Breadwinners in Spanish cities (1914-1930)*

● Cristina Borderías
University of Barcelona
https://orcid.org/0000-0002-9351-3432

● Luisa Muñoz-Abeledo
Universidad de Santiago de Compostela
https://orcid.org/0000-0002-7970-3045

● Xavier Cussó Segura
Universitat Autònoma Barcelona
https://orcid.org/0000-0001-9274-5031

Introduction

In recent decades, methods to measure living standards in European cities and abroad have improved significantly. In particular, Allen's welfare ratios[1] have been extensively used to make international real wages comparisons of unskilled urban workers from the middle-ages into the nineteenth century in different countries (Allen, 2001, 2009, 2015; Allen, Bassino, Moll, and Van Zanden, 2011). Of the many theoretical baskets available, the literature has slowly converged to using a subsistence basket (Allen, Murphy, and Sheneider, 2015; Allen, 2015). This is the minimum resources needed for survival in

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1. The welfare ratio is average annual earnings divided by the cost of a poverty line consumption bundle for a family. A welfare ratio greater than one indicates an income above the poverty line, while a ratio less than one means the family is in poverty. The model of the family consisted of man, woman, and two children, it was assumed that a family corresponded to three adult male equivalents (Allen, 2001).

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terms of caloric and protein intake.[2] In Spain, recent research uses this method in order to compare the subsistence real wages of textile and building labourers (during Early Modern Spain and compared then with North-Western cities (Martínez Galarraga and Prat, 2016; López Losa and Piquero Zarauz, 2021).

This welfare ratio method shows whether one man's urban wage could support himself, his wife and two children. But this method relies on some assumptions that generate criticism: because of its omission of women and children's wages and non-wage income, because it focused on big cities and its exclusion of consume changes over time, because it does not consider the family life cycle.[3] Some recent literature attempts to adapt welfare methods to solve those problems. For instance, using family reconstitution of twenty-six English parishes, Schneider shows how the changing size and composition of an individual family affected its welfare ration over the family cycle (Schneider, 2013). For the Netherlands, a recent study that uses the life cycle has demonstrated that annual wages of male agricultural and textile labourers were high enough to sustain their families at the subsistence level, but not at the respectability level (Boter, 2020).

In Spain, a recent study, based on an analysis of working-class family budgets in Catalonia and Galicia in 1924, has confirmed that men's wages alone were insufficient to cover families' economic needs (Borderías and Muñoz-Abeledo, 2018). The reconstruction of women's participation rates in Spain carried out in recent years has revealed the limited spread of the male breadwinner model among the working classes, even during the first third of the 20th century (Muñoz-Abeledo, 2012; Borderías, 2013; Pérez Fuentes, 2013; Martínez Soto, 2013; Campos Luque, 2014; Muñoz-Abeledo *et al.*, 2015; Garrido, 2016; Borderías and Ferrer, 2017). According to our data, the amount contributed by male heads of family barely made up half of family income—a proportion considerably lower than that reported in other parts of Europe—while women's wages accounted for 20 to 30 percent of family expenses, a greater proportion than that recorded in other European countries.[4]

2. Barebones baskets include a limited variety of goods, typically a cheap source of calories (normally carbohydrates in the form of grains), some source of protein (legumes and meat), and oil or

butter, plus some basic goods for heating (fuel), lighting (candles and lamp, oil), clothing (linen or cotton) and hygiene (soap).

3. See Humphries (2013) and the response in Allen (2015).

4. In the Ghent cotton and linen industry, breadwinners contributed 61 percent and 59 percent respectively, metal professions 70 percent, and artisans 77 percent (Van den Eeckhout, 1993). During the process of British industrialization, the average contribution of family heads was about 76 percent; about 66 percent for factory workers, and about 85 percent for farm day labourers (Horrell and Humphries, 1992, 1995).

Based on the methodology of family budget reconstruction, in this article we propose to expand the socio-geographic and chronological space of our earlier research. The goal is to analyse the capacity of wages in the principal male urban trades to cover annual working family expenses in the period 1914–1929.[5] We did that for all Spanish capital provinces using a model of family made up by two adults between 30 and 40 years old with three children less than 9 years old present in the household and not working. We incorporate a realistic urban workers food basket rather than the baskets proposed by Allen (2015), because it matches well with the Spanish urban reality of the study period. Furthermore, we calculate food costs separately for adult men, adult women, and children; and also for the family unit used as a model in this study. We chose this period because of the availability of data on wages and prices for the "working class cost of living", published in the *Anuario Estadístico de España* (*Spanish Statistical Yearbook*), hereinafter AEE, and in the *Boletín de Reformas Sociales* (*Bulletin of the Institute of Social Reforms)*, hereinafter BIRS. In the same period, *National Population Censuses* (CNP) and estimates of *apparent consumption*[6] allow for better calculations of food consumption.

In Spain, for even the most optimistic position, the fragility of the family economy based on the male breadwinner model could not have withstood the crisis caused by the First World War, with its repercussions on nutrition and, consequently, greater infant morbidity and mortality, as well as lower labour output (Cussó, 2005; Escudero and Pérez Castroviejo, 2010; Rojo and Houpt, 2011). The insufficiency of male workers' wages (even in the most skilled professions)—the same as for day workers' families with double incomes—in maintaining a nutritionally satisfactory diet has received new and sound support from a recent study by Domingo Gallego (2016) on Spanish cities between 1909 and 1913, in which the viability of the family economy based on the male breadwinner model is questioned once again.[7]

After the first fifteen years of the 20th century, during which real wages improved, the inflationary cycle caused by the Great War lowered the well-being that had been achieved in the previous decade. This decline fundamental-

5. It means to calculate the welfare level.

6. *Apparent* here means that it is an indirect estimation of consumption (food totals) and not a direct result of consumption surveys.

7. The heterogeneity of data in family budget studies and their different treatments lead to different results, even withing the same territory, making it difficult to tell whether these differences arise from the data or from the treatments. (Castroviejo, 1992; Perez-Fuentes, 1993, 2003). Available studies of wages also underline the low wages of Spanish industrialization: (Camps, 1995; Maluquer de Motes, 2005, 2006, 2013; Pérez Castroviejo, 1992, 2006; Borderías and López Guallar, 2001, 2003; Escudero, 2002, 2003; Silvestre, 2005; Llonch, 2004;Escudero and Pérez Castroviejo, 2010; Vilar 2014). In rural areas (Deu, 1987; Ballesteros, 1997; Lana Berasain, 2007); and fishing areas by Muñoz-Abeledo (2006).

ly affected biological standards of living—lower life expectancy and deteriorated working conditions (Escudero and Castroviejo, 2010). Local studies of different Spanish provincial capitals—Madrid, Barcelona, Bilbao, Palma, Zaragoza, Palencia—show that prices doubled during the war years, then remained stable through the 1920s (Reher and Ballesteros, 1993; Maluquer, 2006, 2013; Pérez Castroviejo, 2006; Molina de Dios, 2007; German Zubero, 2009; Moreno Lázaro, 2006).[8] Price increases were followed by increases in nominal wages, as the war period was characterised by social conflict, both international and national. In Spain, strikes protesting higher prices took off in 1918 (in the middle of the health crisis caused by the "Spanish flu"),[9] which resulted in wage increases between 1918 and 1920 that outpaced inflation in the beginning of the 1920s (Reher and Ballesteros, 1993; Vilar Rodríguez, 2004; Molina de Dios, 2007). In Zaragoza, the jump in wages came in 1919 (with wages doubling), which contributed to the arrival of immigrants (Silvestre, 2003; German Zubero, 2009). Most authors state that from then until 1930 living standards improved, affecting real wages, nutrition, life expectancy, and height (García Gómez and Escudero, 2018). Indeed, the improvement of urban wages relative to rural wages along with the improvement of non-agricultural working opportunities translated into an increase of migration from rural areas to the city (Silvestre, 2005). Among the industrial sectors, metallurgy had the highest wages (Soto Carmona, 1989; Pérez Castroviejo, 2006). Price moderation and the work of the state during Primo de Rivera's dictatorship brought with them a period of stable labour relations and real wage moderation (Vilar, 2004; Pérez Castroviejo, 2006).

The most recent anthropometric research corroborates an increase in height in the first decades of the 20th century, which was as much the result of wage increases as improvements in nutrition for people born at the beginning of the century (1906-10 and 1911-15), whose military service would be in the periods 1922-26 and 1927-31, respectively. In the Basque Country, these age cohorts would see an increase in height of two centimetres (from 1.64 meters to 1.66 meters) with respect to those born at the end of the 19th century (Pérez Castroviejo, 2006). According to recent research, this would coincide with what was happening in Mediterranean Spain, where those who were born between 1906 and 1910 would reach a height of 1.65 meters in the 1920s (Cámara, Martínez Carrión, Puche Gil and Ramon-Muñoz, 2019).

8. According to Maluquer de Motes, between 1915 and 1920 inflation was severe, reaching 11.18 percent (Maluquer, 2006). The food cost of living index in Zaragoza was stable between 1909 and 1914 at around 100 and doubled between 1914 and 1920. During the following period 1920-1935, prices tended to remain around the level reached at the end of the previous period (Germán Zubero, 2009).

9. An epidemiological situation with evident parallels with the one we are currently experiencing with COVID-19.

The article is structured in three sections. After this introduction, the second section concerns matter relating to sources and methods used in the determination of cost of living as well as in the reconstruction of family budgets, with an extensive subsection that covers the analysis of nutritional requirement estimates—apparent consumption—and the resulting nutritional state of the Spanish population between 1900 and 1930. In the third section, we present our results on the working-class cost of living, as well as the capacity of male wages in some urban occupations to meet household needs, as well as wives' contributions. Finally, we state our main conclusions.

