

Primary Sector Evolution: 1999-2009

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ABSTRACT

Analysing the current situation of agriculture is very important because the economy in a lot of regions is based on this sector. For this reason, the present scenario in many regions mirrors that of agriculture. Farms and their structural evolution over the last decade allow us to see the effects of factors such as the economic crisis and the changes in Common Agrarian Policy (CAP) on this sector and the economies of some regions.

In this sense, European countries compiled agrarian censuses in 2009 and 2010 to comply with the legal regulations established by the European Council in order to obtain a framework or directory of farms that could serve to carry out sampling designs for sectorial agricultural surveys. These censuses have been elaborated in Spain since 1982 and are the main source of primary sector information.

Thus, in this paper we have used the agrarian census data from 2009 to analyse the current situation of farms. In addition, information from the 1999 agrarian census has been used to ascertain the main changes that have taken place in these farms during this decade. This analysis has made it possible to determine the main effects that the worldwide economic crisis has had on farm structure and, therefore, on the hard-hit agrarian economy.

Keywords: Agrarian Economy; Agricultural Economic Indicators; Indices of Prices Received and Paid; Agrarian Census

1. INTRODUCTION

The primary sector is made up of economic activities related to obtaining resources from nature. The main activities in the primary sector are: agriculture, livestock, forestry, bee-keeping, aquaculture, hunting and fishing. Within the primary sector, agriculture figures very prominently as the most important activity. The dry and sunny climate in much of Spain allows for a wide variety of crops, although Spanish Agriculture is very productive due to mechanisation, the spread of irrigation and the use of fertilisers and new cultivation techniques.

Until the industrial revolution, the primary sector was the most developed, created the most wealth and employed the largest number of people. The industrial revolution and the use of machinery in field tasks reduced the need for labour and boosted productivity. Over the past few years, the progress of other economic sectors has resulted in agriculture losing ground in regard to the economy as a whole, although there are still regions where the economy is based on primary sector.

The financial crisis, which began with the fall of Lehman Brothers in the United States in 2008, sparked a severe global recession that has affected all economic sectors, and of course the agricultural sector is no exception. However, the key questions are: how is the crisis affecting the agricultural sector and where are the effects of the crisis being most felt? At a time when food and agriculture are seen as strategic industries, Spain confronts the future with inadequate production structures and many farms below the threshold of profitability. The primary sector, after several decades of continuous transformation, has lost much of its participation in the Spanish economy, dropping from 3.8% of GDP in 2000 to 2.3% in 2009. However, the primary sector still employs 4.3% of the active population and within this sector, agriculture represents approximately 60%.

The impact of the economic crisis on the agricultural sector have been analysed by organisations such as the Coordinator of Organisations of Farmers and Ranchers (2011) and the Union of farmers and ranchers of Navarra (2010). Furthermore, Lamo De Espinosa (2005) analysed the crisis in the Spanish agrarian sector before the 2008 financial crisis and Lamo De Espinosa (2009) analysed the effect of the global crisis and the forgotten effect that this crisis has had on a sector as important as the agricultural sector.

The aim of this paper is to analyse the changes that agriculture has undergone over the past years as a result of the devastating effects of the economic crisis. Thus, we first consider the situation of the Spanish agricultural sector at European level. Later, we analyse the main changes in the agrarian economy over the period 1999-2009 in detail, coinciding with the publication of the 2009 Agrarian Census information. Finally, we present the main conclusions of this research.

2. THE SITUATION OF SPANISH AGRICULTURAL SECTOR AT EUROPEAN LEVEL

In order to analyse the situation of the agrarian economy at European level, we focus on examining three variables of great interest to the overall situation of the sector and the profitability of agricultural economies. These variables are gross value added, prices received by farmers and prices paid by farmers. These variables are an accurate reflection of the situation of the sector. The information has been obtained from the European Union Statistics Office (2012) for the period 1999-2011 in the case of gross value added (bearing in mind that more recent values are advances) and for the period 1996-2008 in the case of indices of prices received and paid by farmers.

