



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

JOURNAL OF RURAL COOPERATION



Centre international de recherches sur les communautés coopératives rurales
International Research Centre on Rural Cooperative Communities
המרכז הבינ-לאומי לחקר קהילות כפריות שיתופיות

CIRCOM

CIRCOM, International Research Centre on Rural Cooperative Communities was established in September 1965 in Paris.

The purpose of the Centre is to provide a framework for investigations and research on problems concerning rural cooperative communities and publication of the results, to coordinate the exchange of information on current research projects and published works, and to encourage the organization of symposia on the problems of cooperative rural communities, as well as the exchange of experts between different countries.

Editorial Advisory Board

BARRACLOUGH, Prof. Solon, UNRISD,
Geneva, Switzerland.

CERNEA, Prof. Michael, The World
Bank, Washington, DC, USA.

CRAIG, Prof. Jack, York University,
Ontario, Canada.

DON, Prof. Yehuda, Bar Ilan University,
Ramat Gan, Israel.

FALS BORDA, Prof. Orlando, Punta de
Lanza Foundation, Bogotá, Colombia.

KLATZMANN, Prof. Joseph, Institut
National Agronomique, Paris, France.

KRESSEL, Prof. G.M., Ben Gurion
University of the Negev, Be'er Sheva,
Israel.

MARON, Stanley, Kibbutz Maayan Zvi
and Yad Tabenkin, Ramat Efal, Israel.

NINOMIYA, Prof. Tetsuo, Kanazawa
University, Japan.

PARIKH, Prof. Gokul O., Sardar Patel
Institute of Economic and Social Research,
Ahmedabad, India.

PLANCK, Prof. Ulrich, Universität
Hohenheim, Stuttgart, Germany.

POCHET, Dr. Carlos A., Universidad
Nacional, Heredia, Costa Rica.

SAXENA, Dr. S.K., Markham, Ontario,
Canada.

SCHIMMERLING, Prof. Hanuš,
Agricultural University, Prague, Czech
Republic.

SCHVARTZER, Prof. Louis, Universidad
de Buenos Aires, Argentina.

SMITH, Prof. Louis, University College,
Dublin, Ireland.

STAVENHAGEN, Dr. Rodolfo, El
Colegio de Mexico, Mexico.

STROPPA, Prof. Claudio, Università di
Pavia, Italy.

Editor: Dr. Yair Levi

Editorial Assistant: Daphna Bar-Nes

CIRCOM

Information for Subscribers: The *Journal of Rural Cooperation* is a semi-annual periodical, aimed at the pursuit of research in the field of rural cooperation. Editorial enquiries and other correspondence should be addressed to CIRCOM, Yad Tabenkin, Ramat Efal 52960, Israel (Fax: +972-3-5346376). Subscription rate: \$25 per annum (plus \$2.00 sea mail; \$6.00 airmail).



JOURNAL OF RURAL COOPERATION

Vol. 25

No. 1

1997

CONTENTS

1. ARTICLES

- Craig, S. and Sumberg, J. Machinery Rings in UK Agriculture: An Example of Opportunistic Cooperation 3
- Kroll, Y. and Polovin, A. Productivity and Consumption in the Kibbutz System at a Time of Crisis: Measurement and Comparison to National Statistics 21
- Oustapassidis, K. and Notta, O. Profitability of Cooperatives and Investor-Owned Firms in the Greek Dairy Industry 33

2. BOOK REVIEWS

- Bager, T. Organizations in Sectors
M. Hopp 45
- Cernea, M.M. Sociology, Anthropology and Development: An Annotated Bibliography of World Bank Publications 1975-1993
Y. Levi 46
-
- Social Organization and Development Anthropology
The 1995 Malinovski Award Lecture
Y. Levi 46
- Harriss-White, B. The Political Economy of Disability and Development, with Special Reference to India
S. Maron 47
- Piers, B. and Jeanrenaud, S. Biodiversity and Human Welfare
S. Maron 49
- Zoomers, A. (ed.) Supporting Small-Scale Enterprise: Case Studies in SME Interventions
P. Motzafi-Haller 50

3. CURRENT INFORMATION

- Dissertation Abstracts 53
- Call for Papers 57
- CIRIEC 50th Anniversary 57

Profitability of Cooperatives and Investor-Owned Firms in the Greek Dairy Industry

by

Kostas Oustapassidis and Ourania Notta
Department of Agricultural Economics
University of Thessaloniki, Greece

Abstract

Comparison between the factors affecting cooperative and investor-owned firms (IOFs) profitability has not been examined in a particular market by empirical studies. This paper examines the determinants of profitability of cooperative and IOFs in the Greek dairy industry in the period 1990–94. The results show that IOFs, in contrast to the cooperatives, apply effectively competitive strategies (advertising and diversification) to increase their profitability.

