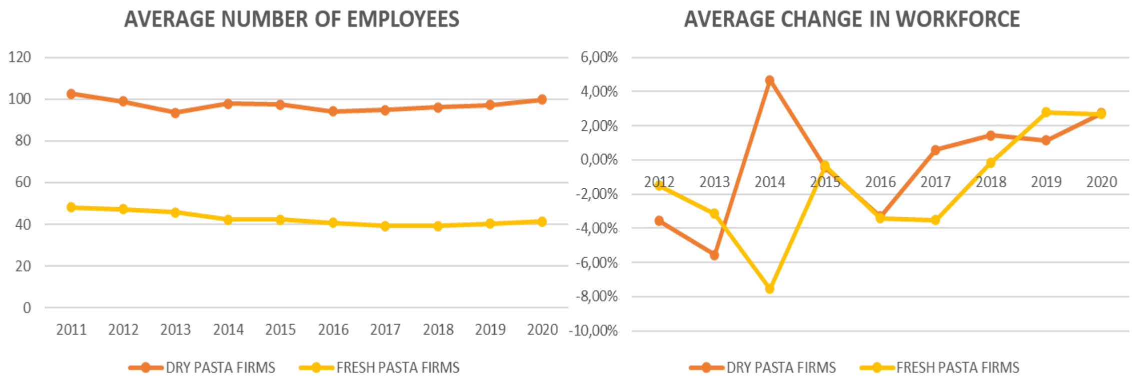

Table 21: average number of employees for both dry pasta firms and fresh pasta firms from 2011 to 2020.

It is also interesting to analyze the workforce in this sector. According to the graphs, dry pasta firms and fresh pasta firms within the sample show just minimal changes in the number of employees during the period 2011-2020. Unsurprisingly, dry pasta firms have an average of 100 employees, whereas fresh pasta firms, which are generally smaller, count an average of 50 employees.

CONCLUSIONS

Italy is a worldwide reference point for production, consumption and export of dry pasta and fresh pasta. This paper has shown that this position has been achieved through a relentless development of this sector over the centuries. In particular, the high concentration of pasta makers throughout the national territory has fostered competitiveness in the international markets. Furthermore, the entire wheat supply chain in Italy, directly linked to the pasta production, is particularly strategic, but also limited by both demand uncertainty and structural problems. The pasta market is at a mature stage, therefore companies mainly compete on price: consequently, as emerged from the analysis of a sample of firms, profit margins are generally low, with the exception of the largest firms. Lastly, the industry is expected to grow in the next years, also thanks to the successful launch of new products, which have been able to combine tradition and innovation.