Firstly, Figure 1 shows the evolution of agricultural gross value added for the European Union 15, 25 and 27, respectively. In all cases this variable displays a clearly downward trend since 2004, a mild recovery in 2007 followed by a decrease in 2009. Since then, the situation of the European agricultural economy has begun to recover, the trend climbing upward until 2011, the last year for which information is available. In contrast, the situation in Spain remained similar until 2009, but later, while Europe has recovered, the situation in Spain has deteriorated after a slight improvement in 2010.

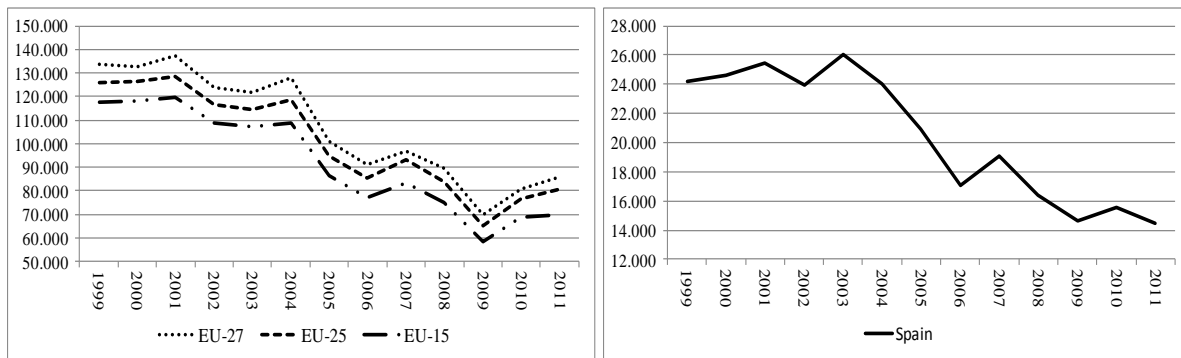


Figure 1. Gross value added in the European Union and Spain

Source: Own Elaboration

Another aspect of great importance when analysing the profitability of farms are the prices received and paid by the agricultural sector. In this sense, Figure 2 shows the pattern of the indices of prices received and paid by farmers in the European Union and Spain. The trend in recent years has been different in the case of prices received. While in the European Union there was an increase in prices received by farmers, Spain has recorded a downward trend since 2008. However, in the case of the prices paid, the trend is upward at all levels considered, albeit more pronounced in the Spanish case.

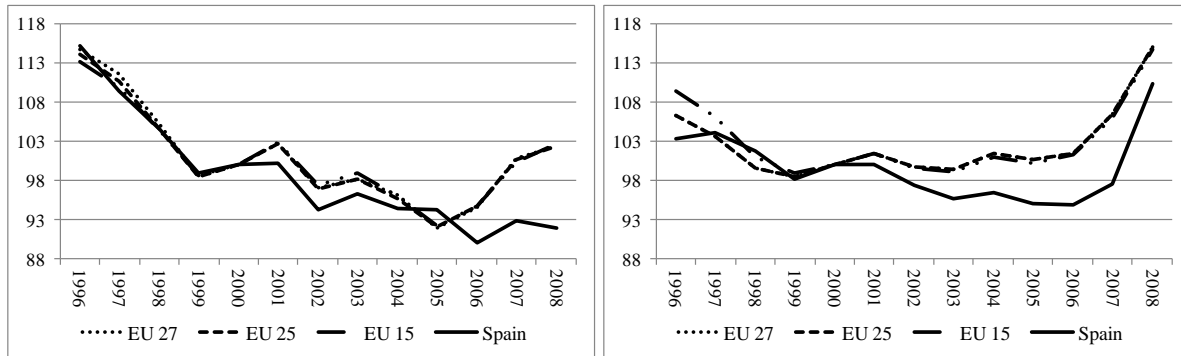


Figure 2. Indices of prices received and paid in the European Union and Spain
Source: Own Elaboration.

