THE AGRARIAN CRISIS IN LATE NINETEENTH CENTURY SPAIN: A RECONSIDERATION

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Abstract

Although falling prices in the late nineteenth century led to significant changes in the agriculture of many European countries, changes in Spain were few, and labour productivity stagnated between 1880-1910. Tariffs delayed the need to move resources out of the sector, but perhaps more important was the fact that farmers faced weak demand for their products, and enjoyed few supply side incentives to increase productivity. Contemporaries rejected labour saving mechanisation as a solution and most believed a successful and prosperous agriculture needed to absorb, rather than shed, labour. But the state failed to provide policies which would have favoured labour intensive family farming.

Keywords: Spanish agriculture, farm policy, mechanisation.

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Introduction

The agrarian crisis of the late nineteenth century has received considerable attention from Spanish historians. Whereas agricultural historians have concentrated on the negative effects of lost markets and reduced farm profitability because of foreign competition, economic historians have been more concerned with the costs associated with the state's response to lower farm prices, namely tariff protection. In a recent paper, I argued that the impact of cereal tariffs on agricultural performance has been exaggerated, especially between 1902/12 and 1930/5. Here I propose to look in greater detail at the nature of the agrarian crisis, and consider whether tariffs were the only solution possible in the period prior to the First World War. In the first section I examine to what extent historians have been right in labeling the difficulties facing agriculture at the end of the nineteenth century as a "crisis", as oppose to just a cyclical downturn in agricultural prices. I argue that the extent of the crisis has often been exaggerated. The impact of the productivity increases in New World agriculture and the transport revolution affected agriculture in all European countries, but in Spain there were fewer changes that in other western European countries, with the exception of Portugal, and possibly Italy. The second section looks at the regional and sectorial problems facing farmers in the period, and to what extent adequate solutions were found. Government policies, together with weak internal demand, permitted resources to be kept in the traditional sectors of cereals, vines and olives. Although farm output increased, labour productivity in the sector did little more than stagnate between 1880 and 1910. In the final section I argue that the real solution to raising productivity on the secano was labour saving mechanisation. However, this was a solution which was rejected by most contemporaries, who still believed a successful and prosperous agriculture needed to absorb, rather than shed, labour. Given the difficulties in accepting mechanisation as a solution, the state might have been expected to have tried to mobilize resources to provide alternatives, especially in the area of labour intensive family farming. Yet prior to the 1910 the state's role was small. Finally, on the demand side, the lack of structural change and slow urban growth provided few incentives for farmers to diversify their production. Only around the First World War were there significant changes, as labour started leaving the land in large numbers.

1 Simpson, 1997.
encouraging mechanisation; rising per capita incomes and growing cities stimulated product specialization. and the state became more active in the provision of public goods. Rising wage costs now encouraged wider technological change. But the agrarian crisis between about 1880 and 1910, whilst a stimulus to change in other countries, tended to consolidate traditional agricultural production systems in Spain.

1. The agrarian crisis in an European context.

The lack of reliable production figures before about 1900 makes it necessary to consider indirectly trends in agriculture. In this section I look at five areas where Spanish agriculture differed from the general western European experience over the half century prior to the First World War, namely (a) wheat prices (which fell less than most countries), (b) wages (which rose less), (c) land rents (increased more), (d) emigration (less) and (e) livestock specialization (less). The evidence suggests that the international price shocks had a relatively small direct impact on Spanish agriculture compared to northern Europe. In this respect, Spain appears more like Portugal, where Reis has argued that "la crisis agraria fue ... un proceso defensivo conservador, más que un proceso transformador".2 Although most farmers did respond to market changes, and some successfully changed farming methods prior to 1910, these were not sufficient to reduce, (a) the two thirds of the active population who were still employed in the sector in 1910, (b) change the relative importance of the secano, which was little different from what it had been in the mid nineteenth century or (c), farming methods which were still essentially traditional.

Falling transport costs and productivity growth in New World agriculture caused big falls in European farm prices. Three price series for Spain are shown in Graph 1, namely the national wheat price, Ballesteros' cost of living estimate for food, and Prados de la Escosura's farm price series. Because of the importance of wheat in all these series, it is not surprising that trends are similar. However, the larger basket of goods found in the price series of Ballesteros and Prados de la Escosura produce noticeably less volatility, than when just the wheat series is used.3 In particular, when the wheat index falls from 123 in 1882 to 91

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2 Reis, 1988, p.328.
3 See also Simpson, 1992, pp.112-4.
in 1884, the decline in Ballesteros’ index is from 119 and 103, and Prados de la Escosura’s index, from 114 to 107. Likewise, the low point in the wheat index is 1895 (when prices fell to 80), compared to 93 for Ballesteros (in 1895) and 86 (in 1894) for Prados de la Escosura. Falling prices in the late nineteenth century are less if a broad basket of commodities is considered, rather than simply wheat.

But wheat was important. Not only did the international wheat price fall more than most other agricultural commodities because of productivity growth in New World agriculture, it was the most important agricultural commodity in most European countries, occupying a significant part of the arable. In Spain, cereals occupied 55 per cent of the sown arable in 1891-5, of which 55 per cent was wheat. GEHR shows wheat prices falling by almost 13 per cent between 1874/84 and 1885/95, with the falls being the most intense in the periphery, especially Cataluña, Galicia, Andalucía and Murcia, which often imported part of their requirements from other regions, or from overseas (columns 1-3, Table 1). But Graph 2 suggests that Spanish prices fell less than elsewhere. Spanish prices moved upwards until 1882, when they are 26 per cent above the base level of 1869/72. By contrast, the three other countries peaked a decade earlier (France in 1871, England in 1873, and Italy in 1874). The drop in Spanish prices between 1882 and 1884 was 26 per cent, compared to only 21 per cent in England, 17 per cent in France and 15 per cent in Italy. However, from each country’s respective peaks, the 1884 price level was 40 per cent lower in England and Italy, 32 per cent in France, and 26 per cent in Spain. Therefore although wheat prices fell more suddenly in Spain in the early 1880s than elsewhere, when the longer period between 1871/84 is taken, the fall is less. After 1890 the combination of tariff protection and devaluation of the peseta stabilized prices at higher levels than in most European countries. Therefore Spain suffered less from the late nineteenth century price shocks affecting cereals than in most western European countries.

A second major difference was the behaviour of wages (Table 2, column 1). Here the evidence is more controversial, as only one series has been used for Spain, namely building workers in Madrid, whose wage, in nominal terms, rose by about 20 per cent.

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Evidence from mining and textile workers suggest the figure may have been nearer 30 per cent. However, even if we accept a faster growth in Spanish real wages than that shown in Table 2, the gap with most other European countries remains significant.

