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Short communication

**CHANGES IN SOME ECONOMIC INDICES OF FISH FARMS UNDER
MARKET ECONOMY CONDITIONS**

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ABSTRACT. The present study was undertaken to evaluate the effect of market economy conditions on the economic results of fish farms. Data collected from 1992 to 1998 were analyzed. Sample sizes for various indices, separately for pond and lake farms, ranged from 69 to 123. Six indices were chosen for the analyses, including financial liquidity (current and rapid), cost level, return (on sales and total assets) and labor efficiency. The direction and statistical significance of trends were evaluated using correlation coefficients. No negative trends were observed for any index, while positive trends were found for the following: index of current financial liquidity; rapid liquidity index; labor efficiency for lake farms; return on total assets and labor efficiency for pond farms. The overall economic efficiency was higher for pond farms.

Key words: FISH FARMS, ECONOMIC INDICES, MARKET ECONOMY

The Agricultural Property Agency of the State Treasury was founded in the early 1990s. One of the most important tasks of the agency was to restructure and privatize state-owned fish farms. This process was planned to be carried out in three stages – two in 1993 and the third in 1994 (Nowicki 1993).

It can be assumed that by 1995 most of the farms were no longer under the influence of the transition period (Kulawik 1997).

The aim of the present study was to evaluate the effect restructuring and privatizing state-owned fish farms had on their economic efficiency. Selected economic indices were used to evaluate efficiency.

The following six indices were chosen for the analysis: the index of current financial liquidity; the rapid index of financial liquidity; the indices of return on total assets and on sales; the cost level index, labor efficiency. They were calculated according to the methods shown in Table 1.

The data used were obtained from the financial reports of the farms from 1992 to 1996. In order to extend the analysis to 1998, the indices from so-called ranking lists of privatized formerly state-owned farms (including fish farms) prepared by the Insti-

TABLE 1

The names of indices and methods of their calculation

Name	Calculation	Interpretation of dynamics
Current financial liquidity index	Ratio between operating assets and short-term financial obligations at year's end	Should not drop below 1.0
Rapid financial liquidity index	Ratio between operating assets minus the reserves and short-term obligations at year's end	Should not drop below 1.0
Cost level index	Ratio between costs and net sales (in%)	Should range from 50 to 90%
Labor efficiency	Ratio between sales and average employment	Increase is advantageous
Return on sales	Ratio between net financial result and net sales (in%)	Increase is advantageous
Return on total assets	Ratio between net financial result and total assets (in%)	Increase is advantageous

tute of Agricultural and Food Economics were used. It was, however, impossible to do this with the return on total assets index because of its particular calculation method.

The sample sizes for the various indices ranged from 69 to 123, depending on the farm type, and from 7 to 28 for particular years. The average sample size for one year ranged from 16 to 20 for pond farms, and from 14 to 16 for lake farms.

The dynamics of the average values of indices during the analyzed period are presented separately for pond and lake farms in tabular and graphic form. The significance of trends were evaluated using correlation coefficients at $P < 0.05$.

The labor efficiency calculations were adjusted for inflation using data from the Central Statistical Office (*Rzeczpospolita*, Jan. 18, 2000). Inflation rates were 44.3% in 1992, 37.6% in 1993, 29.5% in 1994, 21.6% in 1995, 18.5% in 1996, 13.2% in 1997 and 8.6% in 1998.

The dynamics of yearly averages are depicted in graphs which clearly show trends. They were used for data analysis. The tables contain precise data and supply more detailed information.

The indices of financial liquidity – current and rapid – changed in a similar way, with the latter obviously showing lower values (Figs. 1 and 2, Tables 2 and 3). Their dynamics in pond and lake farms were different. With pond farms, financial liquidity indices fluctuated considerably but showed no distinct trend. The direction of changes in the lake farms, however, was clear especially after 1994 and calculations confirmed the statistical significance of trends (correlation coefficients 0.923 and 0.929 at $P < 0.01$).

