

Does post merger financial performance improve after agrifood mergers of cooperatives? An empirican analysis.

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Abstract

This study was carried out to characterize the mergers and acquisitions undertaken in the Spanish agrifood sector during the period 1995-2005 and has two objectives. Firstly, it aims to determine the manner in which economic-financial factors influence the type of merger carried out (merger by formation of a new legal person and merger by acquisition), and the role played by cooperatives (acquirer, acquired or cooperative involved in a merger by formation). Secondly, it aims to determine whether these mergers have contributed to reaching any of the objectives they were set out to achieve: improving the economic-financial situation of the companies involved, increasing income and reducing relative costs. The results obtained show that on average, following a merger, there were no statistically significant improvements in the economic-financial indicators studied.

1.- Introduction and objectives

The small size of the Spanish agricultural cooperative sector has proven to be a problem in the European Union (UE), and particularly Spain. Given the main features of the sector, i.e. increasingly concentrated demand (CIAA, 2009), high price volatility, and a progressive increase in agricultural production costs, the concentration of supply by means of merger processes has become a priority.

The need to foster integration processes in the agrifood cooperative area has been demonstrated in various EU reports, one of the most recent being the 2009 Report on Foodstuff Prices issued on 24 February 2009 and submitted to the European Parliament. This report acknowledges and emphasizes the role that cooperatives are required to play when concentrating supply and demand and the explicit measures required to facilitate the merger and cooperation between organizations of producers to achieve the clear objective of increasing their size.

This problem is especially apparent in Spain, as reflected by comparative figures on European agricultural cooperatives. Despite the increase in the cooperatives' average turnover in recent years, from €2.7 million to €4.4 million in the period from 2000 to 2007, the majority of these companies continued to be smaller sized. Only 39% of Spanish cooperatives have more than 1000 shareholders and only 1.7% have turnover of over €30 million. 77% of these companies earn income of less than 5 million and 39% earn less than one million. The fact that Spanish cooperatives are smaller is evident when they are compared to the average European agricultural cooperatives, whose turnover exceeds €10 million, and cooperatives in countries such as Holland or Denmark, whose turnover is over €1000 million. (CCAE, 2010, COGECA, 2005 and OSCAE 2007 and 2009).

In view of this situation, many different integration strategies have been adopted in the Spanish agrifood cooperative sector in recent years, among which merger processes have acquired increased importance. However, there is no empirical study demonstrating that these processes have achieved the expected results, including an improvement in the cooperatives' economic-financial position, lower average costs and ultimately, an increase in their profitability and the profitability of their shareholders. This study is structured to achieve this purpose, and therefore, aims to do the following: firstly, characterize the mergers carried out between agrifood cooperatives in Spain during the period 1995-2005; and secondly, following the analysis of the economic-financial information of the cooperatives involved in these mergers, determine the following:

1.- The influence of the economic-financial factors of the cooperatives involved in these processes, on the type of merger carried out, i.e. merger by formation of a new legal person, hereinafter "merger by formation" and merger by acquisition, hereinafter "acquisition".

The main difference in "mergers by formation" and "acquisitions" is that in mergers by formation, a new entity is formed, to which all the entities involved in the merger transfer ownership of their equity and are then dissolved. On the other hand, in acquisitions, no new entity is formed, and it is the acquiring cooperative that becomes the owner of the equity of the cooperatives acquired, following which the acquiring entity is the only one that remains active.

2.- Which factors give rise to acquisitions, which cooperative assumes the role of acquirer and which cooperative or cooperatives assume the role of acquired?

3.- The impact of merger processes on the cooperatives' economic-financial position, through the study of ex-ante and ex-post financial statements, to determine the extent to

which they have contributed to improving the business position and performance of the cooperatives involved.

2.- Background

Numerous theoretical and empirical studies have been conducted in recent decades for the purpose of analysing merger operations from different standpoints. These studies consider both the causes leading to merger processes and their effects, through the use of different methodologies. However, the results of these studies have varied and there is still no consensus on whether mergers contribute to an improvement in the enterprises' performance. The lack of studies and research analyzing the effects of mergers on cooperatives from an experimental perspective is notable, with just a few international references on this topic, such as the studies conducted by Richards and Manfredo (2003) or Zopounidis *et al*, 2006.

Generally, the related empirical research conducted on business enterprises can be grouped into two areas:

- Studies based on information supplied by the capital market, exploring the effect of a merger on the value of the resulting (Harris, 1989, Limmack, 1991, García de Valencia, 1994).
- Studies assessing the results of mergers by analysing economic and financial information through the application of ratios of differing significance (Healy *et al*, 1992, Richards and Manfredo, 2003, Serra *et. al*, 2001, Apellániz *et. al*, 1996, Kenkel *et al*, 2003, Colarte and Rodríguez, 2006, Kumar, 2009).

