ENGINEERING AND FINANCING OF THE WORKING ASSETS IN FISHERY ENTERPRISES

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ABSTRACT. Studies on the engineering and financing strategies with respect to the working assets in inland fisheries based on the materials collected from 56 enterprises (24 lake fisheries and 32 pond fish farms) in 1995 and 1996. Graphs were constructed taking advantage of the indices of working assets: level and liquidity, and of current obligations. Significance of the differences between these indices calculated for the two types of fisheries were determined using t-test. Significant differences were found as regards the level and liquidity of the working assets, while indices related to the level and liquidity of current obligations proved to be insignificant. Majority of the fishery enterprises and fish farms adopted moderate strategies (from 37.5 to 83.4%), while conservative strategies were the least popular (from 8.3 to 28.1%).

INTRODUCTION

Strategies of working assets' engineering and financing must reconcile two aims considered as opposing (Bednarski 1994, Kowalski 1996, Wędzki 1997). They should ensure high profits, but at the same time maintain financial liquidity of the enterprise in question. Meanwhile, all actions aimed at high profits increase the risk of loosing financial liquidity as they decrease financial and material reserves.

Strategies aiming at high profits obtained at an increasing risk of loosing financial liquidity can be regarded as „aggressive", contrary to strategies which prefer to maintain safe level of financial liquidity at the cost of lower profits. These can be treated as „conservative" (Wędzki 1997, 1999). Mixed strategies, comprising elements of the two described approaches, can be called „moderate" (Wędzki 1997).

Engineering of the working assets and sources of their financing can be assessed using the described terms. Due to the fact that working assets should not be analysed with no attention given to the sources of their financing (Wędzki 1997), so-called „gross circulating capital" should be taken into account. This capital reflects

financing of the working assets with current obligations, and partly also with fixed assets (Sierpińska and Jachna 1993, Wędzki 1999).

Having all this in mind we can distinguish three complementary approaches to engineering and financing of the working assets:
1. partial strategies of working assets' engineering,
2. partial strategies of engineering the sources used in working assets financing,
3. partial strategies of engineering the gross circulating capital.

The objectives of this paper were to find out what strategies were most frequent in the inland fisheries, and to work out the methods of assessing these strategies in the fishery enterprises. This was achieved based on the mean values of appropriate indices calculated for the whole branch.

MATERIALS AND METHODS

Questionnaire studies were carried out in 1995 and 1996. Data were collected from 56 enterprises: 24 lake fisheries and 32 pond fish farms*. They originated from financial balance sheets and represented the following items: working assets, total assets, financial means and financial obligations. Student's t-test was used to determine significance of the differences between the means values (indices) for the two types of fisheries (lake and pond), accepting probability level of 0.05 as statistically significant. Indices pertaining to the level and liquidity of assets, as well as to current obligations were calculated from the equations presented in Table 1 (after Wędzki 1997). Histograms were used to compare indices of the level and liquidity of working assets and of current obligations in the two types of fisheries. Graphs of partial engineering strategies related to working assets, sources of their financing and gross circulating capital engineering (Fig. 7, 8 and 9) were constructed based on the method described by Wędzki (1997) and discussed in the text.

RESULTS AND DISCUSSION

I. WORKING ASSETS, FINANCIAL MEANS AND CURRENT OBLIGATIONS IN LAKE AND POND FISHERIES

Basic values compared in this study for the two types of fisheries are presented in a relative form as index components, this being done to ensure comparability.

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* Anonymity of the enterprises was maintained in all cases

Names and methods of calculating particular indices

Index	Calculation method
Index of the liquidity of working assets	Ratio between financial means and working assets
Index of the level of working assets	Ratio between working and total assets
Index of the liquidity of current obligations	Ratio between financial means and current obligations
Index of the level of current obligations	Ratio between current obligations and total assets

Working assets are presented in relation to total assets (index of the level of working assets - Tab. 1). Mean value of this index was 0.21 in lake fishery enterprises, being significantly different than in pond fish farms, in which the respective mean was 0.29. Frequency distributions of this index presented in the histograms (Fig. 1 and 2) reveal similar patterns, but values for pond fish farms are shifted to the right (toward higher values) compared to lake fisheries.