APPENDIX

Company name	Registered office address	Registered office address - Town	Registered office address - Region
BARILLA G. E R. FRATELLI - SOCIETA' PER AZIONI	VIA MANTOVA, 166	Parma	Emilia-Romagna
PASTIFICIO RANA S.P.A.	VIA ANTONIO PACINOTTI, 25	San Giovanni Lupatoto	Veneto
F.LLI DE CECCO DI FILIPPO - FARA SAN MARTINO - S.P.A.	VIA FILIPPO DE CECCO	Fara San Martino	Abruzzo
F. DIVELLA S.P.A.	LGO DOMENICO DIVELLA, 1	Rutigliano	Puglia
PASTIFICIO LUCIO GAROFALO S.P.A	VIA DEI PASTAI, 42	Gragnano	Campania
PASTA ZARA S.P.A.	VIA CASTELLANA, 34	Riese Pio X	Veneto
DE MATTEIS AGROALIMENTARE S.P.A.	VIA AMORETTA,6/E - PARCO S.NICOLA,	Avellino	Campania
LA MOLISANA - S.P.A.	CNT COLLE DELLE API, 100/A	Campobasso	Molise
BERTAGNI 1882 S.P.A.	LOC CAMPAGNOLE, 1	Avio	Trentino-Alto Adige
RUMMO S.P.A. - SOCIETA' PER AZIONI	VIA DEI GRANDI MAESTRI PASTAI, 1	Benevento	Campania
PASTIFICIO DI MARTINO GAETANO & F.LLI S.P.A.	VIA CASTELLAMMARE, 82	Gragnano	Campania
ALDINO S.R.L.	VIA EUGENIO MONTALE, 21/23	Casaleone	Veneto
MOLINO E PASTIFICIO DE CECCO S.P.A. - PESCARA	VIA MISTICONI, 5	Pescara	Abruzzo
PASTIFICIO GUIDO FERRARA S.P.A.	ZIN INDUSTR.LE POLVICA DI NOLA	Nola	Campania
PASTA ZARA 2 S.P.A.	STR DELLE SALINE	Muggia	Friuli-Venezia Giulia
PASTIFICIO ATTILIO MASTROMAURO - GRANORO SOCIETA' A RESPONSABILI- TA' LIMITATA	STP 231 KM.35,100	Corato	Puglia
PASTIFICIO ANTONIO PALLANTE S.R.L.	STS SANNITICA KM.22,200, SC	Capodrise	Campania
VOLTAN S.P.A.	VIA DOSA, 24	Martellago	Veneto
LIGUORI PASTIFICIO DAL 1820 S.P.A.	VIA DEI PASTAI, 50	Gragnano	Campania
SURGITAL S.P.A	VIA BASTIA, 16/1	Conselice	Emilia-Romagna
VALDIGRANO DI FLAVIO PAGANI S.R.L.	VIA PAOLO BORSELLINO, 35/37	Rovato	Lombardia
GRUPPO FINI S.P.A.	VIA CONFINE, 1583	Ravarino	Emilia-Romagna
PASTIFICIO F.LLI CELLINO S.P.A.	CIRRAS	Santa Giusta	Sardegna
PASTIFICIO MENNUCCI SOCIETA' PER AZIONI OPPURE: PASTIFICIO MENNUCCI S.P.A.	VIA EMANUELE BALESTRIERI, 236	Lucca	Toscana
PASTIFICIO FELICETTI S.P.A.	VIA DON LORENZO FELICETTI, 9	Predazzo	Trentino-Alto Adige
IL PASTAIO S.R.L.	VIA DEL LAVORO, 3	Berlingo	Lombardia
PASTA BERRUTO S.P.A.	VIA SOMMARIVA BOSCO, 139/141	Carmagnola	Piemonte
REY PASTIFICIO S.R.L.	REG SAN VINCENZO, 1	San Damiano d'Asti	Piemonte
RAVIOLIFICIO LO SCOIATTOLO S.P.A.	VIA PRIVATA MARIA TERESA, 7	Milano	Lombardia
IL PASTAIO DI MAFFEI SAVINO & C. S.R.L.	VIA TRATTATI DI MAASTRICHT, 51	Barletta	Puglia
PASTA LENSI S.R.L.	VIA DON LUIGI STURZO, 21/23	Verolanuova	Lombardia
DE ANGELIS FOOD S.R.L.	VIA OLANDA, 2	Villafranca di Verona	Veneto
GRANDI PASTAI ITALIANI S.P.A.	VIA SANT'ORSOLA, 2/A	Correggio	Emilia-Romagna
INDUSTRIA ALIMENTARE FERRARO S.R.L.	VIA BONAGGE, 26/A	Mussolente	Veneto
BIA S.P.A.	STS 16 ADRIATICA, 1/A	Argenta	Emilia-Romagna
GEA INDUSTRIE ALIMENTARI S.R.L. SIGLABILE GEA S.R.L.	VIA GADAMES, 128	Milano	Lombardia
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.	VIA GIOVANNI FALCONE, 39	Mazara del Vallo	Sicilia
PASTIFICIO FAZION S.P.A.	VIA EUGENIO MONTALE, 21	Casaleone	Veneto
PASTIFICIO DE SORTIS SRL	VIA GERMANIA, SNC	Pietragalla	Basilicata
PASTIFICIO RISCOSSA F.LLI MASTROMAURO S.P.A.	STP 231 EX S.S. 98, KM48+360	Corato	Puglia
PASTICCERIA LEONARDO - S.R.L.	VIA PROVINCIALE DI MERCATALE, 258	Vinci	Toscana
CIEMME ALIMENTARI S.R.L.	VIA FOGGIA, 28/30	Barletta	Puglia
ITALGNOCCHI S.P.A.	VIA SANT'ORSOLA, 2/A	Correggio	Emilia-Romagna
GR.A.M.M. GRUPPO ALIMENTARE MEDITERRANEO MILO S.R.L.	VIA TEOLOGO VALENTE, N.C.	Bitonto	Puglia
BUONA COMPAGNIA GOURMET S.P.A.	VIA CESARE CANTU', 1	Milano	Lombardia
ALBERTO POIATTI S.P.A.	LOC LUMINARIA, SN	Santa Venerina	Sicilia
A.S.T.R.A. BIO SRL	STP 9 KM.3,135, CM	Casteldidone	Lombardia
DELVERDE INDUSTRIE ALIMENTARI S.P.A.	INDUSTRIALE, SN	Fara San Martino	Abruzzo

