



RESEARCH ARTICLE

Unravelling the nutritional transition in Spain: From meat shortages to excess (1958–1990)

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Abstract

The nutritional transition, together with the demographic and epidemiological transitions, stands as one of the most crucial phenomena shaping societies in the 20th century. A prominent characteristic of the nutritional transition is the increased consumption of animal-origin protein, particularly meat. Within this context, the present article utilises Spain as a case study to provide a close examination of the nutritional transition during the latter half of the 20th century. Spain's significance lies in its late but rapid development of this transition. In the 1960s, meat consumption was relatively low compared to other European countries; however, within just two decades, it surpassed that of many developed nations. On one hand, the article offers a detailed insight into how budget constraints were eased to foster meat consumption among various consumer groups. On the other hand, the study aims to quantify the influence of income, prices, and preferences in driving this process.

Introduction

As societies reach a certain threshold of calorie intake and macronutrients, consumers tend to increase their consumption of animal-derived products while decreasing their consumption of plant-derived products (Grigg, 1995; Cussó Segura and Garrabou Segura, 2007; Medina-Albaladejo and Calatayud, 2020; Medina-Albaladejo, Martínez-Carrión and Calatayud, 2023). This complex process, with significant exceptions and differences both between countries (Deaton and Drèze, 2009; Langthaler, 2018; Presa and Román, 2022) and within countries (Medina-Albaladejo, Martínez-Carrión and Calatayud, 2023), has been referred to as the modern nutritional transition (Popkin, 1993). Historically, the nutritional transition first occurred in Europe and other high-income countries and subsequently in developing countries (Grigg, 1995; Delgado, 2003; Popkin, 2003; Cheng, Gao and Seale, 2015; Medina-Albaladejo and Calatayud, 2020). Therefore, global diets have tended to homogenise around the Western diet, which is high in saturated fats and sugars and low in fibre. Consequently, the nutritional transition and the homogenisation of diets have cost both in terms of health (mainly due to the increase in non-communicable diseases) (WHO, 2021; Cerrillo et al., 2023) and the environment (Infante-Amate et al., 2018; Winders and Ransom, 2019; González de Molina et al., 2020).

Both technical changes in livestock production and rising demand are the main factors that the literature has identified to explain the modern nutritional transition (Collantes, 2019). Regarding technical change, the increase in productivity resulting from livestock intensification, and subsequently, the growing influence of major retailers, would have led to a decline in the relative prices of these products, thus causing a significant increase in their consumption (Grigg, 1995; Rivera-Ferre, 2009; Magnan, 2012). Therefore, it would be the increase in productivity along the

value chain that would induce greater consumption of products such as meat or milk. Regarding demand, the rise in per capita income in the Western countries following World War II, and subsequently in developing nations, along with the growth in population and urbanisation rates, would account for the surge in animal product consumption (Popkin, 1993; Delgado, 2003).

Spain, a Mediterranean country that was relatively impoverished in 1950 compared to the rest of Europe, underwent significant economic, political, social, and nutritional changes during the second half of the 20th century. Immersed in a dictatorship, the GDP per capita experienced a spectacular growth, especially until 1975, leading to a convergence with Europe. In the 1970s, amidst the oil crisis, the country transitioned to democracy, marking the simultaneous growth and consolidation of the welfare state (Carreras and Tafunell, 2010). In addition, during the second half of the 20th century, levels of interpersonal inequality significantly decreased (Prados de la Escosura, 2008). From a nutritional standpoint, Spain experienced its modern nutritional transition in the latter half of the 20th century, slightly later than the major European powers (Moreno, Sarría and Popkin, 2002; Pujol Andreu and Cussó Segura, 2014). Prior to the 1970s, the consumption of livestock products in the diet was relatively low (Clar, 2008: 136) and characterised by significant inequalities (Medina-Albaladejo and Calatayud, 2020; Medina-Albaladejo, Martínez-Carrión and Calatayud, 2023). However, there was a significant increase in the consumption of meat and other livestock products within a short period of time, leading to a shift away from Mediterranean dietary patterns (Moreno, Sarría and Popkin, 2002; Bach-Faig et al., 2011). In 1958, the average meat consumption in Spain was approximately 20 kilograms per person, which is close to the current recommendations for nutritional discourse (Willett et al., 2019: 551; Martínez et al., 2020: 53). However, by 1980, meat consumption in Spain had surpassed 60 kilograms per capita, triple the recommended maximum consumption. Additionally, in the latter decades of the 20th century, there was a relative increase in the consumption of processed meat, which is linked to an increased risk of colorectal cancer, coronary heart disease, and diabetes (Bonnet et al., 2020: 3). Consequently, the prevalence of various diseases currently affecting Spanish society, such as high rates of obesity, diabetes, and other cardiovascular diseases (Cerrillo et al., 2023), originated during the period under investigation in this work.

In this context, the objective of this work is twofold. Firstly, I use Spain as a case study to display the evolution of budget constraints on meat consumption and the determinants of its smoothing (income and prices) during the second half of the 20th century. Secondly, I aim to analyse the role of preferences in the evolution of meat consumption during the same period. To gain a more comprehensive perspective, I do not focus solely on average consumption, but instead look at different groups of consumers (income quartiles, regions, and territories) and different types of meat (both by animal origin and degree of processing).

Therefore, this work engages in dialogue and complements some articles that seek to analyse the determinants of nutritional transition. Collantes (2019) finds that the softening of the budget constraint for dairy product consumption in Spain during the second half of the 20th century is primarily explained by the increase in household income. González de Molina et al., (2020: 209–210) argue that, while income increases were significant in boosting meat and milk consumption in the second half of the 20th century in Spain, the decline in prices of these products was more crucial in explaining their widespread adoption among the entire population. Clar (2008) also argues that the implementation of a Fordist consumption model in Spain, characterised by the mass consumption of chicken, pork, milk, and sunflower oil, was highly influenced by the fall in prices. In turn, prices were shaped by institutional variables, based on the ease with which the regime allowed foreign companies in these sectors to establish themselves in Spain. Other authors, such as Nicolau and Pujol Andreu (2005 and 2011) or Pujol Andreu and Cussó Segura (2014), consider that, besides income and prices, other variables such as preferences, medical advances, or technological innovations also played an essential role in the shift in diets. In this work, I complement the aforementioned literature on determinants of livestock product consumption, attempting to provide a micro, detailed, and quantitative perspective.

The paper is structured as follows. After this introduction, in the next section, I describe how I constructed the database and the methodology employed. In “Nutritional transition and meat consumption in Spain,” I present descriptive data on meat consumption in Spain, relating them to the existing literature on the subject. In “Budget constraint, income and prices,” I illustrate the evolution of budgetary constraints on meat consumption, along with their determinants. In the subsequent section, I present the role that preferences have played in this process. Finally, I conclude the work with brief conclusions and limitations.

