

### **Financial analysis of the feed sector in Catalonia**

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#### **ABSTRACT**

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The study focused on an economic and financial analysis of the animal feed sector in Catalonia during 2008 to 2014. This sector was chosen because of its impact on the value chain of agri-food companies, and its important role in Catalonia, as the region that is the leading animal feed producer in Spain. The instruments used in the analysis identified good short-term solvency; an acceptable level of debt, although of poor quality; and return on equity that were less stable than return on assets, with added value that increased during the study period, due to the increase in net income and the logical capitalisation of these companies. The sector was in good economic and financial shape during this period, but improvements should be made in the management of assets and expenses, to boost the appropriate innovation and internationalisation of the sector.

#### **KEYWORDS**

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Animal feed sector, capitalization, debt, financial economic analysis, returns and short-term solvency.

## **1. Introduction**

Animal feeding has developed considerably in Spain and in the rest of Europe in recent decades. This development reflects growth in the livestock sector, particularly in intensive livestock farming, which led to an increase in the demand for animal feed. From an economic perspective, the feeding of animals that produce food is the highest production cost in livestock farming. Therefore, great efforts are being made to determine the nutritional needs of animals and the rations required to optimize the production of livestock species. Production of compound feeds in Spain is one of the highest among the EU Member States for all species of livestock, standing at around a 31 million tonnes<sup>1</sup> in 2015. According to the report on Feed Production Data for 2015<sup>2</sup>, Spain was the second largest producer of feed in the European Union, after Germany. Furthermore, animal feeding is the first link in the food chain.

In financial year 2015, Catalonia continued to be the leading feed producer in Spain, in comparison with the rest of the autonomous communities, with 21.6% of the total production, behind Aragón (13.7%) and Castilla y León (13.4%). Therefore, an analysis of the economic and financial health of feed producers in Catalonia is of particular importance as the region was one of the bases of the agri-food sector in 2008-2014.

The main aim of this study was to carry out an economic and financial analysis of companies that produced feeds for livestock consumption in Catalonia in 2008–2014. Feed producers were selected because of their impact on the value chain of the agri-food sector; a major sector in Catalonia. Furthermore, the agri-food sector has innovative potential in the environmental area. Environmental innovation would have an impact on the high number of pig farms in Catalonia, which cause high nitrate concentrations in water due to liquid pig manure. Therefore, one of the demands of the sector is to reduce the emission of greenhouse gases through animal feeds. Consequently, we consider that feed producers should allocate some of their resources to suitable innovation, to reduce the level of contamination. To do this, it is vital to know the producers' economic and financial position. Furthermore, the future of this sector is clearly focused on international markets (Díaz, M.A., 2014), and large companies should increase their collaboration with

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<sup>1</sup> According to data from the Spanish Ministry of Agriculture, Food and Environment (MAGRAMA).

<sup>2</sup> Compiled and published by MAGRAMA.

each other to enter these markets with greater likelihood of success. To achieve internationalisation, companies need to be in good economic and financial health.

The economic and financial analysis was carried out using information from the annual accounts<sup>3</sup> of Catalan producers of livestock feed (code 1091 of the Spanish National Classification of Economic Activities [CNAE] 2009) during 2008 to 2014. All of the producers had minimum annual income of 8 million euros and minimum total assets of 4 million euros. In line with the relevant Spanish regulations, these large companies must submit normal annual accounts. This study was based on the analysis of four of the five documents that comprise annual accounts: the balance sheet, the profit and loss account, the statement of changes in net worth and the cash flow statement.

The economic and financial analysis of this sector led to a series of conclusions on the short- and long-term financial situation and on the economic situation. It also enabled us to evaluate capitalisation and liquid assets in the sector, through the statement of changes in net worth and the cash flow statement.

## **2. IMPORTANCE OF THE FEED SECTOR IN CATALONIA**

According to the Ministry of Agriculture, Food and the Environment<sup>4</sup> “*The heading “Feeds” includes compound foods for livestock and premixes for feeds*”. Feeds are a vital means of production in livestock farming, to which they are closely linked. In fact, the feed industry is very closely associated with meat production worldwide. The link between feed production and livestock is also very strong in Spain, where vertical integration systems for pig farming have led to feed producers interacting with the big livestock farmers in the country. Therefore, the demand for feeds depends directly on the development of livestock farming.

According to data from the *European Feed Manufacturers’ Federation* (FEFAC), in 2015 Spain was the second largest feed producer in the EU, up 3.7% on the previous financial year (2014), behind Germany and followed by France (which occupied third place, down from second place in financial year 2014). In terms of the distribution of feeds by species,

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<sup>3</sup> The SABI (Iberian Balance Sheets Analysis System) database was used for the selected sample of companies that were active in the study period.

<sup>4</sup> Assessment and strategic analysis of the Spanish agri-food sector. MAGRAMA.

in 2015 production of pig feeds was clearly predominant at 47% (this predominance has been maintained over the years). However, the increase in production of pet feeds has also been notable in the last few financial years<sup>5</sup>.