GHIGI 1870 S.P.A.	VIA GIOVANNI FALCONE, 188	San Clemente	Emilia-Romagna
SGAMBARO SPA	VIA CHIOGGIA, 11/A	Castello di Godego	Veneto
MASTER S.R.L.	VIA DEL LAVORO, 12	Vedelago	Veneto
ANTICA PASTERIA S.R.L.	CSO EUROPA, 9	Lainate	Lombardia
CASA DEI CAPPELLETTI - S.R.L.	STR DRUENTO, 270	Venaria Reale	Piemonte
PASTIFICIO FABIANELLI S.P.A.	VIA SANT'ANTONINO, 107	Castiglion Fiorentino	Toscana
FARMO S.P.A.	VIA FETONTE, 12	Milano	Lombardia
PASTIFICIO LA MOLISANA S.P.A.	VIA NOLA, 62	Cicciano	Campania
S.I.P.A. INTERNATIONAL S.R.L.	VIA FERRARI, 72	Campobasso	Molise
MOLINO E PASTIFICIO ANTONIO AMATO S.R.L.	VIA CASTELLAMMARE, 82	Gragnano	Campania
DALLA COSTA ALIMENTARE S.R.L.	VIA DELLA FORNACE, 131	Resana	Veneto
PASTIFICIO DI CHIAVENNA S.R.L.	VIA NAZIONALE, 4	Prata Camportaccio	Lombardia
GASTRONOMIA PICCININI - SAPORI DELLA COLLINA S.R.L.	VIA CARNIONE, 12/A	Baiso	Emilia-Romagna
PASTIFICIO AVESANI S.R.L.	VIA PIETRO VASSANELLI, 19/A	Bussolengo	Veneto
PASTAI IN BRIANZA S.R.L.	VIA MARCO BIAGI, 46	Lomagna	Lombardia
PASTIFICIO OLEIFICIO MANGIMIFICIO BIANCONI - S.P.A.	LOC BASTARDO	Giano dell'Umbria	Umbria
ZINI PRODOTTI ALIMENTARI S.P.A.	VIA DELLA LIBERTA', 36	Cesano Boscone	Lombardia
FONTANETO S.R.L.	LOC MARCO MOLINO, 20	Fontaneto d'Agogna	Piemonte
PASTIFICIO MEDITERRANEA S.R.L.	VIA VINCENZO VELA, 10	Bologna	Emilia-Romagna
PASTIFICIO ANDALINI S.P.A.	VIA MARTIRI DI BELFIORE, 13	Cento	Emilia-Romagna
PAGANI INDUSTRIE ALIMENTARI S.P.A.	VIA FIORBELLINA	Vimercate	Lombardia
FAVELLATO SOCIETA' A RESPONSABILITA' LIMITATA	1	Isernia	Molise
RUSTICHELLA D'ABRUZZO S.P.A.	PZA DEI VESTINI, 20	Pianella	Abruzzo
ITALFOOD ALA S.R.L.	VIA DELL'ARTIGIANATO, 10 11/12	Ala	Trentino-Alto Adige
PASTIFICIO LE MANTOVANELLE - S.R.L.	VIA ROPPI DI MEZZO, 1	Castel d'Ario	Lombardia
DALI' S.P.A.	VIA DEGLI ARTIGIANI, 3	Crocetta del Montello	Veneto