Sources and Methods

The problems for tackling this study at a national level are well known. The shortcomings of using official wage statistics to reconstruct real wage series have already been shown in Spanish historiography. We are aware that local and regional sources are the most solid ones to build series of wages and prices, but they have a very narrow geographic scope. Spanish historiography has pointed out some deficiencies in official statistics of real wages. In brief, the official statistics lack homogeneity and do not include information about some payments, such as for piecework remuneration (Maluquer de Motes, 1989). Other authors such as Soto Carmona are more critical and point out that the official statistics on wages lack rigor until 1920 because they were elaborated thanks to the voluntary efforts of the IRS rather than to a coordinated action of the public powers (Soto, 1989, p. 35). The discussion of the limits and virtues of salaries published by the Instituto de Reformas Sociales (Institute of Social Reforms, hereinafter IRS) can be seen in Vilar (2004, p. 85) and Maluquer de Motes (2013, p. 20). However, even recognizing their limitations, the official statistics are seen as what "generates the most confidence" (Roldan and García Delgado, 1973). In fact, Maluquer de Motes and Llonch (2005, p. 1221) elaborate agricultural wage series and indices on the basis of Spain's statistical yearbooks. Furthermore, some studies based on sources in business, hospitals, and charitable institutions have shown the reliability of day wages for certain professions, such as mining and metal workers in the Basque Country in the 1920s (Pérez Castroviejo, 2006) and workers in the graphic metal and canning industry in the first third of the 20th century (Muñoz-Abeledo, 2010). With regard to prices, the BIRS and the AEE mainly published food prices and also prices of some home expenses, such as for lighting, wood, and coal. Despite their limitations, they have also been widely used in the historiography to analyse the cost of living in certain cities during the first third of the 20th century (Reher and Ballesteros, 1993; Pérez Castroviejo, 1992, 2006; Pérez Sánchez, 1996; Molina de Dios, 2007; Maluquer,

2013; Germán Zubero, 2009; Rojo and Houpt, 2011; Domingo Gallego, 2016), as well as for the analysis of regional disparities in prices and consumption (Nicolau and Pujol, 2006).[10] Some economic historians have also turned to these sources in order to study wage convergence (Rosés and Sánchez Alonso, 2004), and income inequality (Martínez Galarraga, Roses and Tirado, 2009).[11] In this article we use the data of wages and prices for "worker's cost of living" collected by the IRS and published in the BIRS for the period 1914-1924, and in the AEE for the period 1914-1930 because, even with the aforementioned objections, they are the only sources that provide data for estimating at a national scale the capacity of working men's wages to maintain a family in urban settings.[12]

We have also turned to a wide variety of sources that serve to contrast and complete these data; among them, public and private local statistics on wages, prices, and standards of living, as well as monographs relating to standards of living in different cities. The methodological problems we have had to resolve affect the consumption unit taken as a reference for the determination of income and expenses, that is, the type of family; the selection of the main expenditure items, in particular the determination of food outlays, which is one of the major problems in the reconstruction of family budgets; and the calculation of annual working days in order to calculate annual income. To the extent that our purpose is to determine the spread of the family wage, we have focused fundamentally on the wages of adult male workers, and secondly, on calibrating the potential contribution of wages from women's trades. In the next section, we explain in more detail the methodology for reconstructing each of the elements that make up family budgets.

10. The study by Maluquer revises retail price indexes created for this period by trying to carry out a better measurement of consumer price evolution for the period previous to the publication of the Spanish IPC, started in 1940 (Maluquer, 2013).

11. With regard to wage convergence of urban workers, these authors notice divergence between 1914 and 1920 and convergence between 1920 and 1930 among skilled and unskilled workers, except in Andalusia and northern Castile. Their results show that the process of wage integration that took place between the mid-nineteenth century and the Civil War happened with both high and low rates of migration, making the impact of migration on wage convergence insignificant (Rosés and Sánchez Alonso, 2004).

12. Beginning in 1909, the Social Reforms Institute records prices of food consumption and some household expenditure items: soap, coal, lighting, and in some years the so-called housing costs or housing-lighting. Therefore, they attempt to measure consumer prices and have the advantage of covering a very wide geographic area. Nevertheless, they were not subject to any consideration in the elaboration of price indexes and thus are insufficient, though they can be used in the construction of cost-of-living indexes at the very least.

Wages, Income, and Consumer Prices in Working Families

Since the ultimate purpose of our work is to determine the capacity of men's wages to meet the requirements of family maintenance, we have used a family comprised of a married couple between 30 and 40 years of age with three children less than 9 years of age as our reference unit for estimation of the family budget. The reason for selecting this type of family comes from our interest in approaching family economics in one of the most vulnerable stages of the family cycle. Since these children have not reached working age, wage resources essentially come from the spouses, taking into account that the mother has already finished pregnancy and nursing.[13]

Regarding wages, we have used those published by the AEE. We have selected trades for which regular information exists between 1914 and 1929. There are nine men's trades: four in the construction sector (bricklayers, stonemasons, carpenters, and painters); two in the metal sector (metalworkers and blacksmiths); two in the clothing sector (tailors and shoemakers) and, lastly, agricultural day labourers.

TABLE 1 ▪ *Occupation Percentage with Respect to Total Workforce According to 1920 Census*

	Forestry and Agriculture		Clothing Industry		Metallurgy	Iron and Metals	Construction
	Men	Women	Men	Women	Men	Men	Men
Summary Provincial Capitals	16.43	2.64	3.82	30.65	1.15	8.25	10.91
Total Employed	130, 625	3, 638	30,379	42,232	9,156	65,595	86,739
Barcelona	0.42	0.04	2.64	12.65	1.19	12.39	11.43
Madrid	0.52	0.00	5.95	76.66	0.99	6.64	19.85
Bilbao	0.67	0.12	3.11	41.38	6.51	11.89	5.64

Source: Own elaboration. Data from Instituto Nacional de Estadística (INE), National Population Census of 1920.

13. Our choice of unit for analysis (father, mother, and three children) corresponds to a stage of the life cycle that can be placed in the demographic context of the decade. According to the 1920 census, a woman practically at the end of her fertility would have had a total of four or five children. According to Fernando Gil Alonso (2005), in 1920 the average number of live births from married and widowed women in Spain overall was 3.98, and in the 26 to 35 age group it was 2.77 (Gil Alonso, 2005, p. 164). "The indicator of average number of children per woman in the cohorts born between 1885–1889 is 4.69 in Spain as a whole, and taking into account that that cohort would still have 2% of its fertility until completing its reproductive age in 1920, the average number of children per woman would be between 4.75-4.8" (Gil Alonso, 2005, p. 214).

These trades accounted for a significant part of employment in urban centers and surrounding areas. Men's employment in agriculture and forestry in provincial capitals represented 16 percent of the national totals for this sector, employment in urban construction accounted for almost 11 percent of Spanish construction, and provincial capital metal workers comprised 9.4 percent of the total for Spain (Table 1).

Data on women's wages are very scarce and unsystematic.[14] The most complete series is for female agricultural day labourers and for seamstresses and dressmakers (same wage is assigned to both of the latter occupations), which is what we have used. Its reliability has been contrasted with the Wages and Working Days Statistics of the Ministry of Labour (1914–1930), as well as with published data on industry (Deu, 1987; Enrech, 2004, 2005; Llonch, 2004; Borderías, 2006, 2013b; Vilar, 2014) and with those declared in the *Municipal Enumerator Book* of 1924 in different Galician and Catalonian cities (Borderías and Muñoz-Abeledo, 2018) and with official local statistics of various Spanish cities. We have calculated an average wage from the data on minimum and maximum wages published in the yearbooks.

To move from daily wage data to daily income data in order to calculate the outcome for the household economy requires considering annual working days, a matter on which there is little data. Moreover, we know that differences were not only regional but also inter- and intra-sectoral (Enrech, 2005; Deu, 1987; Soto Carmona, 1989; García Zúñiga, 2014). Here, we have used 265 working days, deducting days for illness, everyday crises, and other contingencies (Borderías and Muñoz-Abeledo, 2018).

With regard to household consumption, we have considered five items that both the Family Budget Survey and the Consumer Price Index (IPC) of the National Institute of Statistics (INE) have recorded since the 1950s for possible long-term comparisons: food, housing, household expenses (lighting and fuel), and miscellaneous expenses. Food prices and household energy costs are mostly those published in the AEE, as those of the BIRS refer to a smaller number of provincial capitals, although we did use information from the *Bulletins* for some items, such as vegetables.[15] Sources for rental prices of working-class housing are elusive. Among historians who have worked on the construction of price indexes, data from the *General Directorate of Registries and Notaries Yearbooks* are commonly used, although the housing registered

14. The data on women's occupations in Table 1 should only be considered as a rough approximation due to the under-recording of women's activities in national population censuses.

In the case of the dressmaking sector, it must further be taken into account that a considerable portion of the work was done at home for the informal market and was not recorded.

15. To get mean prices, prices were averaged for each city and for each product corresponding to the two semesters that they were published in the given years (1914, 1920, 1925, 1929). Concerning prices, Domingo Gallego has used the same methodology (2016, Appendix B, p. 11).

in the yearbooks would have been beyond the means of the working classes (Pérez Castroviejo, 2006; Molina de Dios, 2007; Germán Zubero, 2009; Maluquer de Motes, 2006, 2013). For this reason, we have turned to the "common" prices collected in the BIRS, published with greater regularity than those of the AEE. We have considered rental prices published in the semesters corresponding to the years 1915, 1920, 1921.[16] In order to estimate home lighting and heating expenses, we have used the prices included in the AEE and the amounts for workers' budgets available for different Spanish cities.[17]

It is even more difficult to find price series for all of the Spanish provincial capitals for items that are generally grouped under the heading "other expenses": clothing, health, school, social and tavern expenses. In the absence of these data, we have applied Maluquer's weighting (13.10 percent of total family expenses), which we have shown to be very close to that shown in several local statistics, such as the cases of Barcelona and Madrid (Maluquer, 2013; Reher and Ballesteros, 1993; Ballesteros, 1997; Borderías, 2020); Bilbao (Ballesteros, 1997; Pérez-Fuentes, 1993) and also for capitals with smaller populations such as Palma de Mallorca (Molina de Dios, 2007). Determining a nutritional diet is an extremely complex problem whose methodology we develop in detail below.