Introduction

There is an increasing need for cooperatives to improve their performance in order to secure the finance of expensive strategies in competitive markets. Thus, it is required for the cooperatives to finance strategies such as advertising, diversification and investment in modern technology by their own funds. Although in the past, maximization of profits was considered as a less plausible objective for cooperatives (Bateman *et al.*, 1979, Oustapassidis 1988, 1992a, 1995), the increasing competition in a number of food markets requires financing of expensive competitive strategies mainly by internal sources of capital. Thus the survival of cooperatives, especially in differentiated food manufacturing industries, heavily depends on their ability to finance these strategies from their retained profits.

Therefore it is interesting to study the effects of a number of factors that can increase firm profits in a particular market and then to study whether these strategies are effectively applied by cooperatives against their competitors that operate in the same market. These could enable to make a number of policy recommendations to improve cooperative performance.

Cooperative profits

Farmers and other small operators have formed cooperatives to ameliorate their disadvantage in the market system. Yet economists and managers frequently view cooperatives simply as a variant of an investor-owned firm, modeling them with

an objective function that reflects the specific features of cooperative organization (Staatz, 1989). According to a survey performed by Purdue University in the late 1970s and early 1980s (Schrader *et al.*, 1985), university economists were reported to feel that there were significant differences between the goals of cooperatives and IOFs and that these differences in goals caused differences in business strategy.

An IOF whose overall objective is the maximization of the value of the firm will try to maximize the profitability at a given risk level (Copeland and Weston, 1983). Cooperatives, on the other hand, are expected to have a lower rate of return than IOFs, as their objective is rarely the maximization of profitability. There are at least two reasons for this difference.

First, following Helmberger and Hoos (1962), cooperatives have often been modeled as having a zero-profit objective, with prices and charges adjusted so that no surplus is generated. This assumption will be reflected as a zero-profit, which should not be particularly harmful to cooperatives: the members of a zero-profit cooperative receive their payoff in the form of higher product prices or lower costs. Second, although shareholders in an investor-owned firm expect to earn a rate of return on their investment, cooperative members expect to receive benefits through services provided by the cooperative, such as lower input prices or better marketing channels.

Theoretical model of firm profitability

Taking into consideration the characteristics of cooperatives and IOFs, it is reasonable to assume that there are a number of features that are different in each category of firms and thus their strategies may be applied and affect the annual rate of profit in a different way. However, the competitive pressure and the need for a long run survival may force cooperatives to apply, similar to the IOFs', competitive strategies to increase their profits in order to safeguard their survival and growth through the application of competitive strategies. It is therefore worth studying not only the factors affecting the rate of profit in the case of a sample, consisting of cooperatives and IOF firms but also the differences between the two groups in a particular industry. Following the relevant literature (Martin, 1994) we identify and quantify the factors that explain performance in Greek dairy industry. We have included the following variables in a multiple regression analysis: size, diversification, advertising intensity, leverage, an efficiency and a capital intensity measure. We shall first define these firm level variables measured for each year of the period 1990–94 and explain their expected influence on profitability of dairy firms.

- PR is the firm annual profitability measured as the ratio of gross profit over sales.
- RTO is the firm size in annual sales (billion 1970 drachmas).
- DIV is the diversification index, that takes the value 0 when the firm operates in only one four-digit industry and the value of 1 otherwise.

- AS is the advertising intensity measured as the ratio of firm's advertising expenses over its sales.
- LKS is the logarithm of the ratio of fixed assets (net of depreciation) over sales that measures capital intensity.
- LEV is the leverage index measured as the ratio of total liabilities over the total assets.
- LSIN is the logarithm ratio of sales over inventories.
- a_0 is the constant term.
- $a_1 \dots a_8$, are the coefficients of the respective independent variables of the model.