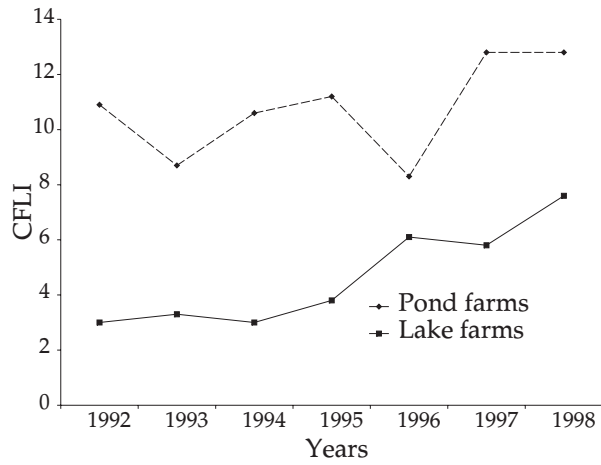


Fig. 1. Changes in the current financial liquidity index - CFLI.

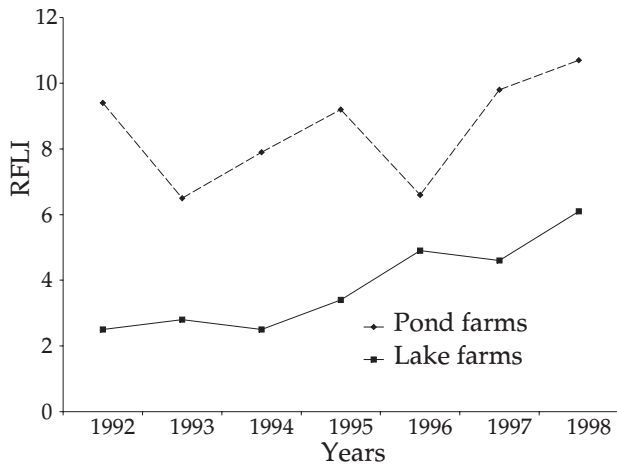


Fig. 2. Changes in the rapid financial liquidity index - RFLI.

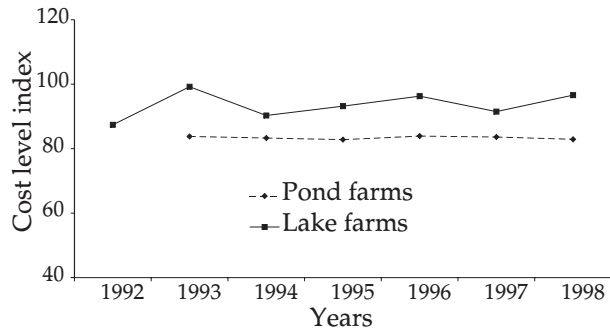


Fig. 3. Changes in the cost level index.

TABLE 2

The values of the current financial liquidity index

Years	1992	1993	1994	1995	1996	1997	1998
Pond farms	10.9	8.7	10.6	11.2	8.3	12.8	12.8
Lake farms	3.0	3.3	3.0	3.8	6.1	5.8	7.6

TABLE 3

The values of the rapid financial liquidity index

Years	1992	1993	1994	1995	1996	1997	1998
Pond farms	9.4	6.5	7.9	9.2	6.6	9.8	10.7
Lake farms	2.5	2.8	2.5	3.4	4.9	4.6	6.1

The cost level index showed no distinct trends in either pond or lake farms (Fig. 3, Table 4). It is, however, noteworthy that in the pond farms it ranged from 50 to 90%, while in the lake farms it often exceeded the safety limit of 90% at which no return can be achieved (Sierpińska and Jachna 1999).

TABLE 4

The values of cost level index

Years	1992	1993	1994	1995	1996	1997	1998
Pond farms	-	83.8	83.3	82.8	83.9	83.6	82.9
Lake farms	87.4	99.2	90.3	93.2	96.3	91.5	96.6

Changes in labor efficiency (Table 5) are shown in Fig. 4 as both absolute values and after inflation adjustment for 1998. All the lines of labor efficiency dynamics in both farm types showed a general growth trend. The increase of prices resulted in a decrease in the growth rate of labor efficiency, nevertheless the trends were statistically significant for both pond and lake farms. The correlation coefficients were 0.916 for pond farms ($P < 0.05$) and 0.879 for lake farms ($P < 0.01$).