Financial means were related to working assets (index of the liquidity of assets - Tab. 1). Mean value of this index was in this case higher for lake fishery enterprises compared to pond farms. It amounted to 0.69 in the first and to 0.56 in the latter. The difference was statistically significant. Most probably it resulted from higher share of the reserves (e.g. fish feeds) in the working assets. Comparison of the histograms (Fig. 3 and 4) reveals that lake fisheries were in this case shifted to the right i.e. characterised by higher values of this index.

Current obligations are presented in relation to total assets (index of the level of current obligations - Tab. 1). Mean values proved to be similar and amounted to 0.06 in the two types of fisheries, although frequency distributions (Fig. 5 and 6) showed different pattern notwithstanding the same range of variations. There was no statistically significant difference.

II. ENGINEERING AND FINANCING STRATEGIES WITH RESPECT TO WORKING ASSETS IN LAKE AND POND FISHERIES

In discussing the strategies no attention was paid to whether definite financial decisions were planned or accidental. It was assumed that in the latter case all financial operations conformed to the adopted strategy.

As has been mentioned in the introduction, assessment of the engineering strategy of working assets and sources of their financing should be supplemented with the assessment of engineering strategy as regards gross circulating capital. Hence, we
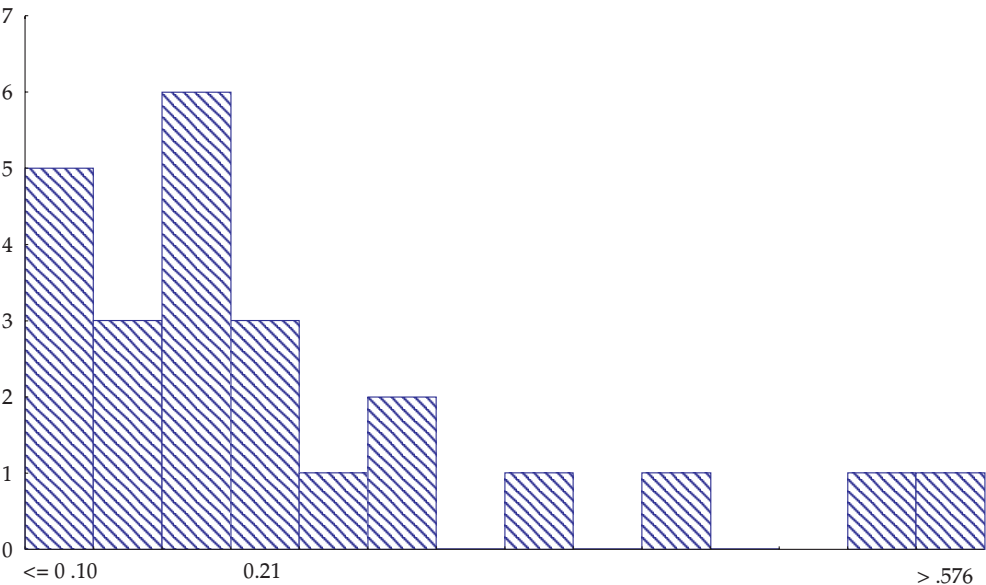
Figure 1. Frequency distribution of the index of the level of working assets in lake fishery enterprises
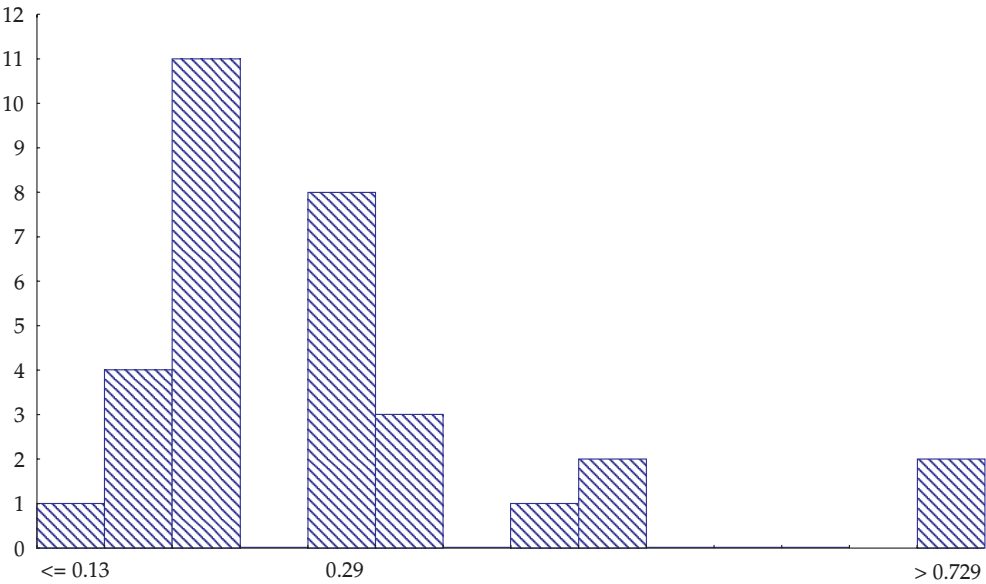