In terms of the livestock numbers in Spain (October 2014 to October 2015)<sup>6</sup>, there was a 6.7% increase in the number of pigs, a 1.7% increase in cattle, an 11% increase in goats and a 7% increase in sheep. These increases led to a rise in feed production.

Feed produced in Catalonia was mainly sold within the autonomous community. The percentage of sales to the rest of Spain was low (around 20% in 2014), and figures for general export were even lower (around 8%), as shown in Table 1:

	2008	2009	2010	2011	2012	2013	2014
<b>Catalonia</b>	2.218. 196	1.589. 580	1.545. 197	2.162. 274	1.519. 742	1.842. 331	2.203. 777
<b>Rest of Spain</b>	461.0 37	418.7 15	394.4 56	492.6 66	532,2 70	543.1 54	633.4 49
<b>Outside of Spain</b>	196.0 16	173.3 62	115.1 72	209.9 68	154,2 25	228.3 14	259.6 37
<b>Turn Over</b>	2.875. 289	2.181. 658	2.054. 826	2.864. 909	2,206, 237	2.613. 800	3.096. 863

**Table 1.** Geographic destination of animal feeds produced in Catalonia (thousands of €)  
Source: Idescat, on the basis of data from the industrial company survey.

To further characterise the feed sector, we can use data provided by Enrique Ulloa<sup>7</sup> on this industry. In 2014, a total of 21 billion tonnes of feed were produced in Spain. The total number of production plants stood at **820** (a figure that is 538 more than in France and 527 more than in Germany) and 12,237 people were employed in the sector. **There were** 156 production plants in Catalonia, followed by 72 production plants in Aragón.

<sup>5</sup> Spanish Ministry of Agriculture, Food and Environment.

<sup>6</sup> Spanish Ministry of Agriculture, Food and Environment.

<sup>7</sup> <http://nutricionanimal.info/la-produccion-de-pienso-en-espana-asciende-a-31-millones-de-toneladas-de-piensos-al-ano/>

The composition of feed, that is, the nutritional ingredients, is an important factor and must comply with specific food safety regulations. This increases pressure on production and animal feeding, which is added to pressure due to the environmental impact of feed production.

The agri-food industry should consider concepts of environmental protection in the design, development and implementation of new production processes, and in the manufacturer of products. New products should generate liquid manure that does not have such a negative effect on the environment (Mackenzie, 2016).

The nutritional composition of the diet of animals (particularly in the pig farming sector) is important to quantify its environmental effect. There is increasing interest in the use of alternative ingredients for animal feeds (Woyengo et al., 2014; Zijlstra and Beltranena, 2013).

Considerable investments are required to address the low level of exports and high environmental pressure in the animal feed sector. However, first it is important to determine whether the financial and economic situation allows for investment in research to reduce the environmental impact and promote internationalisation. Consequently, this economic and financial study of the feed sector in Catalonia focused on the difficult period of recession from 2008 to 2014.

### **3. Study method**

In the theoretical and applied science of accounting, there is a long tradition of financial and economic analysis of companies on the basis of their accounting information. In the literature, numerous papers describe instruments for analysing companies' financial statements (Laffarga and Briones, 1994; Amat, 1994, 2008; Santiago, 1996; Rodriguez-Vilariño, 1992; Carmona, 2007; Rojo, 2008; Alvarez, 1985; Castelló and Lizcano, 1998; Rivero, 1996).

Depending on whether the analysis focuses on the short-term, long-term or results, the instruments identify indicators such as: short-term solvency, debt, returns and capitalisation.

In our analysis of short-term solvency, we assessed the working capital, the sign of the cash flows for the operating activity and the short-term solvency ratio. For debt, we used the ratios of debt, debt quality and asset turnover. Regarding returns, we calculated the

added value, the staff productivity, the return on equity (ROE) and the return on assets (ROA).

This standard analysis was complemented by an analysis of capitalisation based on the statement of changes in net worth, and cash flows were analysed using the cash flow statement.

#### **4. Economic and financial analysis of the feed sector in Catalonia during the recession of 2008 to 2014**

In the difficult period of recession 2008–2014, the financial statements of companies in the region are a barometer of the situation. In our study, we aimed to use these statements to identify whether companies in the feed sector in Catalonia had strong enough financial and economic health during the study period to take on new challenges in innovation and internationalisation.

Three specific objectives were established:

1. Assess the solvency of Catalan feed producers in 2008–2014
2. Assess the level of capitalisation of Catalan feed producers in 2008–2014
3. Assess whether the returns of Catalan feed producers in 2008–2014 were acceptable

We analysed the feed sector as it is directly involved in the value chain of the agri-food industry, which is an important sector in Catalonia. Specifically, it is the leading agri-food cluster in Europe, followed by Lombardy and Denmark. In this sector, neither production nor employment was affected by the recession, and exports increased. Meat industries play an important role in Catalonia, particularly the pig farming industry, and animal feed producers that support this industry are also well-represented.