TABLE 5

Labor efficiency

Years		1992	1993	1994	1995	1996	1997	1998
Pond farms	Absolute value	-	23.8	29.3	40.8	53.9	59.1	64.9
	Adjusted for inflation	-	45.6	47.5	57.4	65.8	64.8	64.9
Lake farms	Absolute value	12.4	14.3	37.5	40.9	48.3	63.8	68.2
	Adjusted for inflation	28.4	27.4	60.8	57.5	59.0	69.3	68.2

Changes in the index of return on sales varied according to farm type (Table 6). Only slight changes occurred in the pond farms (Fig. 5), whereas fluctuations in the lake farms were higher. No significant trends were observed, however.

TABLE 6

The values of return on sales

Years	1992	1993	1994	1995	1996	1997	1998
Pond farms	-	16.0	16.6	17.0	16.0	17.2	16.8
Lake farms	12.0	0.7	9.8	6.7	3.6	8.9	3.7

The last index, return on total assets, was analyzed for a five-year period only. It showed a significant increase for the pond farms (Table 7, Fig. 6), confirmed by a high correlation coefficient value (0.911, at $P < 0.01$). The index fluctuated considerably for the lake farms, but there was no distinct trend.

TABLE 7

The values of return on total assets

Years	1992	1993	1994	1995	1996	1997	1998
Pond farms	6.0	6.0	6.2	7.5	8.8	-	-
Lake farms	3.9	1.0	3.9	5.2	2.0	-	-

None of the six analyzed indices showed a decreasing trend either for the pond or lake farms. On the other hand, significant growth trends were observed in several cases:

- in labor efficiency for both farm types;
- in both financial liquidity indices for lake farms;
- in return on total assets for pond farms.

The lack of growth trends in the pond farm financial liquidity indices are easy to explain since the values of both indices were very high, and further increases over the optimum level could adversely affect profits (Sierpińska and Jachna 1999). At the reported values, no reduction in return was observed (Worniało 1999) and these high values were probably related to the seasonal mode of fish production and sale.

No distinct trends in the changes of the cost level index or the return on sales index were observed for either farm type. While the values of both indices were stable and sufficiently high for the pond farms, those for the lake farms fluctuated considerably (especially the return on sales index), and the cost level index even exceeded the safety limit of 90% in several years.

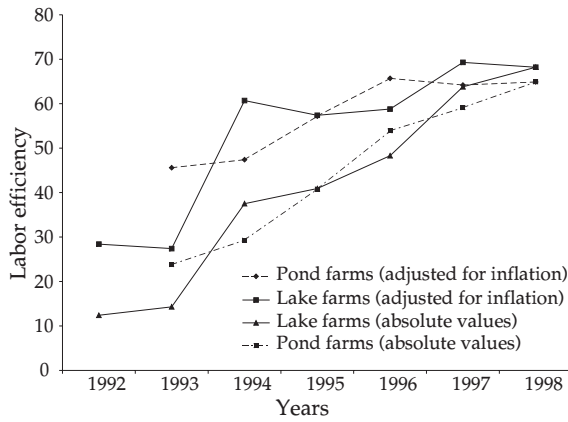


Fig. 4. Changes in the absolute labor efficiency value and the level adjusted for inflation.