In view of the corporate nature of cooperatives, this study is included within the second group. Within this group, the studies focus on these backgrounds from different approaches, mainly to determine the effects of mergers on the financial position and performance of companies, and can be classified as follows:

- Studies comparing a sample of merged entities to a group of entities that has not been merged for a particular time period encompassing the previous year and several years subsequent to the merger (Apellaniz *et. al*, 1996; Serra *et. al*, 2001, Colarte, 2006).
- Studies on the changes in indicators defined in companies prior and subsequent to a merger. (Kumar, 2009). This approach is not capable of distinguishing between the effects stemming from factors relating to the economic environment of the resulting entities' sector and those stemming from the merger process itself.
- Studies comparing the performance of indicators obtained for the sample of merged companies against the mean ratios for the sector. This procedure was chosen in the last part of this study to prevent distortions in the analysis of the results stemming from the economic backdrop of the sector in which the entities operate.

3.- Methodology

This study was conducted using the following process:

3.1. Identification of the merger processes: The study was conducted on a state level, identifying the mergers of agrifood cooperatives via consultation of all the Cooperative Registries in the different Autonomous regions and their corresponding provincial offices, and in certain cases, the Mercantile Registries (table 1).

3.2. Required information relating to the cooperatives and identification of the period for analysis. The period for analysis chosen for each cooperative was from one

year prior to the merger (N-1) to four years following the merger (N+4), the relating economic and financial information being that required for the analysis.

3.3. Selection of the sample: The study population consisted of a total of 147 mergers, in which a total of 374 cooperatives took part.¹ Of these, information was made available on 79 merger processes, i.e. 53.74% of the mergers.

3.4. Normality tests: Normality tests were applied in order to determine whether the data fit a normal distribution. In order to confirm the degree of fit of the data to a normal distribution, a contrast was applied for $\alpha=5\%$, using the Kolmogorov-Smirnov test corrected by the use of Lilliefors and Shapiro Wilk. A p-value of <0.05 was obtained for all the variables, meaning that the data did not fit a normal distribution.

3.5. Hypothesis testing: To verify whether the differences in the ratios analysed prior and subsequent to the merger can be considered to be significant, non-parametric statistical hypothesis testing techniques were applied since the data cannot be assumed to be normally distributed. The median was the dispersion measurement chosen to describe the sample since it was the most representative position measurement for describing the central trend (Martín *et al.* 1989).

3.6. Analysis of results: The results were analysed in order to be able to confirm or reject the null hypothesis that there are no significant differences between the variables and ratios studied.

4.- Empirical study

4.1. Identification of the merger processes carried out by agrifood cooperatives in Spain during the period 1995-2005

Based on the data gathered from the Registries of Cooperatives, 147 mergers were carried out during the period 1995-2005, 115 by acquisition, 28 by formation and 4 by spinoff-acquisition. It is remarkable given the democratic nature of cooperatives, that 78% of the mergers registered were acquisitions.

4.2.- Analysis of the economic-financial differences in relation to pre-merger performance (N-1) between acquirers, acquireds and cooperatives involved in a merger by formation

This subject has been addressed to determine if there economic and financial differences in relation to the pre-merger performance of the cooperatives (N-1), which may justify the role they played in the merger: acquirer, acquired or cooperative involved in a merger by formation.

In view of the difference between the samples from the three groups studied, which arose due the fact that the number of acquisitions and mergers by formation were not the same, it was necessary to apply a non-parametric hypothesis test for several independent samples, and consequently the Median and the Kruskal-Wallis tests were conducted. These are extensible parametric hypothesis tests for the comparison of *t-Student* averages where the sample data cannot be assumed to be normally distributed. The same tests are used to determine whether the three samples come from populations with medians of equal value. The hypotheses made are as follows:

¹ Eight Agricultural Processing Companies were included because they had taken part in mergers between cooperatives and had taken on this legal form subsequent to the merger process.

- H_0 : The variables analysed in the acquirer, acquired, and newly formed cooperatives have the same median prior to the merger.
- H_1 : There is at least one group with a different median.

Following an analysis of the results, it was observed that for most of the variables and ratios studied, there is considerable variability in the pre-merger and post-merger performance of the three groups (acquirers, acquireds and cooperatives involved in a merger by formation). These differences are statistically significant according to the **Kruskal-Wallis test**, with $\alpha=0,05$, for 12 of the 23 variables studied: General and immediate liquidity, solvency, indebtedness, fixed assets (absolute value), financial expenses/debt, financial expenses/sales, asset turnover, turnover, depreciation costs/production value, fixed assets/production value and depreciation costs (absolute value). The **Median test** shows the same results except for in the case of the variables immediate liquidity, financial expenses/sales, depreciation costs/production value and depreciation (absolute value), where the differences are not statistically significant, and in the case of the ratio financial net income/production value where the differences are statistically significant. The differences are not statistically significant in the rest of the variables analysed.