Figure 2. Frequency distribution of the index of the level of working assets in pond fish farms
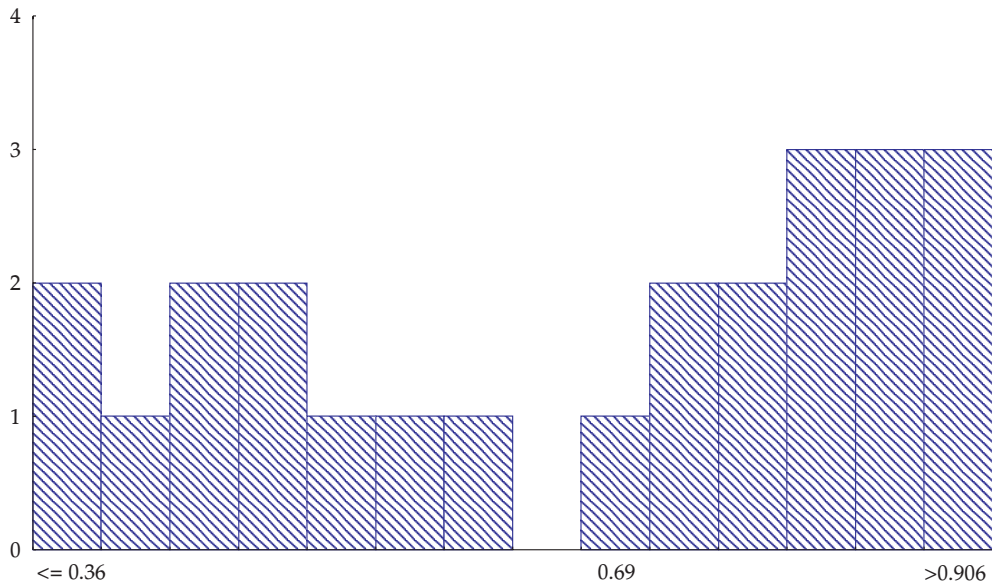
Fig. 3. Frequency distribution of the index of the liquidity of working assets in lake fishery enterprises
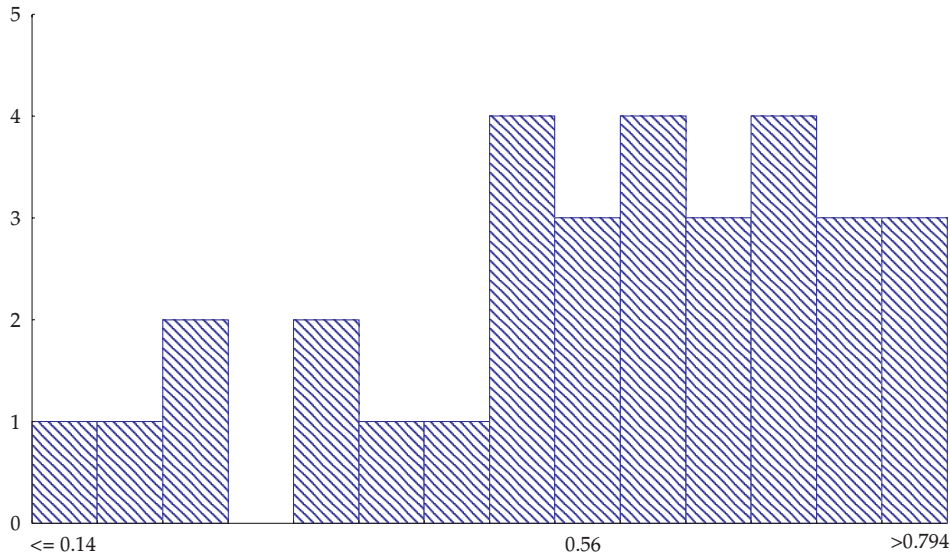