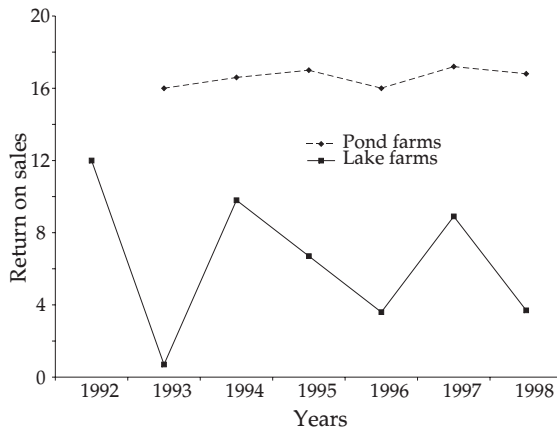


Fig. 5. Changes in the return on sales.

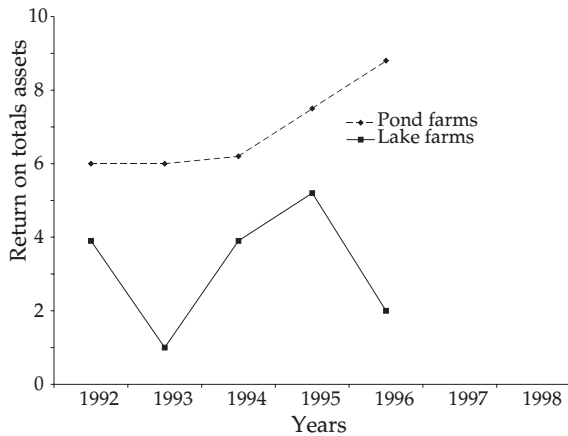


Fig. 6. Changes in the return on total assets.

In summation, it can be concluded that fish farms have met successfully the harsh requirements of the market economy and have even improved some of their economic indices. Pond farms appear to be especially effective. The poorer economic results of some of the lake farms could be interpreted differently if the unfavorable conditions which have prevailed throughout Polish agriculture since 1997 were taken into account (Gorzelać 1998, Milanowska 1999).

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STRESZCZENIE

BADANIE WPŁYWU WARUNKÓW GOSPODARKI RYNKOWEJ NA ZMIANY WIELKOŚCI WYBRANYCH WSKAŹNIKÓW EKONOMICZNYCH GOSPODARSTW RYBACKICH

Celem pracy było zbadanie wpływu wprowadzenia gospodarki rynkowej na efekty ekonomiczne gospodarstw rybackich. Badania przeprowadzono na materiałach z okresu 1992 - 1998. Liczebność badanych prób dla poszczególnych wskaźników ekonomicznych - z osobnym uwzględnieniem gospodarstw stawowych i jeziorowych - wahała się od 69 do 123. Ocenie poddano sześć wskaźników: bieżącej płynności finansowej, wskaźnik szybki, rentowności sprzedaży, rentowności majątku i wydajności pracy. Wielkości wskaźników w różnych latach podano w osobnych tabelach. Kierunek i istotność statystyczną trendów oceniono obliczając współczynniki korelacji. Przebieg zmian zilustrowano wykresami. Trendów ujemnych nie stwierdzono dla żadnego wskaźnika ani w gospodarstwach stawowych, ani w jeziorowych. Dodatnie trendy wykazały - w gospodarstwach jeziorowych: wskaźnik bieżącej płynności finansowej, wskaźnik szybki i wydajność pracy; w gospodarstwach stawowych: wskaźnik rentowności majątku i wydajność pracy. Brak tendencji do jednoznacznych zmian w zakresie wskaźnika operacyjności (inaczej wskaźnika poziomu kosztów) oraz wskaźnika rentowności sprzedaży wystąpił w obu typach gospodarstw. O ile jednak w gospodarstwach stawowych wielkości tych wskaźników były stabilne i wystarczająco wysokie, to w gospodarstwach jeziorowych ulegały sporym wahaniom (szczególnie wskaźnik ren-

towności sprzedaży), a w przypadku wskaźnika operacyjności przekraczały kilkakrotnie bezpieczną granicę. Ogólnie silniejsze ekonomicznie były gospodarstwa stawowe, a brak trendu wzrostowego ich wskaźników płynności finansowej wynikał z dużych wielkości tych wskaźników (przekraczających wielokrotnie normę bezpieczeństwa ekonomicznego).

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