The Working-Class Diet

With regards to the food intake the most notable in the working families' budget during the period (70–75 percent of expenses), we have first calculated the cost of the apparent average diet of the population.[18] Albeit not entirely satisfactory, this is adjusted to the Spanish reality of the era and to some of its regional differences. Moreover, we have also elaborated an optimal diet, based on the above, which would adequately cover energy and nutritional requirements of our reference family unit at a minimum cost.[19]

16. Bulletin of the Institute of social Reforms, Worker's cost of living. We have obtained rental data from the following bulletins: March-September (1915), April-September (1920), November-December (1920), April-December (1921), January (1922).

17. The family budgets that exist between 1910 and 1920 for Biscay (province), Córdoba (Montilla) show a coincident consumption of 1 kg of coal per day. For the province of Barcelona, Alabert's budget also shows this coal consumption in 1915. We have calculated lighting as the minimum cost of oil per day (approximately 52 litres consumed per year and 0.14 per day) on the basis of the information of a working-class family's budget from Biscay. Strike Committee quoted by Pérez-Fuentes (1993, p. 259-264).

18. That is to say, annual production of each food, plus imports, minus exports, seeds, livestock feed, other industrial uses, estimated losses from the different stages of the food chain and, finally, more/less stock variations. The result would be the amount devoted to human consumption, which would be divided among the whole population in order to obtain the annual average consumption per capita (see FAOSTAT, Cussó, 2005).

19. The optimal diet is based on the *apparent consumption*, modified by incorporating the amounts of some foods that allow to cover the estimated requirements for the deficient micronutrients, such as calcium, vitamin A, and folic acid.

We have estimated the cost of these two diets for our reference family unit, consisting of a married couple between 30 and 40 years old with physical dimensions and activity levels considered normal in 1920, and three children—two sons between the ages of four and eight respectively, and a daughter aged six.[20]

To determine the diets mentioned above, we have relied on the net availability or apparent consumption of each one of the main foods in the Spanish population's diet in the period 1900–1930, and its conversion into energy and nutrients. These estimates are based on the methodology of food totals and on current conversion tables (BEDCA, mainly). We use the data prepared by García Barbancho (1960a and 1960b) for the period 1926–1956, which has been corrected or completed by various authors (Simpson, 1989; Giral, 1914 1960; Cussó, 2005, among others). From this, we obtain the diet[21] and its conversion into energy and nutrients for the mid-1920s, and the evolution of the apparent intake or consumption of energy and nutrients of the Spanish population between 1900 and 1930.[22] This is the population that, with appropriate adjustments, we will use as a reference for the urban working population (see Tables 2 and 3).

We have preferred to take García Barbancho's estimate of apparent consumption of foods per resident per day for 1926, conveniently completed and corrected with data from other sources (Giral, 1914; Simpson, 1989), rather than using the baskets proposed by Allen (2015), which are widespread in economic history today. We believe our choice better matches the reality (particularly the urban reality) of Spain in the period. Our diet aims to adapt as fully as possible to the food reality of the country, with the introduction of some regional differences in the consumption of some types of food, such as legumes (chickpeas or lentils) or fish, according to their relative prices, without entailing a reduction in nutritional value.[23] The resulting diet can cover the average energy requirements of a population that performs intense to

20. According to the 1920 census, a woman nearing the end of her reproductive life would have had a total of 4 or 5 children. Although more boys than girls are born, mortality is higher among boys, reversing the relationship between boys and girls beginning at the age of 15, as is confirmed in the population censuses of 1910, 1920 and 1930. For this reason, our family, with children below the age of 10, will be composed of two parents, two sons, and a daughter.

21. Edile portion (García Gómez and Trescastro, 2017).

22. With some corrections aimed to incorporate different products not considered by the author (such as corn, wine, and poultry and game, among others) that with absolute certainty were part of the diet of a large segment of the Spanish population at the time. This would be an "average" diet that, clearly, largely blurs social and regional disparities when talking about the consumption of the different types of food, which we will tackle at a later stage in this study. Home production, consumption of unrecorded minority foods, and the possible concealment of information are not considered in the construction. Protein availabilities have been multiplied by a coefficient 0.7 to take into account the digestibility and the average biological value of the proteins in the Spanish diet.

23. Using these prices as indirect indicators of their abundance and significance in the diet.

TABLE 2 ▪ *Apparent consumption of food, energy and nutrient intake and requirements per person and per day. 1920 – 1926*

			Energy	Protein	Calcium	Iron	Vitamin A	Zinc	Vitamin D	Folic Acid
Products	**Year**	**g/day**	**Kcal**	**g**	**mg**	**mg**	**µg eq.retinol**	**mg**	**µg**	**µg**
Wheat (wholemeal flour)	1926	410.4	1057.2	37.8	121.5	11.5	0	9.52	0	118.2
Rye (flour)	1926	48	137.9	3.1	12.3	1	0	1.15	0	26.88
Corn (flour)	1929-33	21.4	56.2	1.4	0.5	0.4	3.1	0.27	0	5.64
Rice	1926	26.8	94.9	2	2.7	0.2	0	0.05	0	5.36
Legumes	1926	34.7	110.5	7	39.6	2.3	9.3	0.81	0	30.65
Potatoes	1926	375.3	267.9	8.4	30.4	2	0	1.01	0	40.54
Vegetables	1926	64.1	15.6	0.7	20.3	0.3	80.2	0.09	0	13.09
Wine	1929-33	280	218.4	0.3	24.4	2	0	0.28	0	0.28
Cooking Oil	1926	34.2	307.9	0	0	0	0	0	0	0
Fruit and Lemons	1926	121.1	36.8	0.6	17.6	0.3	40.7	0.12	0	16.91
Beef	1926	13.4	26.6	2.2	1	0.2	0	0.22	0.06	0.48
Mutton and Goat	1926	12.5	18.7	1.3	0.6	0.1	0	0.15	0.03	0.37
Pork and bacon	1926	29.6	148.2	3.2	1.9	0.2	0	0.27	0	0.43
Poultry and game	1900	4	3.6	0.6	0.6	0.1	0	0.02	0	0.16
Eggs	1926	27.1	35.8	3	12.2	0.5	33.4	0.31	0.42	11.93
Milk	1926	175.5	122.9	6.1	228.2	0.2	82.5	0.53	0.05	8.78
Fish and seafood	1926	35.0	34.2	6.2	10.5	0.4	7.2	0.41	0.89	4.66
Sugar	1926	25.4	94.8	0	0.5	0	0	0	0	0
Cocoa	1926	1.2	4.2	0.1	0.5	0.1	0	0.02	0	0.17

(Continued on next page)

			Energy	Protein	Calcium	Iron	Vitamin A	Zinc	Vitamin D	Folic Acid
Products	**Year**	**g/day**	**Kcal**	**g**	**mg**	**mg**	**µg eq.retinol**	**mg**	**µg**	**µg**
A.I.*			2835.1	59.9	541.2	22.2	256.5	15.4	1.46	289.86
A.I.**			2616.7	59.7	516.8	20.2	256.5	15.1	1.5	289.6
TMI needs			2288.3	43.1	1047.2	12.5	786.8	13.76	15.5	353.9
Balance			328.4	16.6	-530.4	7.7	-530.3	1.3	-14.1	-64.3

Note:

A.I.**Apparent intake* of energy and nutrients per person per day.

A.I.*** Apparent intake* excluding wine, which we assume was consumed mainly by the adult male population.

Sources: Compilation based on García Barbancho (1960a and 1960b), Simpson (1989) for wine and corn, Giral (1914) for poultry and game, González de Molina *et al.* (2014), Yates (1960), Medina Albadalejo (2016), Cussó, (2001 and 2005), Pujol-Andreu and Cussó (2014) and BEDCA for conversions.

TABLE 3 ▪ *Apparent daily consumption of energy and nutrients by the Spanish population, 1900–1930*

	Energy	Proteins (1)	Calcium	Iron
	Kcal	g	mg	Mg
1900	2404	70.4	440	16.7
1910	2674	73.0	581	
1920	2835	59.9	541	22.2
1930	2672	79.1	514	16.9
	Zinc	**Vitamin A**	**Folic Acid**	**Vitamin D**
	mg	µg	µg	µg
1900	7.2	274	255	1.9
1910		394		
1920	15.4	256.5	290	1.46
1930	9.1	330	419	2.0

Proteins of maximum biological value.

Source: Compilation based on García Barbancho (1960a and 1960b) ; Simpson (1989), for 1900 and 1930; Giral (1914), for 1900; González de Molina *et al.* (2014), for 1900-2000; Yates (1960), for 1930-1960; Medina Albadalejo (2016), for 1900; Cussó, (2001 and 2005), Pujol Andreu and Cussó (2014), for corrections; and BEDCA for conversions.

moderately intense work but does present some deficiencies in some micronutrients, such as calcium, vitamin A, and folic acid; deficits that are corrected in the optimal diet.

Compared to these diets, the diet proposed by Allen appears excessively simplified and somewhat removed from the agroecological and cultural reality of the Mediterranean diet of the time (greater or lesser weight for meat or legumes, and the presence or absence of fish, fruit, or vegetables). Against the estimated energy and nutritional needs for the period, Allen's diet provides, especially for women and children, insufficient energy availability for the work demands of the era, as well as deficiencies in micronutrients such as vitamin A and folic acid (see annexed table).[24] Finally, given the demographic characteristics of the Spanish population in the 1920s, the two children of Allen's model underestimate the family burden.[25]

24. As has also been shown in Humphries (2013). For comparative purposes it may be useful to indicate that if our type of family consisted of 2 children instead of 3 and the energy intake was 8,400 calories, as in Allen's model, the cost of maintenance would be obtained by multiplying the one that results from our calculations by 0.82. This simple operation would serve to translate our results into terms comparable with the Allen model.