Fig. 4. Frequency distribution of the index of the liquidity of working assets in pond fish farms

deal with three partial estimates derived from numerical indices of the level and liquidity of working assets and current obligations (Tab. 2). These were used to construct graphs of partial strategies.

Mean values of the analysed indices in lake and pond fisheries

Index	Lake fisheries	Pond fisheries	Significance of the difference
Index of the liquidity of working assets	0.69	0.56	significant
Index of the level of working assets	0.21	0.29	significant
Index of the liquidity of current obligations	3.54	6.16	not significant
Index of the level of current obligations	0.06	0.06	not significant

Graph of the partial strategy of engineering working assets comprises indices of the liquidity of working assets along the y-axis, and indices of the level of working assets along the x-axis. The mean values amounted to 0.69 and 0.21 in lake fishery enterprises. Vertical lines were drawn from these points, which crossed creating four fields (Fig. 7) of definite strategies. Since higher values of the two indices favour conservative strategy, the field above the two means is defined as characterising conservative strategies, while the field below - as characterising aggressive strategies. The other two fields, where one index is higher and the other lower than the respective mean, represent moderate strategies. Points representing particular lake fishery enterprises are shown in the graph to illustrate the range of adopted strategies. The same procedure was applied to pond fish farms, for which mean value of the liquidity of working assets was 0.56, and of the level of working assets - 0.29 (Fig. 8). Partial engineering strategies with respect to working assets proved to be very similar in the two types of fisheries. Moderate strategy dominated in the same percentage of fishery enterprises (62.5%). Frequencies of other strategies also did not differ much: aggressive strategy was adopted by 25% of lake fishery enterprises, while conservative one - by 12.5%. In pond fish farms these two strategies occurred at the same frequency of 18.7%.

