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RESEARCH ARTICLE

Tradition counts. The boom in the Spanish broiler chicken and pork sectors, 1955–2020

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Abstract

The economic success of the intensive poultry and pork sectors is a milestone in the Spanish economic history of the past seven decades. This work analyses the boom in the chicken and pork businesses in Spain, verifying the strengths and weaknesses of both livestock models, and drawing conclusions in relation to the agribusiness system. The influence of chicken and pork in the booming Spanish meat sector is analysed from the perspectives of livestock farming and agroindustry, followed by the impact of both forms of intensive livestock farming on Spain's domestic consumption and foreign trade. The similarities and differences in their evolution are identified from the perspective of two food supply models: a predominance of economies of scale until the 1980s, and of so-called economies of scope since that time. While the development of mass production in both intensive livestock businesses followed a similar pattern, the progressive segmentation of the market towards higher quality, more artisanal and sustainable products has greatly favoured the sector more deeply rooted in rural tradition: pork.

Introduction

In 2020, Spain became the world's leading exporter of pork with a value of 6.5 billion US dollars, accounting for close to 17.5% of the world's pork trade. Spain's second most important livestock sector, poultry, performed much more modestly to occupy the 13th position in the world in terms of broiler meat exports. However, since the decline of the Mesta, the famous association that had controlled sheep production since the Middle Ages, Spain had never been a major livestock country.

In 1955, John H. Davis, a professor at the Harvard Business School, coined the term "agribusiness" for a business model characterised by the vertical integration of the different parts of the food supply chain (producers, processors, and distributors) (Hamilton 2014). During this decade, broiler chicken production would pioneer the agribusiness model in the United States, later expanding in the early 1960s to become the benchmark for the new agro-industrial model also taking shape in Europe (Godley, 2014: 293–4). Spain's involvement in the process was a result of the 1953 agreements signed by the Franco government and the United States, and the American Agricultural Trade Development and Assistance Act, known as Public Law 480, which led to the implementation of the agribusiness system in chicken production and soon after in pork production. By offering cheap meat at a time when the average income of Spaniards was rising, meat, the meat industry, and the companies involved soon became the outright leaders of the entire Spanish food sector.

This work analyses the boom in the chicken and pork businesses in Spain from the mid-20th century until 2020. Its aim is to highlight the similarities and differences in the courses taken by

both in the long term, verifying the strengths and weaknesses of both models and drawing conclusions in relation to the agribusiness system. The choice of these two specific businesses is due to their being the main protagonists of the livestock change in Spain after 1950. In a country where extensive livestock systems were predominant, and herbivores were the main source of meat consumption in a significant part of Spain, chicken and pork led the strong increase in both meat demand and supply in the second half of the 20th century. Although the situations experienced by both sectors were similar, their starting points were very different: the rearing, transformation, and consumption of chicken showed little regard for any indigenous varieties anywhere in Spain whose quality would justify the development of a subsector aimed exclusively at producing meat. In reality, chicken meat was a by-product of egg production in the Spanish countryside, with the culling of surplus males each season[1]. By contrast, there was a much more deeply rooted rural tradition of pig rearing in Spain, based on the availability of characteristic agroforestry systems, native breeds, and their slaughter, transformation, and consumption as pork products. In addition, over the decades, there has been consolidation into two types of meat with different characteristics: while chicken is considered a healthier and cheaper product, pork shows greater productive diversification with a strong segmentation by quality and price of its products. Could the different evolution and present-day course of both sectors be explained by the degree of tradition related to both these products in Spanish rural culture?

After a brief review of the literature on meat in Spain, the influence of chicken and pork in the booming Spanish meat sector is first analysed from the perspectives of livestock farming and industry. This is followed by a brief observation regarding the impact of both forms of intensive livestock farming on Spain's domestic consumption and foreign trade. The discussion section analyses the strengths shared by the two livestock businesses, with a special focus on their competitiveness in both the domestic and international markets. Finally, the differences in the evolution of both sectors are identified. The analysis begins from the perspective of food supply models in which this expansion of intensive livestock farming took place: according to Louis Malassis (1997), a model of mass consumption developed in Western societies between 1950 and 1980, reaching saturation in the 1980s and giving rise to qualitative product replacement (see Collantes, 2016a). These models were reflected in the agro-industrial production model: until the 1980s, there was a predominance of economies of scale (ability to obtain a homogeneous product at low cost on a very large scale), which subsequently gave way to economies of scope (ability to offer differentiated products with high-value added and high quality).

Livestock farming and meat consumption in Spain. A state-of-the-art review of recent literature

Coherent with its minor importance in traditional food production, the Spanish livestock sector has aroused little interest for historiographers until relatively recent times. While certain pioneering works (GEHR, 1978, 1979; García Sanz, 1991) offer us a view of the totality of Spanish livestock farming between 1752 and 1929, it was not until the publication of a monograph on Spanish agriculture from a biophysical perspective by the History of Agroecosystems Laboratory of the Pablo de Olavide University, Seville, that we were given a complete perspective covering the 20th century (Soto *et al.*, 2019). However, the greater magnitude of Spanish livestock farming since the 1950s has led to the proliferation of articles that contrast with those covering the sector in the previous period[2]. Different studies in recent years have addressed the changes in the meat industry in Spain, with a strong leaning towards pork production as the main focus of research.

On the one hand, certain characteristics can be traced back to the origins of industrial production that have endured over time. The expansion of the pork business, including its industrial transformation since the second half of the 19th century, brings to light the combination of regional and external factors, both concerning the Iberian pig and other breeds. For example,

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the existence of a tradition of sausage and cured meat production in Catalonia is an important factor in the location of the industry (Castell and Ramón, 2022, 2023). In the case of Iberian pork production in southern Spain, together with the existence of an artisanal tradition, location was highly influenced by natural and climate-related factors, notably the expanses of wooded pastures in the region, known as *dehesas*, which are the habitat of the black Iberian pig (Pizarro-Gómez *et al.*, 2021; García Delgado *et al.*, 2017). In addition to these, other factors of importance allowed this supply to cater to the growing urban demand, particularly the introduction of the railway which, both in Catalonia and Andalusia, connected production areas with the main markets of Barcelona and Madrid, respectively (Castell and Ramón, 2022, García Delgado *et al.*, 2017).

Both chronology and environment are combined in the work by the previously mentioned History of Agroecosystems Laboratory, which considers the period following the Spanish Civil War to be key to the transformation of Spanish livestock farming. In this respect, the shift from multifunctional livestock farming to a form exclusively centred on food production led to the subordination of agriculture to livestock production (Soto *et al.*, 2017 and 2019). Interesting results are given by studies on a more microeconomic scale regarding the sustainability of certain livestock sectors. In the case of pork, the strong influence of pig breed is attributed to the environmental efficiency of its forms of production. What is more, the environmental superiority of the extensive *dehesa* model can be seen when compared to semi-intensive pork production (Ramos *et al.*, 2022). In short, the potential for agroecology is combined with the recognition of a high-quality local product associated with a specific region (known as local agri-food systems) as an alternative model to standard products in the global markets. This is the case of extensive Iberian pork production, which is subject to strict rearing and processing regulations (Silva *et al.*, 2023).

