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This paper must be cited as:

Meliá Martí, E.; Martínez García, AM. (2015). Characterization and analysis of cooperative mergers and their results. *Annals of Public and Cooperative Economics*. 86(3):479-504.
doi:10.1111/apce.12083.



The final publication is available at

<http://dx.doi.org/10.1111/apce.12083>

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Table 1. Sample selection procedure

| | | |
|---|--------------------|----------|
| Merger processes carried out by agri-food cooperatives in Spain during the period 1995-2005 - 115 by acquisition - 28 by formation - 4 by spinoff-acquisition | 147 mergers | |
| Cooperatives - 119 acquiring cooperatives - 185 acquired cooperatives - 70 cooperatives involved in a merger by formation | 374 coop | |
| Financial statements furnished | 114 | |
| Eliminated for incomplete financial statements | 25 | |
| Eliminated for financial statements with errors | 10 | |
| Outliers | 9 | |
| Remaining in the final sample - 55 by acquisition - 15 by formation | 70 mergers | |
| Cooperatives included in the final sample mergers: - 54 acquiring cooperatives - 57 acquired cooperatives - 36 cooperatives involved in a merger by formation | 147 coops | |
| Cooperatives by sector - Cereals and feed - Olive - Fruits and vegetables - Others sectors (honey and dried fruit) - Olive and Viniculture - Supplies - Livestock - Viniculture | Coop. N° | % |
| | 9 | 12.9 |
| | 12 | 17.1 |
| | 17 | 24.3 |
| | 3 | 4.3 |
| | 2 | 2.9 |
| | 5 | 7.1 |
| | 11 | 15.7 |
| | 11 | 15.7 |

Table 2. Financial ratios used in the analysis

| | |
|-------------------------|--|
| Size indicators | Turnover (Revenue) |
| | Fixed Assets |
| | Fixed Assets / turnover |
| Liquidity ratios | Current ratio = Current assets /Current liabilities |
| | Quick ratio = Current assets - inventory /Current liabilities |
| Solvency ratio | Total assets/Total debt |
| Profitability: | Return for members = Net profit (after taxes) +Supplies / turnover |
| | Cash Flow for members = Net profit (after taxes) + depreciation + Supplies/ Turnover |
| | Operating profit ratio=Operating profit/Turnover |
| | Return on assets= Operating profit + Supplies / Fixed assets |
| Cost Efficiency | Supplies/Turnover |
| | Staff costs/turnover |
| | Depreciation costs/turnover |
| | Financial expenses/turnover |

Table 3. Descriptive statistics

| | Acquiring, acquired and cooperatives involved in a merger by formation* | | | | Acquiring and acquired cooperatives** | | | |
|--------------------------------------|---|----------|----------|--------------------|---------------------------------------|----------|----------|--------------------|
| | Minimum | Maximum | Mean | Standard deviation | Minimum | Maximum | Mean | Standard deviation |
| Size: Fixed assets | 2.612 | 7.69E+07 | 1.89E+06 | 7.30E+06 | 355 | 7.70E+07 | 2,29E+06 | 8,56E+06 |
| Size: Turnover | 3.54E+06 | 1.93E+11 | 7.19E+09 | 2.00E+10 | 3.54E+03 | 1.90E+08 | 8.22E+06 | 2.29E+07 |
| Liquidity: Current Ratio | 0.15 | 12.74 | 2.04 | 1.88 | 0.3 | 12.74 | 1.91 | 2.023 |
| Solvency | 1.01 | 33.54 | 3.59 | 5.032 | 1.02 | 33.54 | 3.182 | 4.72 |
| Profitability: Return for Members | -21.571 | 1.376 | 0.75 | 0.36 | -2.16 | 1.38 | 0.745 | 0.39 |

*N= 147.