Spain also differed because not only did land rents increase over the period, they also increased relative to wages (column 2, Table 2). The agricultural rental series for Spain are again weak, being based on Robledo (1984) and Carmona (1991). Robledo’s sample shows that the only period when more than half of new rental contracts declined by more than 10 per cent was 1881/5; by 1891/5, only 10 per cent of new contracts showed a decline, compared to 74 per cent that increased. More recently, Pérez Picazo gives a rental increase of 39 per cent between 1867 and 1902 in the huerta in Murcia, with growth being registered at all five bench marks used (1867, 1875, 1885, 1895 and 1902). By contrast, in Cataluña from the turn of the century, Saguer’s index shows at best only a modest recovery, in rents. Elsewhere, land prices were 42 per cent lower in Great Britain in 1912 than they had been in 1877, 19 per cent lower in Sweden, 15 per cent lower in France, but 8 per cent higher in Germany and 11 per cent higher in Denmark. Local rent movements were obviously influenced by a wide variety of factors. For example, higher tariffs, or a switch of resources from low yield wheat to high value fruit crops might allow landlords to increased rents at a time of falling cereal prices. However rising rents, especially on cereal land in Castilla-León, are incompatible with the existence of a sever and long agrarian crisis.

Despite the weakness of the sources, the general conclusions in Table 2 cannot be rejected: factor price movements were very different in Spain to those in England, France, and Scandinavian. Furthermore this information on factor and product prices suggests that not only did Spain escape relatively unscathed from the "crisis agraria", but there was little need for farmers to change production methods. This point is reinforced by Table 3, which shows the low share of net migration, and the fact that two thirds of labour was still found in agriculture in 1910. Sánchez Alonso shows that net emigration was only about 185,000

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Note, however, that there is no information given for either Portugal or Italy, two countries which might have had a similar experience to that of Spain.

See O'Rourke, Taylor and Williamson, 1996, pp.522-4 for a list of sources used.

Robledo, 1984, cuadro 18.


O'Rourke, 1997, Table 5.
during the whole period between 1882 and 1904, and Pérez Moreda and Tortella have noted.
The pull from Spanish cities remained weak prior to 1914.\textsuperscript{13} Therefore the evidence that the
"crisis agraria" set off a rural exodus of any consequence is limited. This is important because
Ireland, for example, a country which was severely affected by the price shocks of these
years, probably saw agricultural output grow at a slower rate than in Spain between 1873-
1914, but labour productivity increased because of the outflow of labour.\textsuperscript{14} We shall return to
this option later.

The final difference between Spain and most countries was the response of
farmers to the crisis.\textsuperscript{15} Urbanisation, rising nominal wages and falling bread prices, all
increased the demand for meat and dairy produces, leading to a significant growth in
livestock farming in northern Europe during the forty years before the First World War. Thus
in Great Britain the area devoted to wheat fell by a half, and cattle increased by 30 per cent
between 1870 and 1910. In France, whilst the value of cereals stagnated, the output of meat
and dairy produce increased by 48 per cent between 1865/74 and 1905/14. In Italy, cattle
increased by 40 per cent between 1880 and 1910, and there were significant increases in the
numbers of pigs, sheep and goats. If in Germany there was no fall in the area of wheat and
rye, cattle numbers rose by a third between 1873 and 1913. In Spain the situation is harder to
establish on account of the lack of reliable censuses, but the size of the national herd was not
so very different in 1865, as it was in 1917, or indeed 1929. By contrast, the area of wheat
grew throughout most of the nineteenth century, and increased by 24 per cent, and production
by 34 per cent, between 1905/9 and 1930/4.\textsuperscript{16}

By 1910, livestock products represented 72 per cent of final agricultural
output in the United Kingdom, 44 per cent in France, but just 30 per cent in Spain and 28 per
cent in Italy.\textsuperscript{17} Of course, there was no reason why Spain should have moved resources into
livestock -even if we assumed that natural resources were favourable- if farmers found other
activities more profitable. However, and as we shall see in Section 3, low agricultural
productivity in Spain was caused by the fact that so many resources were devoted to

\textsuperscript{14} Turner, 1996, chs. 4 and 6, and Guinanne, 1997, p.39.
\textsuperscript{15} Sources for this section are cited in Simpson, 1997, p.77.
\textsuperscript{17} O'Brien and Prados de la Escosura, 1992.
traditional crops.

In conclusion, although some of the information assembled in this section is somewhat fragile, the impact of the agrarian crisis appears to have been less, and therefore agriculture had to undergo considerably fewer changes in Spain than the other countries, with the possible exceptions of Portugal or Italy. Not only were the supply side changes which the agrarian crisis encouraged elsewhere weaker in Spain, but so too were the demand side changes. As a result, Spanish agriculture performed poorly in the period 1880-1910. GEHR suggests that labour productivity fell by 10 per cent and Simpson, by 3 per cent, between 1891/5 and 1910.18 Prados de la Escosura's index of output, by contrast, is slightly more optimistic and shows a 5 per cent growth between the same dates, or 12 per cent over the longer period, 1875/9 - 1909/13.19 This slow growth was caused by structural problems, rather than the crisis itself.

2. A closer look at the difficulties facing Spanish farmers between 1880-1914.

As in other European countries, it has been argued that the crisis affected some Spanish regions, and some commodities, more than others. This is not the moment to undertake an exhaustive study of the crisis, but rather to outline the major problems facing farmers during the period, and how they responded to the changes. In the first instance, I provide a very general picture of how contemporaries themselves interpreted the regional dimension of the crisis, and then look briefly at three sectors, namely wheat, wine and olive oil. In the final section I take a more critical look at the implications of government policy.

As we have seen, wheat (and barley) prices peaked in the early 1880s, wine prices started falling from the late 1880s (although the long run price series remained strong until the 1890s), and olive oil prices were weak from the early 1870s. The major source for understanding the "crisis" is the seven volume Crisis agricola y pecuaria, published between 1887 and 1889. A very rough idea of the regional intensity of the problems can be seen in Table 1, columns 5 and 6. Volumes two to five of Crisis agricola y pecuaria consist of written replies by individuals and institutions from throughout Spain to 130 questions. All

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replies seem to have been published. The Interior (the two Castillas, Extremadura, the Ebro Valley and Aragón) accounted for 62 per cent of replies (Table 1, column 5), against 61 per cent of the agricultural area and 41 per cent of the agricultural output in 1909/13; in Andalucía the number of replies numbered 14 per cent (20 per cent of the area, and 20 per cent of output); the North (Galicia and Cantabria) 13 per cent of replies (9 per cent of area and 17 per cent of output) and, finally, the Mediterranean (Cataluña, Levante, Murcia and Baleares), 11 per cent of replies (13 per cent of the area and 22 per cent of output). The last column of Table 1 attempts to separate out those who believed that there was a crisis, and those who did not. I include all those who replied “yes” to question 23 (¿Existe la crisis agrícola?), and all those who I take to believe implied from their report that there was a crisis. 20 The geographical distribution is very similar, with the Interior providing 61 per cent of those who believed that there was a crisis, against 16 per cent in Andalucía, 13 per cent in the North and 11 per cent in the Mediterranean. Although there were few people who specifically denied that there was an agrarian crisis, there was a wide variety of definitions, and explanations of its causes. However, in general, contemporaries seem to have believed that the problems were especially severe in the interior, notably on the secano. We shall now look at the main difficulties facing wheat, wine and olive oil producers, and consider whether tariffs were an effective remedy.