25. Humphries (2013) and Boter (2020) coincide in pointing out the inadecuacy of the number of children in Allen's model for England in the 18th and the 19th century as well as in the Netherlands at the beginning of the 20th century.

Resuming our analysis, we have contrasted the estimated average availabilities of energy and nutrients with the nutritional requirements of this urban working population for the period (1900–1924) to evaluate the population's nutritional status. For the estimation of nutritional requirements, we have taken the following references: in the first place, the age and gender structure of the population, according to population censuses of 1910, 1920 and 1930 (INE) (table 4) ; in the second place, the physical dimensions of the adult population in that period, based on the heights of military recruits (practically at the end of their physical growth process) and of women from 1910 onward (see Coll and Quiroga, 1994; Quiroga, 2001; Martínez Carrión and Puche Gil, 2010; Spijker, Pérez, and Cámara, 2008, among others); in the third place, the number of births for each selected year and the following year, which are obtained from the *Statistics on Natural Movement of Spanish Population* (INE; Carreras and Tafunell, 2006). With these data, we have been able to estimate the number of pregnancies fully or partially developed in the census year and the nutritional needs resulting from these pregnancies. Finally, and again for the adult population, we have assumed a physical activity level between moderate and intensive for the active population, which is consistent with the physical effort required in that era for production processes, mainly intensive (physical) labour, as much in the agricultural sector as in industry, mining, construction, or transportation. For children, youth, and pregnant women, we have used the energy and nutrient requirements appropriate for proper growth of minors and for the successful development of pregnancies with normal levels of physical activity in the period, without considering the real body dimensions of those groups. We believe that the possible overestimation of the requirements associated with this assumption can compensate to a large degree the loss of energy and nutrients, hardly meas-

TABLE 4 ▪ *Average daily energy and nutrient requirements of the Spanish population 1910–1930*

(2)	Energy	Protein (1)	Calcium	Iron	Zinc	Vitamin A	Folic Acid	Vitamin D	B12
	Kcal	G	mg	Mg	mg	µg	µg	µg	µg
1910 TMI	2266	42.8	1051	12.5	13.8	778	349	15.5	1.82
1920 TMI	2288	43.1	1047	12.5	13.8	787	354	15.5	1.84
1920 TI	2378	43.1	1047	12.5	13.8	787	354	15.5	1.84
1930 TMI	2286	43.1	1052	12.6	13.9	785	352	15.5	1.81

Proteins of maximum biological value.

TMI: moderately intense work, TI: intense work.

Sources: Own elaboration from *National Population Census* and MNP Spain, WHO, 1985; National Research Council, 1991; FAO, 2004; Carbajal Azcona, 2013.

urable because of their variability, caused by the high incidence of infectious diseases of the digestive and respiratory systems, excessive fibre in diets, or extreme environmental conditions experienced by the urban working class. In Table 5 (and A1 and A2 of the Appendix) we present the evolution of these requirements for the entire Spanish working population, as well as for each of the groups represented in our reference family unit.

From our estimates it can be deduced that the average requirements of energy, protein, and selected vitamins and minerals (as a function of age, gender, physical dimensions, satisfactory growth, and work intensity) remained very stable during the period of study, for both the whole population and for the different groups comprising it, and for the family unit in our study.

If we compare apparent availabilities and requirements, we can confirm that the average diet consumed by the population was not fully satisfactory and did not cover the estimated requirements of various micronutrients, especially for more vulnerable groups (women and children), and even more so if we consider the existence of significant inequality in income distribution, which surely relegated part of the population to food and nutrient intakes clearly lower than the estimated average (see Cussó, 2005; Cussó, Gamboa and Pujol Andreu, 2018).

TABLE 5 ▪ *Average daily energy and nutrient requirements of each family member*

Cohort (age range)	Energy (2)	Proteins (1)	Calcium	Iron	Zinc	Vitamin A	Folic Acid	Vitamin D	B12
	Kcal	G	Mg	mg	mg	µg	µg	µg	µg
Boys (0–4)	1065	22.6	578	7	7.8	360	102	14	0.8
Boys (5–9)	1710	34.8	1000	9	10	380	200	15	1.5
Girls (5–9)	1570	34.8	1000	9	10	380	200	15	1.5
Men (30–40) TMI	2850	54	1000	10	15	1000	400	15	2
Women (30–40) TMI	2350	41	1000	18	15	800	400	15	2
Family Daily Average TMI	1909	37.4	916	10.6	11.6	584	260	14.8	1.56
Family Daily Total TMI	9545	187	4578	53	58	2920	1302	74	7.8
Men (30–40) TI	3050	41	1000	10	15	1000	400	15	2
Women (30–40) TI	2550	54	1000	18	15	800	400	15	2
Family Daily Average TI	1989	37.4	916	10.6	11.6	584	260	14.8	1.56
Family Daily Total TI	9945	187	4578	53	58	2920	1302	74	7.8

Proteins of maximum biological value.

Sick persons: infectious diseases imply an increase of energy and nutrient requirements depending on relapse or frequency and severity of episodes.

Moderately intense work (TMI) or intense work (TI) for adults' energy requirements.

Sources: Own calculations based on WHO, 1985; National Research Council, 1991; FAO, 2004; Carbajal Azcona, 2013.

This last circumstance has pushed us to compare this diet with one that would be an optimal diet for the period, one that successfully covers all needs—taking into account the composition of the family unit and the intensity of the work of its adult members—at a minimum cost. This would be achieved by improving the apparent diet with an increase in the consumption of foods particularly rich in the deficient nutrients—foods that would have been within the means of the population of the period, such as salty sardines (100 g), carrots, chards, and thistles (175 g), with the possibility of substituting these products among themselves or with other similar ones, depending on the season or the geographic location of the locality (O.A.I,* Table 6). This diet covers the average requirements of the population, although the surplus energy and protein may be excessive and may need to be adjusted, with a reduction in wine consumption, for instance (O.A.I.**, Table 6).

TABLE 6 ▪ *Optimal apparent intake of energy and nutrients per person per day 1920–1926*

	Energy	Proteins	Calcium	Iron	Vitamin A	Zinc	Vitamin D	Folic Acid
O. A. I*	3300	83.8	1076.5	27.7	970.6	17.0	8.26	429.26
O.A.I. **	2863	83.5	1052.1	25.7	970.6	16.7	8.3	429.0
TMI Needs	2288	43.1	1047.2	12.5	786.8	13.8	15.5	353.9
Balance	574.5	40.4	4.9	13.2	183.8	3.0	–7.3	75.1

O.A.I *Optimal Apparent Intake of energy and nutrients per person per day.

O.A.I. **Optimal Apparent Intake—excluding wine, which we assume was mainly consumed by the adult male population.

Sources: Own elaboration from Tables 2 and 4.

The cost of food has been calculated on the basis of the monetary value of an urban worker's diet, which takes as reference the average apparent consumption of the Spanish population, and not on a certain amount of energy, linked to a basic basket of products, which can be acquired or covered with available wages (Allen, 2009, 2015). This diet is adaptable to the different groups that make up the population, and specifically to the composition of our reference family, which is presented in Table 7, whose nutritional value could be compared with its energy and nutrient needs.[26]

26. In previous research (Cussó, Gamboa and Pujol Andreu, 2018), we have assumed that the generational and gender distribution of this average within the family unit was largely a function of the energy needs of each of them; that is, what would be the feelings of hunger associated, *in general*, with certain dimensions and levels of activity. From this assumption we have calculated that the consumption of an adult man with a moderately intense activity level (TMI) would be equivalent to 125 percent of the average diet, that of an adult woman 103 percent, and that of each of three younger children 63 percent of the average. The family individual average (the sum of the five members diet, divided by 5) would be 83 percent of the national average diet (see Table 7).

TABLE 7 ▪ *Apparent family food intake, 1920–1926*

Average daily consumption		Average Table 2	Per Family member	Adult Man TMI	Adult Woman TMI	Per Child	Total Family	Total Family
Products	Year	g/day	g/day	g/day	g/day	g/day	g/day	kg/year
Wheat (wholemeal flour)	1926	410.4	343.51	511.22	421.53	259.79	1712.1	624.9
Rye (flour)	1926	48	40.18	59.79	49.3	30.38	200.2	73.1
Corn (flour)	1929-33	21.4	17.89	26.62	21.95	13.53	89.1	32.5
Rice	1926	26.8	22.45	33.41	27.55	16.98	111.9	40.8
Legumes	1926	15.1	12.66	18.84	15.53	9.57	63.1	23
Potatoes	1926	375.3	267.9	8.4	30.4	2	0	1.01
Vegetables	1926	64.1	53.62	79.81	65.81	40.56	267.3	97.6
Wine	1929-33	280	0	560	0	0	560	204.4
Cooking oil	1926	34.2	28.66	42.66	35.17	21.68	142.9	52.1
Fruit and lemons	1926	121.1	101.34	150.8	124.34	76.63	505.1	184.4
Beef	1926	13.4	11.24	16.72	13.79	8.5	56	20.4
Mutton and goat	1926	12.5	10.43	15.53	12.8	7.89	52	19
Pork and bacon	1926	29.6	24.81	36.93	30.44	18.76	123.6	45.1
Poultry and game	1900	4	3.35	4.98	4.11	2.53	16.7	6.1
Eggs	1926	27.1	22.7	33.79	27.86	17.17	113.2	41.3
Milk	1926	175.5	146.92	218.65	180.29	111.11	732.3	267.3
Fish and seafood	1926	35.0	29.26	43.55	35.91	22.13	145.9	53.2
Sugar	1926	25.4	21.28	31.67	26.11	16.09	106.1	38.7
Cocoa	1926	9.2	7.66	11.4	9.4	5.79	38.2	13.9

Sources: Own elaboration beginning with Tables 2 and 5, and Cussó, Gamboa and Pujol Andreu, 2018.