Based on the changes in the financial indicators for the year N-1, in cases where significant differences were proven with at least one of the tests conducted, the following conclusions can be drawn (table 1):

The general and immediate liquidity of the acquired cooperatives is higher than that of the acquirers. Also, they have a lower debt-equity ratio, and consequently are more solvent. On the other hand, newly formed cooperatives are positioned at an intermediate level.

Conversely, the acquiring cooperatives have an increased number of fixed assets and a higher turnover, followed by newly formed cooperatives and lastly acquireds (2.6 times higher than that of acquired cooperatives in the case of fixed assets and five times in the case of turnover). Mergers by formation are in an intermediate position.

The analysis of asset turnover, an indicator of the ability to generate income per unit invested in assets, which is statistically different in the three groups studied, shows that the acquiring cooperatives have a greater ability, followed by cooperatives involved in mergers by formation, and lastly acquireds.

The ratio of financial expenses over sales analyzes the financial burden borne by a company in comparison to the income available to cover these costs. This ratio is very low, being only slightly noticeable in cooperatives acquired (0.005). The debt-cost ratio relates the financial expenses to the debt implied in a given cost for the entity. The debt-cost ratio tends to exclude items such as suppliers, compensation pending payment or debts to partners, in so far as these items do not bear a related financial cost. However, this distinction was not possible since there was no breakdown of the debt, and therefore this calculation was made on the total debt. The median debt-cost ratio was between 1% and 2%, the acquiring cooperatives showing a lower value for this ratio.

The main expense items measured in comparison to production value show an unequal evolution in the three groups, which was only statistically significant in the case of depreciation costs. With respect to production value, these fluctuate between 1.5% and 2%, acquired companies having the highest volume of expenses. However, in the case of absolute value, the acquiring cooperatives' expenses are 2.5 and 1.5 times higher than the acquired and newly formed cooperatives, respectively, which is logical given their higher volume of fixed assets.

The ratios staff costs/production value and cost of goods sold/production value do not show significant differences. However, the former are lower in newly formed cooperatives (5.5%), followed by acquirers and lastly acquireds. With respect to cost of goods sold/production value, the median is lowest for acquireds (74% of production value). To the extent that the partner is the cooperative's main supplier, its payment capacity will be lower due to production in acquired companies, as compared to that of partners in acquiring cooperatives and newly formed cooperatives (in that order).

The balance of the main profit and loss account items were found to be very similar in the three groups and there were no significant differences, except in the case of financial net income with respect to production value for the median test. These were only positive for acquiring cooperatives. Finally, the balances of grants related to assets (deferred income) in the three groups were very similar, being slightly lower in both cases in acquired cooperatives.

4.3.- Economic and financial effect of merger processes, through the study of ex-ante and ex-post financial statements.

Lastly, this analysis will determine to what extent the agricultural cooperatives that have participated in merger processes have succeeded in improving their economic-financial position, by comparing their pre and post-merger performance. The use of this approach requires fictitious aggregate accounts for the year prior to the merger, similar to the accounts the cooperatives involved in the merger would have had if they had already been merged in the year N-1, and the pre-merger ratios are based on these accounts. For this purpose the procedures followed by Healy *et al.* (1992), Clark and Ofek (1994) and Apellániz *et al.* (1996) were adopted, calculating the resulting values of each cooperative for the year preceding the merger (N-1), by aggregating the data from the original entities weighted by size, measured based on the volume of the assets of each of the cooperatives in the merged entity following integration. This causes the value reached by the ratio of the acquired entities to have a certain repercussion on the ratio estimated for the aggregate prior to the merger, since if it is calculated using the consolidated balance sheet, the reduced value of the accounts of the acquired company cause the ratio to be extremely diluted.

Additionally, all the ratios and indicators used were adjusted to the median for the sector (calculated based on accounting data for a total of 3,193 Spanish agrifood cooperatives, which were taken from the SABI database) in order to eliminate effects arising from causes unrelated to the merger. For each variable and year of study, the ratio ² between the median for each cooperative and the median for the sector are calculated, this variable being subject to comparison before and after the merger. Values above one indicate that the merged cooperatives have higher levels than the median for the sector, and those lower than one indicate that the ratio for cooperatives is below the sector median. In Table 2 the results of the testing of the following hypotheses can be observed:

- $H_0: \mu_1 - \mu_4 = 0$: There are no significant differences in the pre- and post-merger performance of the variables analysed.

² This methodology was used in studies such as the study conducted by Apellániz, the difference being that instead of calculating the ratio between the median for the cooperatives and the median for the sector, the difference between ratios was calculated. In this case the ratio was used, since it is easier to interpret for analysis purposes.