The worst problems were believed to be found with cereal farmers on the secano, and these consisted of more than simply a decline in prices. As Table 1 shows, Spain's principal cereal producing region Castilla-la-Vieja and León saw wheat prices fall by only nine per cent between 1874/84 and 1885/95, which becomes a one per cent increase when the longer period, 1874/84-1896/1902 is considered. 21 GEHR argues that it was the combination of falling, or stagnant prices, and rising costs which threatened producers. They estimate that rents rose by 22 per cent and labour by 33 per cent between 1862/4 and 1885/7. Wheat prices kept pace with this increase until 1880/2 (a 21 per cent increase), but then fall

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20 There are three main reasons why this is necessary: (1) some individuals sent a general report, rather than replied to the questions; (2) others answered only one bloc of questions, for example, those on wine, and therefore failed to answer question 23, and (3), some thought it was obvious from the nature of their report that there was a crisis, without having to answer the question. I exclude the technical reports from engineers etc., who did not report directly on agriculture.

strongly. This suggests that rents would also have fallen, but that this was avoided because of tariffs (and a depreciating peseta), therefore benefiting landowners rather than tenants.

A second point made by Jesús Sanz, and repeated by GEHR, is that wheat imports in the 1890s were determined not just by domestic prices, but also by what was happening elsewhere. For example, the poor Spanish harvest of 1891 did not attract significant imports, because prices rose even more in England; in 1894 by contrast, despite a reasonable harvest, Spain imported large quantities, because prices fell even more elsewhere in Europe. This indeed suggests a fundamental change in the market, as the Spanish wheat price was increasingly being determined not just by domestic conditions of supply and demand, but by wider changes in the international economy. This was part of a long term change in the nature of prices. For much of the nineteenth century, farmers were compensated after poor harvests by high prices, while good harvests led to falling prices. This produced significant price instability for consumers, but stability for farmers. By contrast, the twentieth century saw an increase in imports at times of poor harvests, reducing any tendency for prices to fall. Large harvest, when accompanied by protection, now implied high farm incomes, as the Banco de Bilbao noted in 1948 that “año de buenas cosechas es año de prosperidad para el comercio y las industrias transformadoras”. Therefore, from the early 1880s, Spanish farmers no longer benefited automatically from high prices after a poor harvest, or low prices after a poor one. Prices were becoming more stable for consumers, but at the expense of introducing great instability in farm incomes.

The consequences of these changes were felt most in Castilla-La Vieja and León, which in the period 1890/4 was responsible for 80 per cent of the net movements of wheat and flour between Spanish regions, and which on average sold 45 per cent of its harvest outside the area. As can be seen in Table 4, “exports” to other regions were totally unrelated with the size of the local harvest, and resulted in stocks for local consumption fluctuating widely from the equivalent of 84 kilos/head in 1891, to 239 kilos/head in 1894.

The problems facing Spanish farmers before 1914, and especially those of the

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22 GEHR, 1988, p.50. Prices from Sánchez-Albornoz, 1975, pp.162-5. where I take an average for Burgos, Palencia and Valladolid. Wheat prices between 1862/4 – 1885/7 increased by 3 per cent.
24 Cited in Leal, et.al., 1977, pp.17-8. By contrast, in the early years of the nineteenth century, after the plentiful harvest in Palencia in 1806, prices collapsed and wheat was sold to feed the pigs, López y Petherver, 1812.
interior, were rising costs and increased income instability, rather than simply the absolute level of wheat prices. The increase in protection offered farmers more time to adapt to the new situation, with the depreciation of the peseta being more important than tariffs prior to the early twentieth century. Looked at from another angle, government policies were increasingly effective in making the country self-sufficient: whereas in 1890/9 Spain imported 7.6 per cent of its wheat requirements, in 1900/9 the figure was 7.3 per cent. in 1910/9. 5.6 per cent, and in 1920/9, 4.0 per cent. As self-sufficiency in wheat was an important goal for many contemporaries, this might be considered a success. However, and as I have argued elsewhere, the period 1880-1930 is one of two very different stories. In the first half, and until about 1905, there were few changes in the area sown, little mechanization or use of artificial fertilizers, and the rural exodus had hardly started; in the second half, artificial fertilizers contributed to a significant increase in the area of wheat (but yields hardly shifted), labour started leaving the land in large numbers, and farmers mechanized in growing numbers. Rather than to look for changes in the level of protection as the key to these two stories, the answer would seem to be rising urban wages changing nature of demand for agricultural produce (per capita wheat consumption peaks in about 1918/22), and drawing labour from the countryside. Any advantage in achieving growing self-sufficiency in cereals between about 1885 and 1905 was insignificant compared to the impact on welfare caused by the slow growth of the economy, and agriculture in particular. Although certainly not of the same scale as the 1930s and 1940s, the two decades between about 1885 and 1905 appear as a period when Spanish agriculture grew at a significantly lower rate than other major countries.

Wine differs from most commodities in the 1870s and 1880s because, far from being years of "crisis", they were a "golden age" for producers. Prices weakened slightly from the second half of the 1880s, but exports continued increasing until 1891. Thereafter Spanish growers faced three problems: weak wine prices, product adulteration and phylloxera. The area of vines declined from its peak of almost 2 million hectares in the mid 1880s to 1.24 million in 1914, before recovering slightly. Although they arrived late, the

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25 Sanz, 1985, cuadro 19.
problems facing the domestic wine producers were more complicated than those found in other sectors. They were also problems which required a response from the state which extended further than just tariffs on imported alcohol. Growers needed information on what new vines were most appropriate for their land, instructions on the techniques of grafting and the requirements of the new, post-phylloxera vines. State agencies, growers’ organizations and private enterprise (nurseries, etc.) helped provide solutions for individual growers. Although the recovery in the area of vines was somewhat slow, despite the solution to phylloxera having already been established in the Midi in the early 1880s, it is difficult to determine whether this was because of weak action by the state, or the low wine prices facing growers. Weak prices also created problems for farmers wishing to use credit markets. Although tax concessions were extended to those farmers who uprooted their dying vines and replanted new ones, this did little to reduce the heavy planting costs and the four year wait before the vines became productive. Instead, vineyards seem to have been replanted using predominantly unpaid family labour: growers being either the owners of the land, or working it using some form of sharecropping contract.29 Certainly viticulture was not going to recover its glory of the 1870s and 1880s, but it is interesting to note that most complaints of growers were concerned with measures to increase the demand for wines, rather than encouraging its supply. In particular, growers demanded lower taxes (especially the consumos) and protection from artificial wines, made from industrial alcohol, an important source of government revenue.30

In the nineteenth century, most of the olive oil exported was of poor quality, and used for industrial purposes, such as lighting, as a raw material in the manufacture of soap, or as a lubricant for machinery. The growth in exports during the nineteenth century was halted in the last quarter with the availability of other cheaper and more efficient vegetable oils. Between 1880 and 1896 the domestic price of olive oil fell by approximately 20 per cent of what it had been in 1861/79, in part because of the increase in the supply of substitutes, and in part because of the maturing of olive trees planted in earlier periods.31

The recovery of olive oil production is usually considered as a success story.