The monetary value of the diets has been calculated using the minimum prices of each product published by the AEE and the BIRS for each of the Spanish capitals in the period between 1914 and 1930.

Costs have been calculated separately for adult men, adult women, and children; and also for the family unit used as a model in this study. Based on this and on the cost of other expenditure items, we have calculated the family budget and the percentage covered by men's wages, as well as the percentage of family expenses covered by women's wages; although in this case, information is only available for seamstresses, dressmakers, and female agricultural day workers.

It would be good to make some clarifications regarding the treatment of data for food products and prices. The *Statistical Yearbook* generally collects the price of wheat bread. But we know that in some regions of Spain corn

bread and rye bread, which people made themselves, were consumed more frequently in urban peripheries, whereas wheat bread was bought in bakeries. With regards to meat, we have considered three types, following the information source: beef, mutton, and pork, in addition to bacon.[27] To calculate the minimum cost of fish, we have taken into account different combinations according to regions and prices (cod, sardine, or fresh fish), choosing the most frequently consumed and least expensive product. Prices of vegetables come from the information in the BIRS. Prices of fruit, recorded only occasionally, have been calculated—in the absence of primary information—according to Nicolau and Pujol Andreu.[28] Concerning legumes, we used the cheapest legume in each provincial capital. The quantities of each product, estimated by García Barbancho (1960a and 1960b) , are shown in Table 4.

Starting from these data and working with these methodological bases, we have first calculated annual family expenses—housing costs, food, and other expenses (see Appendix, Table 3). Next, we have calculated the proportion of each expenditure that could have been covered by the income of male workers in the selected trades and in different Spanish capitals in 1914, 1920, 1926 and 1929. Then we have analyzed the contribution to the family budget that could have been made by the income of women working as seamstresses-dressmakers and agricultural day workers, two trades that can be considered relatively representative of the average female wage, given that the wage range of women, as we have shown in other publications and as we know from the specialized literature, was very limited (Camps, 1995; Borderías, 2006; Muñoz-Abeledo, 2010; Vilar, 2014).

Cost of Living and the Contribution of Men and Women's Wages to the Urban Working Family Budget

First, it should be noted that the reconstruction of the family budget presented here assumes that the family head's wage went entirely to the family, although we know that part of it was used by the worker for his "social" expenses (tavern, tobacco, and others); therefore, the amount set aside for the household budget was smaller, maybe around 5 percent less. In the same way,

27. We have not grouped meat consumption in the cheapest group due to several reasons. First, we notice that in many provincial capitals the price of pork exceeds that of beef—possibly because workers would buy second- or third-grade cuts of meat or offal (Muñoz-Abeledo, 2002, p. 230). Second, we contrasted the AEE data with that of BIRS and verified this. Third, the average price data in Spain of the survey carried out by IRS for the 1910s was two pesetas per kilo, whereas beef was 1.73 and mutton 1.43 (Nicolau and Pujol, 2006), in the cheapest category, because prices vary greatly.

28. The general guideline, contrasted with the available BIRS price data from 1920, is that in big cities (Barcelona, Madrid and Bilbao) fruit was more expensive, twice the price of provincial capitals, and that fruit prices tended to double that of potatoes.

situations such as unemployment, reduction in working days, illness of family members, and other adversities could also increase spending or reduce income, which would negatively affect the balance of the family budget. These situations would force families to begin alternative strategies, such as changing housing, reducing diets, or turning to pawnbrokers or charities.

Our study starts at the beginning of a declining cycle of real wages that would last until the beginning of the 1920s (Williamson, 1995; Maluquer, 2016). During the period, prices increased by 118 percent, due to the war, while wages went up by 25 percent (Maluquer, 2013). This is a period characterised by the end of the wage convergence that had begun in the 19th century and would end in the interwar period (Williamson, 1995); thus, wage dispersion increased both in farming and unskilled industrial jobs (Roses and Sánchez Alonso, 2004).

In the period before the war crisis, as has been shown recently, family economies based on the head of family's wage were not viable (Gallego, 2016). Our analysis of family budgets in 1914, referring to the group of Spanish provincial capitals, reinforces this idea by showing that only in 21 of 432 instances (9 trades in 49 capitals) cover the household budget.

Most of these cases were concentrated in the metal sector (metalworkers and blacksmiths) of the cities that boasted the highest wages (Madrid, Barcelona, Bilbao), although wages were also high in other port cities, since workers were qualified and well-paid in shipbuilding and metal machinery (Cádiz, Santa Cruz). Only metalworkers and stonemasons had national average incomes that allowed them to cover 75 percent of the family budget. However, regional and intra-regional disparities meant that stonemasons' wages did not cover family budgets in more than half the capitals. This was also the case for metalworkers in a third of the capitals. Therefore, even in the most qualified professions, two incomes were essential.

The most impoverished occupation was the agricultural day labourer in the urban periphery, whose wages did not even cover 50 percent of the family budget in more than half of the capitals, hence, the need for the wife's wage was more urgent and remained so during the entire period. Even considering the wife's wage, agricultural day labourers were destined to deficit budgets in almost all of the provincial capitals. Hence, the importance of the contribution of children's work, which, as we know, lasted until the beginning of the 1920s, in spite of child labour legislation (Borrás LLop, 2013; Borderías, 2013b; Muñoz-Abeledo, 2013). The early incorporation of children's work within agricultural day labourers' families is made clear by the fact that it is the only child occupation whose wages are collected by both the BIRS and the AEE (see Map 3 in the Appendix).

The war period impoverished families even more. The average coverage of the family budget in all professions, with the exception of agricultural

day labourers, fell in more than half of the capitals, with Galicia, Castile and Andalusia particularly affected, thus increasing the professions that covered less than 50 percent of the family budget. Zaragoza stands out among all Spanish cities because, in the middle of the inflationary cycle, the nine professions improved their standards of living there, surpassing the family wage, which coincides with what Silvestre has already shown (2004). In Tarragona, bricklayers, stonemasons, and painters covered the family budget, as did the metalworkers in Palma and the stonemasons in Málaga (see maps in the Appendix).

The men's trades with the highest incomes during this period were metalworkers, followed by stonemasons, despite, according to our data, their having lost between 10 and 30 percent of their purchasing power, which coincides with studies carried out for the Basque Country.[29] At the other end of the scale, agricultural day labourers had lower incomes. In a third of the cities, shoemakers and tailors also had lower incomes. Between 1914 and 1920, the number of families that could live according to the male-breadwinner model was reduced, a circumstance that would have negative repercussions on the availability of food and nutrients. This stagnation or reduction probably had temporary effects on health (mortality, height) and welfare (consumption, priorities) that determine the standards of living of the population under study.[30]

The expansionary phase of the economy, which resulted from the benefits of Spain's neutrality during the First World War, is clearly reflected in the increase of average purchasing power of all the trades between 1920 and 1929. Even so, the situation of agricultural day labourers' families in urban settings did not change significantly, as only those in Lérida had a surplus, and that was due to lower rent and household expenditures rather than higher wages. Approaching a balanced budget, but not quite reaching it, families headed by agricultural day labourers that lived in areas surrounding Zaragoza, Pamplona, Barcelona, Tarragona, Castellón and Sevilla could cover more than 75 percent of expenses, which is consistent with our knowledge of agricultural wages.[31] At any rate, not even the total wages of two adult members' of ag-

29. Wages in Biscay's iron and steel industry increased after workers' demands were accepted by owners, who needed labour in this period and who would enjoy great benefits, while workers lost 30 percent of their purchasing power (Pérez Castroviejo, 2006, p. 103-142).

30. Difficult to quantify, due to the distortion caused in health indicators, such as mortality caused by the Spanish flu epidemic, and the compensatory effects on the children and young people's heights because of the improvement in the following decade.

31. According to Lana Berasain's research, which also considers a family of 5 members, day labourers in Navarra cover purchasing power in the 1920s to a greater extent than what happens in the capital Pamplona, but following the same upward trend of the 1920s (Lana Berasain, 2007, p. 37-68).

ricultural day labourer families covered household expenditure at the end of the 1920s.[32]

At the end of the second half of the 1920s, the so-called family wage was achieved by stonemasons in a greater number of cities (51 percent of cities), followed by metalworkers (41 percent) and bricklayers (36 percent).[33] These groups of workers earned the highest wages in the period of analysis. Thus, although the improvement of purchasing power was unquestionable, in three-quarters of the Spanish provincial capitals not even the most qualified professions could live according to the breadwinner-housewife model at the end of the 1920s. No matter how much this bourgeois model had been adopted by some sectors of the working-class, in practice most men's occupations did not earn a family wage even in the first third of the 20th century.

In a low-wage economy, the association between social status and wives' "inactivity" is shown to be extremely fragile—and particularly exposed during times of economic crisis. A very simple exercise such as comparing the subsistence capacity of metalworkers' families—a paradigm of worker aristocracy and considered especially susceptible to the domesticity model—with the double-income model that occurred quite often in marriages between tailors and dressmakers or seamstresses, makes this evident (see Table 8).

This pairing could place the family economies of the latter trades, modest in principle, in better economic conditions than the families whose only income was that of a metalworker.

Seamstresses and tailors were the ones who experienced smaller increases in purchasing power, although regional variation was very notable. Even so, the number of capitals in which dressmakers and seamstresses could cover 40 percent or more of the family budget increased from nine to sixteen, and therefore their capacity to contribute to family economies improved in those capitals. In Table 8, we can appreciate the importance of the sum of incomes in marriages working in the clothing industry (tailors and seamstresses), which could meet food, housing, and other expenses in a big part of the capitals, except Castile.