It is expected that the larger the firm (RTO), the higher the profits ability (PR). This is partly because large firms are able to take advantage of the economies of scale. Diversification (DIV) was defined as an increase in the heterogeneity of product markets served by an individual firm. A diversified firm may take advantage of growth opportunities in more than one industry and as a result achieve higher profits by shifting capital investment into products and markets with the highest profit potential. On the other hand, a firm may diversify to reduce its risks. So diversification of a firm is expected to have a positive effect on its profits. Advertising (AS) has come to be a major tool for brand promotion since mass-media advertising has been introduced in differentiated food markets. Firm's advertising expenditures serve to indicate the relative importance of advertising for a firm as an effort to promote sales. The higher the ratio of advertising to sales (advertising intensity) the higher the profit ability is expected, as advertising is one means to differentiate a product, to increase the customers' loyalty, to decrease its price elasticity and to increase price-cost margin.

The higher the leverage ratio (LEV), the greater the risks associated with the probability of default by the firm, while lower leverage generally indicates greater financial security. So, the higher the leverage ratio, the lower the level of profits expected. However, there are cases where the firm needs financial support to invest in modern technology. Also in countries like Greece, where the inflation is high, the cost of borrowed capital is also high and this may decrease the profitability when leverage increases. Value-maximization theory suggests the existence of optimal leverage for a firm (Copeland and Weston, 1983), which is determined by the trade-offs between the benefits of borrowing and the associated risks. IOFs distribute their financing needs between raising new debt and issuing new equity so as to maintain the optimal "target" leverage. Thus the sign of the coefficient of leverage may be negative or positive.

Capital intensity (LKST) can be measured by the ratio of net fixed assets over sales. According to theory (Scherer and Ross, 1990), the increasing of investments

and of the ratio of assets over sales is expected to have a positive effect on profits by indicating the degree of value added within the products. Efficiency (LSIN) can be measured by the ratio of sales over inventories. The ratio of sales over inventories indicate how efficiently the organization employs its inventories to generate sales. We expect that the higher the ratio of sales over inventories, the higher the profitability of the firm. So the model which is going to be estimated is the following:

$$PR = a_0 + a_1RTO + a_2RTO^2 + a_3DIV + a_4AS + a_5LKS + a_6LEV + a_7LSIN \quad (1)$$

Data and variable measurement

Food and beverage sector is one of the most dynamic sectors of the Greek manufacturing. The contribution of food and beverage industries to manufacturing GDP increased from 22.3 percent in 1990 to 26.6 percent in 1994. Also the sector achieved a faster growth than the rest of the manufacturing sector in terms of manufacturing output. The respective indices (1980=100) are 102.6 and 98.2 for the manufacturing, as compared to 124.3 and 130.2 for the food industry and to 146.1 and 168.1 for the beverage industry in 1990 and 1994, respectively (Greek National Statistical Service, 1990–94). Greek dairy industry has been characterized by a considerable growth in terms of its contribution to sales, value added and gross production value of food industry. The latest available data show that the contribution of dairy industry to total food sales increased from 18.2 percent in 1991 to 21.9 percent in 1993, while the contribution of dairy to the value added and gross production value of the food sector increased from 17.6 percent and 16.2 percent in 1990, to 21.7 percent and 21.1 percent in 1993, respectively (Table 1).

Table 1. Share of dairy industry in food sales, value added and gross production value, 1990–93

	1990 (%)	1991 (%)	1992 (%)	1993 (%)
Sales	–	18.2	19.3	21.9
Value added	17.6	19.7	19.9	21.7
Gross production value	16.2	17.0	18.1	20.1

– Denotes unavailable data

Source: Greek National Statistical Service

On the other hand, the agricultural cooperative sector is important in Greece; in the last decade, cooperative membership included almost 70 percent of the total farm population (about 800,000 farmers), or about 25 percent of the total labor force. The

cooperative sector is characterized by a large number of local cooperatives (7000) with a small average size (120 members) operating at the village level (ABG, 1971-94). These organizations have jointed together to form 132 unions that operate on a regional basis and account for almost half of aggregate cooperative marketing activities. The cooperative structure also includes 10 central unions which mainly specialize in the marketing of specific products (*e.g.* olive oil, wine) and operate at a national level. Finally, local cooperatives, unions or central unions can form cooperative companies to increase their effectiveness through greater managerial flexibility in the decision making process.