Graphs of the partial strategy of engineering sources used to finance the working assets comprise liquidity of current obligations along the y-axis, and level of current obligations along the x-axis. These graph are also characterised by different distribution of the strategy fields. This is due to the fact that an increase of the index of liquidity of current obligations is related to conservative strategy, whereas an increase of the level of current obligations - to aggressive strategy. Hence, fields located above and below the mean values of these two indices (respectively 3.54 and 0.06 for lake fisheries, and 6.16 and 0.06 for pond farms) are characterised by moderate strategies (Fig. 9 and 10). Upper field close to the y-axis represents conservative strategy, and right-hand field close to the x-axis - aggressive strategy. Partial strategy of
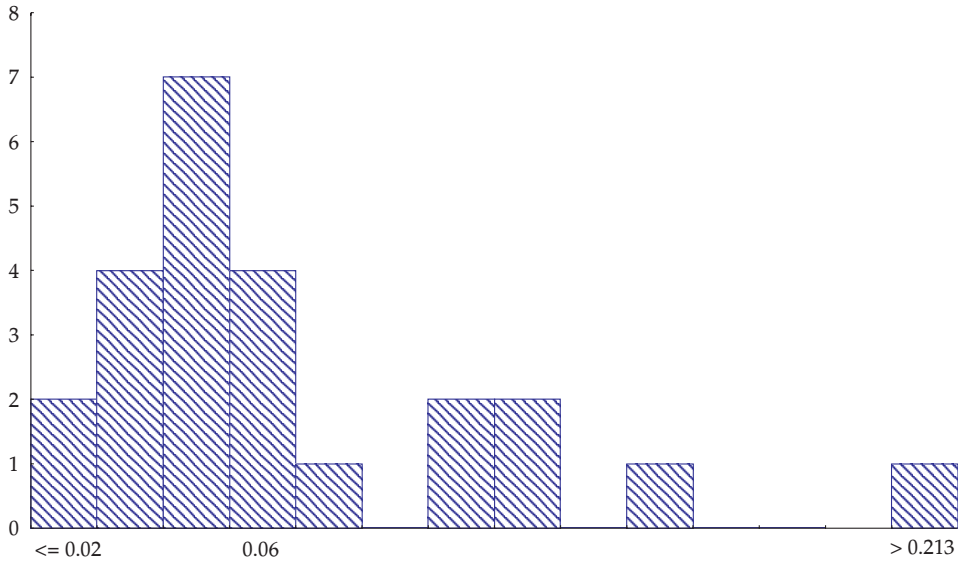
Fig. 5. Frequency distribution of the index of the level of current obligations in lake fishery enterprises
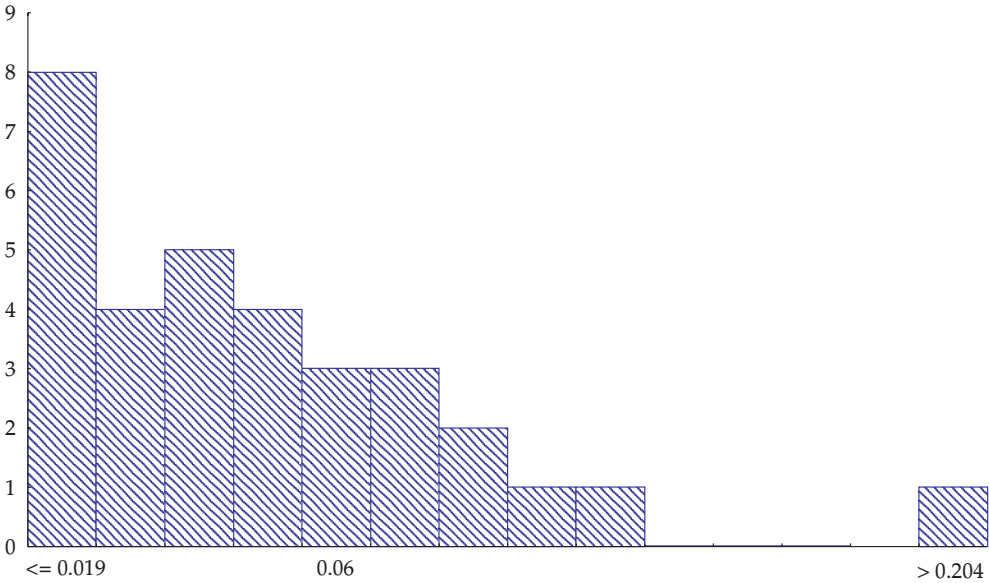

Fig. 6. Frequency distribution of the index of the level of current obligations in pond fish farms