**N= 111

Table 4. Comparison between merging cooperatives and sector before the merger

| Size and liquidity | | | Turnover | | | Fixed Assets | | | FixedAssets/Turnover | | | Current Ratio | | | Quick Ratio | | |
|----------------------------|------|--------|-----------------------|----------|------------|---------------------|--------|------------|---------------------------|--------|------------|-----------------------|--------|------------|----------------|--------|------------|
| | | | Coop | Sector | % + Sig | Coop | Sector | % + Sig | Coop | Sector | % + Sig | Coop | Sector | % + Sig | Coop | Sector | % + Sig |
| AcquiringCoop | n=54 | Mean | 12,204.98 | 4,650.2 | 45.28% | 4,080 | 1,030 | 46.2% | 0.763 | 0.221 | 64.15% | 1.584 | 1.132 | 64.81% | 1.178 | 0.856 | 53.7% |
| | | Median | 3,661.34 | 4,488.49 | aaa | 8,911 | 1,010 | aaa | 0.28 | 0.226 | *** | 1.309 | 1.126 | *** | 0.925 | 0.849 | * aa |
| AcquiredCoop. | n=57 | Mean | 3,262.43 | 4,405.62 | 12.2% | 5,463 | 1,030 | 14.03% | 0.729 | 0.231 | 60.98% | 2.538 | 1.142 | 66.67% | 2.013 | 0.866 | 66.67% |
| | | Median | 1,191.44 | 4,488.49 | *** | 3,025 | 1,010 | *** bb | 0.32 | 0.226 | ** | 1.675 | 1.126 | *** | 1.15 | 0.855 | *** |
| CoopMbF | n=36 | Mean | 3,591.48 | 4,517.89 | 34.48% | 7,483 | 1,020 | 35.2% | 2.45 | 0.226 | 48.28% | 1.939 | 1.135 | 66.67% | 1.587 | 0.859 | 72.22% |
| | | Median | 3,529.68 | 4,488.49 | * c | 5,939 | 1,010 | ** cc | 0.217 | 0.226 | | 1.406 | 1.126 | *** | 1.05 | 0.852 | *** c |
| Solvency and profitability | | | Solvency | | | ReturnforMembers | | | Cash Flowformembers | | | OperatingProfit Ratio | | | ReturnonAssets | | |
| | | | Coop | Sector | % + Sig | Coop | Sector | % + Sig | Coop | Sector | % + Sig | Coop | Sector | % + Sig | Coop | Sector | % + Sig |
| AcquiringCoop | n=54 | Mean | 2.641 | 1.498 | 68.52% | 0.807 | 0.852 | 57.14% | 0.846 | 0.871 | 59.18% | -0.004 | 0.014 | 13.2% | 2.48 | 1.483 | 48.94% |
| | | Median | 1.731 | 1.517 | *** | 0.886 | 0.851 | | 0.921 | 0.869 | | 0.000 | 0.014 | *** | 1.52 | 1.395 | |
| AcquiredCoop. | n=57 | Mean | 4.896 | 1.511 | 70.18% | 0.725 | 0.869 | 45.00% | 0.667 | 0.85 | 45.00% | -0.082 | 0.014 | 19.5% | 1.46 | 1.373 | 60.53% |
| | | Median | 2.148 | 1.517 | *** | 0.857 | 0.869 | * | 0.841 | 0.851 | | 0.003 | 0.013 | *** | 1.32 | 1.260 | |
| CoopMbF | n=36 | Mean | 2.975 | 1.501 | 66.67% | 0.779 | 0.851 | 52.00% | 0.816 | 0.87 | 60.00% | -0.002 | 0.014 | 13.79% | 1.84 | 1.578 | 58.33% |
| | | Median | 2.009 | 1.517 | *** | 0.860 | 0.851 | | 0.900 | 0.869 | | -0.001 | 0.014 | *** | 1.44 | 1.395 | |
| Costefficiency | | | Suppliescost/Turnover | | | Staff cost/Turnover | | | Depreciationcost/Turnover | | | Financial expenses | | | | | |
| | | | Coop | Sector | % + Sig | Coop | Sector | % + Sig | Coop | Sector | % + Sig | Coop | Sector | % + Sig | | | |
| AcquiringCoop | n=54 | Mean | 0.787 | 0.842 | 57.14% | 0.098 | 0.064 | 41.51% | 0.036 | 0.018 | 64.15% | 0.01 | 0.009 | 26.42% | | | |
| | | Median | 0.862 | 0.840 | | 0.044 | 0.063 | * | 0.022 | 0.018 | * | 0.004 | 0.009 | *** | | | |
| AcquiredCoop. | n=57 | Mean | 0.752 | 0.840 | 50.00% | 0.184 | 0.065 | 51.22% | 0.057 | 0.019 | 48.78% | 0.012 | 0.009 | 34.15% | | | |
| | | Median | 0.843 | 0.840 | | 0.074 | 0.063 | | 0.02 | 0.018 | | 0.005 | 0.009 | | | | |
| CoopMbF | n=36 | Mean | 0.777 | 0.841 | 52.00% | 0.096 | 0.065 | 44.83% | 0.032 | 0.019 | 51.72% | 0.007 | 0.009 | 24.14% | | | |
| | | Median | 0.870 | 0.840 | | 0.041 | 0.063 | | 0.018 | 0.018 | | 0.004 | 0.009 | * | | | |

Notes: Coop MbF: Cooperative involved in a merger by formation. +% positive: % of cooperatives whose ratio is higher than industry. It has been used Wilcoxon signed-rank test for two related samples (cooperative ratio in the year of merger – industry mean ratio in the year of merger).