Other recent studies focus on the perspective of meat consumption. Of particular interest is the study of inequality, insofar as it points to pork and chicken as responsible for the comparison between meat consumption and income levels in Spain between 1960 and 1980 (Delgado and Pinilla, 2022). Also noteworthy is the increase in inequality in the 21st century associated with changes in the food production model, resulting in more differentiated consumption of more highly processed chicken and pork products (Delgado and Espinosa, 2021). In this regard, customer preferences rather than price determine the consumption of these meat products, as in the period prior to 1980. The recent influence of large-scale retail chains in this process is combined with the emergence of small artisanal businesses that take advantage of market segmentation by quality (Delgado, 2023). On this point, consumers of higher-quality products are more discerning and better informed, and their perception is decisive in terms of the degree of competitiveness of the sector (Silva *et al.*, 2023).

Finally, and from the perspective of Spanish meat exports from the 1960s to the present, a gravity model shows the importance of internal competition prior to external projection, specifically in the case of pork, and the significance of Spain's entry into the EU (Delgado *et al.*, 2023).

In summary, the most recent literature highlights the different patterns in which the products of livestock farming adapt to shifting demand where, in the face of standard production patterns, preference is increasingly shown for environmental sustainability, traceability, and identification with local traditions. These elements are given important consideration in our long-term analysis of pig and poultry farming.

Comparative analysis of the pork and poultry sectors in Spain: 1950–2020

Given the special conditions of the integrated livestock business, it is of interest to understand the Spanish meat boom from the perspective of two different parts of the supply chain (farming and

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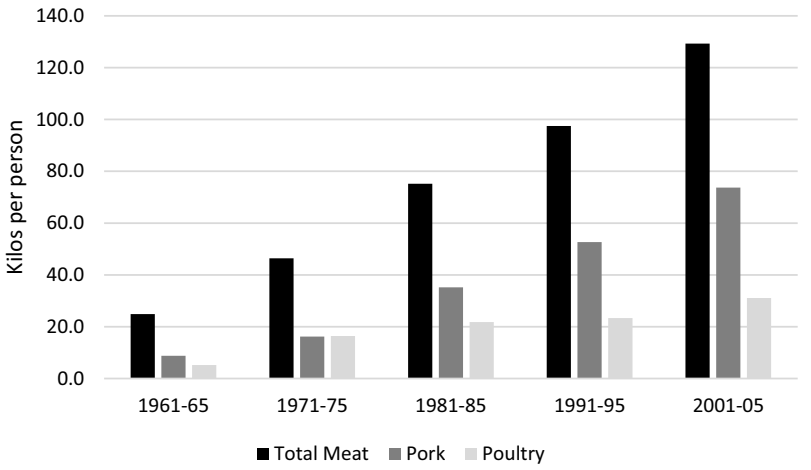

Figure 1. Evolution of Spanish meat production 1961–2005 (in kg per capita).
Source: graph prepared by the author based on data from FAOSTAT, Food Balance Sheets, 1961–2005.

industry) and the weighting of the chicken and pork businesses within this boom. This weighting is also reflected in the evolution of domestic consumption and meat exports.

Livestock farming for meat production

Since the mid-20th century, the growing importance of meat has been one of the most outstanding aspects of Spain's agrarian dynamics. In the 1961–1965 period, Spain's per capita meat production was less than a third of that of France. Barely ten years later, Spain's production had doubled as a result of the stimulus provided by pork and, more particularly, chicken (Figure 1). From that time onwards, the extraordinary increase in meat production could be identified with the dominance of intensive granivore farming, turning Spain into Europe's leading per capita meat producer by the early 21st century. Despite very little mention of chicken in the country's official statistics before 1954, more than 300 million birds were slaughtered in 1967 (Anuario de Estadística Agraria, 1968). Pork production grew much more slowly, and the number of pigs slaughtered would not exceed that of sheep and lambs until 1979. However, pork would come to be the predominant form of meat produced in Spain, exceeding 50% of the total already in the 1990s (Figure 1).

Industrial meat production

The boom in intensive livestock farming under the agribusiness model also led to the profound restructuring of industrial meat processing. In 1957, the traditional small-scale slaughter and butchering of animals was still deeply ingrained in the rural setting. As a result, industrial meat processing accounted for very little (3.5%) of the value added in Spain's main industrial sector, that of food, beverages, and tobacco (calculated from Banco de Bilbao, 1957, 1978). From that decade onwards, pioneering work by individual entrepreneurs facilitated the industrialisation of livestock farming through contracts with multinational feed companies and small farmers, driving the transformation of the business (Clar, 2010). This fact underlines the importance of the agency factor, as evidenced by other examples of successful development of the meat industry in Spain since the 19th century (Castell and Ramón, 2022, 2023).

Within the space of twenty years, industrial meat processing would account for 13% of the total food sector. Since Spain joined the European Union in 1986, the importance of the meat industry has continued to grow, driven by export opportunities, and it is now the largest subsector of the

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Table 1. Evolution of industrial turnover (thousands of euros), Spain

	1995	2000	2005	2010	2015
Meat industries	9,677	11,892	17,981	19,460	24,704
Food, drinks ind.	54,850	65,271	88,543	78,140	92,677
Total industries	276,817	420,012	540,439	520,864	582,357
Meat ind/Food	17.6	18.2	20.3	24.9	26.7
Meat ind/Total	3.5	2.8	3.3	3.7	4.2

Source: Prepared by the author based on data compiled by INE, Encuesta Industrial de productos.

Table 2. Participation of pork and chicken in the meat industries (%), 1995–2020

Tonnes	Pork-sausages	Pork total	Chicken	Poultry
1995	51.9	58.2	17.3	18.8
2000	50.7	56.9	15.4	17.7
2005	50.4	55.2	14.3	16.9
2010	56.6	61.0	14.8	19.0
2015	55.2	59.5	14.5	19.3
2020	61.2	65.6	12.8	16.0
Value	Pork-sausages	Pork total	Chicken	Poultry
1995	39.4	51.0	10.6	12.2
2000	44.1	55.4	11.2	13.7
2005	41.9	50.6	8.2	9.4
2010	51.4	60.8	13.1	14.9
2015	52.2	61.4	12.8	18.7
2020	55.2	64.6	10.5	12.3

Source: Prepared by the author based on data compiled by INE, different years, Encuesta Industrial de Productos No origin is provided for sausages, although pork would account for most of this category. For this reason, pork products are reported both with and without their inclusion.

entire Spanish food industry (Table 1). Figures for employment, barely 4% of the food industry in 1965, also confirm the meat industry's position as the main business in the food, beverage, and tobacco sector (27% of sector employees in 2010).

As in the case of livestock farming, pork became the leading subsector in the meat industry. In terms of both volume and value, pork would ultimately predominate industrial meat production, while chicken would lose importance owing to a more fluctuating dynamic, reflecting its greater sensitivity to shifts in demand (Table 2).

The impact of the expansion of chicken and pork on food consumption

Spain was not traditionally a meat-consuming country. In 1930, each Spaniard consumed 12.6 kg of meat per person and year, barely 2.3% of the food consumed (Simpson 1989). The Spanish Civil War of 1936–39 and the difficult post-war period did not encourage the expansion of meat, and by 1961–1962, it still only accounted for 3% of the total food consumed. Spain's yearly per capita meat consumption at the time was 28.3% of that of France, and only Greece, Portugal, and Albania ranked lower in all of Europe. However, Spain reached 76% of French consumption by 1981 and

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Table 3. Consumption of meat, total, and pork-poultry (kg/person/year), Spain

	A.Meat (Total)	B. Pork-Poultry	B/A (%)
1958	20.7	4.5	21.7
1964	47.8	21.8	45.6
1981	62.2	44.5	71.5
1991	64.8	46.5	71.8
2005	52.4	36.4	69.4
2019	47.3	37.0	78.2

Source: Graph prepared by the author based on data from INE, diiferent years, Encuestas de Presupuestos Familiares.

equalled Denmark as the country with the highest per capita meat consumption in Europe by 1995. By 2000, it became the European leader in its own right (kgs/year/person in FAO Food Balance Sheets, 1961–2000). In any event, Spanish meat consumption first stagnated in the 1990s, and then declined in the 21st century (Delgado, 2023: 236–37).