GIORDANI - S.P.A.	VIA DELLE INDUSTRIE, 50	Marcon	Veneto
PASTIFICIO GALLO NATALE & F.LLI SOCIETA' A RESPONSABILITA' LIMITATA O IN FORMA ABBREVIATA PASTIFICIO GALLO NATALE & F.LLI S.R.L. OPPURE OPPURE PASTIFICIO GALLO S.R.L.	VIA ALBERT EINSTEIN, 3	Mazara del Vallo	Sicilia
PASTA CASTIGLIONI S.R.L.	VIA PRIMO LEVI, 2	Sozzago	Piemonte
PASTIFICIO RIGO S.P.A.	VIA ASOLANA, 28/L	Treviso	Veneto
BRE.MA. GROUP S.R.L.	VIA FORNACE, 20	San Pietro in Gu	Veneto
INDUSTRIA ALIMENTARE COLAVITA - IND.AL.CO. - SOCIETA' PER AZIONI	CNT IONTAPEDE, 11-12	Ripalimosani	Molise
ENTROTERRA - SOCIETA' COOPERATIVA	LOC TORRE DEL PARCO, SNC	Camerino	Marche
GIGLIO SPECIALITA' PASTE ALIMENTARI S.R.L.	STR SANTI FORTUNATO E LAZZARO, 105	Bassano del Grappa	Veneto
BERTONCELLO S.R.L.	VIA MONTE TOMBA, 20	Romano d'Ezzelino	Veneto
PASTA & COMPANY SOCIETA' A RESPONSABILITA' LIMITATA	CSO DUCA DEGLI ABRUZZI, 2	Torino	Piemonte
PASTIFICIO CERATI SRL	VIA ISONZO, 3	Limbiate	Lombardia
LA MEDITERRANEA SRL UNIPERSONALE	VLE ORTLES, 54/A	Milano	Lombardia
DOMENICO PAONE S.P.A.	VIA BARBERINI, 47	Roma	Lazio
REGGIANA GOURMET S.R.L.	VIA GALILEO FERRARIS, 3	Bagnolo in Piano	Emilia-Romagna
PASTIFICIO DAVENA S.R.L.	VIA SAN DOMENICO, 62/64	Brusaporto	Lombardia
CIPRIANI INDUSTRIA SRL	SES SAN MARCO, 1323	Venezia	Veneto
P.A.P. S.R.L.	VIA CANNELONGA ZONA P.I.P.	San Severo	Puglia
STEMARPAST S.R.L.	LUNGOTORRENTE SECCA, 3/H	Genova	Liguria
PASTIFICIO VALLEORO S.R.L.	VIA PAPA GIOVANNI XXIII, 103	Trani	Puglia
LA FABBRICA DELLA PASTA DI GRAGNANO S.R.L.	VLE SAN FRANCESCO, 30	Gragnano	Campania
ANTICA JULIA S.R.L.	VIA RAFFAELLO, SNC	Assisi	Umbria
LA SORGENTE S.R.L. PRODOTTI ALIMENTARI PIU BREVEMENTE LA SORGENTE S.R.L.	VIA ALDO MORO, 6	Pessano con Bornago	Lombardia
LABORATORIO ALIMENTARE CECCHIN ANDREA E CARLO SRL	VIA MAGLIO, 23	Galliera Veneta	Veneto
SOTTOLESTELLE SRL	STP 45 BIS KM.12,000, SN	San Giovanni Rotondo	Puglia