- $H_1: \mu_1 - \mu_4 \neq 0$: There are significant differences in the pre- and post-merger performance of the variables analysed,

where u_1 is the median of the cooperatives prior to the merger (year N-1) and u_4 is the median of the entities following the integration (N+4).

In this case the **Wilcoxon** test was also used since it is the most powerful test for two related groups. According to the Wilcoxon test, significant variations were found in 11 of the 22 variables studied: general and immediate liquidity, solvency, indebtedness, fixed assets (absolute value), asset turnover, turnover, depreciation costs/production value, operating income/production value, deferred income and depreciation costs (absolute value).

Firstly, a comparison of the position of the merging cooperatives and the resulting entity reveals a drop in general liquidity to 85.1% below the sector median following the merger. The same is true of immediate liquidity, which is similar to the sector median (1.02) prior to the merger and drops to 0.78 following the merger. The corrected median of the solvency ratio is another variable whose value drops following the integration, and consequently, the debt-equity ratio increases.

A considerable increase in the median of fixed assets (absolute value) was observed, which doubled the sector median following the merger. There was also an increase in production value, but in both cases it was not considered to be statistically significant. Therefore, following the merger, there was a general increase in the investment in fixed assets.

Another of the aspects to be analysed was whether the merger has contributed to achieving one of the main objectives pursued in the whole of the merger process: the expansion and strengthening of an improved position in the market by the cooperatives involved. For this purpose, the evolution of the turnover was analysed, and showed significant differences prior to and subsequent to the merger. As can be observed, the weight of this variable was 84% of the sector median prior to the merger and 18.5% higher than the sector median following the merger. Therefore, it can be concluded that the merger contributed to achieving this objective.

The asset turnover median was reduced by half following the merger, accounting for 58% of the sector median, which indicates a drop in the efficiency of the assets after the merger. The return on sales remained practically unchanged following the merger, no statistically significant differences being recorded. However, in 40 mergers, this ratio in N+4 was lower than the return on sales in N-1.

The ratio of financial expenses to sales and to total debt increased following the merger. However, in both cases it was below the sector median, and the variations did not show statistically significant differences.

Operating income was the only variable showing a statistically significant drop following the merger. Its evolution was highly conditioned by depreciation costs, staff costs and the cost of goods sold. All of these variables increased except for staff costs, which remained unchanged. Additionally, in the case of depreciation, the differences were statistically significant. However, despite this unfavourable evolution, it is noteworthy that the weight of these expenses over production value was below the sector median both prior to and following the merger. In the case of financial net income with respect to production value, the mean dropped following the merger as a result of the increase in the financial burden with respect to production value, although the differences shown were not statistically significant.

It is evident that, in most cases, the mergers did not lead to an increase in income to the extent that, although there was an increase in activity, the adjustments required to

achieve an appropriate reduction in costs following the mergers were not made. On the contrary, these costs increased on several occasions, and in particular, in the case of depreciation costs and cost of goods sold with respect to production value, or did not drop, as in the case of staff costs.

At the same time, there was an increase in the deferred income median, an item mostly comprising grants related to assets, from 0.71 to 1.095 with respect to the sector median, which implies that aid was received for new investments in fixed assets, thus explaining the reduction in depreciation costs.

5. Discussion

In the study of the influence of the economic-financial performance of the cooperatives involved on the type of merger chosen, it can be concluded that in terms of financial ratios (liquidity, solvency, indebtedness), acquired cooperatives show the best performance, followed by newly formed cooperatives and lastly, acquirers. On the contrary, the order is reversed if attention is paid to indicators relating to the volume of activity and of fixed assets, since the acquirers are larger, followed by newly formed cooperatives and finally, acquired cooperatives.

This lower volume of activity of acquired entities, causes the economic indicators, which in this case were calculated on the basis of the different expense items (staff and depreciation costs) with respect to production volume, to be higher, although there were only significant differences in the case of depreciation, acquiring companies and those integrated by a newly formed cooperative being the most efficient, at least in the terms discussed. The opposite occurs in the case of the ratio cost of goods sold/production value, which was lower in the case of the acquireds, an indicator that the partners of these entities have a lower payment capacity. Also noteworthy given the significant differences found between the three groups, are the values obtained in the assets/production value, which were higher in the case of acquireds.

Therefore, the factor that seems to determine whether an acquisition is performed as well as the role of the acquiring company is the volume of activity and the resulting improved management indicators. On the contrary, noteworthy is that financial problems did not cause a company to be acquired, since the cooperatives generally were not in a delicate position, but rather showed normal or desirable liquidity, solvency and indebtedness levels, the acquireds being the cooperatives with the indicators which were most adjusted.