By the time that intensive livestock farming and the agribusiness model began in Spain, chicken had only had a token presence in the Spanish diet; and despite its strong presence in rural areas, pork was consumed more in the form of cured and salted products rather than as fresh meat. Such was the case that cured leg ham and charcuterie products comprised the meat mostly consumed in Spain in 1964 (*Encuesta de Presupuestos Familiares 1965*). Subsequently, the increase in meat consumption in Spain would correspond to the expansion of fresh pork and chicken, which combined would account for more than three-quarters of the total in the 21st century (Table 3).

Until the saturation reached by the consumption of both by the early 21st century, pork had been the main form of meat consumed, although its dominant role was only explained by the inclusion of cured and charcuterie products[3]. In fact, Spanish statistics (both the consumption figures recorded by the Ministry of Agriculture since 1987 and those of the Encuestas de Presupuestos Familiares) show chicken to be the main form of fresh meat consumed in Spanish homes until 2020. In other words, it is only the wide range of processed products traditionally associated with pork that allowed its consumption to exceed that of chicken. While chicken consumption in Spain reached its peak in the 1990s and has stagnated since then, pork consumption actually continued to grow until the end of the 2010s (Delgado, 2023, 239–40)

The impact of the expansion of chicken and pork on Spanish international trade

Given that meat was not an important part of the Spanish diet, livestock and meat product exports were practically non-existent before Spain's accession to what is now the European Union, and exiguous immediately afterwards, with export-import coverage ratios below 33% during the 1981–91 period (Clar, Serrano and Pinilla 2015: 162). However, by the end of Spain's transition period for full membership in 1992, the strong trade growth it had brought about raised this ratio to above 100% in 1991–2001, and to more than 200% in the 2001–11 period (Ibid. 162). During the 21st century, more particularly in the 2010s, Spain's meat subsector rose to second place by the value of total foreign sales within the food, beverages, and tobacco category, doubling its share in this group (from 7.4% in 2003–4 to 15% in 2016–17; INE, Comercio exterior).

This extraordinary growth in Spanish meat exports since 1992 is closely associated with the expansion in pork products (Figure 2). It is no coincidence that developments in the international pork market have turned Spain into the world's leading pork exporter in the 21st century.

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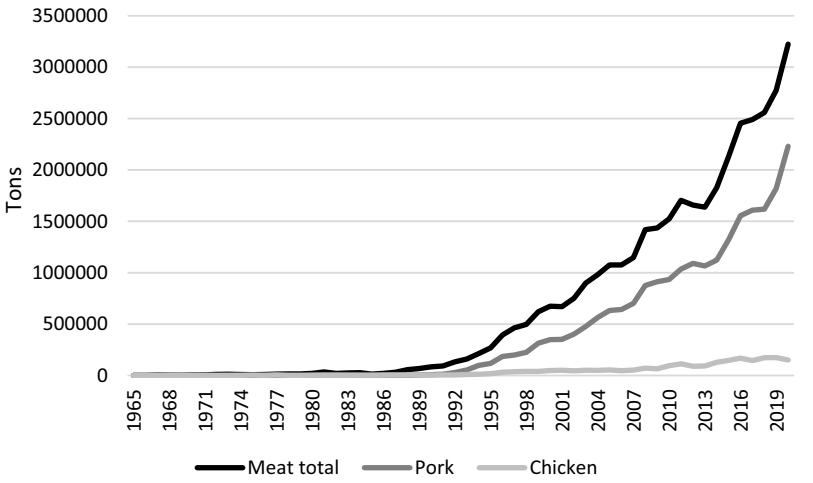

Figure 2. Evolution in meat exports (in tonnes), Spain, 1961–2020.
Source: graph prepared by the author based on data compiled by FAOSTAT, Trade, 1965–2019.

Consequently, foreign trade is where the most notable difference can be seen in the dynamics of pork and chicken. Until 1995, Spanish pork exports were hampered by the presence of African swine fever. However, once free of the disease, the country has constantly been a net exporter of pork and with a growing surplus, whereas it was a net importer of broiler chicken until 2014, with the trends varying since that time (FAOSTAT, 1965–2019).

Main results of the analysis

By recapitulating the trends observed in the Spanish meat sector in general, and in the pork and chicken subsectors in particular, we summarise the main results:

1. Since the 1960s, meat has gone from having scant importance in the Spanish food sector to the leading player, one that is still growing.
2. The rise of the two initial forms of intensive livestock farming in Spain, pork and broiler chicken, has been the most outstanding result of the meat boom since the 1960s.
3. Chicken led Spain's meat expansion first with the implementation of the intensive agribusiness model. Pork took the lead in the late 1970s and became the dominant meat subsector, outweighing chicken as the real driver of the Spanish meat boom for the entire 1960–2020 period.

Discussion: similarities and differences between the chicken and pork sectors in Spain

Based on the main results, explanations are provided here for the boom in both forms of livestock farming, highlighting common factors and patterns, and the greater impact of pork in the long term, taking into account the possible differentiating factors between both sectors.

Common factors explaining the boom in intensive broiler chicken and pig farming

The common patterns characterising the broiler chicken and pork businesses had already existed before the implementation of intensive farming models. As late as the 1950s, both chickens and

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Table 4. Evolution of meat and total food prices in Spain, index numbers (1958:100)

	Total goods	Food (Total)	Meat	Pork	Chicken	Lamb	Veal
1960–61	109.9	108.9	92.5	90.6	80.6	86.9	95.8
1962–63	122.8	124.7	95.2	96.3	71.8	97.9	103.3
1964–65	145.9	148.1	92.0	90.2	60.1	87.8	107.6
1966–67	169.8	169.2	83.2	77.8	49.9	89.9	109.8
1968–69	185.7	181.9	80.7	77.3	46.4	85.4	107.0
1970–71	206.6	197.8	76.2	69.3	42.2	76.5	102.3

Source: Graph prepared by the author based on data compiled by Delgado *et al.*,1976 for the different meats (pesetas/kg) and Maluquer de Motes, 2005: 1293 for food and cost of living (Total goods).

pigs were reared using traditional farming methods. Traditional native breeds (different chicken breeds and mainly Iberian and Celtic pigs) were kept, and only the token presence of imported pig breeds (particularly the Large White) was noted. Farms were family-owned, and animals were fed the surpluses of other farming activities and scraps or farmed extensively (in the case of pigs), taking advantage of the natural resources to be found in the *dehesas*, at least during the fattening period. Certain farms were beginning to keep pigs in barns, somewhat resembling the intensive model (I Congreso Nacional Ganadero, 1954).

In rural areas, the animals were slaughtered on the property, according to the season, and the different pork by-products were also made there in an artisanal manner. The location of different breeds mainly corresponded to the regions where native species were most plentiful, with Iberian pigs dominant in the south of the country and Celtic pigs in the north. The predominance of slow-growing animals and the lack of large-scale industrial production meant that neither chicken nor pig farming was in a position to satisfy a strong increase in demand for meat that might come about as the result of improvements to the income of the population or changes in consumption habits. Nevertheless, in barely a decade, chicken and pork would become the most competitive types of meat in the domestic market, within a context of strong growth in consumer prices, food prices in particular, in the Spanish economy of the 1960s (Table 4).