MICHELIS EGIDIO SRL	VIA VIGEVANO, 20	Mondovì	Piemonte
PASTIFICIO DI BARI TARALL'ORO S.R.L.	ZONA PIP SS 100 KM 33 LOTTO, 13/15	Sammichele di Bari	Puglia
ESSEDUE ALIMENTARE S.R.L.	VIA CESARE CANTU', 1	Milano	Lombardia
MYLENA TORTELLINI SRL	VIA DEL LAVORO, 2	Caravaggio	Lombardia
PASTIFICIO LA SOVRANA DI PUGLIA - S.R.L.	VIA CERIGNOLA KM.0,800	Canosa di Puglia	Puglia
P.A.C. S.R.L.	VIA A. VOLTA, C.DA PONTICELLI, 1	Melfi	Basilicata
PASTIFICIO NOVARESE MARIO S.R.L.	VIA DEI CASTAGNI, 13	Verona	Veneto
CERELIA RIVOLI S.R.L.	SIT NORD, STR. DODICESIMA 4,	Rivoli	Piemonte
PASTIFICIO ARTIGIANO CAV. GIUSEPPE COCCO S.R.L.	ZONA ARTIGIANALE, N. 15	Fara San Martino	Abruzzo
PASTIFICIO GENTILE S.R.L.	VIA CASTELLO, 12	Gragnano	Campania
NUOVA TORT UOVO S.R.L.	VIA PASQUALE ALECCE, 13	Roma	Lazio
LA PASTA ARTIGIANALE SOCIETA' A RESPONSABILITA' LIMITATA	CSO DUCA DEGLI ABRUZZI, 2	Torino	Piemonte
TESA S.R.L.	VIA AGOSTINO CAMPI, 10	Foligno	Umbria
TORTELLINI SOVERINI S.R.L.	VIA DUE PORTONI, 3	Bologna	Emilia-Romagna
TRADIZIONI PADANE S.R.L.	VIA BRESCIA, 50	Gottolengo	Lombardia
PASTIFICIO DIBENEDETTO SOCIETA' A RESPONSABILITA' LIMITATA	VIA MARTIN LUTHER KING, 52	Altamura	Puglia
PASTIFICIO DEI CAMPI S.P.A.	VIA DEI CAMPI, 50	Gragnano	Campania
PASTIFICIO TEMPORIN SRL - IN SIGLA PASTE SRL	VIA DELL'INDUSTRIA, 30	Sommacampagna	Veneto
LA PASTA DI CELESTINO S.R.L.	VIA PRADA, 2/8	Vignola	Emilia-Romagna
PASTIFICIO GAETARELLI S.R.L.	VIA ENRICO FERMI	Salò	Lombardia
TOSCANITA' S.R.L.	VIA PIER CAPPONI, 99	Firenze	Toscana
MAZZI ORESTE E FIGLI S.R.L.	VIA BETLEMME, 3	Sona	Veneto
ARTIGIANI PASTAI BONDI SRL	VIA MODENA, 92	Ferrara	Emilia-Romagna
ANTICA PASTA S.R.L.	VIA LIMITI SUD, 92	Greccio	Lazio
PASTIFICIO FRATELLI DE LUCA S.R.L.	VIA CORRADINO D'ASCANIO, 6	Chieti	Abruzzo
PREMIATO PASTIFICIO AFELTRA S.R.L. SIGLABILE P.P.A. S.R.L.	STS 231, 2	Monticello d'Alba	Piemonte
PASTA FRESCA ROSSI S.R.L.	VLE DEL MERCATO, 79	Modena	Emilia-Romagna
ANTICO PASTIFICIO MORELLI 1860 - S.R.L.	VIA SAN FRANCESCO, 8	Montopoli in Val d'Arno	Toscana
PASTIFICIO ZAFFIRI S.R.L.	VLE SAN DOMENICO	Sora	Lazio
PASTIFICIO COSSU ANTONIO S.R.L.	ZONA ARTIGIANALE PIP, SN	Sardegna	Sardegna
POKER SRL DI C. & B.	VIA SPALLANZANI, 28	Albano Sant'Alessandro	Lombardia
PASTIFICIO PIRRO S.R.L.	ZIN INDUSTRIALE SS106, SNC	Cosenza	Calabria
LA CASA DEL GRANO - S.R.L.	VIA CETTOLINI, 52	Elmas	Sardegna
PASTIFICIO REGAL S.R.L.	LOC SCERNE, SNC	Pineto	Abruzzo
IL TROFIAIO S.R.L.	VIA CECCARDO ROCCATAGLIATA CECCARDI	Genova	Liguria
LA LANTERNA S.R.L.	VIA VENTOTENE, 4	San Giovanni in Persiceto	Emilia-Romagna
PASTIFICIO FRANCESCO ABATIANNI S.R.L.	ZONA ARTIGIANALE LOTTI 16 E 13	Corigliano d'Otranto	Puglia
SUBLIMIS S.R.L.	PZA ELEONORA DUSE, 2	Milano	Lombardia
PASTIFICIO DEI PRAI S.R.L.	VIA DELL'INDUSTRIA, 18	San Martino di Lupari	Veneto
FRATELLI BIANCO S.R.L.	VIA CURTIL, 3	Frassino	Piemonte
ANTICO PASTIFICIO UMBRO S.R.L.	VIA LAGO DI FUSARO, 9	Foligno	Umbria
POGGIOLINI S.R.L.	LOC SAN ZENO, 21/3	Arezzo	Toscana
PASTAI GRAGNANESI SOCIETA' COOPERATIVA	VIA GIOVANNI DELLA ROCCA, 20	Gragnano	Campania
NUOVO PASTIFICIO VIETRI S.P.A.	LOC AREA PIP LEONE, 5/6/7	Avellino	Campania
SPECIALITA' EMILIANE S.R.L.	VIA BOLZANO, 1	Calendasco	Emilia-Romagna
PICCHIOTTI PASTA FRESCA S.R.L.	VIA PROVINCIALE DI MERCATALE, 108/D	Vinci	Toscana
PASTIFICIO PLIN S.R.L.	VIA CASCINE, 11	Villanova d'Albenga	Liguria
PASTIFICIO STROPPA S.R.L.	VIA SARDEGNA, 38/42	Pieve Emanuele	Lombardia
NONNA RINA S.R.L.	VIA ANTONIO MEUCCI, 4	Costabissara	Veneto
D'ANDREA GIOVANNI S.R.L.	VIA LORETO, 22	Recanati	Marche