Finally, based on the results relating to the analysis of pre- and post-merger performance, it can be concluded that the mergers of agrifood cooperatives carried out in Spain during the period 1995-2005 have not led to the expected results, given that most of the variables and ratios analysed evolved negatively following the merger. The analysis of financial ratios shows that the merger did not contribute to improving liquidity or the solvency of the entities, which dropped significantly following the merger, and were below the sector median. There was also a statistically significant increase in indebtedness and in the financial burden with respect to the volume of sales (although not significant). A considerable investment in fixed assets was made (two times the sector median in terms of absolute value), which was not accompanied by an increase in production value sufficiently covering the increase in depreciation costs.

Moreover, the economic indicators did not improve following most of the mergers. Although in the majority of cases, there was a statistically significant increase in business activity, which was one of the objectives of these operations. However they were not of the expected magnitude, at least given the evolution of post-merger costs. In fact, there was an increase in the main costs with respect to production value, except in

the case of staff costs, which remained unchanged, which is also negative given that one of the objectives of the mergers was to decrease the relative weight of these costs by means of an increased volume of activity.

Following the merger, the return on sales or income generated per unit earned for sales remained unchanged, and asset turnover dropped to half of the sector median (statistically significant drop), as a result of the increase in fixed assets.

As for the profit and loss account items, operating and financial income decreased, although only the former showed a statistically significant variation, while extraordinary income remained unchanged.

Lastly, noteworthy is that there was a statistically significant increase in deferred income with respect to production value following the merger, which points to an increase in grants related to assets received by the merged entities. These grants, which in principle are positive to the extent that they imply government backing for merger processes, become disadvantageous if they are not conditional upon the restructuring of assets to increase the production process and minimize costs.

In view of the results obtained, it is evident that the resources (human, material, etc.) of the cooperatives involved in the mergers were not restructured following most of the mergers. The post-merger concentration of the production centres would have been appropriate for the purpose of reducing not only depreciation costs, but also the costs inherent to the production process. However, the increase in depreciation and staff costs and the fact that there was a decrease in the average income generated per unit invested in assets (asset turnover) shows that this is not the general tendency in these processes.

Clearly, post-merger fits are even more complicated in the case of cooperatives. In the case of staff, this is due to the network of family and friendships generally tying the staff to the company base, and in the case of the concentration of production and handling centres, this is a result of ties to typical ties to the land and partner. However, without this type of fit, the courage often required by the shareholders to approve a merger is fruitless, because if synergies are not achieved, the mergers become pointless, and on the contrary, might even worsen the economic-financial indicators, as shown in the results of this study.

6. References

- Apellaniz, P., Serrano, C. and Apellaniz, T. 'Evaluación de los resultados de las fusiones a partir de la información contable', *Revista Española de Financiación y Contabilidad XXV*, Vol. 87, (1996) pp. 429-457.
- Arcas, N. and Munuera, J.L. 'El cooperativismo como estrategia para mejorar la competitividad de la empresa agroalimentaria', *Distribución y Consumo*, Vol. 8 (42), (1998) pp. 55-72.
- Asquith, P. 'Merger bids, uncertainty and stockholder returns', *Journal of Financial Economics*, Vol. 1-4, (1983) pp. 51-83.
- Ciaa. 'The competitiveness of the EU food and drink industry, Facts and figures 2009', CIAA (2009). <http://www.ciaa.be/asp/documents/brochures.asp>. Last accessed: 20/1/2010.
- Clark, K. and Ofek, Y.E. 'Mergers as a means of restructuring distressed firms: An empirical investigation', *Journal of Financial and Quantitative Analysis*, Vol. December, (1994) pp. 541-561.
- Colarte, T. and Rodríguez, J. 'Resultados económicos y financieros de las fusiones en España: Un análisis empírico con información contable', *Revista Española de Financiación y Contabilidad XXXV*, Vol. 129 abril-junio, (2006) pp. 275-303.