This evolution can only be explained by the rapid achievement of significant economies of scale in the production of meat through the early development of efficient systems according to the agribusiness model. The basic patterns of the new livestock production model followed the changes observed in other developed countries: (i) genetics; (ii) animal nutrition; (iii) farming methods, and (iv) slaughter/processing methods.

i. Starting with genetics, the existing animal breeds were not well suited to meat production (the predominance of laying hens in the case of chickens), or the meat they provided had a very high fat content, which was more suitable for charcuterie production (native breeds in the case of pigs). Moreover, because the native varieties were not prolific breeders, there was a need to cross them with foreign breeds to improve their reproduction rate. The Franco government left it fully in the hands of the private sector to introduce foreign breeds without regulating the collateral effects this would have on the environment and traditional (pig) breeds until well into the 1970s (Segrelles, 1993).

The poultry sector was the first to take advantage of the window opened in 1953 by the agreements for military and economic collaboration between Spain and the United States. The result was the creation of a partnership between Spanish businesses and the large American multinational feed manufacturers and the importing of hybrid Hy-Line laying hens from the United States in the 1950s (Soria and Zuñiga, 1983: 315). The poultry sector soon found a major niche in the market for producing meat using varieties of broiler chickens. In the early 1960s,

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broiler breeds such as the Hubbard were imported and expanded through contracts between local businesses and the multinationals (Clar, 2010).

Although starting somewhat later than the poultry sector, the pork sector began to catch up by importing varieties already found in Spain (Large White), in addition to others such as the Landrace and, in particular, the Jersey-Duroc. By 1974, hybrid foreign breeds already accounted for half of the pigs in the country, a figure that would rise to 73.4% by 1986 (Segrelles, 1993: 174). The contracts entered into by local businesses with the subsidiaries of large multinational animal feed manufacturers were also decisive for the rapid expansion of livestock production (Clar, 2010). As with poultry, the main industrial regions were located close to the large centres of consumption, predominantly north-eastern Spain, Catalonia in particular.

ii. Major change came about in terms of diet, with the introduction of compound feeds supplied to animals housed in barns. This led to a break with the traditional model of free-range rearing, resulting in the total enclosure in barns in the case of chickens, which was also widespread in pig farming, and the traditional use of resources from the natural environment was gradually abandoned. However, the intensity of the vertical integration model led to such a strong dependence on imported inputs, such as maize and soya, that the Spanish government was obliged to impose greater rationing of the feeds used, with these products being replaced by others such as locally produced sunflower seeds (Clar, 2005).

iii. The basic method used for livestock farming was vertical integration. Until the business came under the control of meat processors and large-scale retail (supermarket and hypermarket) chains in the late 1990s, integration mainly took place upstream: the livestock industry was dominated by the large feed manufacturers. While this vertical integration was not exclusive to Spain, the intensity of the process was particular to the country. A major explanatory factor was the greater occurrence of crises (recessions and epidemics) during the development of the sector. The large production capacity of the new methods led to surplus production and the consequent expulsion of a large number of small producers from the market. Economic recession and rising input prices, as occurred in the 1970s, forced many independent producers to join forces with integrated companies in order to survive. The chicken sector progressed more quickly along this route, and by the mid-1980s, it had achieved 95% vertical integration, 100% in the main producing regions. Although at a slower rate, non-integrated pig farmers followed the same path as their poultry counterparts, given the strong seasonal fluctuations in pork prices (known as the 'pork cycle') that penalised the accumulation of surplus production.

A second explanatory factor was the lack of clear regulation of integration contracts until the 1990s. The lack of regulation in Spain gave overriding power over livestock farmers to the integrated companies, which imposed tight controls over and could unilaterally terminate contracts with less efficient producers (Segrelles, 1993). Until the sector was regulated in the 1990s, the oligarchy of large integrated companies even came to push out weaker counterparts, strengthening their stranglehold over the market.

iv. Finally, another important change that evidenced the superiority of intensive livestock producers was the restructuring of the animal slaughter and butchering stage. In the 1950s, in addition to the previously described traditional slaughter and transformation of animals into charcuterie and cured products in rural settings, municipal abattoirs existed in urban areas focusing mainly on ruminants, with notable technical and health-related shortcomings. As companies and larger cooperatives gradually incorporated the slaughter stage into the integrated chain of intensive livestock production, private abattoirs that were technologically more advanced and with greater capacity proliferated. By 1985, practically all the broiler chickens produced were slaughtered in company-owned facilities (Segrelles, 1993).

The pork sector took longer to choose commercial refrigerated abattoirs over municipal facilities and small-scale industrial facilities, given the traditional production of pork charcuterie products. Nonetheless, Spain's obligation to comply with European Union health and food safety regulations as a condition of its joining accelerated and consolidated the process. While only nine

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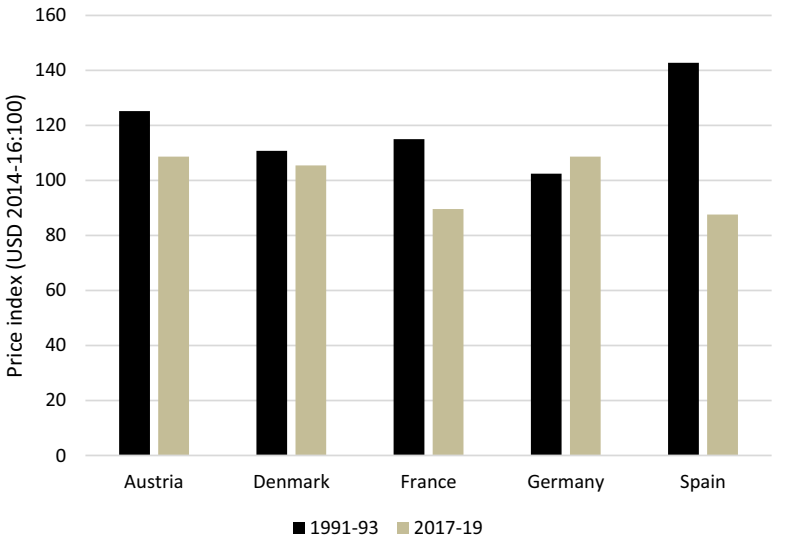

Figure 3. Pork producer price index in five European countries, USD/tonnes (2014–16:100).
Source: graph prepared by the author based on data compiled by FAOSTAT, Producer Prices, different years, Meat of pig with the bone, fresh or chilled (biological).

refrigerated abattoirs existed in Spain in 1954, there were more than 1,400 such facilities 50 years later (Barrón, 2009). The large companies were best situated to make the necessary investments in cold storage facilities, combining abattoirs with cutting rooms and increasingly taking over sausage factories.

Unlike the large meat-producing countries in the European Union, Spain's only reference market for the sale of its local production was the domestic market until the second half of the 1990s. The aversion of companies to excess capacity when faced with potential situations of market saturation made it essential to have abattoirs of their own to avoid the loss of returns caused by having to continue to fatten animals at times of excess supply. As a result, feed manufacturers were forced to take over or enter into agreements with refrigerated abattoirs and cutting rooms (Soldevila, 2007, 713). Likewise, Spanish abattoirs had been forced to make their businesses more efficient by choosing the most capable and competitive meat processors in the lead-up to Spain's entry into the European Union. A comparative study conducted in the 1980s between abattoirs and pork cutting rooms in Catalonia, Spain's leading producing region, and those in the regions of Jutland, in Denmark, and Brittany, in France, showed that the margins in Spain were the lowest, given that 80% of their turnover was destined to the purchase of raw materials, compared to the 55% in Denmark (Burset, 2021).