Although the trends are clearly different in the European Union and Spain, we analyse the evolution of the ratio between the index of prices received and the index of prices paid in order to analyse the evolution of the existing margin in the development of agrarian and cattle activity (Alfaro, Andrés and López, 2010). The ratio used is defined as:

$$\text{Ratio perceived / paid} = \frac{\text{Perceived prices index}}{\text{Paid prices index}}$$

The evolution of the ratio shows that the profitability of farms is at stake in the whole of the European Union, in view of the clearly downward trend of this index and the fact that it has remained below the value of balance (1) since 2001. This situation is even more worrying in Spain, as index levels have been lower still in recent years.

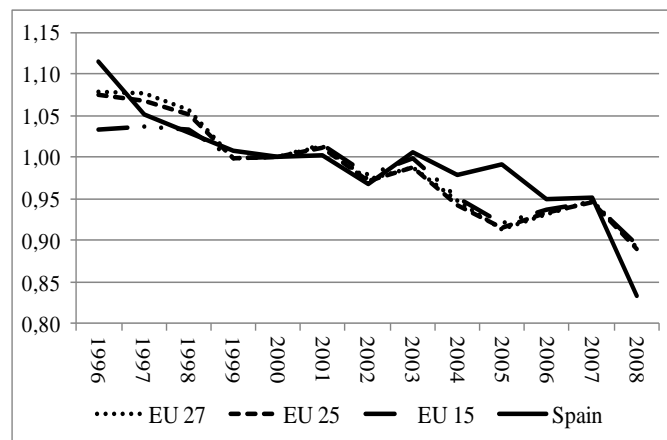


Figure 3. Evolution of the ratio between prices received and paid
Source: Own Elaboration.

These results show the delicate situation the agricultural sector is in and that in addition to the effects of the economic and financial crisis that has affected the world since 2008, there has been a crisis of profitability in the sector since 2001.

3. SPANISH AGRICULTURAL ECONOMIC INDICATORS

In the analysis of the situation of the agricultural sector in Spain, we will use economic indicators obtained from the Farm Accountancy Data Network (FADN), an instrument for evaluating the income of agricultural holdings and the impact of CAP, which consists of an annual survey carried out by the Member States of the

European Union, and the Spanish Ministries of Agriculture, Food and Environment and Economy and Competitiveness.

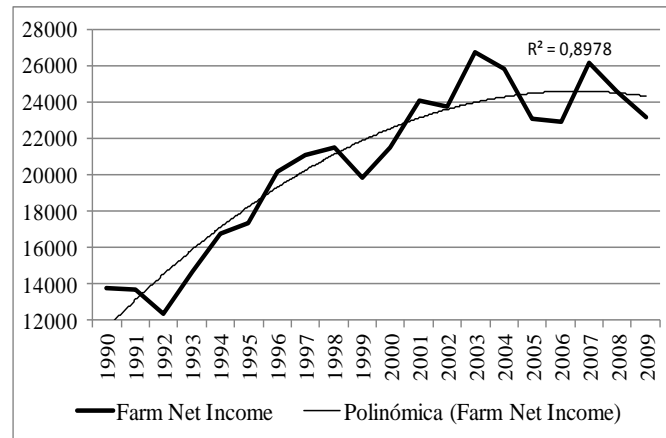


Figure 4. Farm Net Income

Source: Own Elaboration.

Figure 4 shows the evolution of farm net income and a polinomic adjustment of tendency in the data series to show how this affects the trend. In the period between 2003 and 2009, agricultural income decreased by 13 percent (Ministry of Agriculture, Food and Environment, 2012). In addition, following a recovery in 2007, 2008 and 2009, there were two years of decline that revealed the serious crisis the agricultural sector is now suffering. If we consider the tendency shown by the data series, the pattern is very clear, recording an increase until 2003, before stabilising and then turning downwards since the outbreak of the economic crisis at the beginning of 2008.