- Comisión de agricultura y desarrollo rural, Parlamento Europeo. 'Informe sobre los Precios de los Productos Alimenticios de 24 de febrero de 2009, presentado al Parlamento Europeo' <http://www.europarl.europa.eu>. Last accessed: 08/2/2010.
- Commission of the european communities. 'Cooperatives in Enterprise Europe (Draft consultation paper)', (2001). http://europa.eu.int/comm/enterprise/entrepreneurship/coop/consultation/doc_en.pdf. Last accessed: 02/2/2010.
- Commission of the european communities. 'Communication of the European Commission to the Council and the European Parliament, the European Economic and Social Committee and the Committee of Regions on the promotion of cooperative societies in Europe' (2004). http://europa.eu.int/eur-lex/en/com/cnc/2004/com2004_0018en01.pdf. Last accessed: 15/02/2010.
- Confederación de cooperativas agrarias de España. 'Características y ventajas'. CCAE (2010). http://www.agro-alimentarias.coop/5/5_3_1.php. Last accessed: 20/4/2009
- Cornett, M.M. and Tehranian H. 'Changes in corporate performance associated with bank acquisitions', *Journal of Financial Economics*, Vol. 31, (1992) pp.211-34.
- Cosh, A.D., Hughes, A., and Singh, A. 'The causes and effects of takeovers in the United Kingdom: An empirical investigation of the late 1960s at the microeconomic level'. In: *The determinants and effects of mergers* (Mueller D.C., ed), *Oelgeschlager, Gunn & Hain, Cambridge, Mass., USA.*(1980) pp. 227-269.
- Dennis, D.K., and McConell, J.J. 'Corporate mergers and security returns', *Journal of Financial Economics*, Vol. Junio, (1986) pp. 143-187.
- Embid, J.M. 'La fusión de sociedades', *Noticias de la Unión Europea*, Vol. 152, (1999) pp. 87-97.
- Feo Parrondo, F. 'Los procesos de fusión en cooperativas agrarias: manual de procedimiento', *Revista de climatología, meteorología y paisaje*, Vol. 13-14, (2004) pp. 211-212.
- Franks, J.R. and Harris, R.S. 'Shareholder wealth effects of corporate takeovers: The United Kingdom experience 1955-1985', *Journal of Financial Economics*, Vol. August (1989) pp. 225-249.
- García de Valencia, A.J. *Las fusiones y adquisiciones de empresas: Efectos sobre la rentabilidad del accionista*, (Tesis doctoral. Universidad de Valencia, 1994).
- Ghosh, A. 'Does operating performance really improve following corporate acquisitions?', *Journal of Corporate Finance*, Vol. 7, (2001) pp. 151-78.
- Healy, P.M., Palepu, K.G. and Ruback, R.S. 'Does corporate performance improve after mergers?', *Journal of Financial Economics*, Vol. 31, (1992) pp. 135-175.
- Juliá, J.F., Fernández, M., and Server, R.J. 'Las cooperativas agrarias en Informe sobre la situación de las cooperativas y las sociedades laborales en España'. (Dir. Barea J., Monzón J.L.) *Ed. CIRIEC-España*, Vol. 18-77, (1996).
- Juliá, J.F. and Meliá, E. 'Challenges for agricultural co-operatives in the European Union: the case of the Spanish agricultural co-operatives', *International Journal of Co-operative Management*, Vol. 1, (2003) pp. 16-23.
- Juliá, J.F. and Server, R.J. 'Retos y praxis del cooperativismo agrario en la Unión Europea', *Cuadernos de Desarrollo Rural*, Vol. 42, (1999), pp. 13-33.
- Juliá, J.F., Server, R.J. and Meliá, E., 2004. 'Los procesos de fusión en cooperativas agrarias. Manual de procedimiento'. *Ed. Mundi-Prensa*, Madrid (2004).
- Kenkel, P., Gilbert, A. and Spence, B. 'Post merger financial performance of Oklahoma cooperatives', *SAEA Annual Meetings, Mobile, Alabama, USA*. Vol. Feb. 1-5 (2003).
- Kumar, R., 2009. 'Post-merger corporate performance: an Indian perspective', *Manage Res News* Vol. 32(2), (2009), pp. 145-157.