All the changes described throughout the production chain evidenced a more intense integration process in Spain with fewer legal barriers that quickly raised the competitiveness of pork and broiler chicken in the domestic market, as we have already observed. However, even in the wider European context, producer prices in constant US dollars confirmed Spain's competitiveness. Despite pork producer prices in Spain in the early 1990s being higher than those in the large producer countries, by the end of the period, Spanish pork was the cheapest in the entire European Union (Figure 3).

Differential factors explaining the boom in intensive broiler chicken and pig farming

While they started out along very similar lines, the broiler chicken and pork businesses developed very distinct features that would influence the different courses they would take. These are

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analysed taking into account the evolution of the markets over such a long period, in a context marked by a shift from the mass production of standardised products for homogeneous markets to the production of increasingly differentiated goods for segmented markets.

Intensive livestock farming from the perspective of economies of scale

The broiler chicken in 1960s, Spain had all the makings of a new product. Before its arrival, the difference between poultry and chicken was not clearly distinguishable: it is calculated that only 20% of all poultry meat came from chickens in the 1940s (García Pascual 1993). Even by the second half of the 1960s, the volume of meat produced from slaughtered birds in Spain was lower than that of horse meat and similar to that of goat meat. In that same decade, however, as would occur in the United Kingdom, France and Italy, the broiler chicken arrived hand-in-hand with agribusiness (Godley, 2014). By the end of the 1970s, broilers accounted for 90% of the total poultry meat produced in Spain, and it was not until the 21st century, with the presence of other species, that this percentage would fall slightly.

Broiler chickens came to be the quintessential example of Fordism in the livestock sector in Spain (Clar 2008). In a very short time, the market was flooded with a standardised product at a very competitive price as the result of the rapid achievement of economies of scale by the large integrated companies that covered the entire production stage (Langreo, 2008a: 47). The success of mass-produced broiler chicken in the Spanish market over the last half-century led to its consolidation as the most affordable and most consumed form of meat in the country. To remain the cheapest protein, great efforts had to be made by the sector, given that the context between the 1970s and 2010s was one of practically stagnant per capita consumption and token exports. Because prices were the main vector controlling the number of poultry companies, company size became key to enabling the sector to respond to fluctuations in the market. Thus, it came as no surprise that the ten largest companies would come to supply two-thirds of the entire volume of slaughtered chickens in Spain in the 2000s (data compiled by Alimarket).

The way in which mass consumption of chicken initially developed in Spain significantly influenced the long-term evolution of the product. Broiler chicken was introduced into Spain as a fresh or refrigerated consumer product, and it was mainly sold as dressed carcasses, rather than as individual cuts prepared in a factory and packaged with or without processing of any kind. During the 2010s, industrial producers significantly closed the gap between the volume of whole and cut-up broiler chickens, evidencing the rise of individual cuts and processed products. Nonetheless, data from the industry available since 1993 shows that the preference for fresh or refrigerated products has not varied substantially, accounting for more than 90% of the market.

For decades, chicken meat was purchased from small specialist retailers who received the product whole and cut it up themselves. This situation was characteristic of the entire meat sector and was not exclusive to poultry. In the 1990s, supermarkets and large-scale retailers gradually began to gain market share from the specialist retailers (Collantes, 2016b), accounting for half of total chicken meat sales by the early 21st century. However, despite these changes, one main feature of its consumption has not substantially changed: chicken has become the featured form of fresh meat in supermarket and hypermarket aisles (Langreo, 2008b).

The relative late mass introduction of refrigerator-freezers into Spanish homes (the first refrigerator arrived in 1952, but its generalisation had to wait until the late sixties) heightened the preference for fresh products over frozen, and Spanish consumers have subsequently been quite resistant to frozen chicken, particularly products prepared by immersion freezing. The result is that the broiler chicken produced in Spain is a more perishable product than its counterpart in other countries (Gosalvez, 2009: 43).

Centred more on the domestic market, the main industrial producers specialised in fresh and refrigerated chicken products, eschewing the large investment required to adapt their facilities to

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the slaughter and immersion freezing of chickens that would allow them to offer a frozen product. According to the industrial figures compiled by INE, frozen chicken meat accounted for only 6.8% by weight of the total produced in 2000, and despite the growing use of freezing for the preparation of processed products, it only accounted for 8.1% in 2015. Since the 1980s, it has not been uncommon for frozen chickens to be imported to supply the hospitality industry during the summer months when tourism is at its peak in Spain. The same can be said of the increase in imports into Spain of frozen chicken in the 21st century to satisfy the growing demand for processed chicken products (Gonsálvez, 2009: 46). In other words, the previously described direction taken by the broiler chicken produced in Spain influenced its international projection, for which entry into the European Union meant the possibility of relieving the saturation of its internal market.

The introduction of the intensive pig farming and pork production business brought about even greater changes than in the case of broiler chicken. As late as 1962, the regions with the greatest presence of native breeds and extensive farming systems (Galicia, Castile, Andalusia, and Extremadura) supplied two-thirds of the pigs for slaughter. By the end of the 20th century, the shift to the intensive and industrial model saw the two main agro-industrial regions (Catalonia and Aragon) predominate, producing a total of 44% of all pigs for slaughter (Censo Agrario de España, 1999). From the industrial perspective, the rapid consolidation of production around the main population centres (Barcelona, Valencia) coincided with what had occurred in the case of broiler chicken, but it entailed a much more intense geographical restructuring given that the traditional slaughter model was much more dispersed.

The generalisation of intensive methods in both pig farming and pork production also led to a shift in the destination of the dressed carcasses produced. In 1960, there was still the traditional rural use given to slaughtered pigs, based on the production of very different processed products (hams, sausages and other charcuterie products, and canned products, among others), with 87% of all slaughtered pigs by weight destined for artisanal or industrial processing. The mass introduction of imported white pig breeds drove the consumption of fresh or refrigerated pork, to the extent that by 1980, although production had risen fourfold, the amount destined for processing had fallen to 51%. The possibilities for export to other European Union countries since 1995 bolstered this change in direction so that by 2005, processed meat production had fallen to 41%. However, the great international projection of Spanish pork would not have been possible without the vigour of the domestic pork market before joining the European Union. In this regard, pork would become the main exponent of the strong home market effect detected in the Spanish meat subsector in recent decades (Serrano *et al.*, 2015). A recent study not only confirms the strength of the aforementioned effect for pork but also interestingly finds it with little or no intensity in the case of Spanish chicken, depending on the variables included in the model (Delgado *et al.*, 2023).

As with broiler chicken, vertical integration advanced with great strength in the pork sector, spurred on by the feed manufacturers and by the meat processors themselves in certain cases. Nevertheless, integration was principally focused on the fattening stage, which meant that the degree of full integration in the 2000s, accounting for more than half of all production, was still far behind the proportion seen with broiler chicken (Langreo 2008a: 47). Consequently, the pork sector was a less closed agribusiness model with a wider variety of means to respond to the market than was the case of the broiler chicken sector. In the specific case of processed meat, the pork industry was linked to the proliferation of refrigerated abattoirs that came to replace the traditional municipal facilities. These were operated by large companies which were among the most efficient in the entire Spanish agri-food chain (ibid., 49).