The study sample was comprised of livestock feed producers that had a minimum operating income of 8 million euros and minimum assets of 4 million euros for two consecutive years during 2008-2014, meeting the conditions established in Law 14/2013 of 27 September on support for entrepreneurs and their internationalisation. These are large companies (that submit normal annual accounts, according to provisions in the Spanish General Accounting Plan) that represent the population of feed companies in Catalonia during the period of recession considered in the study.

The sample was obtained from the SABI database according to the criteria below:

- Main economic activity: feed production, according to CNAE Code 2009: 1091
- Status: active
- Legal form of organisation: trading company (public limited companies and private limited companies)
- Minimum operating income for two consecutive financial years: 8 million euros
- Minimum assets for two consecutive financial years: 4 million euros
- Location: Catalonia

Using these criteria, we selected 20 companies located in Catalonia from the set of large Spanish companies. These companies have considerable experience, as most of them were founded over 20 years ago.

To carry out an analysis of the economic and financial situation of these companies in 2008–2014, we calculated the main financial indicators using appropriate descriptive statistics, based on the average values of the companies in the study.

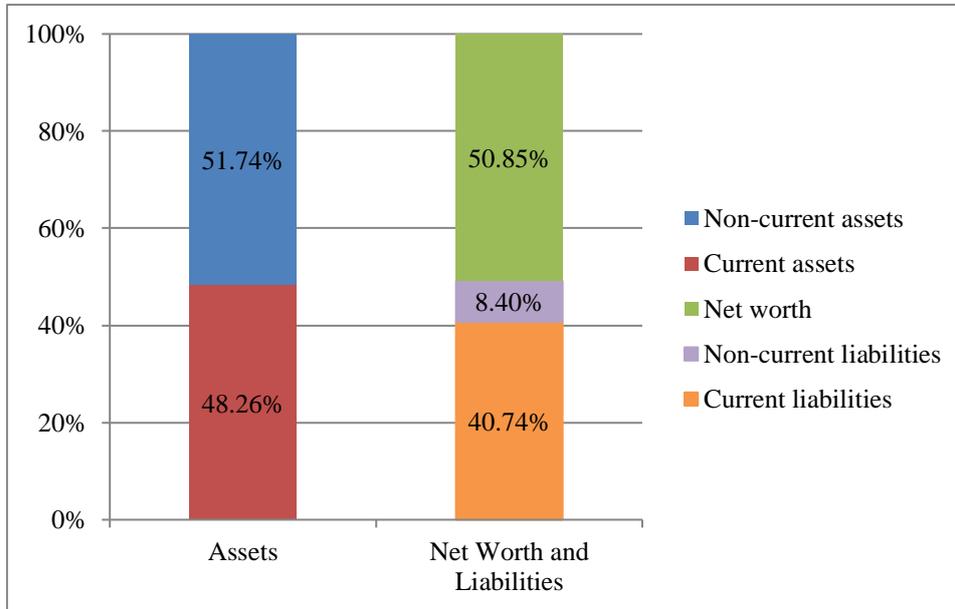
Specifically, we analysed the following indicators:

- Working capital (current assets – current liabilities)
- Short-term solvency (current assets/current liabilities)
- Debt (total debts/net worth and liabilities)
- Debt quality (short-term financial and commercial debts/total debts)
- Asset turnover (operating income/total assets)
- Return on equity (ROE = net income/net worth)
- Return on assets (ROA = EBIT/assets)
- Added value (operating income – operating expenses)
- Staff productivity (added value/staff costs)

We began the study with an analysis of the short-term financial situation, followed by an analysis of the long-term financial situation, an analysis of returns, an analysis of variations in assets derived from the statement of changes in net worth and an analysis of variations in liquid assets through the cash flow statement.

#### 4.1. Analysis of the short-term financial situation

The analysis of the short-term financial situation consisted in determining the capacity of Catalan feed companies to pay their short-term liabilities. The average values of financial assets and liabilities during the period are shown in Figure 1. Current assets were higher than current liabilities, so that the situation was one of financial balance.



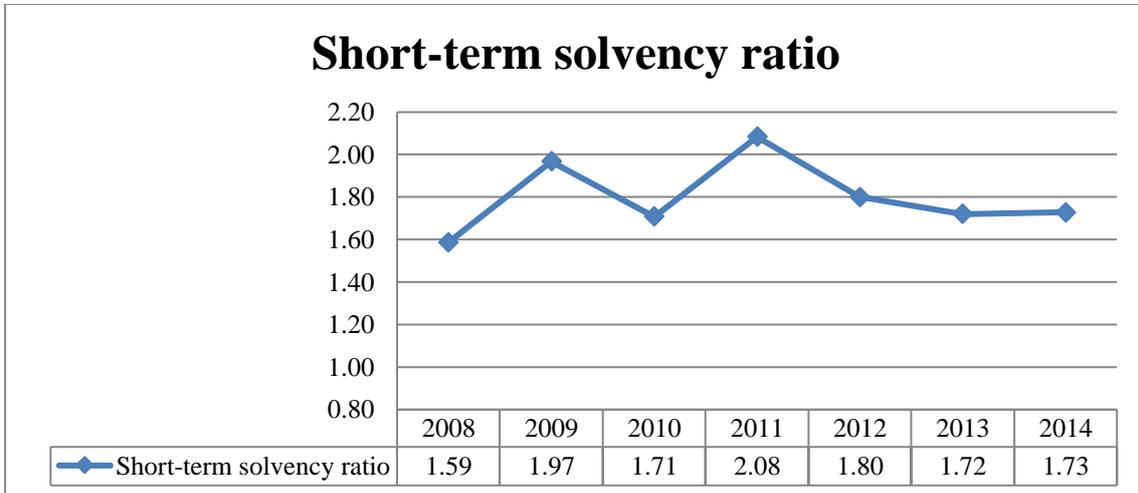
**Figure 1.** Financial assets and liabilities in the balance sheet for 2008–2014