- Langetieg, T. 'An application of three-factor performance index to measure stockholder gains from mergers', *Journal of Financial Economics*, Vol. Diciembre, (1978) pp. 365-383.
- Lin, S. and Switzer J. 'Are cash acquisitions with better post combination operating than stock acquisitions?', *Journal of Banking & Finance*, Vol. 25, (2001) pp. 1113-38.
- Limmack, R.J. 'Corporate mergers and shareholder wealth effects: 1977-1986', *Accounting and Business Research*, Vol. Summer, (1991), pp.239-251.
- Martín Guzmán, M.P. and Martín Pliego, F.J. *Curso básico de estadística económica* (Madrid, Editorial AC, 1989).
- Meliá, E. *La concentración empresarial en las cooperativas agrarias. Estudio metodológico de los procesos de fusión*, (Comité Económico y Social de la Comunidad Valenciana, 2004).
- Meliá, E. 'El derecho de separación del socio cooperativista en la fusión de cooperativas. Efectos de la reforma de la norma contable en estos procesos', *Revista Española de Estudios Agrosociales y Pesqueros*, Vol. 217(1), (2008) pp.105-132.
- Meliá, E. and Juliá, J.F. 'La intercooperación: una respuesta a las actuales demandas del cooperativismo agrario', *Estudios de Economía Aplicada Valenciana*, Vol. 26(1), (2008) pp.57-88.
- Meliá, E., Juliá, J.F. and Martinez A. 'Mergers of agrifood cooperatives and their effects: from expectations to results. An empirical study in four Spanish Autonomous Regions', *Spanish Journal of Agricultural Research*, Vol. 8 (2), (2010) pp. 235-250.
- Observatorio socioeconómico del cooperativismo agrario español. 'Cooperativismo en cifras'. OSCAE (2007). [http:// www.agro-alimentarias.coop/ficheros/doc/02462.pdf](http://www.agro-alimentarias.coop/ficheros/doc/02462.pdf). Last accessed: 25/6/2008.
- Observatorio socioeconómico del cooperativismo agrario español. OSCAE (2009). <http://www.ccae.es>. Last accessed: 20/2/2009.
- Richards, T. and Manfredo, M.R. 'Cooperative mergers and acquisitions: the role of capital constraints', *Journal of Agricultural and Resource Economics*, Vol. 28(1), (2003) pp. 152-168.
- Richards, T. and Manfredo, M.R. 'Post-merger performance of agricultural cooperatives' *Agricultural Finance Review.*, Vol. 63 (2003). Iss: 2, pp.175 - 192
- Serra, V., Gomez, M.A. and Landete, M. 'Resultados de las fusiones empresariales: Una aproximación empírica en el sector asegurador'. *Revista Española de Financiación y Contabilidad XXX*, Vol.(110), (2001) pp. 1001-1036.
- Server, R. and Meliá, E. 'La concentración empresarial en cooperativas agrarias. Formulación de un modelo económico para los acuerdos de fusión', *Revista de Estudios Agrosociales y Pesqueros*, Vol. 196, (2002) pp. 33-52.
- Server, R. and Meliá, E. 'El efecto impositivo originado en los procesos de fusión de cooperativas. Cuantificación y especificidades del registro contable de su reversión'. *Revista de Cuadernos Aragoneses de Economía XVI*, Vol. 2, (2006) pp.339-360.
- Zopounidis, C., Shiniotakis, N. and Baourakis, G. 'Financial analysis and economic aspects of the agricultural unions of Crete', *Agricultural Economics Review*, Vol. 7(2), (2006) pp. 66-74

Table 1. Differences in pre-merger performance between acquirers, acquireds and cooperatives taking part in the formation of a new cooperative.

RATIO	MEDIAN				MEDIAN TEST							KRUSKAL-WALLIS TEST		
	ACQUIRER	ACQUIRED	FORMATION	TOTAL	>MEDIAN			<=MEDIAN			P-VALUE	SIGNIFICANT DIF.	P-VALUE	SIGNIFICANT DIF.
					ACQUIRER	ACQUIRED	FORMATION	ACQUIRER	ACQUIRED	FORMATION				
General liquidity	1.29	1.83	1.74	1.39	28	45	28	51	34	17	0.004	H1 ACCEPTED	0.047	H1 ACCEPTED
Immediate liquidity	0.95	1.21	1.22	1.14	31	45	24	48	34	21	0.096	H0 NOT ACCEPTED	0.006	H1 ACCEPTED
Solvency	1.61	2.42	2.09	1.95	26	49	26	53	30	19	0.001	H1 ACCEPTED	0.005	H1 ACCEPTED
Indebtedness (debt-equity ratio)	0.62	0.39	0.48	0.51	51	29	19	28	50	26	0.001	H1 ACCEPTED	0.003	H1 ACCEPTED
Short-term Debt/Total Debt	0.89	0.92	0.94	0.93	35	39	25	44	40	20	0.479	H0 NOT ACCEPTED	0.601	H0 NOT ACCEPTED
Fixed assets	662,046.0	250.916.5	550,595.68	585,676.75	55	24	22	24	55	23	0.000	H1 ACCEPTED	0.000	H1 ACCEPTED
Financial expenses/Sales	0.000	0.005	0.000	0.000	11	21	17	32	22	20	0.059	H0 NOT ACCEPTED	0.028	H1 ACCEPTED
Financial Expenses/Debt	0.010	0.020	0.020	0.020	7	18	15	36	25	22	0.019	H1 ACCEPTED	0.005	H1 ACCEPTED
Return on assets	0.015	0.020	0.020	0.010	16	20	23	27	23	14	0.081	H0 NOT ACCEPTED	0.232	H0 NOT ACCEPTED
Return on sales	0.006	0.009	0.009	0.007	16	21	20	27	22	17	0.296	H0 NOT ACCEPTED	0.771	H0 NOT ACCEPTED
Asset turnover	2.800	1.675	2.390	2.140	28	14	19	15	29	18	0.010	H1 ACCEPTED	0.003	H1 ACCEPTED
Return on Equity	0.005	0.020	0.010	0.020	25	14	16	18	29	21	0.057	H0 NOT ACCEPTED	0.182	H0 NOT ACCEPTED
Turnover	6,098,400	1.217.300	3,840,600.	3.428.600.0	34	7	20	9	36	17	0.000	H1 ACCEPTED	0.000	H1 ACCEPTED
Labor and personnel expenses/Production Value	0.106	0.154	0.055	0.061	18	25	18	25	18	19	0.317	H0 NOT ACCEPTED	0.229	H0 NOT ACCEPTED
Depreciation expenses/Production Value	0.016	0.020	0.018	0.018	16	27	18	27	16	19	0.059	H0 NOT ACCEPTED	0.014	H1 ACCEPTED
Cost of Goods Sold/ Production Value	0.815	0.728	0.870	0.864	23	19	19	20	24	18	0.667	H0 NOT ACCEPTED	0.727	H0 NOT ACCEPTED
Operating Income/ Production Value	-0.009	0.006	-0.0015	0.0002	22	23	16	21	20	21	0.638	H0 NOT ACCEPTED	0.894	H0 NOT ACCEPTED
Financial Income/ Production Value	0.000	-0.001	-0.0019	-0.0005	29	18	14	14	25	23	0.014	H1 ACCEPTED	0.066	H0 NOT ACCEPTED
Extraordinary Income/ Production Value	0.007	0.005	0.007	0.004	21	21	19	22	22	18	0.968	H0 NOT ACCEPTED	0.474	H0 NOT ACCEPTED
Deferred Income**/Production Value	0.035	0.016	0.022	0.023	21	22	18	22	21	19	0.968	H0 NOT ACCEPTED	0.624	H0 NOT ACCEPTED
Fixed Assets/ Production Value	0.180	0.280	0.170	0.200	15	29	17	28	14	20	0.009	H1 ACCEPTED	0.009	H1 ACCEPTED
Depreciation	72,788.27	28,778.89	49,671.110	33,971.190	24	16	21	19	27	16	0.131	H0 NOT ACCEPTED	0.015	H1 ACCEPTED