29 For sharecropping outside Cataluña, see, for example, Piqueras, 1981, Sabio, 1995, pp.174-80 and 219-20 and Carmona, forthcoming.
31 For olive oil prices, see GEHR, 1981.
Tariffs could protect Spanish olive oil producers from cheap imports of substitutes, but they obviously could not protect export markets. Two major problems faced producers if they were to compete in international markets, namely product quality, and the development of new marketing networks. With respect to production, the challenge lay not so much in the growing of olives, but rather in the manufacture of oil. Although agronomists of the period frequently criticized growers for using "traditional" techniques of production, and especially their choice of labour contracts for harvesting, which provided incentives for speed of collection, rather than in its care (harvesting by beating the trees – *vareo*, and paying by piece work *destajo*), growers showed themselves responsive to introducing improvements when there was a sufficient price premium. The real challenge lay in the processing of the fruit, which required a substantial increase in fixed capital, and the introduction of new technologies. Not only did the area of olives increase, but there was a rapid introduction of hydraulic presses and refining from the early twentieth century. There was less success in the marketing of olive oil. Although exports grew over the half century prior to the Civil War, over two thirds in the period 1926-35 was still exported in bulk, most of which was then blended with other oils. Spain appears to have been slow adopting brand names compared to France or Italy, or in establishing marketing networks.

In the first two sections of this paper, I have argued that the impact of the "crisis agraria" in Spain was relatively small. This had two important consequences. First, farmers suffered less from lower farm prices than elsewhere. Second, the smaller decline in farm prices when combined with a slow growing (domestic) market, implied that resources were slow to switch out of traditional production. We can therefore questioned whether the expression "crisis agraria" is the most appropriate to describe the late nineteenth century. But if this is true, why was a commission established to examine it, and why did most of those who replied argue that there was a crisis? The commission was established, at least in part, because other countries such as England, France and Italy also conducted large agricultural inquiries in the late 1870s and early 1880s. However, these inquiries were more concerned

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33 For a discussion on this, see Ramón Ramón, forthcoming.
with property arrangements and structural problems facing agricultural development, rather
than problems for farmers trying to compete in a period of falling prices. But they helped to
set the context for the Spanish Inquiry and, once a forum for debate was established, it is not
surprising that plenty of people and institutions took advantage of it to argue for the need for
state intervention - and especially tax reductions, improved infrastructure and, of course,
tariff protection. This is perhaps where most confusion arises, because whereas for some the
Inquiry was considered an opportunity for rent seeking, for others it was an opportunity to
present detailed arguments for agrarian development, rather than the need to solve short-term
“crisis” difficulties. It is a consideration of what would have been an appropriate strategy for
agrarian development which we shall now consider in the final section.

3. Farm profitability, productivity growth and the role of the state, 1880-1910.

I have argued that the performance of Spanish agriculture over the period 1880/1910
was poor, with labour productivity remaining stagnant. This is not to say that farmers did not
introduce changes. Agricultural historians have found significant evidence of farmers
improving livestock breeds, extending irrigation systems, intensifying cropping rotations and
increasing yields. Yet these two very different visions of agriculture are not incompatible.
In the first instance, the weight of “traditional agriculture” still remained very large in
1909/13, with cereals, legumes, potatoes, wine and olive oil accounting for 55 per cent of la
producción final agraria. When livestock is included, then the figure increases to 84 per cent.
Although livestock production perhaps was undergoing important changes for example in
Cantabria, there were much fewer in Galicia or Asturias, and even less in the provinces of the
Interior and Andalucía, except for the milking cows kept in urban shippens. Therefore much
of livestock’s contribution to final output must also be considered as “traditional”. The more
dynamic sectors such as oranges, represented just 1.9 per cent and sugar beet, 0.9 per cent. A
very rough calculation suggests that the “dynamic” sectors were at most 26 per cent of
agriculture in 1910.36 Cereals (and legumes) still accounted for 53 per cent of final

35 To cite just a very small number of the many recent works, see Dominguez and Puente 1997, Perez Picazo, 1997, Garrabou, et al.1995

36 The “dynamic sector” is taken as including irrigated cereals and legumes, all frutales, hortalizas, plantas industriales, together with
agricultural output in Castilla la Vieja, 42 per cent in Aragón, 41 per cent in Castilla la Nueva and Alta Ebro, 34 per cent in Extremadura and 33 per cent in Andalucía, and wheat yields nationally were only 0.82 tons per hectare between 1905/14 on the secano.

Second. historians have shown that the initial impact of technological change on productivity growth is often small. For example, total factor productivity in Britain grew annually at a maximum of only 0.1 per cent between 1760 and 1801, despite apparent rapid technological change in a number of key industries. More recently, economists have tried to reconcile the revolution in computer technologies with relatively slow growth rates of TFP in the United States. According to my calculations, labour productivity in Spanish agriculture grew by 56 per cent between 1909/13 and 1929/33, of which about half came from increased output, and half from a decline in the labour force. Changes of this magnitude could not have taken place without an important accumulation of knowledge of biological and mechanical technologies over the decades prior to 1910. However, the fruits of these changes were enjoyed only after 1910.