Regarding the relationship between women and men's incomes in the two professions where a rough comparison is possible—seamstresses with tailors, female day labourers with male day labourers—the national average shows a relative loss of women's income compared to men's income, although there is great variation around that average. Moreover, the gap between tailors and seamstresses-dressmakers increased during these years in half of the capitals;

32. Although agricultural day labourers' purchasing power increased by 25 percent between 1914 and 1929, by the latter date they still did not achieve 75 percent of the budget in 35 capitals.

33. While painters achieved it only in 26 percent of the Spanish capitals, blacksmiths and tailors in 20 percent, carpenters in 16 percent, shoemakers in 8 percent, and agricultural day labourers in only one city, Lérida.

TABLE 8 ▪ *Percentage Coverage of Budget in Two Family Economic Models*

Capitals	Metalworkers				Tailors + dressmakers/seamstresses			
	1914	1920	1926	1929	1914	1920	1926	1929
North Spain								
La Coruña	81.66	69.42	91.67	97.88	99.81	83.89	123.29	135.76
Lugo	0.00	0.00	0.00	0.00	73.45	59.15	87.74	101.96
Orense	73.96	45.84	0.00	112.69	93.05	60.73	92.65	97.04
Pontevedra	55.16	0.00	86.77	96.83	79.98	0.00	96.41	100.55
Oviedo	89.87	70.91	104.15	117.95	97.80	76.05	138.86	179.73
Vitoria	0.00	88.08	92.68	84.25	91.01	96.89	95.87	90.06
Bilbao	116.45	86.16	121.15	113.09	118.69	114.88	139.99	136.76
San Sebastián	71.61	77.98	93.45	91.08	103.20	90.90	150.47	156.14
Santander	82.79	73.13	110.89	115.73	71.29	91.41	159.23	166.17
Ebro Valley								
Pamplona	84.08	66.97	88.68	88.96	118.24	77.16	74.92	75.16
Logroño	88.48	63.54	76.89	89.63	97.33	69.90	102.53	108.84
Zaragoza	88.24	115.35	111.40	116.71	84.80	203.87	112.80	113.93
Huesca	0.00	0.00	0.00	0.00	96.97	86.65	119.68	113.75
Teruel	0.00	81.71	0.00	0.00	107.43	112.80	136.64	162.79
Mediterranean								
Barcelona	88.56	95.73	114.19	140.48	103.96	126.50	161.36	222.42
Tarragona	0.00	72.11	106.72	115.66	112.37	110.57	160.08	170.74
Lérida	67.12	80.13	121.02	97.42	94.76	150.24	148.52	152.22
Gerona	75.75	63.28	88.78	91.32	113.63	83.92	131.74	138.45
Palma de Mallorca	74.89	104.15	139.24	145.97	112.33	108.75	36.55	36.49
Castellón	54.56	48.95	83.14	90.57	89.27	56.03	83.14	90.57
Valencia	75.66	82.42	84.64	91.83	121.06	114.12	121.31	131.62
Alicante	0.00	47.51	82.91	101.05	83.69	96.24	111.41	90.94
Murcia	0.00	60.47	65.47	65.79	61.50	82.46	104.16	104.67
Castile								
León	101.73	0.00	0.00	98.13	107.72	45.66	0.00	103.90
Palencia	54.86	58.07	89.36	87.40	79.80	72.59	98.29	109.25
Burgos	0.00	77.54	0.00	0.00	166.96	101.95	124.73	96.96
Zamora	55.61	69.29	114.58	105.47	62.86	66.21	84.34	77.64

(Continued on next page)

Capitals	Metalworkers				Tailors + dressmakers/seamstresses			
	1914	1920	1926	1929	1914	1920	1926	1929
Valladolid	70.40	65.27	75.61	82.28	95.55	80.10	104.34	123.42
Soria	0.00	0.00	0.00	0.00	93.15	111.35	92.88	119.92
Segovia	64.38	48.35	0.00	0.00	79.23	75.21	95.25	88.18
Salamanca	0.00	82.42	83.42	0.00	0.00	54.55	54.22	84.64
Ávila	0.00	0.00	0.00	0.00	71.74	53.41	91.52	86.97
Madrid	145.01	75.01	101.08	120.04	175.54	79.55	103.61	0.00
Guadalajara	50.73	96.82	136.30	115.45	60.88	48.41	82.75	99.41
Toledo	80.59	58.53	73.43	86.01	42.53	44.02	71.64	112.70
Cuenca	0.00	0.00	0.00	0.00	89.30	49.57	69.03	98.09
Ciudad Real	47.32	42.41	0.00	0.00	68.61	59.64	80.29	86.15
Albacete	0.00	59.13	82.82	76.92	68.17	91.38	0.00	94.01
South Spain								
Cáceres	43.70	45.77	57.60	68.06	60.70	66.11	74.54	81.67
Badajoz	60.03	58.31	66.09	67.44	50.94	58.31	96.49	101.16
Córdoba	82.33	91.58	91.31	95.97	82.33	60.67	127.84	129.07
Jaén	41.10	0.00	87.59	72.03	69.87	60.91	65.69	60.03
Granada	65.24	66.55	117.96	108.45	86.11	101.02	133.57	119.95
Almería	64.85	46.98	94.77	103.04	72.05	66.26	75.26	93.95
Málaga	92.86	94.48	74.55	76.60	104.47	140.37	138.99	140.21
Cádiz	87.73	71.54	80.91	73.27	144.64	106.75	108.72	113.43
Sevilla	66.56	64.71	91.88	118.65	85.14	79.74	102.09	139.11
Huelva	98.95	73.28	103.17	109.43	94.45	86.60	112.27	131.96
Santa Cruz de Tenerife	0.00	0.00	0.00	0.00	439.27	81.10	117.92	178.78

Sources: Own elaboration. Data on the total cost of family expenses are presented in Table 3 of the Appendix. Data on wages and cost of living comes from the *Bulletin of the Institute of Social Reforms* (1904–1924), *Spanish Statistical Yearbook*, 1914-1930.

further, the gap between male and female agricultural day labourers increased in 28 percent of capitals (although in this case we only have data for 16 capitals).

Furthermore, we have to take into account that worker budgets arising from our calculations are based on minimum prices, and that these deficits could have been even higher if there was no access to those prices. The deficits would have to have been compensated for on the expense side—with poorer quality food, cheaper housing, and restriction on other spending—or on

the income side, with work intensification, other monetary resources, or non-monetary resources. If covering the apparent diet was not attainable for most people, covering the optimal diet was even less so, although the difference between the cost of one and the other was limited: 7.73 percent more on average in 1918 and 4.81 percent more in 1929.

Conclusions

In recent decades, studies of real wages in European cities have focused on unskilled urban workers, mainly unskilled building labourers. Allen, in particular, has developed a procedure for comparing real wages across time and space which is based on their wages in different European capitals and on a standardized basket of goods for a family of two adults (man and woman) and two children. The resulting measure is called a welfare ratio or a subsistence ratio and equals a family's income divided by its maintenance cost at a specific level of consumption. As we have pointed out in the introduction, the method generated some criticisms, among them the omission of women's and children's wages, the focus on big cities and the lack of consideration of the family life cycle. In this article, we estimate welfare levels in Spanish province capitals using the methodology of family-budget reconstruction. We analyze the sufficiency of a man's wage in the principal male, urban trades to support himself, his wife, and three children less than nine years old in the period 1914–1929. To allow comparability among the capitals, we propose a family budget with a homogeneous spending composition—food, housing, clothing, and other family expenses—at the cheapest prices available in each city.

One of the main contributions of this article lies in the proposal of two diets—one apparent and one optimal—that consider consumption needs according to gender, age, body size, and degree of labour intensity. Another significant contribution is the provision of data on wages for nine male trades and two female trades instead of just for bricklayers, the most common male trade the literature of real wages has used to make international comparisons. We have considered four building trades (bricklayers, stonemasons, carpenters, and painters); two in the metal sector (metalworkers and blacksmiths); two in the clothing sector (tailors and shoemakers), and, lastly, agricultural day labourers. With the help of the *Spanish Population Censuses* we confirmed that these trades made up a relevant part of the employment in Spanish cities and their surrounding areas. Furthermore, we have considered females wages in two occupations: agricultural labourers and seamstress.

All these wages were published by the *Spanish Statistical Yearbook* (AEE) for the period 1914–1930. We have also used the "worker's cost of living" collected by the Social Reforms Institute and published in the *Bulletin for Social Reforms* (BIRS) for the period 1914–1924, and in the *Spanish Statistical Year-*

book (AEE) for the period 1914–1930, the only sources that provide data on prices and wages in urban settings at national scale.

Our findings concur with earlier studies that show a shortfall in men's wages for most of the occupations at the beginning of the study period and the deterioration of those wages during the inflationary war period. But our results also qualify the undeniable improvement of purchasing power throughout the 1920s, because although nominal wages grew from 1918 onward, increases in purchasing power did not began until 1925 (Map 1 in the Appendix). Moreover, in terms of the capacity of one man's wage to support his family, only stonemasons, metalworkers, and bricklayers—mainly in the northern half of the country—reached this level. In the north of Spain, the most industrialised regions—Catalonia and the Basque Country, with their main capitals (Barcelona, Bilbao)—were those that performed better in terms of welfare rates. But in 1929, in three-quarters of the capitals, not even the most skilled occupations provided a family wage. The reconstruction of family budgets has also allowed us to estimate the deficits that had to be covered by resources other than husband's wages. We have, also, estimated the potential contribution of women's wages as seamstresses, tailors and agricultural labourers to cover the household budgets of different male urban trades in each one of the fifty-two capitals. As we have shown, in most cases, even with two salaries, family economies were in deficit. In this situation, working-class families would have been forced to reduce the quality of their food and housing, putting their health at risk, to reduce other types of consumption, to intensify the working hours of family heads, not excluding other possible strategies such as the use of pawnbrokers, loans, or charity. This precariousness also explains the extension of child labour well into the 1920s, despite prohibitionist legislation. But analysis of this and other possible strategies—and of the living standards that working classes could achieve by following them—are outside the scope of the present article. In sum, the reconstruction of working-class family budgets in trades of the primary and secondary sectors has allowed us to contribute new evidence showing that on the eve of the Second Republic, wages of male workers failed to cover family subsistence. Family wage, a key of the liberal theoretical model of modernization as well as of social reformer proposals to solve the "social question" and to the ideas of working-class respectability of the era, was still more a discourse than a reality for most of the urban trades.