Data and methodology

To illustrate the evolution of budget constraints on meat consumption during the mid-20th century in Spain, as well as its decomposition into the roles played by prices and income, I have primarily relied on the Household Budget Surveys (HBS) as the main data source (INE, 1959, 1965–69, 1983–85, 1992–95). These surveys were first conducted by the National Institute of Statistics (INE) in 1958 with the aim of obtaining information about the expenditure (and physical consumption of food items) of Spanish households (Maluquer de Motes, 2005; Collantes, 2012), as well as the consumer price index. Specifically, in this study, I use the HBS from 1958, 1964/65, 1980/81, and 1990/91, also known as the structural (or basic) family budget surveys (Díaz-Méndez et al., 2005: 120). Although there is an HBS for the period 1973/74, it does not provide data on food intake, but only on food expenditure. I have attempted to use alternative databases such as the one provided by the FAO to cross-reference food intake data with the expenditure data from the HBS, but the data merging does not yield consistent and reliable results (Cerrillo et al., 2023). This is due, among other factors, to the fact that the increase in the production and export of meat in Spain, as well as a greater share of processed meat in the 1970s, resulted in a greater loss in the value chain that surveys do not take into account.¹ Additionally, the FAO does not allow for disaggregating consumption by consumer groups, something that is done in this study. Therefore, although quantitative information is not provided between 1964 and 1980, this study prioritises structural changes over cyclical ones. In fact, as argued by Nicolau and Pujol Andreu (2005), significant changes in societies’ diets should be studied over the long term, as preferences do not change from one year to another due to their influence by social and technological changes. Although the use of a single database as the foundation of the entire study may imply the existence of biases due to possible methodological errors of the source (Díaz-Méndez et al., 2005), the trends (though not the exact values) in meat consumption presented in the surveys during the study period are similar to those of other sources such as the Food Consumption Panel (from 1987 onwards), thus demonstrating the robustness and reliability of the surveys.

Since the 1964/65 survey, all of the surveys have a considerable sample size (between 24,000 and 28,000 households [Maluquer de Motes, 2005: 1271]) and a sufficiently broad disaggregation of products to gain a detailed understanding of household consumption.² In addition to providing data on food consumption at the national level, they also offer data on consumer characteristics, such as income levels, regional scope, types of municipalities (rural and urban), etc., which allow for a much better understanding of what has happened at the average level (Medina-Albaladejo, Martínez-Carrión and Calatayud, 2023). Indeed, there are other segmentations such as consumption by age or gender, the Household Budget Surveys do not provide this data for the study period. Consumption by age is only provided for 1990, so its evolution cannot be observed, which is key in this article. Additionally, only the age of the breadwinner is provided, so the results are biased. Regarding gender, there is no data available.

Since the surveys provide physical consumption and nominal expenditure data, the implicit price of each food product can be obtained (Collantes, 2019). In order to calculate expenditure and prices in relative terms, they have been deflated using the consumer price index offered in Maluquer de Motes (2005: 1292) and linked to the one provided by the National INE.³ For data on

net disposable household income at the national level, the data presented by Carreras, Prados de la Escosura and Rosés (2005: 1372) have been used. For disposable income by different groups of consumers, the data provided by the HBS have been used, also deflated by the general price index. Although the data provided by the HBS on disposable income may be somewhat underestimated (Torregrosa-Hetland, 2016), this does not seem to imply significant bias, as demonstrated in Collantes (2019) using alternative indicators such as GDP per capita. With regard to the types of meat analysed, data has been aggregated both at the level of the source animal (beef, lamb, poultry (mainly chicken), and pork) and by degree of processing, i.e., fresh and processed meat.⁴

Once the database has been constructed, a methodology similar to that of (Collantes, 2019: 960–62) has been employed, which consists of two parts. The first part involves calculating the budget constraint for meat consumption in Spain and determining the factors contributing to its softening over time. To calculate the budget constraint, a fixed quantity of consumed meat is chosen (reference consumption), and the expenditure on family income per capita required to consume that quantity is observed at the prevailing prices for each year. Fixing a quantity allows us to observe the evolution of the income required to consume that quantity over time, without taking preferences into account. In other words, if a budget constraint is displayed with the actual quantities consumed each year (which will also be shown), those consumed quantities are not only determined by income and prices but also by the willingness to consume meat in different years. By fixing a specific quantity of meat, we avoid this issue. To determine the factors influencing the softening of the budget constraint over time, we employ the definition of purchasing power for meat procurement. In any given year, this is determined by the division of available family income and the real prices of meat. When translated into cumulative annual growth rates, the increase in purchasing power for meat access is represented as follows:

$$T_{t,t-1}(\textit{Meat purchasing power}) = T_{t,t-1}(\textit{Disposable income}) - T_{t,t-1}(\textit{Meat prices}) \quad (1)$$

In other words, this is a breakdown of the cumulative annual growth rates (T) of purchasing power in the acquisition of meat, corresponding to the percentage of net disposable income per person and the prices of meat. To be clear, although the formula resembles a demand function, it is a decomposition. In other words, the calculation does not inherently involve a functional form based on a theoretical model; it is solely an empirical decomposition. While it is true that there are other important variables besides income that affect demand, such as urbanisation, these are correlated with income and are also addressed qualitatively in the analysis. For example, as will be argued later, rural-to-urban migrations are key to shaping nationwide preferences for different types of meat.

The second methodological part is to determine the role of preferences or, in other words, households' predisposition to consume meat. Using Collantes' methodology (2018), the so-called consumer responsiveness factor (RF) is applied⁵:

$$RP = \frac{T_{t,t-1}(\textit{Meat consumption})}{T_{t,t-1}(\textit{Meat purchasing power})} \quad (2)$$

Intuitively, the responsiveness factor measures how the increase in physical meat consumption varies over a period of time with variations in the purchasing power of meat acquisition in the same period. If the RF is greater than 1, the growth in meat consumption will be higher than the growth in purchasing power adjusted for meat prices, therefore, there will be an increase in the predisposition to consume meat. In other words, consumer preferences will be favourable towards meat consumption. If the RF is less than 1, the opposite will occur.