Table 2. Market shares of dairy cooperatives in total dairy sales, 1990-94

Cooperative name	Cooperative structure	1990 (%)	1994 (%)	Change
Agno	Union	11.06	10.00	-1.06
Rodopi	Company	1.24	7.35	+6.11
Dodoni	Company	6.40	6.70	+0.3
Neogal	Company	1.17	0.96	-0.21
Olympos	Company	0.63	0.86	+0.23
Total		20.5	25.87	

Source: ICAP HELLAS (Annual Balance Sheet Data of the Greek Manufacturing Companies).

It is worth note that four cooperative companies and one cooperative union are included in the sample: the cooperative union "Agno" whose members are local dairy cooperatives are based in the North of Greece and the other cooperative companies ("Rodopi", "Dodoni", "Olympos" and "Neogal") whose majority capital is controlled by cooperative unions. The cooperative companies operate in the center and north of Greece where much of milk is produced. The operation of this type of organizations improves farmer price for the milk and also improves competition in the dairy industry. Thus, it is beneficial both for farmer members who enjoy reasonable price for their product and for the consumer welfare due to the "yardstick effect" in the dairy sector. It is worth noting that although the dairy sector is very competitive (through intensive application of competitive strategies such as advertising) cooperatives increased their market share over the study period. Their aggregate market share increased from 20.5 percent to 25.9 percent between 1990-94. The changes of the cooperatives market shares between 1990-94 are presented in Table 2. Three of the five cooperatives (the companies: "Rodopi", "Dodoni" and "Olympos") increased their market share between 1990-94 and two of them (the cooperative company "Neogal" and the cooperative union "Agno") showed a reduction in their market shares between 1990-94.

The paper uses panel data for a period of five years which are required for an

appropriate estimation of factors affecting firms' profitability. Also, this enables one to study the differences between IOFs and cooperatives with different objectives and possibly different competitive strategies to increase their profits.

Table 3. Diversification of Greek dairy manufacturing firms into other industries

4-digit industry code	Name
2021	Milk products
2022	Cheese production
2023	Ice cream production
2031	Manufacturing of juices

Source: Greek National Statistical Service and ICAP HELLAS (Annual Balance Sheet Data of the Greek Manufacturing Companies).

To test a number of hypotheses concerning the effects of several variables on profitability we collected annual balance sheet data for the 30 largest Greek dairy firms for the period 1990–94. The sample includes both cooperatives and IOFs and it accounts for 90 percent of the total dairy sales. Entries and exits that took place in the period 1990–94 referring to small dairy firms were not included in the sample. The relevant data are available on an annual basis from a proprietary service company (ICAP, 1990–94). Twenty five companies are investor-owned firms and the rest are cooperatives. The average size of the firms of the sample is 266 employees in the period of the study, with a great variation between the leading group and the rest. The leading group consists of four IOFs with an average size of 1500, 693,642 and 476 for each and only one cooperative with an average size of 695 employees is included in the leading group. Data for firm advertising are obtained from another proprietary company (Nielsen-Hellas, 1990–94). Apart from the advertising intensity (AS) and the total sales, a diversification index (DIV) is also used. The latter shows the expansion of firm into other 4-digit industries according to the Standard Industrial Classification (SIC) which is a numerical classification scheme with a larger number of digits indicating a more disaggregated classification. This index could be measured by a Herfindahl type measure (Oustapassidis, 1992; Sporleder and Skinner, 1977; Berry, 1971) but this measure requires detailed data for the share of each product in firms sales. Unfortunately, this kind of data are considered as strictly confidential and are not available. To overcome this problem we used a dummy variable which takes the value 0, when the firm operates in only one four-digit industry, and the value of 1 otherwise. Table 3 shows the diversification of Greek dairy manufacturing firms. Also financial ratios such as leverage and capital intensity measures and an efficiency variable (sales/inventories) were employed in this model and have been calculated by the authors from the balance sheet data.