As had also occurred with broiler chicken, the Spanish pork sector underwent strong consolidation, with large companies emerging as the result of mergers, acquisitions and business expansion. While the consolidation process was common to both the sectors analysed, the business dimension of pork was much greater than that of broiler chicken. The globalisation of the

Table 5. Number of pig farms and pigs per farm, Spain, 1962–2020

	1962	1989	1999	2010	2020
Pig farms	1,468,801	376,353	218,110	94,252	88,437
Pigs/farm	3.3	31.8	101.2	272.7	369.5

Source: Agricultural censuses and MAPAMA.

pork market had driven this process, particularly as regards the creation of strong multinational conglomerates (Szymanska 2017). Consequently, the ten largest companies came to concentrate 40% of all the pork produced in Spain in 2005 (Langreo 2008a: 65). But even companies with local capital came to dominate the market, resulting in the Spanish pork-producing sector becoming one of the best structured in the entire European Union (Langreo and González Barrio 2007: 229–30).

More companies, particularly of a large size, resulted in fewer farming operations, although the remaining farms grew larger. This characteristic was shared during the development of both broiler chicken and pork production. Nevertheless, the closure of close to 1,000 broiler chicken farms between 2007 and 2020 was more than offset by the significant increase since 2015 in farms rearing game birds (partridges, quails, and pheasants) and turkeys. By 2020, 8,670 farms were producing these three birds compared to the 1,900 existing in 2007 (MAPAMA, OTE Avicultura, 2020). The demanding conditions set by the broiler chicken business led part of the least efficient producers towards alternative products that offered greater freedom and the prospect of a growing market.

The changes were more radical in the pork sector, given that the traditional extensive farming model involved low numbers of pigs per farm. During the first years after Spain joined the European Union, one of the problems of its pork sector continued to be the small relative size of farms (Soldevila, 2007). The restructuring process in terms of size and the achievement of economies of scale intensified in the 1990s and was exacerbated by the global financial crisis of 2008 (Table 5).

While the average number of pigs per farm in Spain in 1997 was just below that of the 15 countries making up the European Union at the time (Eurostat 2000, 92), two Spanish regions (Aragon and Catalonia) appeared among the five leading regions of the European Union in both 2013 and 2016 in terms of number of pigs per farm (livestock units/holding)[4]. The setting up of large-scale pig farms benefited from the existence of spaces suitable for their production in terms of (dry) climate and very low population density, as in the case of Aragon (Clar y Pinilla, 2011: 257), which were located far away from large cities. The need for broiler chicken farms to have an abattoir a short distance away made it more difficult to take advantage of those rural areas, as did the environmental costs involved in the installation of factory farms for broiler chickens (Martín Cerdeño, 2019). The higher levels of nitrogen and phosphorous in poultry manure, higher ammonia emissions, intense consumption of resources (water, feed), and the effects produced by the incineration of dead animals during the broiler chicken production process significantly raised the environmental costs brought about as a result of the appreciable increase in farm size. In all, however, pork production shared the great majority of these environmental disadvantages (Turner, 1999). Consequently, environmental impact is now one of the greatest concerns in the Spanish pork sector, particularly the management of wastes that accumulate around pig farms (Giménez García *et al.*, 2021).

The European Union's Common Agricultural Policy (CAP) strengthened the shift towards larger-scale pig farming operations, with the largest holdings, and therefore the large companies that owned them, being the prime beneficiaries of production support payments under the scheme: close to 50% of the largest operations received payments compared to smaller holdings, of which only 5% received such support. In addition, pig farming is one of the livestock sectors

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Table 6. Feed price index evolution in Spain, (Pigs, 1985: 100)

	1985	1994–95	1999–00	2004–05	2009–10	2014–15	2018–19
Pigs growing	100	99.4	93.8	98.3	103.7	120.5	117.7
Broilers	114.7	115.0	111.1	116.2	138.6	159.6	145.5

Source: Prepared by the author based on data compiled by MAPAMA, Feed.

that receives most of the rural development funding under CAP for investment in infrastructure and the modernisation and adaptation of farms. Pig farming receives a much greater share of the funds from both of these programmes than does broiler chicken farming (MAPAMA, OTE Avicultura, 2020).

While the larger scale of the pork sector is a differential factor, the cost of raw materials is another factor to consider. The Spanish government's White Paper on Agriculture and Rural Development (2002) highlighted this aspect as a key limiting factor for food industry productivity. The cost of feed represents 65–75% of the total cost of the broiler chicken supply chain. And while the dependence on plant-based proteins (soya) is common to both broiler chicken and pig fattening operations, feed portions for broilers and their mother hens include a significant amount of maize, with barley being a basic ingredient of the feed for pigs in the fattening phase (MAPAMA, 2017 and Segrelles, 1993).

The poultry sector has attempted to reduce its dependence on imported raw materials such as maize and soya by replacing them with others (wheat instead of maize and sunflower oilcake instead of soya). However, despite these strategies to reduce the cost of feed, a comparison of prices paid by livestock farmers shows that relative costs are higher for broiler chicken farmers than for pig farmers and that prices have evolved negatively for them since 1985 (Table 6).

It stands to reason, therefore, that the feed costs needed to produce Spanish broiler chicken are the highest in the European Union, and that they represent the highest proportion of total production costs (MAPAMA, OTE Avicultura, 2020). Although pork production does not have such high feed costs, particularly as regards the European Union average (MAPAMA, OTE Porcino, 2020), they have traditionally been higher in Spain than in the main producing countries. Despite this, the total cost of pork production has been the lowest in the European Union in recent years owing to lower fixed costs, within a general context of their reduction in the large European producing countries (Table 7).

Intensive livestock farming from the perspective of economies of scope

The previously mentioned White Pages from 2002 also stated the need for value added to offset the cost increases faced by food companies. This need also coincided with the growing segmentation in the food market that began at the end of the 20th century. According to the timeline established by Ríos-Nuñez and Coq-Huelva (2015), 1985 marked the turning point in Spain between a pattern based mainly on the consumption of standard, low-cost products, and another in which growing niche markets were emerging in parallel to the mass consumer market for consumers with higher incomes and/or different tastes. In the terminology coined by Harriet Friedmann (1982), there was a transition from the second food regime to the third.

The recent study by Pablo Delgado helps us to compare the dynamics of both chicken and pork since the mid-1980s, a period in which consumer preferences have been more decisive than income levels. The combination of the fall in per capita consumption of chicken since the 1980s with the remarkable growth in pork consumption in Spain since the 1990s led to a situation where poultry's leading position, accounting for 37.5% of the total meat consumed in Spain in 1991 (vs 31.5% for pork), was surpassed by that latter in 2010, now making up a 44.6% share of the total, and with demand for poultry falling to 25.3%. This whole process is explained by a time of strong

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Table 7. Pork production costs in the main European producing countries 2007–2019

	2007–2009	*2017–2019*
	Euro/Kilo	*Euro/Kilo*
Denmark		
Fixed costs	0.52	0.36
Variable costs	0.97	1.06
Feed	0.87	0.85
Total costs	1.49	1.42
Germany		
Fixed costs	0.63	0.40
Variable costs	1.30	1.20
Feed	0.88	0.85
Total costs	1.66	1.6
Netherlands		
Fixed costs	0.55	0.36
Variable costs	0.99	1.22
Feed	0.84	0.86
Total costs	1.54	1.58
Spain		
Fixed costs	0.41	0.22
Variable costs	1.16	1.18
Feed	1.00	0.93
Total costs	1.57	1.40

Source: Prepared by the author data compiled by the Servei d'Estadística i Preus Agroalimentaris, 2021.

expansion in processed pork products (charcuterie), coming to constitute two-thirds of the total pork consumed in Spain in the 21st century, coinciding with an invariable decline in the consumption of fresh meat, the main form in which chicken is consumed in Spain (Delgado, 2023: 238–240). Moreover, relative prices of processed meat products are always slightly higher than those of fresh meat (ibid., Figure A.8). Therefore, the differential expansion of pork is due to its ability to respond to new consumer preferences with higher value-added processed products.