Nutritional transition and meat consumption in Spain

According to the well-known article by Popkin (1993), the nutrition transition consists of two stages. In the first stage, societies tend to alleviate hunger by increasing caloric intake, primarily derived from plant-based products and to a lesser extent from animal protein. In the second stage, societies reduce caloric intake from plant-based products and significantly increase consumption of animal fats, processed products, and sugar. However, while there is a trend towards this homogenisation in diets, each country has taken a distinct path to complete the nutrition transition (Langthaler, 2018; Presa and Román, 2022). For the case of Spain, there is also abundant literature discussing the nutrition transition. On average, caloric and protein intake during the first third of the 20th century in Spain was already above nutritional requirements (Cussó Segura, 2005). During this time, around 60 per cent of calories were obtained from cereals (bread), potatoes, and legumes. Therefore, the Spanish diet was characterised by the consumption of Mediterranean products (Moreno, Sarría and Popkin, 2002; Garrabou Segura and Cussó Segura, 2009; Pujol Andreu and Cussó Segura, 2014; Medina-Albaladejo and Calatayud, 2020). Therefore, the consumption of livestock products, such as meat, milk, or eggs, was relatively low compared to Atlantic European countries (Gallego, 2016; Delgado, 2023). However, as noted by González de Molina et al. (2013), in the 1860s, the consumption of livestock products was higher (also observed by Bartolomé and González-Mariscal [2021] for preindustrial Seville). Therefore, according to various authors, it cannot be considered that there has been a single nutrition transition in Spain (Nicolau and Pujol Andreu, 2011).⁶ What does seem evident is that during the first half of the 20th century, despite a certain increase in the consumption of livestock products due to improvements in both supply and demand (Clar, 2008; Collantes, 2016; Langreo and Germán, 2018), significant segments of the population experienced deficiencies in specific micronutrients, such as calcium, vitamin A, or iron, partly due to the still limited consumption of livestock products (Cussó Segura, 2005; Collantes, 2014; Medina-Albaladejo and Calatayud, 2020). Moreover, this situation was exacerbated by the Civil War (1936–39) and the post-war period. That is, both the poverty caused by the war itself and the economic policies applied later, as well as international isolation, resulted in both economic and dietary deterioration (Barciela, 2003; Christiansen, 2013). The latter is accentuated in the case of livestock products (Clar, 2013; Martínez-Carrión, 2016). However, the final years of the 1950s and, especially the 1960s, witnessed significant changes in the Spanish diet (Moreno, Sarría and Popkin, 2002). Therefore, there was a significant increase in meat and dairy product consumption (Collantes, 2014, 2019). In 1961, meat consumption in Spain was substantially lower than in larger European countries. The same applied to dairy products, where their consumption was much less widespread in Spain than in Atlantic Europe after the Second World War (Collantes, 2019: 956). Conversely, the consumption of bread and potatoes was substantially higher in Spain (Pujol Andreu and Cussó Segura, 2014: 140). From the 1960s onwards, there was a remarkable convergence, with meat consumption growing more in Spain than in Europe (see Table 1).

However, the remarkable increase in meat consumption and dairy products (Collantes, 2014) since the 1960s masks significant changes among consumer groups (Collantes, 2015; Hernández-Adell, Muñoz Pradas and Pujol Andreu, 2019; Delgado and Pinilla, 2022; Medina-Albaladejo, Martínez-Carrión and Calatayud, 2023). In other words, the growth in average meat consumption involved the massification of its consumption at the income, regional, and territorial levels (both in rural and urban areas). In fact, in 1960, the modern nutritional transition had been carried out only by certain social groups, usually high-income ones, while the vast majority of the population still based their diet on Mediterranean patterns (Cussó Segura, 2005). Therefore, meat consumption was not common among most of the population (Marrodán, Montero and Cherkaoui, 2012). As shown in Table 2, consumption was overwhelmingly higher in the highest income quartile (Q4), as well as in urban areas and in the Mediterranean and Interior regions (especially Madrid) (Cussó Segura and Pujol Andreu, 2016).

Table 1. Meat consumption in different countries (kg per capita)

	1961	1991
<i>United Kingdom</i>	69,2	50,0
<i>France</i>	77,0	59,5
<i>Germany</i>	63,9	48,2*
<i>Spain</i>	21,8	64,2

Sources: For 1961, FAOSTAT (<https://www.fao.org/faostat/en/#data>). For 1991, DAFNE-ANEMOS (<http://dafne-anemos.hhf-greece.gr/>).

Notes: By using different sources for each year, the data are not entirely comparable. The FAO data for 1961 represent apparent consumption, whereas the DAFNE-ANEMOS data for 1991 reflect actual household consumption collected through surveys. In any case, the FAO data for 1991 are as follows: United Kingdom 72.5, France 100.9, Germany 87.7, and Spain 96.6. This refers to the consumption of meat from all possible animal sources.

*1993.

Table 2. Meat consumption in different consumer groups (kg per capita)

	1958	1964	1980	1990
Income				
Q1	n/d	19,9	63,3	67,0
Q4	n/d	48,6	64,8	61,3
Territory				
Urban	18,7	33,1	61,7	60,9
Rural	19,0	23,4	69,7	72,8
Regions				
North	n/d	24,5	65,4	66,7
Interior	n/d	30,9	69,7	69,0
Mediterranean	n/d	38,9	67,3	66,3
Andalucia	n/d	16,9	54,0	58,7

Source: Own elaboration based on Household Budget Surveys.

Notes: Quartile 1 is the quartile with the lowest income. For the construction of the four regions (North, Interior, Mediterranean, and Andalusia) see Delgado and Pinilla (2022).

In contrast, in the 1980s and 1990s, these inequalities in access to meat disappeared completely. In fact, consumption became higher among lower-income quartiles and in rural areas (Lopez, 1993). In other words, it was the increase in meat consumption among less favoured social groups or those with lower historical meat consumption that explains the strong increase in average terms up to the 1990s (see Table A1 in the Supplementary Material for consumption by disaggregated consumer groups by types of meat).

Undoubtedly, both changes in meat prices and increases in disposable income were important in explaining the sharp increase in meat consumption and its popularisation among all consumer groups. Regarding income, after the Stabilization Plan of 1959, a series of economic policies favourable to economic growth were implemented, and per capita income in Spain grew and tended to converge with Europe (Carreras, Prados de la Escosura and Rosés, 2005). In other words, during this time, Spain became a developed country (Carreras and Tafunell, 2010). This entailed that food items with a higher relative price, such as meat and milk, became more accessible to the average consumer in the country. As affirmed by Igualador et al. (1981: 85), ‘the strong increase caused by demand will bring about strong changes in [livestock] production’ (see also (Simpson, 1995)). At the regional level, income would also play a significant role in meat



Figure 1. Meat prices in relation to the general consumer price index.
 Source: Own elaboration based on Household Budget Surveys.

consumption patterns. In 1964, the Mediterranean, the region with the highest meat consumption, was also the wealthiest (Table 2). Andalusia, the region with the lowest income, was also the least carnivorous.

Regarding prices, significant changes in livestock production were observed during these years, which have been described in the literature as the crisis of traditional livestock farming (Domínguez Martín, 2001; Langreo, 2002; 2003; 2008; Ríos-Núñez and Coq-Huelva, 2015; Clar, Martín-Retortillo and Pinilla, 2018; Langreo and Germán, 2018). In other words, livestock production, historically based on being rooted to the land (extensive livestock farming), was industrialised, resulting in a notable increase in productivity in the meat sector due to this technical change. The intensification of livestock farming was based on the massive importation of animal feed, as well as the penetration of American capital with advanced technology, the importation of more productive foreign breeds, and improvements in the use of substances for animal fattening (Rodríguez-Zúñiga, 1980; Domínguez Martín, 2001; Clar, 2005, 2010; Estévez Reboredo and Sánchez de Lollano Prieto, 2022). Similar to the West (Godley, 2014), the intensification of meat production occurred first in chicken and pork, so that meats whose production was still based on extensive livestock farming, such as beef and lamb, had relatively higher prices. Clar (2008: 159) considers the price decline as a more important factor than income in explaining these patterns: *'the restructuring of the Spanish diet as a direct consequence of progress in income and urbanization (fundamentally) loses explanatory power the more we delve into the particular actors of change'*.