Table 4. Mean values of groups included in firm profitability models, 1990–1994

Variables	Definition	All	IOF	Coop.
Profitability	Gross profit			
	$\frac{\text{Gross profit}}{\text{Sales}}$	0.27	0.30	0.17
Leverage	Long and medium liabilities + current liabilities			
	$\frac{\text{Long and medium liabilities + current liabilities}}{\text{Total assets}}$	0.58	0.49	3.14
Capital intensity	Fixed Assets-depreciation			
	$\frac{\text{Fixed Assets-depreciation}}{\text{Sales}}$	0.37	0.35	0.43
Advertising intensity	Advertising expenditures \times 100			
	$\frac{\text{Advertising expenditures} \times 100}{\text{Sales}}$	2.90	3.58	0.42
Efficiency	Sales			
	$\frac{\text{Sales}}{\text{Inventories}}$	8.90	10.1	6.05
Diversification	Diversification index	57	5	52
Market share		100	79.3%	20.6%
Annual employment	Number of employees			
	$\frac{\text{Number of employees}}{\text{Number of firms}}$	266	272	247

Sources: ICAP HELLAS (Annual Balance Sheet Data of the Greek Manufacturing Companies). Calculations of the variables was made by the authors.

Table 4 shows the sample means of the financial ratios and structure and conduct characteristics by group. According to the measure of profitability used in this paper the mean profitability of the IOF group (IOFs' gross profits over sales) is higher than that of the cooperative group over the period 1990–94. The leverage ratio for dairy cooperatives is lower than that for the IOFs. It appears that the cooperatives, in contrast to the IOFs, are overborrowed. The mean ratio of fixed assets over sales for cooperatives is higher than the ratio for IOFs but this can be attributed either to the high degree of investment in new technology or to a less utilization of the available capacity. Cooperatives in the sample use less advertising than IOFs, and IOFs have higher degree of diversification. Finally, IOFs have higher average size in terms of employment and higher market share than cooperatives. More specifically the

Table 5. OLS Parameter estimation of Profitability by Sample, 1990–94

Variables/Sample	All	IOFs	Co-ops
C	0.25	0.25	0.54
Constant	(9.18)* ^a	(7.90)* ^b	(7.55)*
RTO	-136.90	-885.00	-1296.10
Size in sales	(-3.02)*	(-0.22)	(-3.80)*
RTO ²	0.5E-04	-0.2E-05	0.15E-02
Square of size	(2.31)*	(-1.07)	(3.10)*
DIV	0.06	0.08	-0.28
Diversification index	(3.40)*	(6.55)*	(-3.37)*
AS	2.20	1.72	0.25
Advertising over sales	(4.20)	(5.19)	(0.16)
LKS	0.45	0.06	0.74
Logarithm of fixed assets over sales	(4.98)*	(7.10)*	(3.98)*
LEV	0.002	-0.003	-0.20
Long, med. and current liabilities over total assets	(0.13)	(-3.43)*	(-4.10)*
LSIN	0.10	-0.98	0.10
Logarithm of sales over inventories	(1.20)	(-1.17)	(2.50)*
Sum of squared residuals	0.58	0.20	0.09
F* Test (Chow Test)		9.84	
R ²	0.43	0.69	0.67
Number of observations ^c	100	75	25 ^d

^at-values in parentheses.

^b* denotes statistical significant results at 5 percent or lower level of significance.

^cThere are 20 annual observations with no complete data for all variables.

^dThe size of this sample is rather small but the model for cooperatives is estimated just for comparison with the IOFs.

average employment is 247 for cooperatives and 272 for IOFs, while the respective figures for the market share are 20.6 percent and 79.3 percent.

Results

Table 5 shows the OLS (Ordinary Least Squares) results. The first equation refers to the full sample. Diversification has a positive and highly significant effect on profitability showing that the expansion into other relative (four digit) industries is a successful course of the firms. Advertising intensity has a positive and statistical significant effect on profitability showing that as advertising expenditures increase, profitability increases too. On the other hand, size has a negative and statistical significant effect on profitability whereas the square of size has a positive and statistical significant effect on profitability showing that as size increases, profitability decreases up to a point, and after that critical point ($RTO=1.369.000$ thousands drachmas) any increase of size leads to an increase of the firms' profitability. It is worth noting that only two large firms reach that point and that no cooperative is among them. Finally, the ratio fixed assets over sales has a positive and statistical significant effect on profitability.

In order to examine if cooperatives and IOFs behave differently we estimated the same model for each group separately and then we applied Chow-test for the significance of the coefficient differences obtained from the whole and the different groups. We found $F^*=9.84$ while the theoretical value of F for $v_1=8$ and $v_2=100-(2 \times 8)=84$ degrees of freedom is 2.3. Thus $F^* > F_{.01}$ and the two equations do differ significantly. Comparison between the IOF and the cooperative model shows a number of interesting differences. The coefficients of both competitive strategies (advertising and diversification) are positive and statistically significant, in the case of the IOF model. The coefficient of leverage is negative and significant for both IOFs and cooperatives. The latter means that when the firms depend on borrowed capital this has a negative effect on profitability.