For the ratios: Return for members, Cash Flow for members, Return on Assets and Supplies/Turnover, supply sector co-ops involved in mergers were eliminated so that they would not hide the results for members' earnings. The sample in this case is composed of 50 Acquiring Co-ops, 54 Acquired Co-ops and 32 MbF Co-ops.

Sig: *: Significance level of the difference between cooperative ratio and industry ratio in the year of the merger: * P < 0.10 significantly different; ** P < 0.05 significantly different; *** P < 0.01 significantly different.

Sig: a. b. c: Significance level of the difference between: a: acquiring-acquired; b: acquired-involved in merger by formation; c: acquiring-involved in merger by formation. a, b, c: P < 0.10; aa, bb, cc: P < 0.05; aaa,bbb, ccc: P < 0.01.

Table 5. Factors that influence the role played by a cooperative in a merger: acquiring or acquired (Probit analysis).

| | Coefficient | Std. errors | Marginal effects | Std. errors |
|--------------------------------------|-------------|-------------|------------------|-------------|
| Fixed Assets (10 ⁶ euros) | -0.2778** | (0.113) | -0.0895*** | (0.033) |
| Quick ratio | 0.2587* | (0.137) | 0.0834** | (0.041) |
| Return on assets | -0.2594** | (0.130) | -0.0836** | (0.038) |
| Return for members | -0.0731 | (0.472) | -0.0236 | (0.152) |
| Intercept | 0.3376 | 0.4170 | | |

Log-likelihood: -47.8294

Prob>Chi2:0.0003 Correctly classified: 68.24%

In order not to hide the results of members' earnings, the supply co-ops were eliminated from the model.

N= 95 co-ops

***, **, * indicate significance at the 1%, 5% and 10% respectively

Table 6. Cooperative and industry-adjusted ratios for combined cooperatives mergers completed in the period 1995-2005.