Figures 1–3 depict the price of meat in different ways. The first illustrates the price of meat in relation to the general consumer price index. The second displays the price of meat relative to a protein-rich substitute, such as dairy products. The third shows the price per 100 calories of meat. Although with slight differences, all three figures convey a similar narrative. Specifically, between 1964 and 1980, there was a greater decline in the price of pork and chicken compared to other types of meat. The diverse price behaviour observed in each type of meat may have exerted an influence on consumption patterns, as observed in Tables 3 and 4. In 1964, meat consumption was highly diversified, meaning that approximately the same amount of each type of meat was consumed. However, in the 1980s, in line with the strong increase in the average meat consumption, both the growth rates in chicken and pork consumption increased more than the growth rates in lamb and beef consumption (see Table 4). Consequently, the consumption of the former two meats stood at over 40 kilograms per person in the 1980s and 1990s, while the latter two were less than 15 kilograms. Therefore, in the 1990s, the majority of meat consumption in Spain (over 70 per cent) was based on these two types of meat. Regarding the degree of processing,

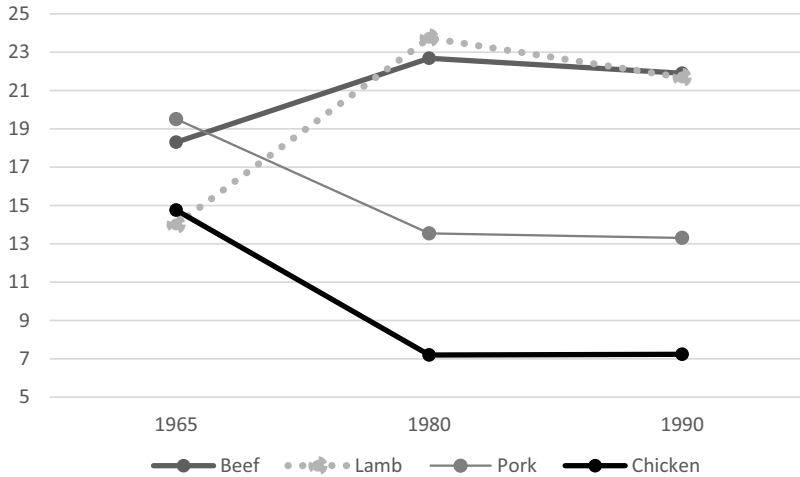


Figure 2. Meat prices in relation to dairy product prices.
 Source: Own elaboration based on Household Budget Surveys. For dairy product prices, see Collantes (2019: Table 7).

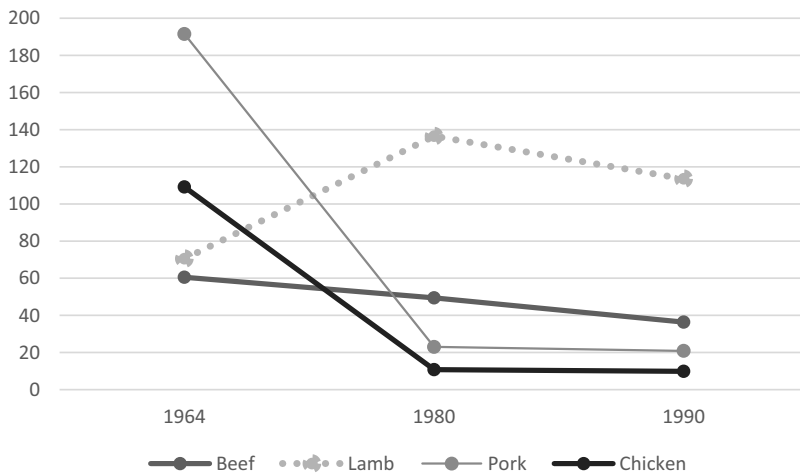


Figure 3. Price per 100 calories of meat.
 Source: To calculate calories from meat, I used the food composition tables from Moreiras, O et al., (2013). However, this approach has two main limitations. Firstly, calories for each food are designed for contemporary items rather than those from the 60s, 80s, and 90s. Secondly, household budget surveys disaggregate each type of meat in a manner that does not align with the food composition table. Nevertheless, my estimation for the 90s is quite comparable to that shown in Varela et al. (1995). Therefore, despite these limitations, the results do not seem to be significantly deviated from reality.

although processed meat (mainly ‘*embutidos*’ (cold meat) but also products such as sausages or hamburgers) have gained weight in the diet, in the 1990s, their consumption was around 25 per cent. Therefore, the mass consumption of meat during the second half of the 20th century is mainly explained by the consumption of fresh meat, in turn derived from chicken and pork. Hence, a priori, we could identify two effects. On one hand, the increase in income favoured the rise in overall meat consumption. On the other hand, the prices of each type of meat implied a substitution effect. Meats with a relatively lower price, such as pork and chicken, gained prominence in relation to total meat consumption. Conversely, meats with a relatively higher price, such as beef and lamb, diminished in significance within the Spanish diet.

Table 3. Consumption of different types of meat per person

Kg per person	1958	1964	1980	1990
Beef	n/d	7,2	9,5	11,4
Lamb	n/d	5,4	4,1	4,2
Chicken	1,2	5,3	21,9	22,7
Pork	n/d	7,4	25,8	23,3
Other meats ^a	n/d	1,7	4,1	2,9
Total^b	n/d	28,3	62,2	64,8
Fresh meat	n/d	22,6	49,4	49,3
Processed meat	n/d	5,7	12,8	15,5
Total^b	20,7	28,3	62,2	64,8
Percentage	1958	1964	1980	1990
Beef	n/d	25,6	15,3	17,6
Lamb	n/d	18,9	6,6	6,4
Chicken	5,6	18,7	35,5	35,0
Pork	n/d	26,3	41,4	36,0
Other meats ^a	n/d	6,2	6,6	4,5
Total^b	100	100	100	100
Fresh meat	n/d	79,9	79,4	74,6
Processed meat	n/d	20,1	20,6	25,4
Total^b	100	100	100	100

Source: Own elaboration based on household surveys.

^aThe composition of the category "Other meats" varies during the study period. Broadly speaking, it includes pork and horse meat, as well as meats whose origin is not specified in the surveys.

^bThe aggregation and homogenisation of the series over time results in some discrepancies between the sum of each type of meat and the total.