This poor performance between 1880 and 1910 can only partly be blamed on the agricultural crisis. As we have seen, the impact of falling commodity prices, caused by the growing productivity in agriculture in the New World, and declining international transport costs was muted in Spain, compared to northern Europe. In part this was because of tariffs and a depreciating peseta, but it was also because Spain had low per capita incomes and cities remained small, limiting urban demand for agrarian products. Spanish farmers did not have the same incentives to shift resources into higher value crops or livestock as in northern Europe. Natural resources also restricted the flexibility in switching between products in response to changes in factor and product prices. But the problem of natural resources was significantly increased by the unwillingness of contemporaries to contemplate mechanization. Furthermore, even if mechanization was rejected there were a number of other supply side initiatives which the state might have implemented, both to raise productivity and to improve rural living standards. In fact the state did very little. We shall now look more closely at the

livestock from Cataluña, País Valenciano, Murcia, Madrid, Santander, Guipuzcoa and Vizcaya. All figures are from Simpson, 1994, p.69.
39 These points are considered in more detail in Simpson, 1997, pp.72-9 and 1995, ch.8.
As production costs continued to rise faster than farm prices, farmers were required everywhere sooner or later to reduce unit costs. The agricultural experience of four countries is summarized in Table 6. Unit costs were reduced primarily through mechanization (United States), by raising yields (Denmark or Italy) or by the shift of resources into other, more profitable activities (Britain).\(^40\) Given that natural resource endowments in Spain made it very difficult to raise yields, the obvious solution to improving labour productivity and raising living standards was by encouraging migration, and mechanization. Furthermore, with industrialization, agriculture is destined to decline, and economists stress the importance of a rapid movement of resources out of agriculture to other, more productive sectors, as a source of productivity growth.\(^41\) In this vein, one distinguished British agricultural historian has described the period 1870 and 1914 for his country in terms of success, because its contribution to GNP declined from 15 to 6 per cent, and its share of the active labour force fell from 16 to 8 per cent:

"At the least, agriculture as the first of Britain's major industries to go into decline, had coped with its decline with more flexibility and less long-term anguish and distress than other staple industries, such as coal, cotton or shipbuilding, which went down the same road later. At the best, a slimmer agriculture, by 1914, really was fitter, economically, than it had been in 1870: British consumers enjoyed cheap food, the cheapest in Europe, and British farmers and farm workers enjoyed higher real incomes".\(^42\)

This type of solution would, however, have be rejected by the very great

\(^{40}\) Clearly, identifying individual countries with each possibility is an oversimplification, if only because farmers often choose a combination of approaches. It does have the advantage in that it makes clearer the options facing a country.

\(^{41}\) To cite just one recent study, Broadberry has suggested that an important factor in the closing of the aggregate labour productivity gap between Britain and Germany was achieved by shifting resources out of the latter's agriculture. Broadberry, 1997. The classic case is England during the Industrial Revolution, although for a criticism, see Allen, 1992.

\(^{42}\) Thompson, 1996, p.59.
majority of Spaniards in 1900. Sánchez Alonso has noted for emigration, opinion in the half century prior to the Great War changed only slowly from its outright rejection, to a believe that policies should be implemented to retain labour in agriculture. Very few contemporaries saw rural migration and mechanization as a solution to cheap imports, or as a means of raising rural incomes. Instead, most wanted the state to implement policies to increase the size of the rural population.

This association of a prosperous nation with a large agricultural labour force was an unfortunate one for Spanish economic development. The cheap grain from North America was often produced on family farms and under conditions not so different from Spain’s secano, but with mechanization allowing a much larger area of cultivation. With similar wheat yields to those found in Spain, labour productivity in cereal farming in the United States increased four times between 1840 and 1910, and another 70 per cent between 1910 and 1930. In Spain, the figure was significantly smaller. The potential of cereal mechanization was understood by both Abela and Costa in their debate of the early 1880s, before domestic prices started to fall in Spain. Abela argued that it was necessary to abandon cereal cultivation on marginal land and mechanise. He also recommended a switch into more competitive crops when possible. Costa’s ideas were not so different, although he questioned how Spanish farmers would be able to mechanise given the backward nature of the country. Unfortunately, when prices actually fell after 1882, there were few who challenged the idea that a prosperous agriculture needed to employ large numbers of workers, even if mechanization was considered by some as necessary.

In fact, population growth in Spain had made land increasingly scarce relative to labour, and in the Crisis agricola y pecuaria there are various references to declining yields in the interior. The movement from a resource-based agriculture to a science-based one on Spain’s secano was difficult, and labour absorbing policies were unsuitable for late nineteenth

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43 Sánchez Alonso, 1995, ch.2; for agrarian policies, see especially, Robledo, 1993, pp.75-94.
44 This can be seen in the replies to question 15 of La crisis agricola y pecuaria, where very few argued that the agricultural work force should be reduced, and most suggested that measures should be taken to increase it. More significantly, of the 40 questions relating to “cereales y legumbres”, none asked how farmers might become more productive or competitive; instead questions were heavily biased towards the possibility of restricting imports, raising domestic output and increasing internal prices.
47 Abela believed that mechanization would allow an extension in the area of cultivation, rather than a decline in the rural workforce.
century cereal farming. Wheat yields remained stagnant until the 1960s (although artificial fertilizers would permit an extension in the area cultivated). There were also technical difficulties in introducing intensive livestock farming systems in a country which suffered long summer droughts, and international market opportunities for both the vine and olive were limited. Resources that were kept in extensive cereals had no obvious alternative use. However, it needs to be remembered that these limitations still had to be learnt by contemporaries. Most writers prior to the First World War were unaware of the difficulties in raising output per hectare on the *secano*, whether this was by improving cereal yields, or switching to other, higher value crops. Technical change is always accompanied by many failures, and the historian has a major advantage over contemporaries in being able to identify better the direction of successful technological change. Furthermore, for individual farmers, there were obvious advantages in having a cheap, plentiful work force which removed the necessity to experiment with costly machinery. Finally, contemporaries in general believed that rural unrest was less threatening than the social and political problems associated with rapid urbanization and industrialization.

But once mechanization and a rapid rural exodus are rejected, there were relatively few alternatives if the policy goal was a competitive agricultural sector, at least on the *secano*. Yet it could reasonably be argued that a “competitive” agriculture was not in fact a priority for most. Table 7 outlines four possible policy aims which, if they are over simplified, probably include most major ideas being debated in this period. Three imply an increase in the rural population, rather than a decline.

Not all Spain was *secano*, and some countries were successful in both increasing output per agricultural worker and providing employment for a growing labour force. Furthermore, mechanization occurred slowly in many European countries, and the emphasis instead was often on land saving technologies. The classic European case perhaps was Denmark, which successfully exploited its comparative advantage, and was at the forefront of technological and institutional change. If contemporaries really wished Spain to

Abela, 1880, p.557.

provide agricultural employment for a growing population, and delay the rural exodus, alternatives to the cereals-vines-olives-extensive livestock production systems needed to be found. However, incentives to change in these directions were often lacking. We shall consider three areas where supply side incentives might have induced productivity changes.