Variations in assets and liabilities over the financial years that were analysed revealed a 38% increase in assets, a 19% increase in liabilities, and a 60% increase in net worth over the study period, which shows the capitalisation of these companies. In addition, the *working capital* (pure total capital that finances current assets) was positive in all of the financial years that were analysed and continued to increase.

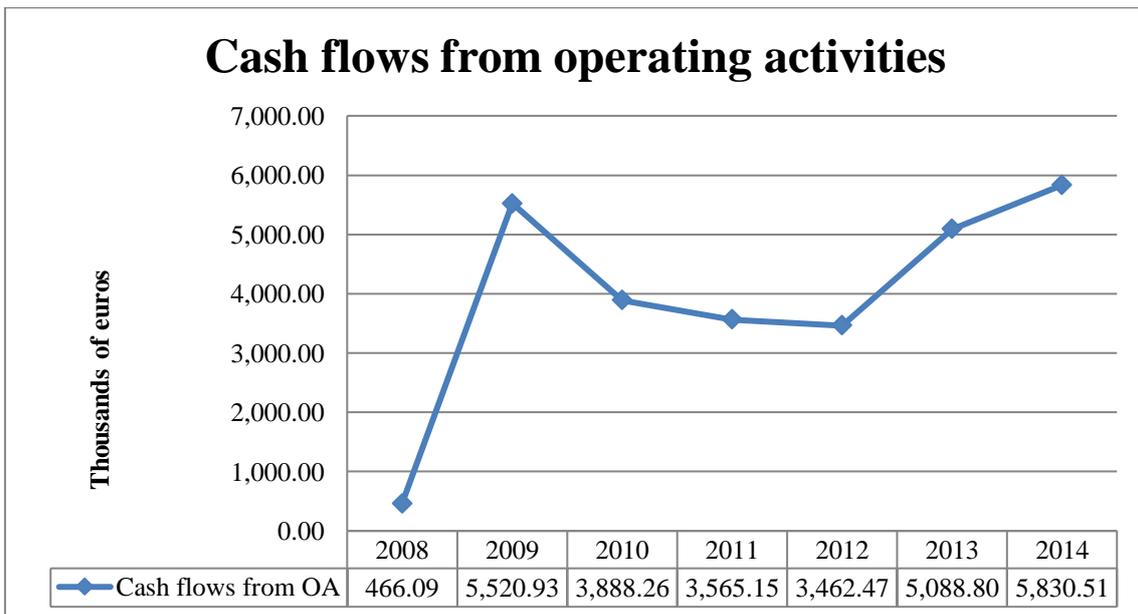
The *short-term solvency ratio* measures the capacity of companies to pay their debts in the short-term using their current assets. In the seven financial years, the companies showed a good capacity to meet their obligations, with increasing solvency throughout the period until the highest value was reached in financial year 2011, as shown in Figure 2. The values of this ratio were higher than those calculated for the entire livestock sector in 2012, 2013 and 2014, which were equal to unity<sup>8</sup>. The short-term solvency ratio is associated with the positive sign of *operating activity in the Cash Flow Statement*, which

<sup>8</sup> According to a study by Amat, O et al. (2016).

remained positive in all of the financial years that were analysed and increased notably in 2014, as shown Figure 3. Therefore, the liquidity of Catalan animal feed producers was supported.



**Figure 2.** Variation in short-term solvency during the study period



**Figure 3.** Variation in cash flows from operating activities in the study period, according to the cash flow statement

Therefore, the short-term financial situation of large feed producers during the study period was strong, with good short-term solvency.

## 4.2. Analysis of the long-term financial situation

The main objective of analysing the long-term financial situation was to determine the capacity of the main animal feed producers to pay their debts in the long term. The vertical and horizontal percentages of the various financial items in the study period show that net worth increased by 60%, in other words, the companies increased their capital.

However, according to the criterion provided by Amat and Perramon (2012), assets were not managed efficiently in the study period (the increase in assets was greater than that of sales) and neither were costs (the increase in sales was above the variation in returns). The financial management was prudent (the increase in assets was greater than the increase in debts), as shown in Table 2.