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Appendix

TABLE A.1 ▪ *Evolution of average energy needs, Spain 1910–1930 (Kcal/day). TMI*

	Total Population	Children	Men 15–70	Women 15–70	Pregnant Women	Elders
1910	2266	1662	2855	2353	2635	2215
1920	2288	1695	2855	2351	2633	2212
1930	2286	1661	2861	2354	2636	2208

TABLE A.2 ▪ *Evolution of average protein requirements (1), Spain 1910–1930 (gr/day)*

	Population	Children	Men 15–70	Women 15–70	Pregnant Women	Elders
1910	42.8	33.5	54.2	41.2	56.2	47.0
1920	43.1	34.0	54.2	41.2	56.2	46.8
1930	43.1	33.5	54.2	41.2	56.2	46.6

(1) Proteins of maximum biological value.

Sources tables A1 and A2: Prepared by the authors on the basis of population censuses, WHO, 1985; National Research Council, 1991; FAO, 2004; Carbajal Azcona, 2003 and 2013.

TABLE A.3 ▪ *Annual family expenditure in pesetas, capitals of Spain*

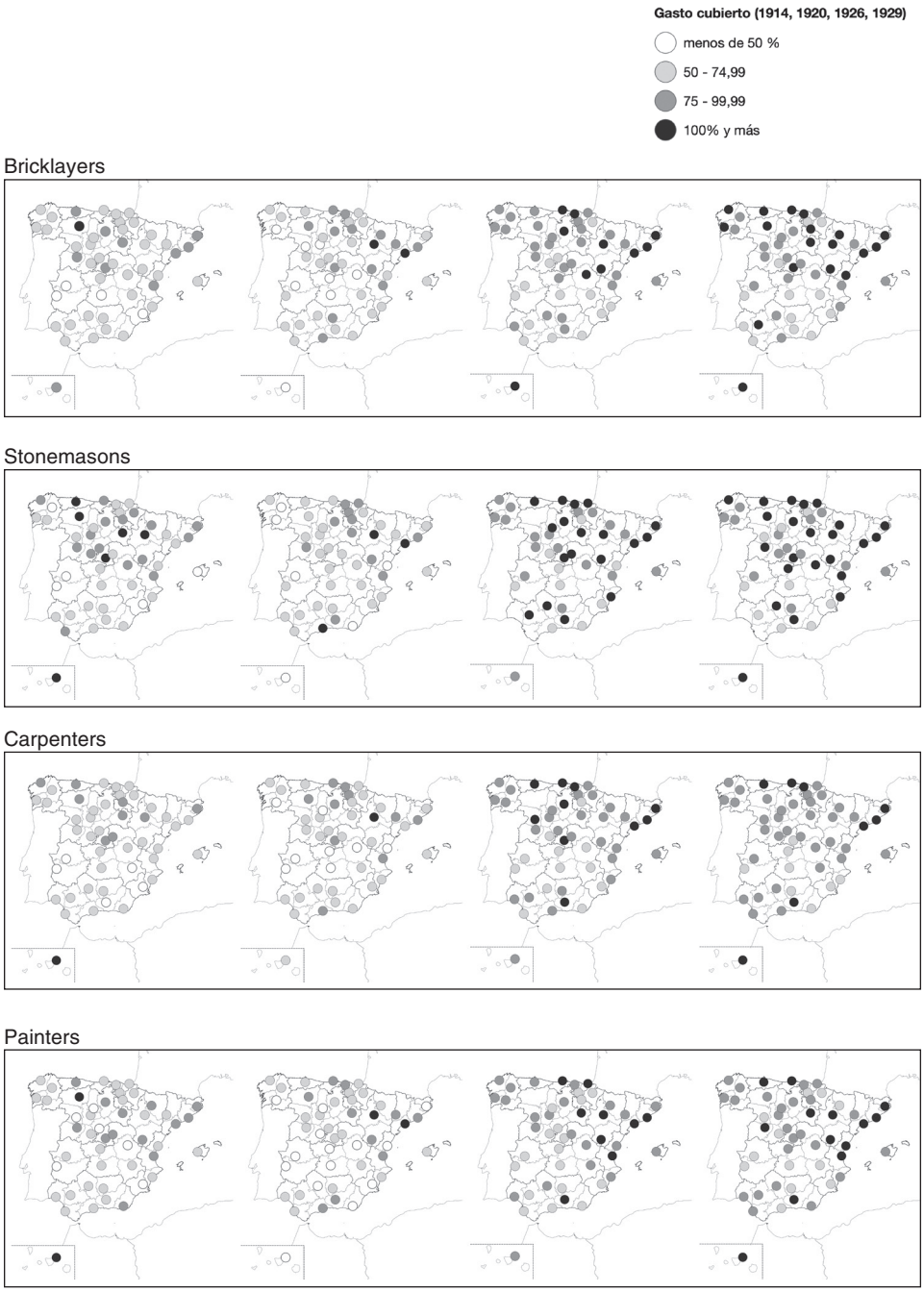
Total expenditure	1914	1920	1926	1929
Albacete	1409.22	2465.02	2479.84	2325.56
Alicante	1367.95	2719.07	2557.04	2622.51
Almería	1379.20	2749.76	2376.72	2185.99
Ávila	1385.16	2356.60	2461.26	2209.17
Badajoz	1545.18	2385.93	2506.14	2259.43
Barcelona	1720.65	2906.63	2668.80	2263.72
Bilbao	1479.12	2537.38	2460.86	2519.01
Burgos	1116.19	2306.97	1832.48	1981.40
Cáceres	1364.34	2605.33	1955.26	1946.81
Cádiz	1397.01	3055.77	2620.19	2493.88
Castellón	1335.78	2863.73	2550.00	2340.71
Ciudad Real	1400.16	2499.57	2310.28	2153.34
Córdoba	1287.48	2948.54	2176.61	2001.89
Corunna	1460.34	2290.26	2095.74	2098.32
Cuenca	1261.24	2523.49	2111.33	1891.08
Gerona	1224.39	2920.79	2313.31	2249.01

(Continued on next page)

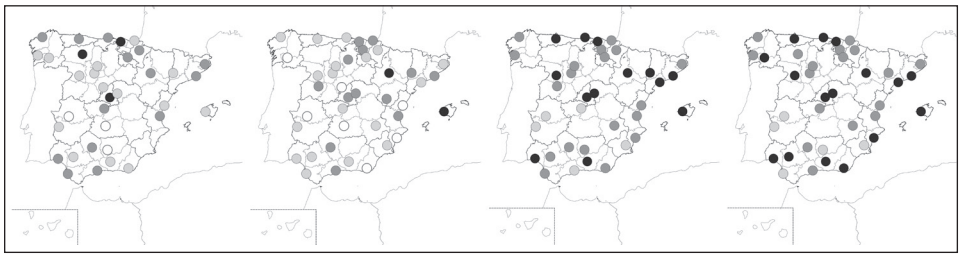
Total expenditure	1914	1920	1926	1929
Granada	1269.42	2787.23	1909.61	2015.92
Guadalajara	1305.90	2258.12	2041.50	2065.92
Huelva	1473.00	2983.52	2183.31	2058.35
Huesca	1229.77	2293.72	2131.13	2125.81
Jaén	1611.99	2719.06	2117.79	2207.32
León	1107.07	2756.50	2414.22	2295.51
Lérida	1677.95	2645.71	2408.69	2176.11
Logroño	1123.10	2085.16	2326.25	2069.57
Lugo	1443.18	2351.96	2114.12	2014.30
Madrid	1736.03	2331.82	2621.64	2317.95
Málaga	1426.86	2454.31	2535.21	2551.46
Murcia	1350.78	2410.35	2226.09	2215.36
Orense	1388.34	2792.50	2645.60	2116.41
Oviedo	1253.26	3223.13	2671.74	2359.05
Palencia	1328.29	2509.75	2224.20	2122.33
Palma de Mallorca	1415.46	2162.72	1903.25	1906.16
Pamplona	1260.72	2275.16	2166.58	2159.69
Pontevedra	1201.05	2419.04	2061.50	1778.91
Salamanca	1158.90	2732.82	2382.44	2191.68
San Sebastián	1572.84	2769.48	2509.61	2545.85
Santa Cruz de Tenerife	1327.21	3144.94	2865.41	2297.47
Santander	1440.45	2899.11	2329.94	2232.61
Segovia	1337.80	2466.43	2469.14	2291.57
Seville	1532.89	2733.45	2595.67	2428.85
Soria	1209.01	1963.37	2211.15	2154.59
Tarragona	1414.93	2756.11	2483.14	2405.68
Teruel	1185.24	2284.71	2230.30	1912.77
Toledo	1479.73	2558.30	2219.58	2233.74
Valencia	1313.39	2089.85	2348.23	2164.41
Valladolid	1317.41	2233.18	2190.51	2012.90
Vitoria	1291.33	2256.51	2073.01	2280.35
Zamora	1370.04	2151.36	2081.52	2261.37
Zaragoza	1351.50	2469.76	2378.73	2384.21

Sources: Own elaboration. Data on wages and cost of living comes from the *Bulletin of the Institute of Social Reforms* (1904–1924), and the *Spanish Statistical Yearbook*, 1914-1930.