Table 4. Cumulative annual growth rates in the consumption of different types of meat

	1958–64	1964–80	1980–90	1965–90
Beef	n/d	1,8	1,8	1,8
Lamb	n/d	-1,7	0,1	-1,0
Chicken	24,3	9,9	0,4	6,0
Pork	n/d	8,6	-1,0	4,7
Fresh meat	n/d	5,4	0,0	3,2
Processed meat	n/d	5,6	1,9	4,1
Total meat	4,5	5,4	0,4	3,37

Source: Own elaboration based on Household Budget Surveys.

Budget constraint, income and prices

As outlined in the previous section, significant changes occurred in meat prices and consumer income, resulting in the average consumption of meat in Spain growing and becoming widespread among all consumer groups in the second half of the 20th century. In this manner, Spain

Table 5. Expenditure on meat relative to household income in Spain (%)

Reference consumption	1964/65	1980/81	1990/91
National average	18,3	7,3	5,1
Income			
Q1	43,0 ^a	12,7	9,9
Q4	7,8 ^a	5,3	3,0
Territory			
Urban	21,7	9,6	6,2
Rural	19,9	8,5	5,6
Regions			
North	17,7	7,7	5,5
Interior	17,7	6,9	5,0
Mediterranean	15,9	7,0	4,7
Andalucia	22,6	8,4	5,4
Real consumption	1964/65	1980/81	1990/91
National average	18,3	16,1	11,7
Income			
Q1	35,9 ^a	28,4	23,3
Q4	16,8 ^a	12,0	6,4
Territory			
Urban	19,6	15,7	10,8
Rural	15,7	20,9	14,3
Regions			
North	16,3	17,9	12,9
Interior	19,2	16,9	12,3
Mediterranean	21,6	16,7	11,0
Andalucia	13,6	16,0	11,3

Source: Own elaboration based on Household Budget Surveys.

Notes: ^aThe 1964/65 family budget survey provides expenditure data by income brackets that do not correspond to quartiles, as the lowest income bracket (Q1) covers 50 per cent of households. Therefore, the results should be interpreted with caution.

successfully underwent the modern nutritional transition and adopted Westernized consumption patterns. To examine this phenomenon, Table 5 presents the evolution of the budget constraint for meat consumption. It is displayed in two ways. Firstly, a fixed quantity of meat is chosen (reference consumption), and the necessary expenditure to consume that quantity with respect to the per capita disposable net family income, based on the prices of each year, is shown. This fixed quantity is set at 28.3 kilograms of meat per year, equivalent to the consumption level in 1964 according to Household Budget Surveys. Although this amount is relatively higher than the current recommended levels, it aligns with the prevailing consumption conditions in Spain. Moreover, in 1964, meat consumption was relatively diversified across all types of meat, indicating that the intensification of livestock farming had not yet substantially altered meat consumption patterns on average. Secondly, the necessary expenditure relative to disposable income to consume the actual amount of meat consumed each year is presented. Table A2 in the Supplementary Material provides the same information, disaggregated by meat types.

Overall, there is a clear softening of the budget constraint for meat consumption during the second half of the 20th century. Both on average and across different consumer groups, the expenditure as a percentage of disposable income required to consume the reference consumption of meat (28.3 kilograms) has significantly decreased. At the national level, it has dropped from slightly over 18 per cent to around 5 per cent. The softening of the budget constraint is particularly pronounced among lower-income groups. Specifically, these groups would have needed 43 per cent of their total income to consume the reference consumption. However, by 1990, they required less than 10 per cent. As expected, the differences between the highest and lowest income quartiles were initially substantial but tended to converge over the period, reducing levels of inequality (although not completely eliminating them). Differences in the budget constraint by territory and region are smaller than those based on income levels, resulting in similar meat expenditure relative to income as observed at the average level. Only Andalusia exhibits a higher budget constraint in 1964, although it also tends to converge with other regions in subsequent years.

Another characteristic in the evolution of the budget constraint is the high share of income dedicated to actual meat consumption. Specifically, an average family in Spain allocated nearly 20 per cent of their total disposable income to meat consumption in 1964/65. At first glance, this may seem excessively high. For instance, concerning the consumption of milk and dairy products, an average household spent 3.7 per cent of its income in 1964 (Collantes 2019: Table 2). However, in 1964/65, food expenditure accounted for around 50 per cent of total household expenditure, and the share of meat expenditure in total food expenditure was approximately 25 per cent in the same year, making meat the largest component of food expenditure (Maluquer de Motes, 2005). Expenditure on meat relative to income was particularly high among low-income households, as they allocated 36 per cent towards it. This suggests, as we will delve into further, that there was a strong preference for meat consumption during the 1960s. Despite the availability of relatively cheaper food options for energy and protein intake, families preferred to allocate a significant portion of their income towards consuming meat. The comparative data from the 1990s at the European level also highlight the exceptional nature of the Spanish case in this regard. In Purchasing Power Standard, Spanish households in 1994 spent 1258 on meat, significantly more than households in Germany (644), the United Kingdom (630), and France (1005).⁷ In percentage terms, Spanish families spent 2 per cent more on meat than French families, and twice as much as German and British families on average in the same year (Kanerva, 2013: Figure 12a).

What explains this softening of the budget constraint? To address this inquiry, we employed Formula 2. In essence, we decomposed the growth of purchasing power into the respective portions (expressed in percentages) attributable to the increase in household income and the price of meat. Table 6 shows the main results. First, the growth of the purchasing power of all meats was particularly strong between 1958 and 1980, and then continued to grow, although less markedly. This growth was explained by the intense increase in household income and by the fall in relative meat prices (except for beef and lamb, whose relative prices increased during this period). Initially, income was the main determinant for the growth of aggregate meat (last two rows), especially between 1958 and 1964. These results are consistent since the drop in the relative prices of aggregate meat was low (0.3). In the following two periods, although price increases in importance as a driver of consumption capacity, income remains more important than prices. Therefore, between 1965 and 1990, income contributes about 60 per cent of the increase in purchasing power. The same occurs with fresh and processed meat: income is more important in explaining its massification from the 60s onwards.

However, if we conduct a more disaggregated analysis by type of meat, the argument becomes nuanced. Especially in the case of poultry (mainly chicken), the fall in prices is more important to explain the increase in consumption capacity from 1964. Regarding pork, we observe a balance between income and prices to explain the increase in its purchasing power. However, for beef, and especially lamb, income is more important, at least in the period when meat consumption

Table 6. Contribution of income and prices to the growth of purchasing power for meat consumption (%)

	1958–64	1964–80	1980–90	1964–1990
Beef				
Income	n/d	121,1	44,7	94,3
Prices	n/d	–21,1	55,3	5,7
Lamb				
Income	n/d	551,6	35,7	160,8
Prices	n/d	–451,6	64,3	–60,8
Pork (fresh)				
Income	n/d	50,4	48,5	50,0
Prices	n/d	49,6	51,5	50,0
Chicken				
Income	55,4	37,5	54,7	39,3
Prices	44,6	62,5	45,3	60,7
Fresh meat				
Income	102,4	63,1	53,3	61,2
Prices	–2,4	36,9	46,7	38,8
Processed meat				
Income	75,5	58,4	63,3	59,0
Prices	24,5	41,6	36,7	41,0
Total meat				
Income	94,9	62,0	59,0	61,3
Prices	5,1	38,0	41,0	38,7

Source: Own elaboration based on Household Budget Surveys.