First, and as we have mentioned, a frequent solution to the decline in cereal prices elsewhere was for farmers to switch to livestock farming. The growth in nominal wages over the period 1870-1910, the increase in urbanization, and the decline in the real cost of basic foods, and increased demand in western Europe. Furthermore, whilst the farm gate price of meat and dairy produce often increased faster than the general price index, European farmers also benefited from a steep decline in feed costs, namely barley, maize and oilseed cake. Spanish farmers benefited from demand shifts, although by less. Urban Spain grew slowly from 21.5 per cent of the total population in 1887 to 23.9 per cent in 1910, urban nominal wages increased by 20 or 30 per cent, and per capita consumption of wheat increased slowly, rather than decline. However, on the supply side, livestock farmers saw no fall in nominal feed costs. Thus, whereas wheat prices stagnated between 1869/73 and 1909/11 (5 per cent increase), barley prices rose from 53 per cent of the wheat price to 75 or 80 per cent, and maize from 71 to 75 per cent. Oilseed cake, an important feature of the “Second Agricultural Revolution” was scarcely used because of tariffs on imported vegetable oils. Therefore, one potential area for helping farmers switch out of low yield cereals to higher value livestock was missed. The steep decline in international feed costs did not benefit the Spanish livestock farmers, whether in the urban dairies of Barcelona or Madrid, the small farms of the North, or the extensive pastures of the secano.

A second “missed opportunity” was institutional innovation, especially in the area of cooperatives. The late nineteenth century in many areas of Europe saw a decline in the numbers of agricultural laborers, and an increase in the relative importance of small farmers. Although small farms proved highly adaptable to changing markets, they were at a disadvantage in the few, but growing areas where economies of scale existed. Cooperatives

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50 Urban Spain was, however, only 14.9 per cent in 1860. Figures refer to municipalities of over 20,000 inhabitants and provincial capitals. Reher, 1989, pp.196. For wheat per capita consumption, see Torres, 1944, p.241.
51 Sánchez Albornoz, 1975, p.180; García Lombadero, 1971; Carreras (ed) 1989 and Anuario estadístico, 1917, p.259. GEHR, 1980, give a lower figure for barley in the early 1900s, which suggests that the price gap closed quickly from around 1910.
were considered as a potential solution, linking the low monitoring costs of the small farm, with the economies of scale found in a growing number of areas as agriculture became more commercial. Cooperatives in the late nineteenth century had a number of functions, namely buying for members off-farm inputs (fertilizers, pesticides, machinery etc), providing a cheap, but flexible banking system and, finally, the transformation and commercialization of agricultural produce. As Van Zanden has written:

"In Scandinavia, the Low Countries, Germany, Switzerland, Ireland, and large parts of eastern Europe cooperatives fundamentally reorganized rural markets. By 1910 in these countries most farmers were members of some kind of cooperative. Almost nothing of this kind occurred in Britain, France, and southern Europe. There membership of cooperatives remained restrictive to a small minority of farmers".53

Why were cooperatives so weak in southern Europe, and in particular, in Spain? Once again, a demand explanation has some relevance. One argument is that the slow process of technological change and low level of commercialization in Spanish agriculture, implied that the demand for the economic services that cooperatives might supply was limited, especially prior to the First World War. For example, although commercial fertilizers were still relatively unimportant, they accounted for two third's of cooperative purchases in 1920.54 However, there was a widespread demand for rural credit, and cooperatives might have allowed farmers to enjoy a greater share of the value added in the transformation and marketing of their products. Here cooperatives appear to have failed prior to 1910 for one of two reasons. In the first instance there were high transaction costs for farmers in setting up cooperatives, and there was no national body willing to create the incentives required for such a far reaching economic reform. Thus although the catholic church, as elsewhere, successfully recruited hundreds of thousands of farmers in the inter-war period, its mission was spiritual rather than one of economic development. Second, the formation of cooperatives, at least initially, was easier in those countries, such as Canada, where farmers could exert political

influence. Cooperative members were able to vote for those representatives who were willing to back initiatives on their behalf. Later, from the mid 1930s especially, governments would themselves encourage the formation of cooperatives as a system which could help to control the growing surpluses brought about by excessive production.

A third area where a state committed to the development of a large and prosperous agriculture might have acted was in the area of lease and land reform. Most commentators criticized the short term nature of leases, the failure to compensate tenants for improvements made, the foros and rabassa morta, and the large areas of supposedly underutilized land found on the latifundios, etc. Similar problems were widely debated in other European countries at the time, and in less developed countries today. Opinion has shifted considerably over the last century on the economic and social implications of such reforms, and today it seems unlikely that tenure or land reform would have increased labour productivity significantly in the long run.\textsuperscript{55} However, reform might have delayed the rural exodus, one of the supposed aims of government policy. As with the development of cooperatives - which might have had a positive role on growth if they improved market efficiency - the failure to implement an agrarian reform reflects the low priority that the state gave to family farming.

In conclusion, the state was much more successful in the period 1880-1910 in the area of economic regulation, than in the provision of public goods to make agriculture more competitive. As elsewhere, the state was required to respond to the appearance of disease, especially phylloxera, and problems of public health related to food quality. By contrast it played only a minor role in reducing transaction costs in the development of cooperatives, it was slow to carry out investment in infrastructure, create agricultural experimental stations and extension services (and fund them adequately), to develop a proper statistical service, to produce a cadastre, etc. Spanish farmers were not alone in having to operate with a weak state. In England, the state did even less for farmers. But in England, as we have seen, agriculture was treated as a declining industry. In Spain, government talked of the need for a prosperous, family-based, agriculture. Given this, and the fact that tariffs and taxes (consumos) in general restricted the incentives to move out of traditional crops, then a

\textsuperscript{55} This is treated in greater detail in Carmona and Simpson, forthcoming.

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more dynamic state was required to create alternative incentives for change.

**conclusion.**

Although falling prices in the late nineteenth century led to significant changes in the agriculture of many European countries, changes in Spain appear much fewer. Furthermore, the period 1880-1910 was one of small, or even stagnant productivity growth in Spanish agriculture. Increased tariffs delayed the need to move resources out of the sector, and hence encourage farmers not to change. This need not have mattered if tariffs had been accompanied by incentives on the supply side for farmers to increase productivity. As I have argued, this was not forthcoming, at least prior to the First World War. Animal feed costs remained high, cooperatives were insignificant, and government funding of research and extension services remained very small. On the demand side, structural change had hardly started, and urbanisation increased little faster than the general population growth. Therefore market incentives for farmers to switch out of traditional crops and towards other, higher valued produce, was again limited.

In Spain the "crisis agraria" therefore appears less a problem of falling prices and farmers trying to adapt to more competitive markets, than the generally successful attempts in maintaining the area under traditional crops, and limiting the need for technological change. The interwar period would, by contrast, see a rapid outflow of labour to the cities, and with it, demand for more diversified diets. These changes in turn provided incentives to both increase the speed of technological change on the secano, and increase the output of irrigation grown crops. The state also slowly increased the incentives for change. Labour productivity increased by around two thirds, and the labour productivity gap between Spain and northern European countries was reduced slightly.56

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56 Simpson, 1994, cuadro 7: for the labour productivity gap, see O’Brien and Prados de la Escosura, 1992, Table 6.
Gráfico 1
Movimientos de precios en España, 1860-1910

Fuentes:
Ballesteros, 1997, p.373.
Prados de la Escosura, 1995, p.133.
Gráfico 2
International Wheat Prices

Fuentes:
### Table 1.