*Depreciation and fixed assets measured at absolute value. **Deferred income mainly includes grants related to assets; PV(Production value): Net sales + Finished product inventory change+ Other operating income

Table 2. Evolution of economic-financial indicators following merger (period N-1 to N+4)

RATIO	MEDIAN COOP/MEDIANSECTOR		WILCOXON				
	N-1	N+4	RANGE - (DIF N+4<DIF	RANGE + (DIF N+4	TIE (DIF N+4=DIF N-1)	P- VALUE	SIGNIFICANT DIF.
General liquidity	0.95	0.815	49	26	1	0.00053	H1 ACCEPTED
Immediate liquidity	1.02	0.785	46	30	0	0.00371	H1 ACCEPTED
Solvency	1.015	0.835	44	29	3	0.02187	H1 ACCEPTED
Indebtedness (debt-equity ratio)	0.65	0.71	27	47	2	0.02533	H1 ACCEPTED
Short-term Debt/Total Debt	0.87	0.79	35	38	3	0.31694	H0 NOT ACCEPTED
Fixed assets	0.93	2.05	13	63	0	0	H1 ACCEPTED
Financial expenses/Sales	0.27	0.37	27	40	2	0.09532	H0 NOT ACCEPTED
Financial Expenses/Debt	0.42	0.615	36	31	2	0.6619	H0 NOT ACCEPTED
Return on assets	0.35	0.41	43	26	0	0.12003	H0 NOT ACCEPTED
Return on sales	0.27	0.28	40	27	2	0.3921	H0 NOT ACCEPTED
Asset turnover	1.03	0.58	53	16	0	0	H1 ACCEPTED
Return on Equity	0.38	0.15	43	26	0	0.10973	H0 NOT ACCEPTED
Turnover	0.84	1.185	10	58	1	0	H1 ACCEPTED
Labor and personnel expenses/Production Value	0.3	0.295	26	43	0	0.06125	H0 NOT ACCEPTED
Depreciation expenses/Production Value	0.4	0.49	23	45	1	0.02632	H1 ACCEPTED
Cost of Goods Sold/ Production Value	0.8	0.91	26	41	2	0.24777	H0 NOT ACCEPTED
Operating Income/ Production Value	-0.03	-0.09	42	27	0	0.02843	H1 ACCEPTED
Financial Income/ Production Value	3.57	2.74	42	27	0	0.07929	H0 NOT ACCEPTED
Extraordinary Income/ Production Value	0	0	23	28	18	0.80382	H0 NOT ACCEPTED
Deferred Income**/Production Value	0.71	1.095	20	43	6	0.0024	H1 ACCEPTED
Fixed Assets/ Production Value	0.47	0.55	28	39	2	0.34233	H0 NOT ACCEPTED
Depreciation	0.73	1.655	10	59	0	0	H1 ACCEPTED

**Deferred income: mostly includes grants related to assets; PV (Production value): Net sales + Finished product inventory change+ Other operating income*