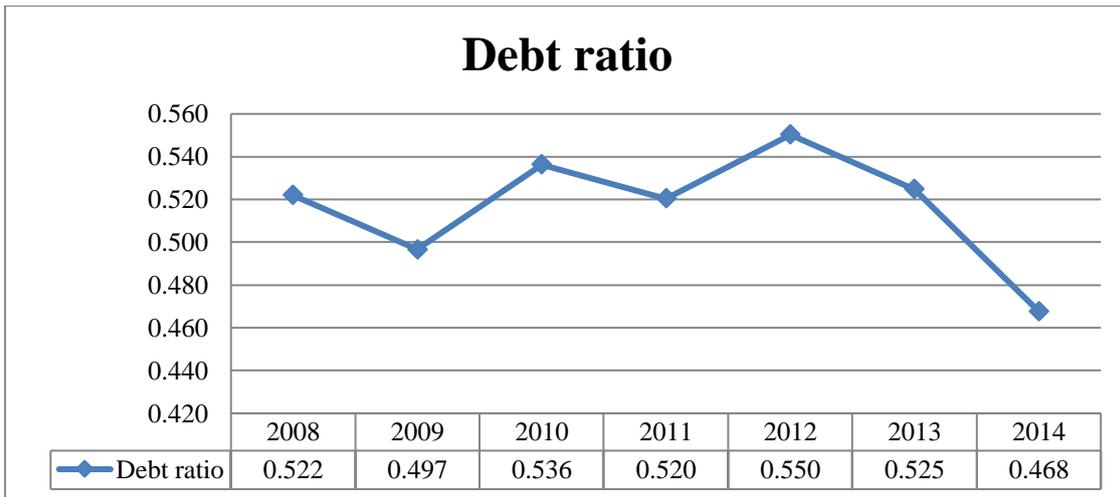
	Asset management		Prudent financial management		Cost management	
	Δ Sales	Δ Assets	Δ Assets	Δ Debts	Δ Results	Δ Sales
<b>Balanced growth</b>	22,80%	38,35%	38,35%	19,31%	-7317,74%	22,80%

**Table 2.** Balanced growth according to criteria provided by Amat and Perramon (2012)

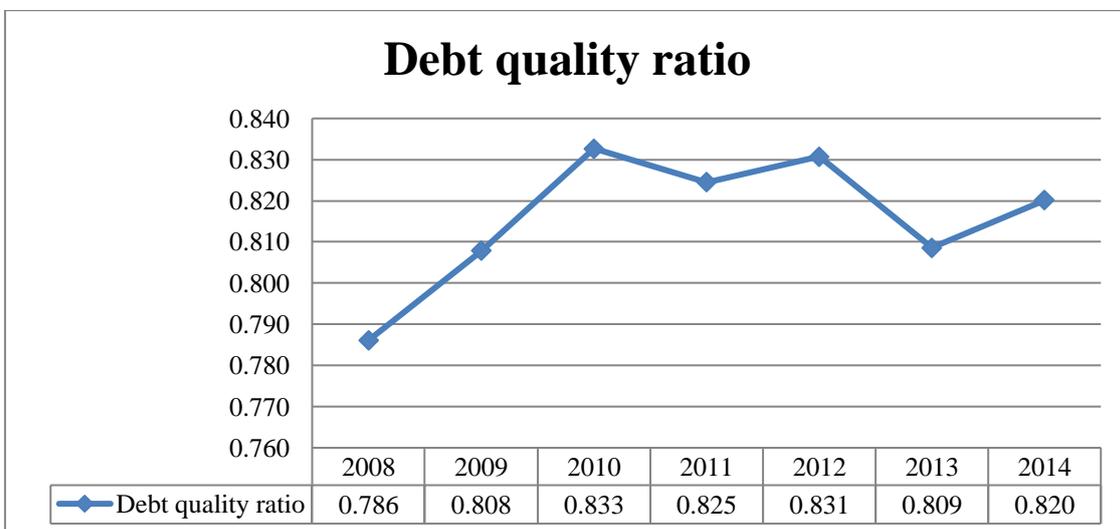
Furthermore, the *asset turnover*, which indicates the average time to recover an asset, shows that these companies took approximately seven months to recover the value of their investments in the study period. There were no marked deviations from this average.

The companies had an acceptable level of debt, which did not exceed 60% in any of the financial years (Figure 4). The debt was of poor quality: there were more short-term than long-term debt (Figure 5). The debt level for the livestock sector for financial years 2012, 2013 and 2014 had similar values of between 57–60%, whilst the debt quality was lower, at 67-69%.<sup>9</sup> The companies had financial autonomy; with a debt level that was not damaging considering that the financial leverage was above unity.

<sup>9</sup> According to a study carried out by Amat, O et al. (2016).



**Figure 4.** Variation in debt during the study period



**Figure 5.** Variation in debt quality during the study period

Therefore, we could state that the large Catalan animal feed producers were in a sound long-term financial position during the study period. However, the debt quality should be improved in these years of recession.