Wheat prices and replies to “La crisis agricola”.

<table>
<thead>
<tr>
<th>Region</th>
<th>1874/84 pesetas/hl</th>
<th>1885/95 pesetas/hl</th>
<th>% fall in prices</th>
<th>% national harvest 1890/4</th>
<th>% replies to commissio n (1)</th>
<th>% of replies which argue there was a crisis (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alto Ebro</td>
<td>20,85</td>
<td>18,46</td>
<td>-11.5</td>
<td>5.2</td>
<td>9.2</td>
<td>7.4</td>
</tr>
<tr>
<td>Andalucía Occidental</td>
<td>24,58</td>
<td>20,70</td>
<td>-15.8</td>
<td>10.6</td>
<td>10.2</td>
<td>11.0</td>
</tr>
<tr>
<td>Andalucía Oriental</td>
<td>24,67</td>
<td>20,74</td>
<td>-15.9</td>
<td>7.5</td>
<td>4.2</td>
<td>4.7</td>
</tr>
<tr>
<td>Aragón</td>
<td>21,47</td>
<td>18,56</td>
<td>-13.5</td>
<td>13.0</td>
<td>11.8</td>
<td>12.1</td>
</tr>
<tr>
<td>Cantabria</td>
<td>24,18</td>
<td>21,51</td>
<td>-11.0</td>
<td>1.3</td>
<td>7.6</td>
<td>7.2</td>
</tr>
<tr>
<td>Castilla la Nueva</td>
<td>21,33</td>
<td>18,92</td>
<td>-11.3</td>
<td>11.6</td>
<td>17.2</td>
<td>19.6</td>
</tr>
<tr>
<td>Cataluña</td>
<td>24,66</td>
<td>20,51</td>
<td>-16.8</td>
<td>6.3</td>
<td>6.2</td>
<td>6.6</td>
</tr>
<tr>
<td>Castilla la Vieja-León</td>
<td>19,17</td>
<td>17,44</td>
<td>-9.0</td>
<td>27.1</td>
<td>21.8</td>
<td>20.1</td>
</tr>
<tr>
<td>Extremadura</td>
<td>20,92</td>
<td>18,60</td>
<td>-11.1</td>
<td>5.4</td>
<td>1.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Galicia</td>
<td>25,08</td>
<td>20,97</td>
<td>-16.4</td>
<td>2.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Murcia</td>
<td>24,60</td>
<td>20,84</td>
<td>-15.3</td>
<td>2.6</td>
<td>1.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Valencia &amp; Baleares</td>
<td>24,91</td>
<td>22,08</td>
<td>-11.4</td>
<td>6.8</td>
<td>2.8</td>
<td>3.0</td>
</tr>
<tr>
<td>España</td>
<td>22,70</td>
<td>19,78</td>
<td>-12.9</td>
<td>100.0</td>
<td>100.0</td>
<td>100.1</td>
</tr>
</tbody>
</table>

: column 4, Sanz, 1985, cuadro 17 and Arrazola, 1896, pp.50-1.
: columns 5 and 6, La crisis agricola y pecuaria, vols. 2-5.

Notes: (1) only those replies that can be allocated to regions have been included (500 out of the total 517).
(2) I include only those replies which deal specifically with agriculture (463 out of the total 500).
Table 2

Wages, agricultural rents and GDP per capita in Europe, 1870-1910.

<table>
<thead>
<tr>
<th></th>
<th>Real wage growth per urban worker 1870-1913</th>
<th>Wage-rental ratio 1870-1910</th>
<th>Real GDP per capita 1870-1913</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>0.44</td>
<td>-0.43</td>
<td>1.11</td>
</tr>
<tr>
<td>Denmark</td>
<td>2.63</td>
<td>2.85</td>
<td>1.57</td>
</tr>
<tr>
<td>France</td>
<td>0.91</td>
<td>1.80</td>
<td>1.30</td>
</tr>
<tr>
<td>Germany</td>
<td>1.02</td>
<td>0.87</td>
<td>1.63</td>
</tr>
<tr>
<td>Great Britian</td>
<td>1.03</td>
<td>2.54</td>
<td>1.01</td>
</tr>
<tr>
<td>Ireland</td>
<td>1.79</td>
<td>4.39</td>
<td>na</td>
</tr>
<tr>
<td>Italy</td>
<td>1.74</td>
<td>na</td>
<td>1.28</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.64</td>
<td>na</td>
<td>1.01</td>
</tr>
<tr>
<td>Norway</td>
<td>2.43</td>
<td>na</td>
<td>1.31</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.37</td>
<td>na</td>
<td>0.69</td>
</tr>
<tr>
<td>Sweden</td>
<td>2.73</td>
<td>2.45</td>
<td>1.46</td>
</tr>
<tr>
<td>Europe</td>
<td>1.39</td>
<td>2.07</td>
<td>1.25</td>
</tr>
<tr>
<td>New World</td>
<td>1.14</td>
<td>-3.03</td>
<td>1.66</td>
</tr>
</tbody>
</table>

Sources: O’Rouke and Williamson, 1997, Table 2.
Table 3

Migration and employment in European agriculture.

<table>
<thead>
<tr>
<th></th>
<th>Persons adjusted net migration rate 1870-1910 (per 1000)</th>
<th>Persons adjusted cumulative population impact 1910 (%)</th>
<th>Date when absolute decline in the labour force began</th>
<th>% in agriculture when absolute numbers begin to decline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>-1.16</td>
<td>-5</td>
<td>1950</td>
<td>48.4</td>
</tr>
<tr>
<td>Denmark</td>
<td>-2.78</td>
<td>-11</td>
<td>1930</td>
<td>35.6</td>
</tr>
<tr>
<td>France</td>
<td>-0.10</td>
<td>0</td>
<td>1921</td>
<td>41.5</td>
</tr>
<tr>
<td>Germany</td>
<td>-0.73</td>
<td>-3</td>
<td>1907</td>
<td>36.8</td>
</tr>
<tr>
<td>Great Britain</td>
<td>-2.25</td>
<td>-9</td>
<td>1851</td>
<td>21.9</td>
</tr>
<tr>
<td>Ireland</td>
<td>-11.24</td>
<td>-36</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Italy</td>
<td>-9.25</td>
<td>-31</td>
<td>1936</td>
<td>48.2</td>
</tr>
<tr>
<td>Netherlands</td>
<td>-0.59</td>
<td>-2</td>
<td>1947</td>
<td>19.3</td>
</tr>
<tr>
<td>Norway</td>
<td>-5.25</td>
<td>-19</td>
<td>1931</td>
<td>35.3</td>
</tr>
<tr>
<td>Portugal</td>
<td>-1.06</td>
<td>-4</td>
<td>1950</td>
<td>48.4</td>
</tr>
<tr>
<td>Sweden</td>
<td>-4.20</td>
<td>-15</td>
<td>1920</td>
<td>40.2</td>
</tr>
<tr>
<td>Europe</td>
<td>-3.08</td>
<td>-11</td>
<td>1.66</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Net migration rate and cumulative impact, Taylor and Williamson, 1997, Table 1; agricultural labour force, Grigg, 1982, Table 11.
Table 4.
Castilla-la-Vieja and León in the national wheat market.