The variable of fixed assets over sales has a positive and significant effect on profitability in the case of IOFs as in the case of cooperatives. These results show that increasing the intensity of the capital leads to higher profits. Finally, it is worth noting that for cooperatives the size of the firm has a negative and significant effect on profitability while the square of the size of the firm has a positive and significant effect on profitability. This means that as cooperatives grow, they are more profitable.

Conclusions and recommendations

This paper uses data for the 30 largest Greek dairy firms to examine the factors that affect their annual profitability. A regression analysis was used to estimate and test the relationships between profitability and diversification, advertising, size, leverage, efficiency and capital intensity. Diversification, advertising, square of size and the capital intensity have all been found to have a positive effect on the annual

profitability of the Greek dairy firms. These results suggest that dairy companies, irrespective of their type of ownership, can increase their profits by expanding into different product areas, advertising more their products and increasing their capital intensity and their size.

The sample is divided into two groups: cooperatives and IOFs. The application of the Chow-test shows that there are significant differences between the two groups. Comparison between the two groups shows that, in contrast to the IOFs, cooperatives do not effectively apply advertising and diversification strategies and that their size is smaller than that required for high profitability.

The fact that, in contrast to the IOFs, cooperatives do not effectively use advertising and diversification strategies to increase their profits, shows that if cooperatives objective is to improve their performance in the dairy market they must finance expensive competitive strategies such as diversification, advertising and capital intensity, mainly by internal sources of capital. Further research is needed to investigate whether this can be achieved by improving the quality of cooperative management.

References

- Agricultural Bank of Greece (ABG). *Annual Reports of Cooperative Business*. Athens: Department of Agricultural Cooperatives, 1971-94.
- Bateman, D.I., Edwards, J.R. and Levay, C. "Problems of Defining a Co-operative as an Economic Organization". *Oxford Agrarian Studies*, 1979, 8:53-63.
- Berry, C.M. "Corporate Growth and Diversification". *Journal of Law and Economics*, 1971, 14:371-383.
- Copeland, T.E. and Weston, J.F. *Financial Theory and Corporate Policy*. Reading, MA: Addison-Wesley Publishing Co., 1983.
- Greek National Statistical Service. *The Annual Industrial Survey*. Athens, 1990-94.
- Helmberger, P.G. and Hoos, S. "Cooperative Enterprise and Organization Theory". *Journal of Farm Economics*. 1962, 44:275-90.
- Icap Hellas. 'Manufacturing Industries' Directory For Greece (Series). Athens, 1990-94.
- Martin, S. *Industrial Economics* New York: Macmillan Publishing Company, 1994.
- Nielsen Hellas. *Advertising Expenditures Directory*. Athens, 1990-94.
- Oustapassidis, K. "Structural characteristics of Agricultural Cooperatives in Britain", *Journal of Agricultural Economics*, 1988, 39:231-242.
- _____. "Diversification, Size and Growth of The Greek Co-Operative Marketing Unions", *European Review of Agricultural Economics*, 1992, 19:85-96.
- _____. "Economies of Scale in Agricultural Marketing Co-Operatives: The Case of the Greek Unions", *Journal of Rural Cooperation*, 1992, 20:127-138.

- _____, Sergaki, A., Vlachvei, A. and Baourakis, G. "The Effects of the Greek Accession to the EC on the Market Shares of the Agricultural Co-Operatives in Greece", *Journal of Rural Cooperation*, 1995, 23:17-29.
- Scherer, F.M. and Ross, D. *Industrial Market Structure and Economic Performance*. Boston: Houghton Mifflin Company, 1990.
- Schrader, L.F., Babb, E.M., Boynton R.D. and Lang M.G. "Cooperative and Proprietary Agribusinesses: Comparison of Performance". *Agr. Exp. Stat. Bull.* 982, Purdue University, 1985.
- Sporleder, L.T. and Skinner, R.L. "Diversification of Regional Marketing Co-Operatives", *Southern Journal of Agricultural Economics*, 1977, 9:191-95.
- Staatz, J.M. "Farmer Cooperative Theory: Recent Developments". Washington, D.C.: *ACS Research Report 84*, Agricultural Cooperative Service, U.S. Department of Agriculture, 1989.