The first way to add value to meat products is through industrial processing. There is little doubt that pork has the advantage in this case of more possibilities for processing than broiler chicken, both because pigs are much bigger animals and owing to the long tradition of pork-derived products in Spain. Based on the unit values of the main industrial products since 1995, the main source of value in the broiler chicken sector is fresh cuts, which is higher than that of dressed whole chickens or frozen chicken pieces. The value of cut and frozen pork products shows very little difference from that of chicken. However, cured and canned products, particularly leg ham, and also bacon and sausages show a much greater difference in terms of value added when pork is compared to chicken. Thus, the same standardised meats, pork, and chicken, which made equal access to meat possible in Spain, are responsible for the reappearance of inequalities in the 21st century. While a low degree of processing (such as whole chicken) shows a low degree of inequality, consumption of meat with a greater degree of processing or better

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quality, such as 'certified' pork shows the greatest disparities by income quartile (Delgado and Espinosa, 2023).

As previously explained, meat consumption in the Spanish countryside was already heavily biased by tradition towards pork and its derivatives. In 1964, a first estimate of family consumption in Spain showed that pork products accounted for 43.4% of the total meat consumed in rural areas, while chicken (together with rabbit and game) accounted for only 13.6% (INE, Encuesta Continua de Presupuestos Familiares, 1966). To a large extent, this increased consumption of pork was due to the production of sausages and preserved meat products in rural homes throughout the country. Consequently, the presence of hams and sausages in the traditional rural diet of much of the country has given pork a boost that has not been the case with chicken, bolstered by the large-scale migration of the rural population to urban areas in the second half of the 20th century. Studies on Spanish consumption in the 1990s and 2000s showed that while pork was considered one of the least preferred and least healthy of fresh meats, cured products were highly appreciated, particularly cured pork loin and leg ham, which were more highly valued in qualitative terms (Mili, Mahlau and Furitsch 1998: 141–3; Observatorio del Consumo y la Distribución Alimentaria, 2009).

Without such deep-rooted traditional consumption, current dietary choice shows that, at a time of qualitative replacement of foodstuffs, chicken had the advantage of being considered the healthiest meat (with pork the least) of all those consumed in Spain (Observatorio del Consumo y la Distribución Alimentaria, 2009). Over the last decade, however, turkey has overtaken chicken as the healthiest meat in the perception of Spanish consumers, with a fairly even quality rating (Baviera *et al.*, 2021: 544). However, the increased consumption of chicken as a replacement for other meats during economic recessions (such as post-2008) and its poor behaviour with economic recovery, both in absolute terms and compared to pork (Cerdeño, 2019), show that price continues to be a determining factor. Chicken has actually proven to be the cheapest of the four main types of meat in Spain with no significant variations in its relative price since 1990 (Delgado, 2023: Figure A.6). Among the advantages of chicken when compared to the image Spanish consumers have of turkey meat are good value for money and an affordable price, opinions given by close to 95% of all those surveyed. However, chicken is still mainly a fresh product in Spain, while the difference in the consumption of processed products is appreciable when there are children in the household (36.8% of households with children consume processed products once a week or more compared to 28.3% without children). Turkey shows similar although slightly lower figures (Baviera *et al.*, 2021:342–344).

In addition to the wider range of traditional processed products, there is another differential factor that sets the pork sector aside from the broiler chicken sector when it comes to value-added: the availability of native breeds (Iberian pigs) and local production systems whose quality is increasingly being recognised by the markets. Paradoxically, the success of intensive pig farming in Spain led to a strong decline in the numbers of Iberian pigs, which did not adapt well to the integrated meat production model and were even more highly affected by African swine flu. Compared to the 1955 figure of 171,000 breeding sows, only 66,400 remained by 1982, the lowest recorded (Vargas and Aparicio 2001: 110). The change in consumption patterns seen in the mid-1980s led to a gradual recovery in Iberian pig numbers, particularly through crossing with foreign breeds. This led to significant cost reductions derived from their more rapid growth and the shorter time required to make leg and shoulder hams from pigs fattened on feed in comparison with rearing purebred animals on acorns (Buxadé, 2001).

In the 1990s, *Ibérico* (Iberian) pork became a brand synonymous with quality and spurring a demand that has been difficult to meet, given the genetic characteristics and limitations in terms of the natural spaces (*dehesas*) where the animals live and the resources on which they are fed. The *Ibérico* classification is even subject to a different set of regulations to those governing white pig breeds, with different quality levels set according to breed purity and farming models (Silva *et al.*, 2023). This has resulted in a differentiated value for the various *Ibérico* products, as shown by the

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Table 8. Evolution in the price (euros/kg) of the ten most expensive meat products in Spanish homes, 2008–2019

	2008–09	2013–14		2018–19
Iberian cured pork loin	23.5	27.3	Iberian cured pork loin	29.2
Iberian cured ham	21.4	21.5	Iberian cured ham	28.0
Iberian cured pork shoulder	19.5	19.7	Iberian cured pork shoulder	24.0
Serrano cured pork loin	13.6	14.0	Serrano cured pork loin	13.8
Serrano cured ham	12.0	11.8	Kid goat	13.2
Iberian chorizo	10.5	11.6	Serrano cured ham	12.2
Serrano cured pork shoulder	11.3	10.5	Iberian chorizo	12.1
Beef	9.6	9.5	Serrano cured pork shoulder	11.5
Veal	9.0	9.2	Lamb	10.8
Long pork sausage	8.5	9.1	Other cured products	10.5

Source: Prepared by the author from home consumption data compiled by MAPAMA. Specific products have been selected, discarding product groupings (e.g. bovine meat) and ranges of the same product (e.g. packaged Serrano cured ham, sliced Serrano cured ham . . .). Kid goat and lamb, products that did not appear in the previous two periods, are included in the list for 2018–2019.

prices paid per product family since 2008, when the distinction was first made between products made from Iberian pigs and non-Iberian white pigs in statistics. The three most expensive types of meat in Spain over the last decade have borne the *Ibérico* brand, and each of the main *Ibérico* products is more than double the price of its counterpart made from white pigs (Table 8).

The dynamic affecting the price of Iberian pork in the last decade consolidated a business trend that had already existed at the turn of the century (Buxadé, 2001): gross operating margins and economic returns from *Ibérico* products (both acorn-fed and grain-fed) were higher than those of the meat industry in general. While the return on equity (ROE) for the meat industry as a whole was 2.4%, ROE for grain-fed Iberian pork products was 11.6%, with 16.2% achieved for acorn-fed products (extensive and semi-extensive farming). For this reason, and despite the greater investments required to produce *Ibérico* leg ham (five times that of white pork leg ham in 1999–2000), the small enterprises dedicated to Iberian pork derivatives found themselves with a lucrative niche market (Langreo and González Barrio 2007: 231). The capacity of these types of artisanal companies to survive in the market, with lower production and a focus on local and regional markets, was already patent during the 2000s (Langreo, 2006). After the major recession of 2008, the sector shows a strong duality between small local companies specialising in a tradition of quality craftsmanship, and medium or large companies dominated by capital from outside the Iberian pig's home regions that focus on standardised products for the shelves of large-scale retailers (Pizarro-Gómez *et al.* 2021).