Notes: See Formula 1 in 'Data and methodology' to understand how the contribution of income and prices to the growth of purchasing power for meat consumption has been calculated.

increased sharply (1964–80). In the last period (1980–90), prices played a greater role for both beef and lamb meat.

Therefore, if meat is analysed in an aggregated manner, the modern nutritional transition in Spain would be explained more by income than prices, in line with authors such as Popkin or Grigg (see introduction). However, when meat is examined in a detailed manner, prices play a more significant role for chicken and pork, namely, the meat types that account for the popularisation of meat consumption. Therefore, in this case, works such as Rivera-Ferre (2009) or Clar (2008) for the case of Spain would be more accurate in pointing to prices as the main determinant in the modern nutritional transition. In other words, it would seem that for those meats whose technical change in production occurred earlier and more forcefully, such as chicken and pork, prices play a greater role than income. Conversely, for those meats that were historically based on extensive livestock farming, and thus had lower levels of productivity, income would play a more significant role.

However, national results conceal differences among consumer groups. Table 7 shows the contribution of income to the growth of purchasing power for total meat consumption across different consumer groups. Consistent with the national-level findings, income plays a larger role than prices in explaining the growth in meat consumption across all consumer groups. However,

Table 7. Contribution of income to the growth of purchasing power of aggregated meat (%)

	1964–80	1980–90
Q1 ^a	87,2	84,4
Q4 ^a	132,3	70,5
Rural	65,5	78,0
Urban	67,4	68,0
North	73,6	75,6
Interior	70,3	96,6
Mediterranean	59,8	61,1
Andalucia	62,5	76,7

Source: Own elaboration from the Household Budget Surveys.

Notes: ^aThe 1964/65 family budget survey provides expenditure data by income brackets that do not correspond to quartiles, as the lowest income bracket (Q1) covers 50 per cent of households. Therefore, the results should be interpreted with caution.

there are notable differences among groups. First, income played a greater role during the mass consumption period of meat (1964–80) for high-income consumers (Q4) than for low-income (Q1) consumers. In other words, the fall in prices was important for enabling groups with lower purchasing power to consume meat regularly. During the same period, the contribution of income to meat consumption was relatively similar in rural and urban areas, but there were significant differences among regions. Particularly noteworthy are the similar contributions of income in regions with such disparate levels, such as Andalusia (relatively poorer region) and the Mediterranean region (the wealthiest region in the country). Regarding dairy products (Collantes, 2019), we observe both similarities and differences. On the aggregate level, income plays a more significant role than prices in smoothing the budget constraint. This holds true for both milk and its derivatives. When examining income quartiles, family income exhibits a similar impact regardless of the quartile in the case of dairy products. However, when considering different regions, there are more pronounced differences based on the region compared to the case of meat. Therefore, in addition to prices and income, preferences play a significant role.

The role of preferences

What role did preferences play in meat consumption? Although often overlooked, preferences play an important role in explaining different consumption patterns. Preferences encompass a wide range of variables. In this work, without aiming to be exhaustive, I focus on some of them. For example, the dominant nutritional discourse, the role of women in the labour market, the role of advertising in consumption, consumers' perception of certain products, or regional historical traditions in the consumption of certain meats. As explained in the methodological section, I will combine the analysis of preferences from both a quantitative and qualitative perspective. To quantify preferences, I use the RF. This indicates consumers' predisposition to consume meat in growth rates (see methodological section). Table 8 represents the national responsiveness factor for total, fresh, and processed meat. There are at least three points to highlight.

Firstly, the high predisposition to consume meat in 1958–65 (around 0.8). This was much higher than in the case of dairy products during the same years (almost 0), although lower than the RF of processed milk (because it was a new product) (Collantes, 2019). In the 1960s, the Spanish population (on average) consumed a level of macronutrients more than sufficient with respect to the minimum necessary values (Cussó Segura, 2005: 349). As demonstrated in Table 9, between 1958 and 1964/65, there was a decline in protein and lipid intake. Despite this, the weight of both macronutrients derived from meat increased, doubling in the case of lipids. Therefore, in the 1950s and 1960s, the

Table 8. National-level responsiveness factor

	1958–65	1965–80	1980–90
Fresh meat	0,9	1,0	0,0
Processed meat	1,1	1,0	1,2
Total meat	0,8	1,0	0,2

Source: Own elaboration from the Household Budget Surveys.

Table 9. Calories, proteins, and lipids derived from meat consumption

	1958	1964/65	1980/81	1990/91
Calories from meat	99.5	150.5	310.2	326.7
Total calories	2925	3008	2914	2634
Calories from meat (%)	3.4	5.0	10.6	12.4
Proteins from meat	9.3	12.1	27.5	32.7
Total proteins*	65.4	60.9	68.6	70.4
Proteins from meat (%)	14.2	19.9	40.1	46.5
Lipids from meat	6.8	11.2	22.1	21.5
Total lipids	139.6	108	131	121
Lipids from meat (%)	4.9	10.4	16.8	17.8

Source: Cussó, Gamboa, and Pujol-Andreu (2018: 15) for total calories, proteins, and lipids.

Notes: *high biological value proteins.

predisposition to consume meat in Spain was very high due to its low historical consumption. This predisposition explains why the average Spanish household allocated nearly 20 per cent of its income to meat consumption, while lower-income households allocated 36 per cent of their income to it. In the 1980s, meat assumed a central role in calorie and macronutrient intake, representing 10 per cent of total calories, 40 per cent of high biological value protein intake, and approximately 17 per cent of lipids.

Secondly, the increase in the RF for total (and fresh) meat between 1958–64 and 1964–80 is remarkable. This result would not be predictable. The responsiveness factor, in my opinion, should be interpreted as a product life cycle curve (Collantes, 2019). That is, when a product is new in the market, its predisposition to consume it is high. In other words, the increase in its consumption will be greater than the increase in adjusted purchasing power for that product. However, over time, as the product becomes more widely available, the predisposition to consume it tends to fall, as it ends up becoming a mass-consumption product. Therefore, if there are no significant changes in the intrinsic characteristics of that product or a transitory change in consumers' perception of it (for example, a fad), the natural curve of the RF should be descending over time. So why is there an increase between 1958–65 and 1965–80?