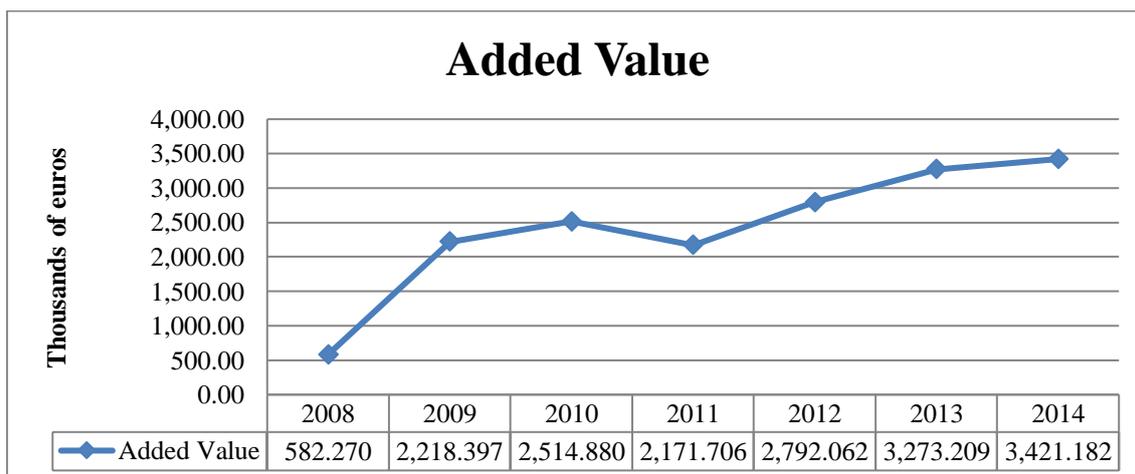
### 4.3. Economic analysis

The aim of the economic analysis was to study the results and the reason for these results, in other words, how they were produced and the causes of their variation in the study period.

The 23% increase in operating income and the 17% increase in operating expenses in the study period explain the variation in added value (operating income minus operating

expenses) for the feed sector in Catalonia, which increased in the study period by over 400% (Figure 6), along with the high staff productivity. Staff costs went up 15% in the study period.

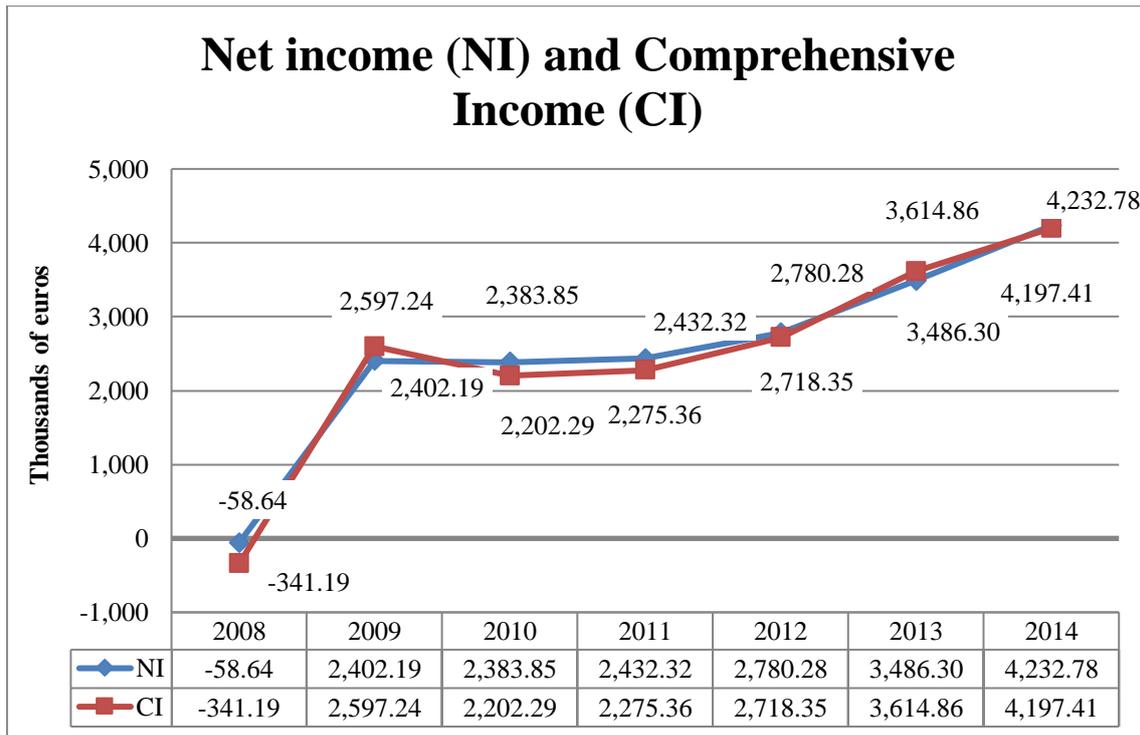
The added value, which is the value of the income generated by the activity of producing feed, increased considerably, particularly from 2011 onwards (Figure 6). Staff productivity (added value/staff costs) followed the same trend.