<table>
<thead>
<tr>
<th></th>
<th>Wheat harvest</th>
<th>Supply of wheat to other regions</th>
<th>% of harvest supplied to other regions</th>
<th>Size of national wheat imports</th>
<th>Wheat price in Castilla-la-Vieja &amp; León</th>
<th>Wheat price in Barcelona</th>
</tr>
</thead>
<tbody>
<tr>
<td>1890</td>
<td>5324</td>
<td>2700</td>
<td>50.7</td>
<td>1978</td>
<td>17.3</td>
<td>19.8</td>
</tr>
<tr>
<td>1891</td>
<td>5309</td>
<td>3410</td>
<td>64.2</td>
<td>1611</td>
<td>19.0</td>
<td>21.7</td>
</tr>
<tr>
<td>1892</td>
<td>5190</td>
<td>3160</td>
<td>60.9</td>
<td>1461</td>
<td>19.6</td>
<td>23.0</td>
</tr>
<tr>
<td>1893</td>
<td>7749</td>
<td>2414</td>
<td>31.2</td>
<td>4290</td>
<td>17.9</td>
<td>21.7</td>
</tr>
<tr>
<td>1894</td>
<td>7852</td>
<td>2441</td>
<td>31.1</td>
<td>4366</td>
<td>15.4</td>
<td>18.6</td>
</tr>
<tr>
<td>1890-4</td>
<td>6285</td>
<td>2825</td>
<td>44.9</td>
<td>2741</td>
<td>17.6</td>
<td>21.0</td>
</tr>
</tbody>
</table>

All figures in 000s QM; wheat price pesetas/ hl.
Source: Sanz, 1985, cuadros 6, 19, and 21.

Table 5
a. area of wheat in hectares

<table>
<thead>
<tr>
<th></th>
<th>France</th>
<th>Italy</th>
<th>Gr.Britain</th>
<th>USA</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1869/73</td>
<td>6829</td>
<td>4737</td>
<td>1445</td>
<td>9081</td>
<td>Na.</td>
</tr>
<tr>
<td>1909/13</td>
<td>6539</td>
<td>4744</td>
<td>746</td>
<td>19382</td>
<td>3864</td>
</tr>
<tr>
<td>1925/29</td>
<td>5358</td>
<td>4870</td>
<td>626</td>
<td>23578</td>
<td>4332</td>
</tr>
</tbody>
</table>

b. wheat yields

<table>
<thead>
<tr>
<th></th>
<th>France</th>
<th>Italy</th>
<th>Gr.Britain</th>
<th>USA</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1869/73</td>
<td>1.05</td>
<td>0.84</td>
<td>Na</td>
<td>0.84</td>
<td>Na.</td>
</tr>
<tr>
<td>1909/13</td>
<td>1.32</td>
<td>1.02</td>
<td>2.18</td>
<td>0.96</td>
<td>0.92</td>
</tr>
<tr>
<td>1925/29</td>
<td>1.48</td>
<td>1.23</td>
<td>2.28</td>
<td>0.95</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Table 6.

Agrarian change in four countries, 1880-1913.

<table>
<thead>
<tr>
<th>United States</th>
<th>Denmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in output:</td>
<td>Change in output:</td>
</tr>
<tr>
<td>+64%</td>
<td>+71%</td>
</tr>
<tr>
<td>Change in labour:</td>
<td>Change in labour:</td>
</tr>
<tr>
<td>+30%</td>
<td>+8%</td>
</tr>
<tr>
<td>Change in area of arable:</td>
<td>Change in land area:</td>
</tr>
<tr>
<td>+90%</td>
<td>+1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>United Kingdom</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in output:</td>
<td>Change in output:</td>
</tr>
<tr>
<td>-5%</td>
<td>+18%</td>
</tr>
<tr>
<td>Change in labour:</td>
<td>Change in labour:</td>
</tr>
<tr>
<td>-14%</td>
<td>+14%</td>
</tr>
<tr>
<td>Change in area of arable:</td>
<td>Change in area of arable:</td>
</tr>
<tr>
<td>-20%</td>
<td>+10%?</td>
</tr>
</tbody>
</table>

Labour in all cases refers to males only.


United Kingdom, 1878-1913; Feinstein, 1972, Tables 118 and 131. Area refers to cereals and potatoes only, calculated from Mitchell, 1975.


Spain, output 1879/81 and 1909/11 Prados de la Escosura, 1995, p.85; labour, 1877 and 1910, Carreras (ed), 1989; area, see text.
<table>
<thead>
<tr>
<th>Policy goal</th>
<th>Method</th>
<th>Level of acceptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Economic growth</td>
<td>Free trade; state active in research and development</td>
<td>Low</td>
</tr>
<tr>
<td>2. Rent seeking (self-sufficiency in wheat)</td>
<td>Tariffs</td>
<td>High (among farmers); low (urban consumers).</td>
</tr>
<tr>
<td>3. Urban social peace</td>
<td>Tariffs – to maintain labour in countryside</td>
<td>High</td>
</tr>
<tr>
<td>4. Increase rural population</td>
<td>Tariffs; state active in research and development</td>
<td>High</td>
</tr>
</tbody>
</table>
Bibliography.


Antúnez, L. (1887) Informe sobre la crisis actual de las industrias pecuaria y vitivinícola. Barcelona.


Carmona, J. and Simpson (forthcoming) El cambio institucional y la agricultura española.


Crisis Agrícola y Pecuaria. La. Actas y dictámenes de la comisión creada por el Real Decreto de 7 de julio de 1887 para estudiar la crisis que atraviesa la agricultura y la ganadería. Madrid, 6 vols.


GRUPO DE ESTUDIOS DE HISTORIA RURAL (GEHR),(1980) Los precios del trigo y la cebada en España, 1891-1907, Madrid.


López y Peñalver (1812), Reflexiones sobre el precio del trigo, Madrid.


--- (1994) "La producción y la productividad agraria española, 1890-1936" Revista de Historia Económica, 12, pp.43-84.


Torres, Manuel de (1944) El problema triguero y otras cuestiones fundamentales de la Agricultura española, Madrid.