Collantes (2019) also observed an increase in RF during this period for dairy consumption (in fact, the increase was greater than that for meat consumption). His hypothesis for this increase is based on the fact that the type of milk consumed in 1958–64 was not the same as that consumed in the period 1964–80. In the first period, most of the milk consumed was raw milk, while in the second period, it was processed milk. In other words, the mass production of processed (homogenised) milk increased confidence in this product, resulting in an increase in the RF. For meat, the argument could be similar. That is, the meat consumed in 1958–64 was produced in an extensive type of livestock farming, while in 1964–80 its production was intensive (industrialised).

Table 10. Responsiveness factor of different meats

	1958–64	1965–80	1980–90
Beef	n/d	0,7	0,8
Lamb	n/d	–2,8	0,0
Pork (fresh)	n/d	1,8	–0,5
Poultry	2,5	1,1	0,2

Source: Own elaboration from the Household Budget Surveys.

Table 11. Meat consumption in rural and urban areas in 1964 (kg per capita)

	Urban	Rural
Beef	9,9	3,6
Lamb	5,0	5,7
Pork	8,0	8,6
Chicken	7,0	3,0

Source: Own elaboration from the Household Budget Surveys.

Therefore, the appearance of a new type of meat (or produced in a different way) could have increased the predisposition to its consumption.

However, I consider that this argument does not apply to meat. To support this claim, I rely on the RF of poultry meat, for which there are data available since 1958 (see Table 10). What is observed is that the RF of this meat, being the paradigm of intensive livestock farming (Godley, 2014), has followed a normal pattern since 1958, that is, decreasing. Therefore, the change in the production of chicken, from a production based on hunting and family poultry to a type of chicken produced industrially, would not explain the increase in the predisposition to the consumption of total meat between 1958–64 and 1964–80. Consequently, I consider that the explanation behind this change in preferences is based on beef.

As shown in Tables 11 and Table A1 in the Supplementary Material, beef consumption is historically linked to urban areas (Nicolau and Pujol Andreu, 2005; Martinelli Lasheras, 2009: 35; Gil Roig, Angulo Garijo and Gracia Royo, 1998: 114). Along with chicken, the consumption of beef was almost 3 times higher in urban areas than in rural areas. Therefore, since, between 1950 and 1975, there was a large migration from rural to urban areas (Collantes and Pinilla, 2011), this led to the emergence of new consumers with a greater predisposition to the consumption of beef, causing the RF of total meat to increase in this period. Because in 1964 beef consumption with respect to total meat was still high (around 25 per cent), its consumption had a great influence on the consumption of total meat (and fresh meat). Clar (2013: 340), presents this idea clearly:

‘A new middle class emerged from the great exodus from the country to urban areas. It is calculated that in the 1960s alone more than two million Spaniards moved to the city from the countryside. However, until that time, any growth in the urban population had been reflected in greater consumption not of pork or chicken but of beef and, more particularly, veal. This partly explains why meat consumption in Spain was so low, given that veal tended to be seen as a luxury and its price was subject to large fluctuations. However, rural emigrants were generally unaccustomed to eating either beef or veal.’

Indeed, the RF of beef in 1964–80 in rural areas was 2.9, while in urban areas it was 0.52 (see Table A4 in the Supplementary Material). Therefore, this reinforces the hypothesis of the

importance of rural-urban migration in changes in national preferences during this period (Clar, 2013). In the following years, both sheep and beef meat showed a positive RF (see Table 10). However, in the 1980s, these two types of meat lost importance with respect to the total consumption of meat, so they had little effect on the RF of total meat (now dominated by chicken and pork). From the 1960s–80s onwards, Table 8 shows a significant decline in the predisposition to consume total (and fresh) meat. In addition to its own mass consumption, the dominant nutritional argument in Spain may have had some importance in this decline. In the first third of the 20th century, the low consumption of meat and milk by the Spanish population (on average) was a public health problem due to the importance given to the consumption of high-biological value proteins (Bernabeu-Mestre et al., 2008). However, in the early second half of the 20th century, the dominant nutritional discourse was different in the case of meat. For example, in the 1960s, a consumption of around 100 grams of meat per person was recommended (Vivanco and Palacios, 1964: 196). Therefore, unlike milk, where in the 1950s its consumption was promoted by the state in schools (Collantes, 2017b: 126), the relatively low consumption of meat in Spain was not considered a problem to public health and the problems caused by excessive consumption of meat were already evident (Clar, 2013: 340). These concerns about excess consumption of meat had already permeated society in the 1980s, thus influencing its lower preference and stagnation in consumption during this period (Mili, Mahlau and Furitsch, 1998).

The third important feature of Table 8 is related to processed meat. Specifically, the increase in its responsiveness factor between 1964–80 and 1980–90 is noteworthy. Processed meat has been gaining weight in total meat consumption, accounting for around 40 per cent of total consumption in recent years (Delgado, 2023). As outlined in the introduction, this has both health and environmental implications. What is behind this increase in the responsiveness factor of processed meat? Several factors could be at play. Firstly, the incorporation of women into the labour market. This fact, accelerated in the second half of the 20th century (Casares and Rebollo, 1991: 26), may have led to an increase in the consumption of processed and prepared food products due to less time spent preparing food. However, this does not appear to be a determining factor in the case of meat. Consumption data for processed meat in 1994 show that it is slightly higher in households where the woman is inactive in the labour market than in households where she is active (Rama, 1997: 129).

Therefore, I consider that the increase in the predisposition to consume processed meat is due to an intrinsic change in the characteristics of processed meat produced in Spain during this period. Historically, the consumption of processed meat in Spain was linked to rural areas, with a type of processed meat made artisanally (*embutidos*) and a high level of self-consumption (Lopez, 1993: 27). Therefore, in the 1950s and 1960s, the processed meat market was still based on artisanal meat, consumed abundantly by high-income families and in rural areas. The increase in income and urbanisation rates in the 1960s and 1970s demanded a type of mass-produced processed meat for this new segment of urban and middle-class consumers. The supply adapted to the demand by producing processed meats such as chopped, salami, mortadella, and, in general, all sausages produced industrially. This type of meat, in line with a higher total expenditure on processed foods (Abad, García Delgado and Muñoz Ciudad, 1994: 85), gained weight in total meat consumption between the 1980s and 1990s, to the detriment of other types of meat more linked to rural areas such as chorizo (Moreno, 2009). In fact, in the 1970s and 1980s, various transnational companies became interested in the production of this type of processed meat, so companies such as Nestlé and Oscar Mayer invested in the Spanish market to meet this new demand (Moreno, 2009: 114). Additionally, during this period, quality standards and regulations for processed meat increased (Escribano, 1981), further differentiating industrially produced processed meat from artisanal meat. In fact, in 1988, the meat sector was one of the sectors that dedicated the most resources to advertising ‘new products’ (industrially produced processed meat) (Rodríguez Zuñiga Manuel y Soria Rosa, 1990: 106).

Table 12. Responsiveness factor of processed meat in rural and urban areas

	1965–80	1980–90
Processed meat (rural areas)	1,2	0,5
Processed meat (urban areas)	0,7	0,7

Source: Own elaboration from the Household Budget Surveys.