**Figure 6.** Variation in added value during the study period

The financial income, which increased considerably in this period was higher than the financial expenses, which dropped 29% in line with the prudent financial management.

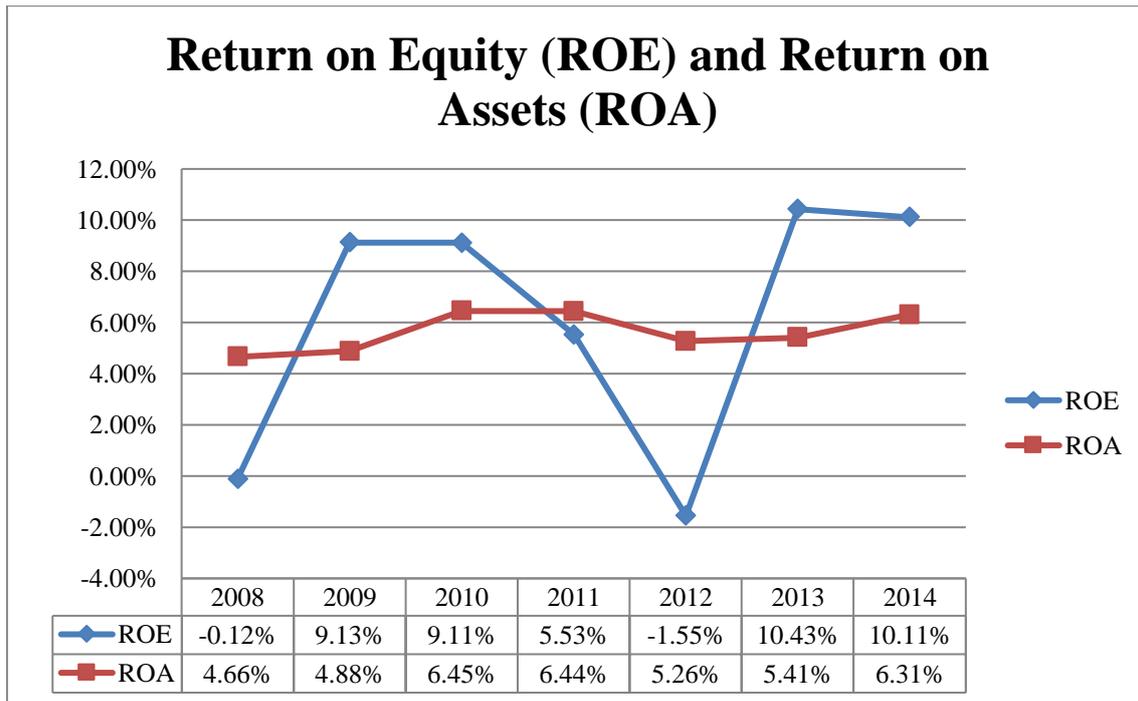
From 2009, the net income increased 75%, in line with the comprehensive income, which increased by 61% after 2009.



**Figure 7.** Variation in net income and comprehensive income

The return on equity increased by 11% from 2009 until the end of the study period, although in financial years 2011 and 2012 it was lower than the return on assets (which indicates pressure due to debt). The return on assets was more stable in the study period and increased 36%. In financial years 2013 and 2014, the ROE was greater than the ROA, which indicates that debt was not damaging to the companies at all. According to studies undertaken in the livestock sector<sup>10</sup>, the ROE had values between 9% and 10% in financial years 2012, 2013 and 2014, and the ROA for the same period stood at 5%.

<sup>10</sup> According to a study carried out by Amat, O et al. (2016).



**Figure 8.** Variation in ROE and ROA in the study period

#### 4.4. Analysis of the statement of changes in net worth

After a standard analysis of the financial statements of large Catalan feed producers for 2008–2014, we examined information from the statement of changes in net worth. This enabled us to analyse the comprehensive income of the companies, that is, results including the net income, the income and expenses charged to net worth, and the amount transferred to the profit and loss statement. The statement of changes in net worth provides information on comprehensive income and enables us to assess variations in assets over the study period, identifying the reasons for these changes and the guarantees that the companies offered in the period.

To compare net income and comprehensive income, we used the first document in the statement of changes in net worth: the statement of recognised income and expense. A 61% increase in the comprehensive or business income was observed in 2008-2014, due mainly to hedging and variations in the value of financial instruments. The net income increased 75% and variation in net income and comprehensive income was observed from 2009 onwards (Figure 7).

The second document, the statement of total changes in net worth, revealed that net worth went up by 60%. Capitalisation increased in these companies, particularly in recent

financial years. Therefore, these companies offered greater guarantees to others who were involved in them, particularly at the end of the study period. This was due mainly to the increase in returns.

#### 4.5. Analysis of the cash flow statement

The information provided in the cash flow statement refers to the movement of cash and other equivalent liquid assets in the study period. In other words, it explains the effect of collection and payment in this period, depending on whether the amounts are related to operating, investing or financing activities, as shown in Table 3.