If we look at Real agricultural income, we can see that the average income of European farmers is the same as that in 1993 (European Union Statistics Office, 2012), 50% below the average income of the other productive sectors and displaying a downward trend. In Spain, at the beginning of the 1990s, real agricultural income stood at around M€14,000, but in 2009 was only M€11,427, 5.3% less than in 2008 and 26.3% less than in 2003. These figures highlight the impact of the crisis on the agricultural sector and underline the weak structure of European agrarian economies. The agricultural sector has also suffered the effect of the crisis. Thus, agricultural income fell by an average of 12 percent between 2008 and 2009, although the decrease was distributed unevenly across regions and productive sectors, leading to a rise in unemployment in rural areas.

If we consider the evolution of costs in terms of the main inputs required to carry out agrarian activity, the situation is not good. More specifically, Figure 5 presents the evolution of the cost of seeds and plants, fertilisers, crop protection, energy and interest paid. We have included the cost of financing given that it is an expense to be taken into account due to the difficulty involved in accessing credit today, much more restrictive credit policy imposed by financial institutions and farmers' need to fund the technology and sizing necessary to ensure their farms are competitive and therefore increase agrarian income.

The interest and financial charges paid on loans peaked in 2008, with an increase of over 14% compared to 1999. As regards the rest of production costs, it is worth noting the increase in inputs derived from oil, such as fertilisers and energy, which includes motor fuels and lubricants, electricity and heating fuels, albeit fuels figuring most prominently.. In the case of fertilisers, costs have increased by 103 percent since 1999, while energy costs have risen by 167%. If we take into account that prices received by the agricultural sector during 2009 were between 32% and 51% less than those recorded in 2008, farm profitability is in doubt.

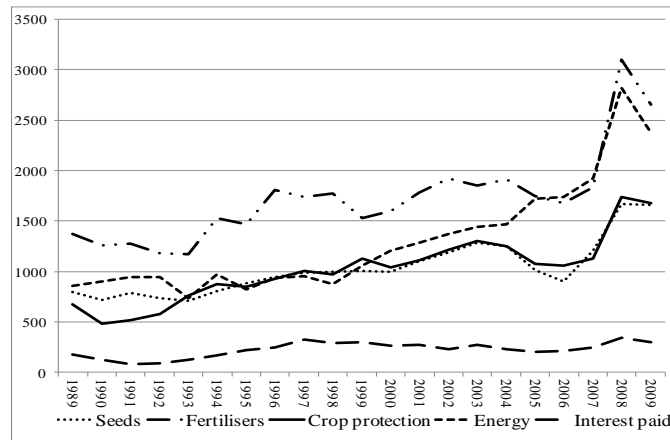


Figure 5. Main production costs
Source: Own Elaboration.

If we take into account labour market data, we see that in 2009 the average number of unemployed in the agrarian sector stood at 192,000, 30% more than in 2008. The increase in unemployment is a negative consequence of the crisis in the agricultural sector, which affects not only the people professionally engaged in agriculture and livestock, but also has an impact on the whole rural environment.

The commercial margins measured using the Total distribution margin (Ministry of Economy and Competitiveness, 2012), which is calculated as the difference between the origin price (OP) and the final price or retail price (FP) in relation to the retail price, constitutes the only cause for joy on behalf of farmers after the crisis, as they display a clearly downward trend. Nevertheless, this margin is still far from the values recorded in 2006. Del Campo (2006), Cruz (2008) and Alfaro, Andrés, Mondéjar and Mondéjar (2011) analyse the evolution of commercial margins. More specifically, Alfaro, et al. (2011) analyse the commercial margins of 28 fresh products between 2005 and 2009, obtaining an upward trend except in the case of fish, with the presence of inflationary peaks on dates marked as Christmas or holiday periods. Therefore, we must be aware of the evolution of this margin to check whether this downward trend continues.