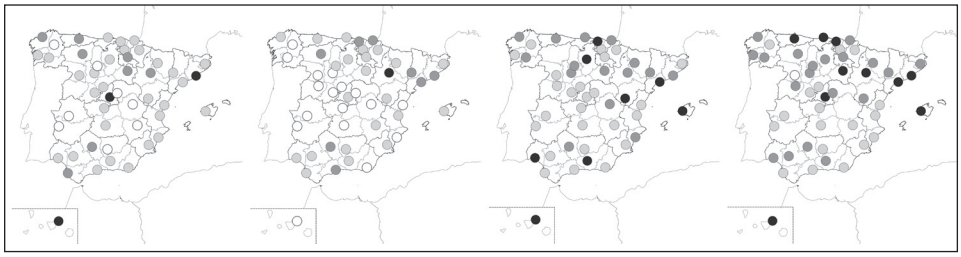
MAP 1 ▪ *Household expenditure covered by men's occupations in the construction, metal, clothing, and agriculture sectors (%) (1914-1920-1926-1929)*



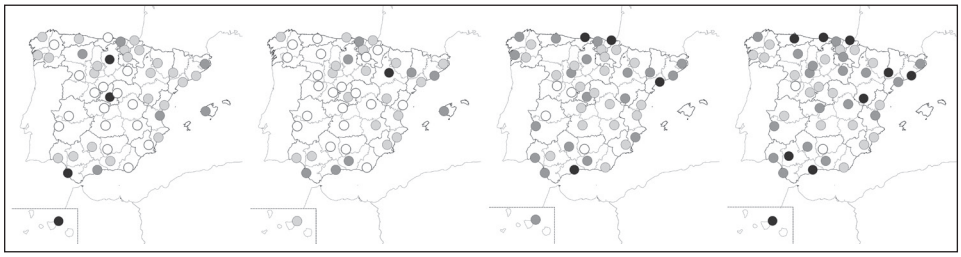
Metalworkers



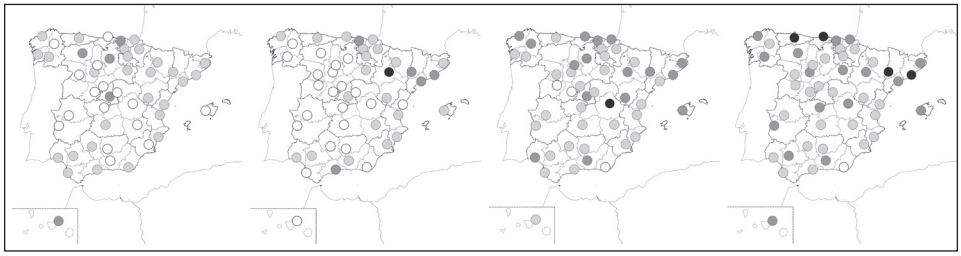
Blacksmiths



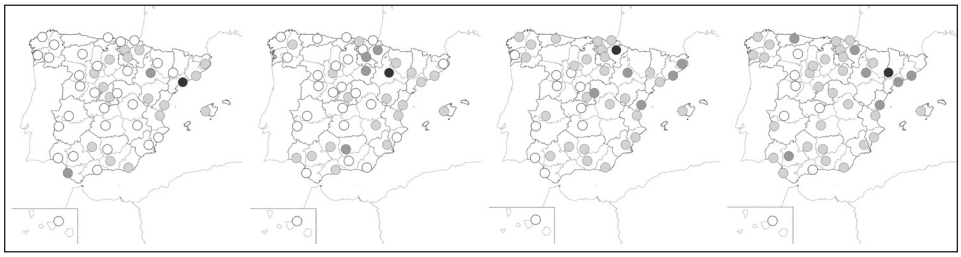
Tailors



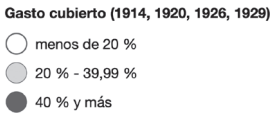
Shoemakers



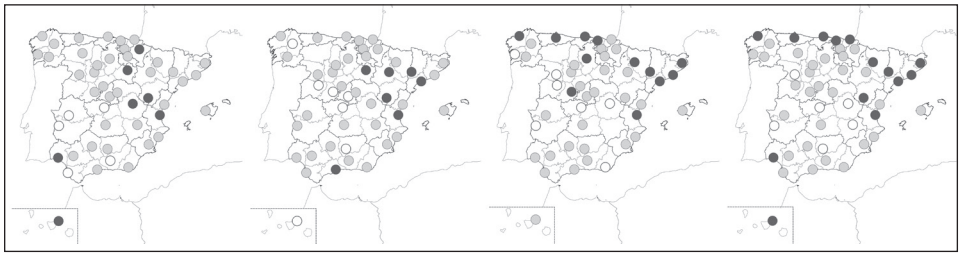
Agricultural Day Labourers



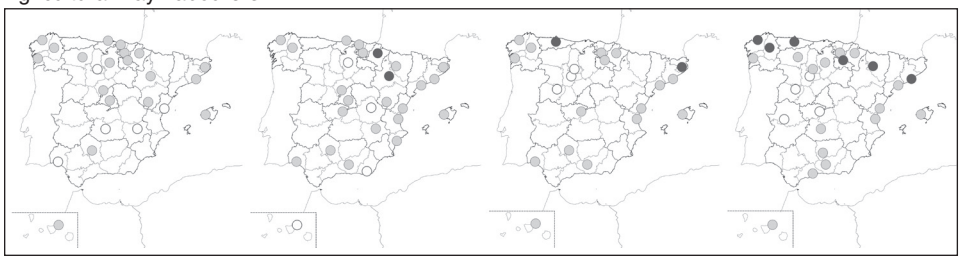
MAP 2 ▪ *Household expenditure covered by women as agricultural day labourers and seamstress/dressmaker (%) (1914-1920-1926-1929)*



Seamstresses and Dressmakers



Agricultural Day Labourers



MAP 3 ▪ *Household expenditure covered by children working as agricultural day labourers (%) (1914-1920-1926-1929)*

Sources: Own elaboration. Data on wages and cost of living comes from the *Bulletin of the Institute of Social Reforms* (1904–1924), and the *Spanish Statistical Yearbook*, 1914-1930. Data on household expenditure in Table A.3.

■

Breadwinners in Spanish cities (1914-1930)

Abstract

Historic constructions of family budgets have been scarce in Spain. In fact, the first national Family Budget Survey was carried out in 1958. In this article, we present new evidence of different occupational groups' incomes in Spanish provincial capitals (1914-1930). We also calculate the minimum cost of covering basic needs (food, housing, and other expenses) of urban working families. The main objective of the article is to estimate the capacity of men's wages to sustain the family economy, as well as women's contributions to the same. The main data sources are the *Boletín del Instituto de Reformas Sociales 1904-1924* (*Bulletin of the Institute of Social Reforms*), the *Anuario Estadístico de España 1914-30* (*Spanish Statistical Yearbook*), and the *National Population Censuses* (1910-1930), the food and nutrient totals prepared by García Barbancho (1960a and 1960b), and estimates of energy and nutrient requirements prepared by WHO/FAO and other specialists and institutions.

Keywords: wages, consumption, household budgets, well-being

JEL codes: J31, E21, D10, I31

■

«Ganadores de pan» en las ciudades españolas (1914-1930)

Resumen

La producción histórica de presupuestos familiares ha sido escasa en España. De hecho, la primera Encuesta de Presupuestos Familiares a escala nacional data de 1958. En este artículo presentamos nuevas evidencias de ingresos de diferentes grupos ocupacionales en las capitales de España (1914-1930). También calculamos el coste mínimo de la cobertura de las necesidades básicas de las familias obreras urbanas (alimentación, vivienda, gastos de casa y otros gastos). El principal objetivo del artículo es estimar la capacidad de los salarios masculinos para sostener la economía familiar, así como la contribución de las mujeres a la misma. Las principales fuentes empleadas son: el *Boletín del Instituto de Reformas Sociales* (1904-1924), el *Anuario Estadístico de España* (1914-1930), los *Censos Nacionales de Población* (1910-1930), los balances de alimentos y nutrientes elaborados por García Barbancho (1960a and 1960b) a partir de 1926 y las estimaciones de las necesidades de energía y nutrientes elaboradas por la OMS/FAO y otros especialistas e instituciones.

Palabras clave: salarios, consumo, presupuestos familiares, bienestar

Códigos JEL: J31, E21, D10, I31

■

«Guanyadors de pa» a les ciutats espanyoles (1914-1930)

Resum

La producció històrica de pressupostos familiars ha estat escassa a Espanya. De fet, la primera Enquesta de Pressupostos Familiars a escala nacional data de l'any 1958. En aquest article es presenten noves evidències d'ingressos de diferents grups ocupacionals a les capitals d'Espanya (1914-1930). També es calcula el cost mínim de la cobertura de les necessitats bàsiques de les famílies obreres urbanes (alimentació, habitatge, despeses de casa i altres despeses). El principal objectiu de l'article és estimar la capacitat dels salaris masculins per sostenir l'economia familiar, i com hi contribueixen les dones. Les fonts principals emprades són: el *Boletín del Instituto de Reformas Sociales 1904-1924* (*Butlletí de l'Institut de Reformes Socials*), *Anuario Estadístico de España 1914-30 (Anuari Estadístic d'Espanya)*, els Censos Nacionals de Població (1910-1930), els balanços d'aliments i nutrients elaborats per García Barbancho (1960) a partir de l'any 1926 i les estimacions de les necessitats d'energia i nutrients elaborades per l'OMS, la FAO i altres especialistes i institucions.

Paraules clau: salaris, consum, pressuposts familiars, benestar

Codis JEL: J31; I21; D10; I31