LA MONFORTINA S.R.L.	LOC SANT'ANNA, 63	Monforte d'Alba	Piemonte
COMMERCIALE OASI DEL TORTELLINO SOCIETA' A RESPONSABILITA' LIMITATA	VIA DEI TULIPANI, 8/B	Albano Laziale	Lazio
REAL PASTA SRL	VIA OMOBONO TENNI, 84 - 84/A	Reggio nell'Emilia	Emilia-Romagna
MZ ART FOOD SRL	VIA DON ANTONIO REGGIANI, 10	Goito	Lombardia
COMPAGNIA DELLA PASTA S.R.L.	VIA TORRICELLA, 7	Poppi	Toscana
INDUSTRIA ALIMENTARE CARAZITA S.R.L.	VLE ROMA, 57 - 59-SN	Spinazzola	Puglia
INDUSTRIE ALIMENTARI PALLANTE S.R.L.	VIA MANDRIZZO, SNC	Fisciano	Campania
SFOGLIA RINA S.R.L.	VIA ROMA, 57/C	Zola Predosa	Emilia-Romagna
Ç TORTELLINO S.R.L.	VIA VELLETRI, 19	Albano Laziale	Lazio
L'ARTE DELLA PASTA S.R.L.	VIA COLTRA, 44	Albosaggia	Lombardia
PASTIFICIO MARTIMUCCI SOCIETA' A RESPONSABILITA' LIMITATA	VIA DELLA RUCOLA, 26	Altamura	Puglia
PASTIFICIO MARELLA S.R.L.	STP PUTIGNANO KM.0,300, SNC	Gioia del Colle	Puglia
PASTIFICIO L'ANTICA MOLA S.R.L.	VIA LA MOLA, 191	Supino	Lazio
MAPO S.R.L.	VIA DEL PANTANACCIO, SNC	Latina	Lazio
FILOTEA EXPERIENCE SOCIETA' COOPERATIVA	VIA I MAGGIO, 56	Ancona	Marche
LA CAMPOFILONE SRL - SOCIETA' AGRICOLA	LOC FICIARA', 27	Campofilone	Marche
PAIP FIRENZE SRL	VIA TORTA, 52	Sesto Fiorentino	Toscana
GRUPPO SOLDANO S.R.L.	VLE CADUTI DI NASSIRIYA, SNC	Limbadi	Calabria
TORTELLINI DI VALEGGIO SUL MINCIO SRL	VIA SALA, 30	Valeggio sul Mincio	Veneto
OASI DEL TORTELLINO SOCIETA' A RESPONSABILITA' LIMITATA	VIA DEI TULIPANI, 8/B	Albano Laziale	Lazio
PASTIFICIO MARCELLO S.R.L.	VIA DEL TECCHIONE, 48/C	San Giuliano Milanese	Lombardia
ANTICHI SAPORI S.R.L.	VIA GALILEO GALILEI, 13	Valeggio sul Mincio	Veneto
GENUITALY PRODUZIONE PASTA FRESCA S.R.L.	VIA PUGLIA, 18	San Giorgio di Mantova	Lombardia
MARCOZZI S.R.L.	CNT VALDASO, 47/A	Campofilone	Marche
F.LLI PORRO S.R.L.	VIA NAZIONALE, 48	Pornassio	Liguria
LA BOLOGNESE S.R.L.	VIA GIOVANNI PESCE, 1	Paderno Dugnano	Lombardia
PASTIFICIO BENEDETTO CAVALIERI S.R.L.	VIA GIUSEPPE GARIBALDI, 68	Maglie	Puglia
PASTIFICIO ZANINI S.R.L.	VIA GIUSEPPE MASSARENTI, 4	Modena	Emilia-Romagna
IL TORTELLINO BOLOGNESE S.R.L.	VIA FRATELLI BANDIERA, 30	Preganziol	Veneto
PASTIFICIO ARTUSI S.R.L.	VLE DELL'ARTIGIANATO, 60	Casalserugo	Veneto
PASTIFICIO PALANDRI S.R.L.	VIA BONELLINA, 154	Pistoia	Toscana
LA ROMAGNA S.R.L.	VIA ANTONIO DA SANGALLO, SNC	Foligno	Umbria
PASTA & CO. S.R.L.	VIA LOMBARDIA, 1/5	Bussolengo	Veneto
ANTICO PASTIFICIO ROSETANO S.R.L.	VIA SALARA, 9	Roseto degli Abruzzi	Abruzzo
ANTICHI SAPORI S.R.L.	VIA SCIASCIA, 19	Cingoli	Marche
PASTIFICIO VALLEBELBO S.R.L.	CSO IV NOVEMBRE, 49	Santo Stefano Belbo	Piemonte
BRUNO S.R.L.	VIA ABRUZZO, Z.I.	Acquaviva delle Fonti	Puglia
PASTIFICIO BATTAGELLO S.R.L.	VIA BALEGANTE, 5	Riese Pio X	Veneto
PASTIFICIO DESTEFANO S.R.L.	VIA G.CERESA ROSSETTO, 14	Bollengo	Piemonte
PASTIFICIO PIGI S.R.L.	VIA BALILLA, 88	Romano di Lombardia	Lombardia
PASTIFICIO ARTIGIANALE LEONARDO CARASSAI S.R.L.	VIA XX SETTEMBRE, 38	Campofilone	Marche
PASTIFICIO BARBIERI S.R.L.	VIA IV NOVEMBRE, 2	Correggio	Emilia-Romagna
I CUCINIERI S.R.L.	VIA PIETRO CELLA, 80	Piacenza	Emilia-Romagna
PASTIFICIO BATTISTINI S.R.L.	VIA LEVICO, 33/35	Cervia	Emilia-Romagna
ANTICHE TRADIZIONI DI GRAGNANO S.R.L.	VIA SALETTA, 9	Gragnano	Campania
PASTIFICIO FRACARO S.R.L.	VIA FRIULI, 12	Arzignano	Veneto
RAVIOLIFICIO LOMBARDINI S.R.L.	VIA GIOVANNI PASCOLI, 2	Canonica d'Adda	Lombardia
PASTIFICIO PAVONI S.R.L.	VLE FORO BOARIO, 61	Tolentino	Marche
PASTIFICIO OROBICO S.R.L.	VIA DEL CONVENTO, 37	San Paolo d'Argon	Lombardia
M & C FABBRICA ALIMENTARE S.R.L.	INDUSTRIALE TITO SCALO, SNC	Tito	Basilicata