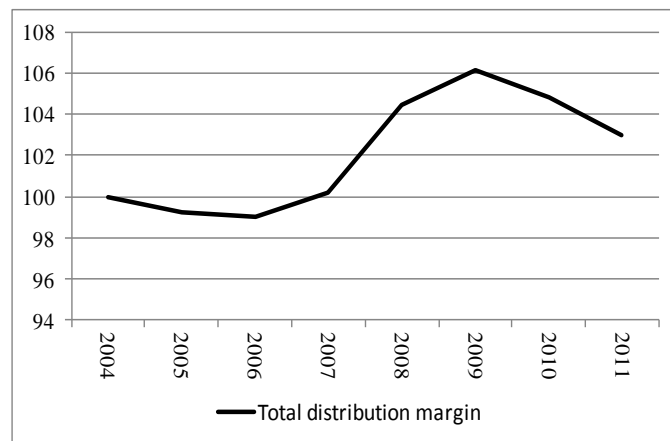


Figure 6. Total distribution margin
Source: Own Elaboration.

The results of the foregoing analysis of these economic indicators shows the difficult situation that, like the rest of the economy, the agricultural sector is in, with a continued decline in farm income year after year, a continuous increase in production costs, together with a widespread decline in prices received, as shown in the previous section.

4. CHANGES IN HOLDING STRUCTURE: 1999-2009

An important aspect of analysing the effects of the global economic crisis on the agricultural sector is the changes suffered by agricultural holdings. In order to analyse the major changes in these agrarian structures we have used the main results of the agrarian censuses performed in Spain in 1999 and 2009 by the National Statistics Institute (INE).

In Spain a size of 10 hectares¹ is normally used as indicative in order to consider a holding small, while a holding of more than 100 hectares would be considered latifundia, other holding sizes being considered average-sized farms. Taking this into account and comparing the agrarian censuses of 1999 and 2009, Table 1 reflects how the number of small holdings in Spain has dropped by almost 54% over this period, while the number of latifundia has increased by 5.5%. This situation stems from some of the aspects analysed in the previous section, because the crisis in the agricultural sector, together with the global economic crisis, have seriously punished farm profitability, especially that of smaller farms, which have disappeared as a result.

Table 1. Holding structure

	Holdings number		
	1999	2009	Variation
Surface <10 has	1408791	649245	-53.91
Surface 10 to 100 has	307127	271171	-11.71
Surface > 100 has	48538	51186	5.46

Source: Own Elaboration.

The evolution of the different crops in irrigated and dry lands (Table 2) in the period under consideration also reveals important information in relation to the changes in the use of land in farms' search for greater profitability. Herbaceous crops cover 76.6% and 60.1% of dry and irrigated land, respectively. However, in the last decade, the proportion of irrigated land used to grow herbaceous crops has decreased by 12.5%, due to becoming less profitable as a result of the increase in production costs and high price volatility (Blas, 2008; López, et al., 2008 and Tangermann, 2008). In contrast, the amount of land devoted to olive groves and other uses has increased. Olive groves represented 15.3% of irrigated land in 2009. As regards dry land crops, all uses have decreased due to large areas being abandoned because of a lack of profitability, aggravated by periods of extreme weather conditions.

Table 2. Use of arable crops

	Irrigated			Dry		
	1999	2009	Variation	1999	2009	Variation
Herbaceous crop	2038655	1783594	-12.51	10361068	9505464	-8.26
Fruit	528854	528113	-0.14	623114	509004	-18.31
Olive grove	391516	452877	15.67	1882073	1700850	-9.63
Vineyard	191496	191167	-0.17	843851	661451	-21.62
Other uses	11116	11900	7.05	48616	30880	-36.48

Source: Own Elaboration.

Table 3 shows the changes that the agrarian crisis has provoked in the legal status of farm holders with a clear decline in individuals in favour of mercantile societies and production cooperatives. This is certainly good news for the sector, given that farmer association in production cooperatives may be a good alternative to combat the crisis in profitability across the sector. Another fact worth highlighting is the decline by more than 66% in public entities devoted to agricultural holdings.

¹ We have considered this size a guide, taking into account that it depends on the area and the type of crop for this surface area to be large enough not be considered a small holding.