| Ratios | | | | | | | | | Post merger ratios /premerger ratios | | Industry adjusted ratios | | | | | |
|-----------------------------|--|---|------------------------------|--------------------------------|---------------------------------|---|---|-------------------------|---|--|---|--|---|-------------------------|--------|------|
| | | Premerger | | Post merger | | Post merger industry adjusted ratios /premerger industry adjusted ratio | | Mean | Median | Mean | Median | Mean | Median | Mean | Median | |
| | | Mean | Median | Mean | Median | Mean | Median | | | | | | | | | Mean |
| N | Aggregate dCooperative (Cm ₋₁) | Aggregate dCooperative (Cmd ₋₁) | Industry (Im ₋₁) | Cooperative (Cm ₄) | Cooperative (Cmd ₄) | Industry (Im ₄) | (Cmd ₄ / (Cmd ₋₁)) | % positive ² | Industry adjusted Premerger (Cm ₋₁ /Im ₋₁) | Industry adjusted Premerger (Cmd ₋₁ /Im ₋₁) | Industry adjusted Post merger (Cm ₄ /Im ₄) | Industry adjusted Post merger (Cmd ₄ /Im ₄) | (Cmd ₄ /Im ₄) / (Cmd ₋₁ /Im ₋₁) | % positive ¹ | | |
| Turnover (Million €) | 70 | 13.01 | 5.41 | 4.6 | 14.5 | 4.88 | 4.54 | 1.188 ^{aa} | 61.43% | 3.3 | 1.26* | 3.2 | 1.04** | 1,255 | 60.00% | |
| Fixedassets (mil€) | 70 | 3.96 | 1.74 | 1.03 | 5.95 | 2.11 | 1.25 | 1.327 ^{aaa} | 67.14% | 3.88 | 1.64*** | 4.52 | 1.66 | 1.044 ⁺⁺ | 58.5% | |
| FixedAssets/Turnover | 70 | 0.72 | 0.27 | 0.22 | 0.78 | 0.44 | 0.27 | 1.334 ^a | 60.00% | 3.19 | 1.31*** | 2.97 | 1.59*** | 1.056 | 55.7% | |
| Current ratio | 70 | 1.82 | 1.35 | 1.13 | 1.6 | 1.29 | 1.16 | 0.993 | 48.57% | 1.61 | 1.31*** | 1.38 | 1.1*** | 0.961 | 42.9% | |
| Quick ratio | 70 | 1.42 | 1.04 | 0.86 | 1.14 | 0.9 | 0.84 | 0.960 | 47.14% | 1.65 | 1.24** | 1.36 | 1.05** | 0.983 | 50.00% | |
| Solvency ratio | 70 | 3.01 | 1.87 | 1.5 | 2.54 | 1.83 | 1.54 | 0.963 | 41.43% | 2.02 | 1.25*** | 1.65 | 1.19*** | 0.936 ⁺ | 40.00% | |
| Returnformembers | 65 | 0.805 | 0.886 | 0.851 | 0.73 | 0.84 | 0.84 | 0.962 ^{aaa} | 26.15% | 0.95 | 1.035 | 0.874 | 0.997* | 0.953 ⁺ | 26.15% | |
| Cash Flowformembers | 65 | 0.901 | 0.937 | 0.870 | 0.84 | 0.93 | 0.86 | 0.984 ^{aaa} | 33.85% | 1.03 | 1.079*** | 0.977 | 1.081** | 0.946 ⁺⁺ | 30.77% | |
| OperatingProfit Ratio | 55 | -0.007 | -0.001 | -0.013 | -0.005 | 0.0001 | -0.01 | 1.083 | 50.91% | 1.01 | 1.012*** | 1.009 | 1.014*** | 0.391 | 45.70% | |
| ReturnonAssets | 65 | 11.30 | 2.95 | 3.81 | 7.08 | 1.75 | 3.06 | 0.662 ^{aaa} | 35.38% | 2.70 | 0.720 | 2.563 | 0.575*** | 0.947 | 46.15% | |
| Supplies cost/Turnover | 65 | 0.78 | 0.86 | 0.84 | 0.71 | 0.82 | 0.83 | 0.965 ^{aa} | 36.92% | 0.92 | 1.015 | 0.855 | 0.993** | 0.944 ⁺ | 30.77% | |
| Staff cost/Turnover | 70 | 0.10 | 0.05 | 0.06 | 0.11 | 0.05 | 0.07 | 1.116 ^{aa} | 60.00% | 1.57 | 0.81 | 1.67 | 0.72 | 0.997 | 48.6% | |
| Depreciationcost/Turnover | 70 | 0.04 | 0.03 | 0.02 | 0.04 | 0.03 | 0.02 | 1.264 | 61.43% | 2.26 | 1.31*** | 1.74 | 1.45*** | 1.065 | 52.9% | |
| Financial expenses/Turnover | 70 | 0.009 | 0.004 | 0.008 | 0.01 | 0.005 | 0.008 | 0.964 | 45.16% | 1.08 | 0.54*** | 1.13 | 0.63 | 1.087 | 51.4% | |

The premerger cooperative indicators have been calculated from fictitious aggregate accounts for the year prior to the merger, estimated 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.

For the ratios: Return for members, Cash Flow for members, Return on Assets and Supplies/Turnover in order not to hide the results of members' earnings, the supply co-ops were eliminated from the model.

*** P<0.01:Cmd and Im are significantly different at the 1% level; ** P<0.05: at the 5% level; * P<0.1: Cm and Im at the 10% level.

+++ P<0.01:Cmd₄/Im₄ and Cmd₋₁/Im₋₁ are significantly different at the 1% level; ++ P<0.05: at the 5% level; + P<0.1: at the 10% level. P value in Solvency and Supplies cost/Turnover was 0.127 and 0.11 respectively, although we have considered in the table P <0.1.

aaa P<0.01:Cmd₄/Cmd₋₁ are significantly different at the 1% level; aa: P=<0.05: at the 5% level. a: P<0.1 at the 10% level.

%Positive¹ : % of mergers whose industry-adjusted ratios (coop/industry) increased after merger (Wilcoxon signed-rank test)

% Positive² : % of mergers whose ratios increased after merger (Wilcoxon signed-rank test)

Due to the existence of negative signs in the case of Operating Profit Ratio.to calculate the industry-adjusted ratios the ratios of means and medians of sector cooperatives were increased by one unit.