PASTIFICIO MENNILLI RENATO S.R.L.	VIA SANTA CROCE 1 VICO, 2	Casoria	Campania
ALBIO S.R.L.	VIA DON LUIGI POSOCCO, 6	Vidor	Veneto
IL PASTIFICIO LANGHE S.R.L.	STR VALLE TALLORIA, 35	Grinzane Cavour	Piemonte
SPINOSI SRL	VIA XXV APRILE, 21	Campofilone	Marche
PASTIFICIO BOLOGNESE S.R.L.	VIA SAN SECONDO, 69	Torino	Piemonte
PASTIFICIO F.LLI SETARO S.R.L.	VIA GIUSEPPE MAZZINI, 47	Torre Annunziata	Campania
ANTICA PASTA MEDITERRANEA S.R.L.	CSO ITALIA, 199	Villaricca	Campania
ANTONELLI FOOD SRL	VIA DOMANICO, SNC	Roma	Lazio
I CAGLIARITANI QUI SARDEGNA S.R.L.	VIA ALTIERO SPINELLI	Settimo San Pietro	Sardegna
PASTIFICIO MONTI FRANCESCO S.R.L.	VIA FERDINANDO SANTI, 17	Empoli	Toscana
BONTART S.R.L.	VIA FIESCHI, 8/11	Genova	Liguria
GRUPPO ALIMENTARE ITALIANO S.R.L.S.	PZA IMMACOLATA DI MARMO, 4	Messina	Sicilia
PASTIFICIO AL RE DEL TORTELLINO S.R.L.	PZA SAN ROCCO, 3/N	Valeggio sul Mincio	Veneto
PASTIFICIO GAETANO FAELLA S.R.L.	PZA GUGLIELMO MARCONI, 13	Gragnano	Campania
PASITAL S.R.L.	VIA GUGLIELMO MARCONI, 2	Montecalvo in Foglia	Marche
PASTIFICIO PALMERINI SRL	VIA MASINI, 38/B	Camaiore	Toscana
PASTIFICIO SAN MARCO S.R.L.	VIA DELLE MONDINE, 8	Montale	Toscana
SPECIALITA' REGIONALI S.R.L.	VIA ODERISI DA GUBBIO, 216	Roma	Lazio