Table 3. Legal status of farm-owners

	Individuals	Mercantile societies	Public entities	Production cooperatives	Other legal personality
1999	1589195	17324	14628	2023	35609
2009	781505	23953	4848	5028	26273
Variation	-50.82	38.26	-66.86	148.54	-26.22

Source: Own Elaboration.

In relation to the type of work carried out on the farm and the working day (Table 4), the results of comparing the two agrarian censuses show a very significant increase in the number of persons employed on a fixed basis whose working day is less than 75%. Furthermore, the number of fixed full-time employed persons declined by 15.1%. Family labour has also declined significantly given that the vast majority of farms that have disappeared were family-run and unable to survive the increase in costs suffered by the sector. Finally, the economic crisis has meant a decline in the indirect jobs generated by the sector, recording a decrease of 80.35%. This situation is due to agricultural work becoming increasingly more autonomous, because farms cannot afford extra costs in the current situation of crisis.

Table 4. Type of work on farms

Type of work	Working day	1999	2009	Variation
Familiarity labour (people)	Full	1720578	929694	-45.97
	Lower than 25%	52939	101799	92.29
Fix wage earner (people)	25-50%	13095	27270	108.25
	50-75%	9408	17291	83.79
	75-100%	15399	26286	70.70
	100%	120890	102614	-15.12
Eventual jobs (working days)		53478394	38349316	-28.29
Indirect jobs (working days)		38349316	7537084	-80.35

Source: Own Elaboration.

Table 5 shows a decrease of more than 50% in the percentage of farm holders with exclusively practical training. On the contrary, there is a very large increase in the number of people with some agricultural training and a more moderate rise in farmers with professional and university training. The data collected in this table should be taken cautiously, because higher-level training may be motivated by the good results obtained by European training aid or may be due to the incorporation of people with training from other industries into the agricultural sector. However, and given that the largest increase has occurred in people with some agricultural training, we have reason to believe that this improvement is the result of training policies developed by the European Union.

Table 5. Farm-owner Training

	1999	2009	Variation
Training exclusively practical	1707136	838042	-50.91
Professional training	18206	24463	34.37
Agrarian university training	12886	15148	17.55
Other agricultural training	51934	112143	115.93

Source: Own Elaboration.

Finally, it is worth noting the increase in the number of companies devoted to organic farming. More specifically, in the period for which information is available (2001-2009), there has been an increase in companies engaged in: the production of organic products (58.7%), development and marketing (106.9%) and imports (56%). However, we must bear in mind that during 2009 there has been a decline in all categories, except in the case of producers, where growth has slowed down to 16.3%. As a result, we should await new data in order to confirm this is a timely break from the economic crisis and not a structural change.

5. SUMMARY AND CONCLUDING REMARKS

This paper analyses the situation of the agricultural sector after the economic crisis of 2008, analysing the main effects the crisis has had on the sector. The main results show that gross value added in the agricultural sector

has suffered a severe setback after the crisis, but while Europe has recovered in the last few years, the situation in Spain is once again deteriorating following a slight improvement in 2010. The situation is made more worrying in this sector by the existence of a profitability crisis, which can be seen in the trend displayed by the index that compares prices received to prices paid. Furthermore, this situation is even more worrying in the Spanish case. As a result, any change or the disappearance of the European Union grants received by the agricultural sector will cause numerous holdings to disappear in the absence of profitability.

The evolution of production costs with a quick and direct impact of any increase in oil prices has resulted in rising costs that are difficult to sustain. In addition, we must also bear in mind that while the increases in costs are transmitted immediately, reductions take longer to materialise in input prices. This increase, together with the low prices received by farmers puts the profitability of many farms in doubt.

Finally, we must emphasise that farm size has tended to increase over the last decade with the disappearance of a large number of small farms. The grouping of farmers into production cooperatives to try to alleviate the effects of the crisis in the sector, together with the increase in the level of training of farm-owners could benefit the sector in the long term.

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