The boom in Iberian pork (the so-called '*Ibérico* bubble') was reflected in the number of Iberian pigs (both purebred and crossbred), which tripled between 1993 and 2019 and grew in proportion from 6% to 11% of the total number of pigs in the country The qualitative replacement of white pork for Iberian pork also took place during this period, the result of which was that extensively reared and acorn-fed purebred pigs were more highly valued and fetched higher prices than intensively or semi-intensively raised crossbred pigs. This led to the passing of a regulation by the

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Spanish government in 2014 that product labels were to show the percentage of Iberian breed purity (at least 50% in all cases) to differentiate quality and prevent fraud.

Attempts to differentiate between quality chicken products began in the 1990s with the importing of slow-growing breeds (*Label Rouge*) and free-range rearing. The pioneers in this field were independent producers who did not own abattoirs and who were unable to commercialise their products on a large scale, which resulted in higher costs for fattening, slaughter and distribution. Later attempts by the large poultry companies to direct part (at least one-third) of their production to '*pollo campero*' ('country chicken') and '*pollo de corral*' ('farmyard chicken'), terms denoting free-range birds, had little success. This failure was due in part to the Spanish consumers' lack of familiarity with the product, and in part to the fraudulent competition from intensively reared broiler chickens with similar-sounding labels in the aisles of the large-scale retailers (Buxadé, 1994).

In addition, the clear labelling regulations that were in force in other countries were lacking in Spain, and this would be a problem until well into the 21st century (González Jiménez, 2013). The production of *pollo campero* and extensively reared broiler chicken would finally be regulated in 2013. Despite this, slow-growing and organically reared chickens continued to encounter problems when it came to increasing market share owing to the heavier weighting of maize in their diet, which greatly raised production costs and, consequently, their price. Therefore, it was logical that intensively reared broiler chickens should continue to account for about 90% of all the chicken produced in Spain by the end of the 2010s (Sarmiento, Palacios and Álvarez, 2017).

Again, tradition makes a significant difference here. Organically reared chicken barely accounted for 0.10% of all the broiler chicken produced in Spain by 2018, but close to 60% of this figure was produced in the two regions with native breeds: Galicia, with the best supply of maize in the country, and Catalonia. They are the only Spanish regions whose heritage meat chickens are recognised by the European Union with protected geographical indication (PGI) status: *Capón de Vilalba* in Galicia, and *Gall del Penedés* and *Pollo y Capón del Prat* in Catalonia.

The comparison with pork products in this field is also telling. First, Spain has five pork products included in the highest-level quality scheme, protected designation of origin (PDO), four of which are for *Ibérico* leg and shoulder hams made from at least 75% purebred Iberian pigs (*Guijuelo*, *Jabugo*, *Dehesa de Extremadura,* and *Los Pedroches*), and the other for white pork leg and shoulder hams made from white pig breeds (*Teruel*) Another 15 pork products, two of them leg hams, have been granted PGI status. In particular, in a move away from standardised and globalising models, PDOs are proof of the specific local product as a guarantee of differentiation and quality; in the case of *Ibérico*, they are also linked to long-standing agro-ecological practices in the *dehesas* of Spain and a commitment to indigenous breeds (Silva *et al.* 2023). In summary, the higher number of products of recognised quality reflects both the great appreciation in Spain for natural and artisanal pork products and the recognition of the high value of the country's rural food heritage. This type of farming also fits in perfectly with the emphasis given to animal welfare and, more particularly, with environmentally friendly farming (Aparicio *et al.*, 2018) and the strategy for sustainable and natural livestock farming systems. Thus, extensive pig farming models (*dehesa* pigs) have the best agro-ecological credentials for energy return on investment (EROI), contributing to the energy transition and offering organic meat to society (Ramos *et al.* 2022). This offers a greater guarantee for the future of the sector in terms of sustainability.

Conclusions

The economic success of the intensive poultry and pork sectors in production, consumption, and foreign trade is a milestone in the Spanish economic history of the last seven decades. Among the supply factors that explain its meteoric expansion, those worthiest of mention are the impossibility of the traditional extensively reared ruminants to compete on price, the absence of imports

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during the first decades of development, and a context of scarce legal restrictions lasting until the 1990s. Decades of tough competition in the domestic market shaped the two agro-industrial sectors, leaving them well prepared to face the global market. In turn, this process led to a drastic reconfiguration of both forms of livestock production in terms of breeds, feeding methods and animal slaughter and cutting, with a strong influence from those traditionally used in rural areas.

Both intensive livestock businesses began with very similar dynamics in a period of mass consumption in Spain, but once production reached its maturity stage, in a context of highly segmented consumption, they were found to have developed very distinctive characteristics. The question is why chicken, being both a cheaper and healthier product, was unable to expand at the same rate as pork. The comparison made of both types of livestock farming highlights the distance between a more recently introduced product in Spain with an insufficient supply of the necessary raw materials and another with a long-standing tradition that is much better suited to the conditions of much of the country, both in terms of space and raw materials.

Nevertheless, the initial development of intensive livestock farming turned its back on the traditional resources and methods of rural Spain. This fact was even more evident in pig rearing, where the abandonment of native breeds was a result of the creation of macro-farms using foreign breeds. The impact of this phenomenon on the rural areas where it has occurred is not easy to assess. While it is evident that environmental degradation is seen as a growing issue, it is also true that meat, ham and sausage companies offer employment opportunities in many areas with severe depopulation problems.

Be that as it may, growing market segmentation and product differentiation are mainly responsible for the better business prospects of the pork sector. Differential quality and the identification of the product with local and traditional factors have played a decisive role in this respect. The broiler chicken has not been able to overcome the basic notion that it is a cheap source of protein owing to its lack of a cultural background in the form of the quality processed products that exist for pork. However, in comparison with a relatively less established product such as turkey, the conclusion is that the strong roots put down by chicken in markets and homes also make a difference for Spanish consumers (Baviera *et al.*, 2021: 344).

Consequently, the similar courses taken by the broiler chicken and pork sectors in Spain, with their different levels of success, highlight the capacity of the agribusiness system for long-term adaptation. Given changing market conditions and consumer preferences, sectors built on a solid base of products that have centuries of appreciation have the greatest possibilities for achieving continued success. In short, tradition counts.

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Notes

1 According to calculations made in 1953, 79% of the total annual value of poultry production in Spain came from egg production, while chicken meat accounted for only 11% (Sindicato Nacional de Ganadería, 1954).

2 For a review of the main literature studying the period from the 19th century to 1985, see Soto *et al.*, 2019: 100–101.

3 Most of the charcuterie products sold in Spain have traditionally been pork, even today. More than 50% of the total are made of pork, particularly boiled ham (15.4%) and cured 'white' (non-Iberian) leg ham (14.3%). In comparison, chicken charcuterie products account for barely 1.3%, while turkey charcuterie products account for 13.2% (ANICE, 2021).

4 Specifically, Aragon was ranked first in both years (459 LSU/holding in 2013 and 501 in 2016), followed by Lombardy (Italy) in 2013 and Noord-Brabant (Netherlands) in 2016; Catalonia was ranked fourth in both years (calculation based on data compiled by Eurostat, Pigs by NUTS 2 regions). The animal categories included per holding were live swine, piglets live weight under 20 kilos, and other pigs.

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