SITOGRAPHY

[1] Treccani, "Pasta" (2006). https://bit.ly/3ngzRhu

[2] National Geographic, "The Twisted History of Pasta". https://on.natgeo.com/3A5CpXi

[3] https://en.wikipedia.org/wiki/Pasta

[4] Riccardo Borgacci, "Coltivazione del frumento - grano - Triticum e produzione della farina" (July 2019). https://bit.ly/3QKdIpv

[5] https://it.wikipedia.org/wiki/Triticum

[6] ReD Academy, "La classificazione della pasta: fresca, secca e all'uovo". https://bit.ly/3ylS8jH

[7] Decreto del Presidente della Repubblica, n. 187 (09/02/2001). https://bit.ly/3xYfMBo

[8] Pastai Italiani (21/02/2020). https://bit.ly/3A4dmns

[9] Scheda progetto ISMEA 10.2: "La competitività della filiera del frumento duro." (December 2018). file:///C:/Users/Utente/Downloads/Competivit___filiera_frumento_duro_2%20(4).pdf

[10] Statista, "Production of wheat in Italy from 2016 to 2019, by type." (18/01/2022). https://www.statista.com/statistics/784052/production-of-wheat-by-type-in-italy/

[11] Lucanella s.r.l, "Descrizione del processo produttivo della Pasta Fresca e Pasta Secca di semola di grano duro". https://bit.ly/3xZxxAe

[12] L'Espresso Food and Wine, "Earth Day, la pasta amica dell'ambiente" (05/04/2022). https://bit.ly/3IwXGeV

[13] L'analisi di Euler Hermes-Il settore della pasta (March 2020). EH_Study_PASTA2020.pdf

[14] Cerved, Analisi di settore: PASTA (April 2019). Pasta_2019.pdf

[15] ItalianFOOD.net, "World Pasta Day 2019: Italy lighting up the way". https://bit.ly/3Onl00x

[16] Franco Antoniazzi, "Storci convention in Egypt for pasta technology" (April 2018). https://bit.ly/3nokAeo

[17] https://it.wikipedia.org/wiki/Barilla

[18] https://it.wikipedia.org/wiki/De_Cecco_(azienda)

[19] https://it.wikipedia.org/wiki/Pastificio_Lucio_Garofalo

[20] Prometeia, Analisi di settore: PASTA (May 2014). Prometeia_pasta_2008_07.pdf

[21] SumUp, "Mergers & Acquisitions (M&A) - Cosa sono le M&A?". https://sumup.it/fatture/dizionario/mergers-and-acquisitions/

[22] SkyTG24, "Barilla acquisisce stabilimento Pasta Zara a Muggia per 118 milioni." (06/10/2020). https://bit.ly/3P15qrz

[23] Food Insider, "Pasta, viaggio nella categoria regina dell'alimentare." (14/07/2017). https://bit.ly/3P6msEW

[24] Ranking Royals, "Largest Pasta Exporters". https://rankingroyals.com/largest-pasta-exporters-in-2020/

[25] Statista, "Average price for pasta in Italy from 2018 to 2020, by type." (18/01/2022).

https://www.statista.com/statistics/1010096/average-pasta-price-by-type-of-wheat-in-italy/

[26] The local, "War and energy prices: why the cost of pasta could rise in Italy." (03/03/2022). https://bit.ly/3I17Vb6

[27] Altroconsumo, "Prezzi della pasta ancora su a gennaio. Ma l'Ucraina non c'entra." (18/02/2022). https://bit.ly/3ai3gVH

[28] Il Fatto Alimentare, "2020 anno record per i consumi di pasta. All'estero, è italiano un piatto ogni quattro." (02/11/2021). https://bit.ly/3OIWXZP

[29] GDO News, "IRI: nel mercato della pasta esiste un gap del 5% tra crescita a valore ed a volume. Forte il trend del 100% italiano." (30/05/2020). https://bit.ly/3uzXBB8

[30] AIDA Database (24/05/2022)

[31] Investopedia, Return on Assets (ROA). https://bit.ly/3tYWJWD

[32] Investopedia, Return on Equity (ROE). https://bit.ly/3u7KoiP

[33] Investopedia, Return on Investment (ROI). https://bit.ly/3Nk5L7j

[34] Investopedia, Return on Sales (ROS). https://bit.ly/3ngYT03

[35] MBA Skool, "Value-Added Per Employee". https://bit.ly/39RHO9I

[36] Corporate Finance Institute, "Revenue per Employee". https://bit.ly/3A65Jgf