CASH FLOW STATEMENT (THOUSANDS OF EUROS)	2008	2009	2010	2011	2012	2013	2014
A) CASH FLOWS FROM OPERATING ACTIVITIES	466,09	5.520,93	3.888,26	3.565,15	3.462,47	5.088,80	5.830,51
B) CASH FLOWS FROM INVESTING ACTIVITIES	-2.990,35	15,13	-605,81	-2.656,31	-2.791,74	-8.097,57	-3.679,93
C) CASH FLOWS FROM FINANCIAL ACTIVITIES	2.619,92	-5.379,82	-2.536,18	-1.219,78	-727,84	3.289,36	-2.085,09
Effect of changes in exchange rate and other changes	-9,65	-10,06	33,89	-285,44	169,67	0,00	0,00
D) INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	95,66	156,24	746,27	-310,94	-57,10	280,59	65,49
Cash and cash equivalents: opening balance	265,73	292,12	374,06	1.154,22	427,05	520,53	975,95
Cash and cash equivalents: closing balance	351,74	438,30	1.154,22	557,84	539,61	801,13	1.041,44

**Table 3.** Variation in the cash flow statement during the study period

This accounting document shows the cash flows of feed producers over the seven financial years that were analysed.

All of the cash flows from operating activity were positive, as more money was collected than paid, and the companies could make their payments in the short-term. Cash flows from investing activity were negative in all financial years except 2009, which shows that the companies were investing funds. Finally, cash flows from financing activities were also negative, except in 2008 and 2013. Consequently, loans from financial entities were returned, except in 2008 and 2013 when loans were requested (Ruiz et al., 2006).

Continuing with the analysis of the cash flow statement of feed producers in 2008–2014, we can see that the cash flow fluctuated during this period, but companies could cover their short-term payments, as show in the standard analysis of the short-term financial situation. In other words, these companies had good short-term solvency, made investments, and returned loans received from credit entities.

## **5. Conclusions**

In recent decades, the livestock sector has grown considerably in Spain and in the other European Union countries. This change has had a direct impact on the animal feed sector; specifically on companies that produce feeds for livestock.

The main aim of this study was to carry out an economic and financial analysis of livestock feed producers in Catalonia in 2008–2014. This sector forms the basis of the production process in the agri-food sector, and is of great importance in Catalonia.

The study shows that the companies had good short-term solvency, as illustrated by the values for working capital, which were positive in all the financial years that were analysed and increased during the study period. Furthermore, the short-term solvency ratio had values within the optimal interval at 1.5 and 2, or even higher in 2011. The positive values of cash flows from operating activity in the cash flow statement also corroborated the solvency and liquidity of these companies in the short term. Therefore, in response to the first objective of the study, we can state that the short-term solvency of the companies was good.

Regarding the long-term financial situation, the analysed companies had a debt level that could be considered normal or acceptable, as the values for all the financial years were between 50 % and 60%. However, most of this debt was short-term, so the debt quality was poor. The financial leverage values indicated that the use of debts in the sector was not damaging: in all the financial years, the values were higher than unity. As the companies did not have very high levels of debt, the capitalisation was acceptable, although assets and expenses could be better managed.

The economic analysis revealed that the operating income increased by 23% in the study period, and the operating expenses increased by 17%. These figures explain the changes in added value (operating income minus operating expenses) for the Catalan feed sector in this period, which increased by over 400%, as well as the high staff productivity. The return on equity increased by 11% from 2009 to the end of the study period, although in financial years 2011 and 2012 the levels were lower than the return on assets. The return on assets was more stable during the period, and the value increased by 36%. In financial years 2013 and 2014, the return on equity was higher than the return on assets, which indicates that the debt level was not damaging to these companies. The return on equity was unstable in this period, unlike the return on assets, although in the last two financial years there was an upwards trend.

The analysis of the statement of changes in net worth revealed a 61% increase in the comprehensive or business income for 2008–2014, due mainly to hedging and variations in the value of financial instruments. Net income increased 75% in the study period. Consequently, the Catalan feed producers increased their capital during the period.

Therefore, the analyses of debt and of the statement of changes in net worth indicate that Catalan feed companies increased their capital in the study period, which supports the second objective of our study.

An analysis of the cash flow statement of feed producers in 2008–2014 showed that the companies could make their payments in the short-term. Furthermore, the investments made in most of the financial years, and the external resources used for funding in certain financial years indicate that the sector is growing.

Regarding the third objective, we consider that the return on assets was stable in the study period and the figures for 2014 (6.31%) were in line with companies in the sector. Regarding the return on equity, the fluctuations reflect the period of recession in which the study took place. However, there was an upward trend in the last two financial years, in line with the trend in the sector.

To conclude, the economic and financial analysis of the livestock feed sector in Catalonia in the period 2008–2014 revealed that the sector was in good financial health. However, the management of assets and expenses should be improved. Therefore, the results of recent financial years support the potential for innovation and internationalisation in this sector in the near future.

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