engineering sources of finances for the working assets differed more between the two types of fisheries than other indices. Although moderate strategy dominated also in this case, but in lake fisheries it was observed in 58.4% of the enterprises, while in pond farms only in 37.5%. Other strategies were represented only in 20.8% of lake
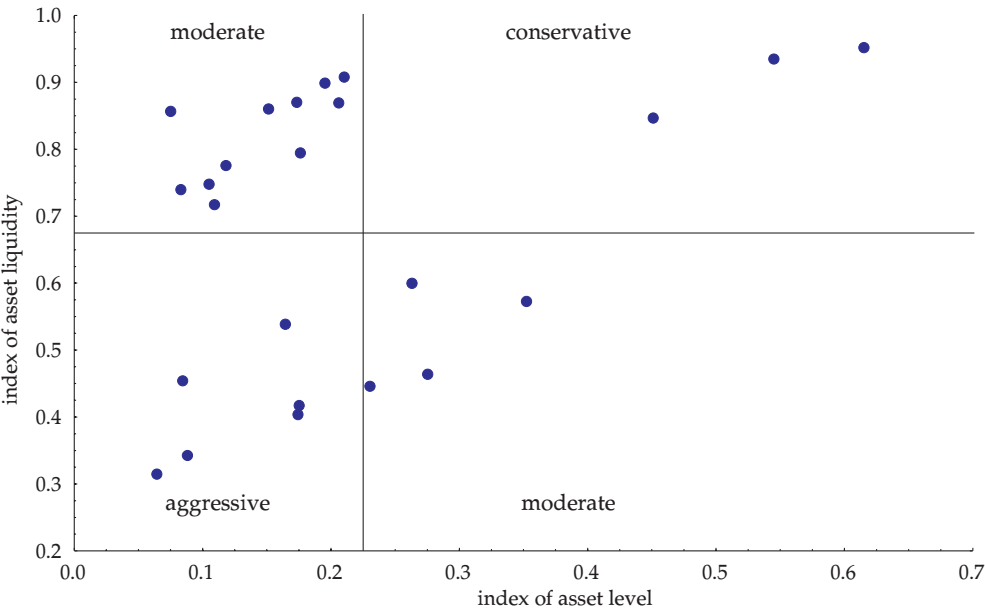
Fig. 7. Partial strategies of engineering the working assets in lake fishery enterprises (N = 24). Moderate strategy - 62.5%, aggressive strategy - 25.0%, conservative strategy - 12.5%
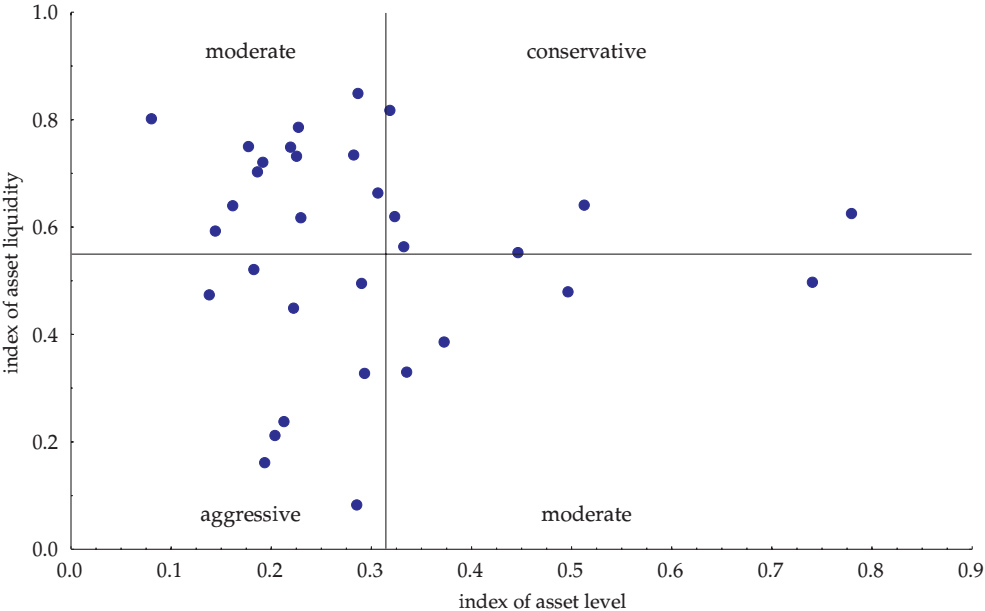