As shown in Table 12 and as outlined previously, this new industrially produced processed meat was primarily traded in urban areas, resulting in a slight increase in its RF.⁸ In rural areas, the predominantly consumed processed meat was mainly artisanal, resulting in a decreasing trend in its responsiveness factor, as it was not considered a ‘new’ product.

However, the general change in preferences for processed meat masks a great variability among regions. Regions in the Interior and Mediterranean such as Madrid, Extremadura, Navarra, La Rioja, Balearic Islands, and Valencia greatly increased their consumption of ham (especially cured ham). The consumption of sausages notably increased in some areas of the north such as Galicia and Asturias, as well as in Madrid or Aragón, while its consumption fell in Catalonia. This is probably due to the fact that in the latter, its consumption has historically been higher (especially ‘*butifarras*’), resulting in an earlier saturation of this type of meat than in other areas. Therefore, the new offer of industrially processed meat was also conditioned by historical regional consumption patterns and had to adapt to them. In fact, regional differences in meat preferences have existed throughout the second half of the 20th century. For example, as shown in Table A3 of the Supplementary Material, the predisposition to consume poultry in the Mediterranean in 1964–80 was much lower than in the rest of the regions because its consumption was already high in the 1960s. However, in the 1980s–90s, the variability in the responsiveness factor for all types of meat, in addition to decreasing, tends to homogenise in all regions, showing a convergence in consumption patterns throughout the country.

Conclusions

The nutritional transition, along with other transitions such as the demographic and epidemiological ones, is a complex and multifactorial process that has significant importance in the historical evolution of societies. On one hand, the massification of products such as meat or milk among all consumer groups implied a nutritional improvement (especially in terms of micronutrients such as vitamin A, iron, or calcium) in more disadvantaged consumer groups such as children, pregnant women, or low-income segments (Cussó Segura, Gamboa and Pujol Andreu, 2018). On the other hand, the nutritional transition and the westernisation of consumption patterns also carry health costs. In recent decades, there has been an increase in non-communicable diseases such as obesity, diabetes, and other cardiovascular diseases in middle-low and low-income countries (Popkin, Adair and Ng, 2017).

In this work, I have focused on Spain to delve into how the budget constraint was softened to carry out the nutritional transition in Spain. Additionally, I have explored some of its determinants: income, prices, and preferences. The uniqueness of Spain lies in how it transitions from being a country with a Mediterranean diet and relatively low income in the first half of the 20th century to becoming one of the most carnivorous countries in Europe by the 1980s. In other words, following patterns seen in Mediterranean countries, the share of calories and proteins from vegetal sources was higher in Spain compared to central and northern Europe in the early years (Pujol Andreu and Cussó Segura, 2014). However, from the 1960s onward, the diet in Spain converges with that of Europe, thereby completing the nutritional transition belatedly but rapidly.

At the aggregate level of meat, income would play a greater role as a determinant of consumption. However, a more disaggregated approach by types of meat shows that the degree of industrialisation of each type of meat is also a crucial factor, which would lead us to think that prices play an important role, as shown by Clar (2008). Regarding the role of preferences, I have tried to show the importance of regional and territorial patterns to explain the change in predisposition to consume meat, as well as the importance of changes in supply to adapt to a new type of urban middle-low class consumer (Nicolau and Pujol Andreu, 2005).

The similarities and differences in the determinants of meat and dairy consumption in Spain during the study period are particularly interesting (Collantes, 2017a; Collantes, 2019). In the early 1960s, the milk responsiveness factor was much lower than that of meat, as the average consumer did not trust raw milk consumption. In the case of meat, this lack of confidence did not exist. It is likely that, for this reason, prices played a more important role in the capacity for chicken and pork consumption than in milk consumption. In other words, the drop in milk prices did not increase milk consumption, but the mass production of processed milk did, as this 'new' type of milk generated enough consumer confidence to become a mass-consumed product. In fact, the increase in the responsiveness factor of processed milk between 1958 and 1964 was much greater than in the case of meat. In addition to being a new product, dominant nutritional discourse may have also conditioned milk consumption. State encouragement of milk consumption since the 1950s was something that did not happen (or at least not to the same extent) in the case of meat.

Analysing and understanding the determinants of the nutritional transition of each product can help mitigate the negative effects, both environmentally and health-wise. On the one hand, the significance of prices in certain key meat types, such as poultry and pork, supports the implementation of taxes (such as a Pigouvian tax) to reduce consumption (Katare et al., 2020; Funke et al., 2022). On the other hand, the importance of preferences also supports appealing to emotional and informational factors (such as how to cook vegetarian food or increasing the availability of it) as drivers in reducing meat consumption (Harguess, Crespo and Hong, 2020).

Therefore, this work demonstrates the importance of disaggregating by-products and consumer groups to understand major dietary changes in societies, such as the nutrition transition. This phenomenon is evidenced by the fact that the determinants (such as prices, income, and preferences) influencing the consumption of chicken or pork differ from those influencing the consumption of beef and lamb. Furthermore, these determinants also exhibit variation between rural and urban areas. Thus, if we study major dietary changes using broad categories like 'livestock products' or average consumption at the national level, we will not observe key details to understand such changes.

Supplementary material. To view supplementary material for this article, please visit <https://doi.org/10.1017/S0956793324000050>

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Notes

1 To delve further into the difference between FAO data and the household budget surveys, see Delgado (2023).

2 While the sample size of the 1958 HBS is around 4,000 households, and the data is less disaggregated, it serves as a useful starting point.

3 https://www.ine.es/dyngs/INEbase/operacion.htm?c=Estadistica_C&cid=1254736176802&menu=resultados&idp=1254735976607

4 I have included frozen meat in fresh meat due to its low weight contribution.

5 The consumer responsiveness factor is an indicator very similar to the concept of income elasticity of demand. I prefer using this indicator over elasticity for two reasons. Firstly, it is more interpretable. For instance, an RP of 2.5 means that, on average, for each additional unit of purchasing power, the quantity demanded increases by 2.5 units. Secondly, we can compare it with the case of dairy products in Collantes' work (2019).

6 At this juncture, Pujol Andreu and Cussó Segura (2014: 142) hold a differing view. While acknowledging a decrease in livestock inventory during the second half of the 19th century, which could have diminished the consumption of livestock products, they argue that such consumption has consistently remained below that of Atlantic Europe.

7 <https://ec.europa.eu/eurostat/web/household-budget-surveys>

8 As can be observed, there are discrepancies between the FR in Table 8 and that in Table 12. This disparity arises due to the utilization of net disposable household income provided in Carreras, Prados de la Escosura and Rosés (2005) in Table 8, while in Table 12, the response factors are derived from the income data gathered through family budget surveys. Nevertheless, the differences are minor and only marginally affect the slope of the responsiveness factors.

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