Fig. 8. Partial strategies of engineering the working assets in pond fish farms (N = 32). Moderate strategy - 62.6%, aggressive strategy - 18.7%, conservative strategy - 18.7%
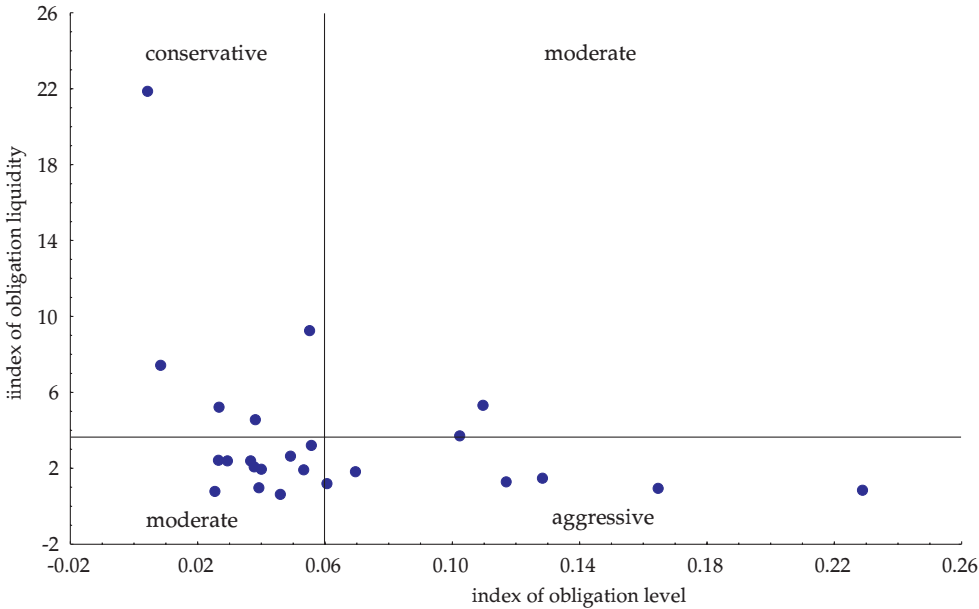
Fig. 9. Partial strategies of engineering the financing sources of the working assets in lake fishery enterpri-
ses (N = 24). Moderate strategy - 58.4%, aggressive strategy - 20.8%, conservative strategy - 20.8%
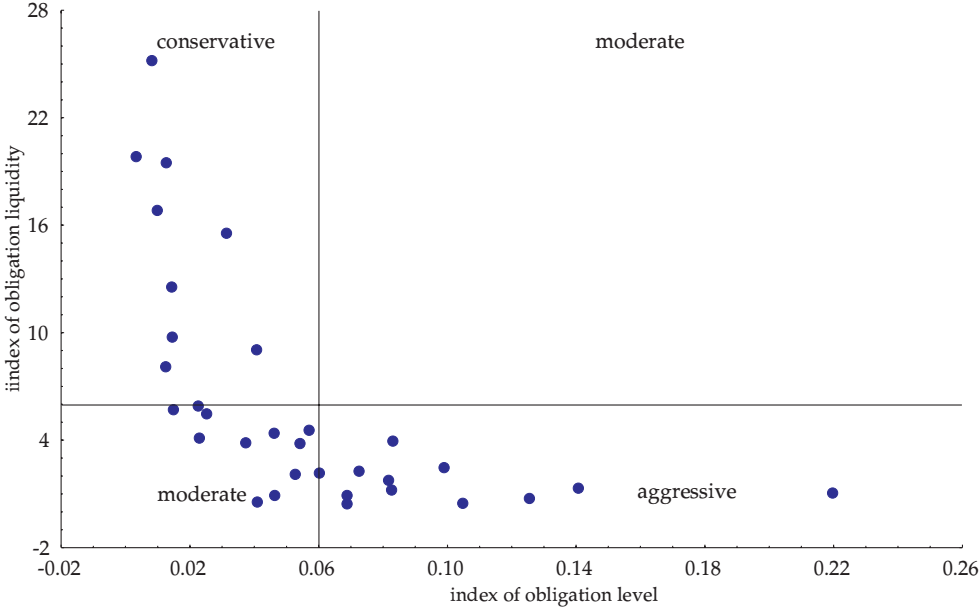
Fig. 10. Partial strategies of engineering the financing sources of the working assets in pond fish farms (N =
32). Moderate strategy - 37.5%, aggressive strategy - 34.4%, conservative strategy - 28.1%
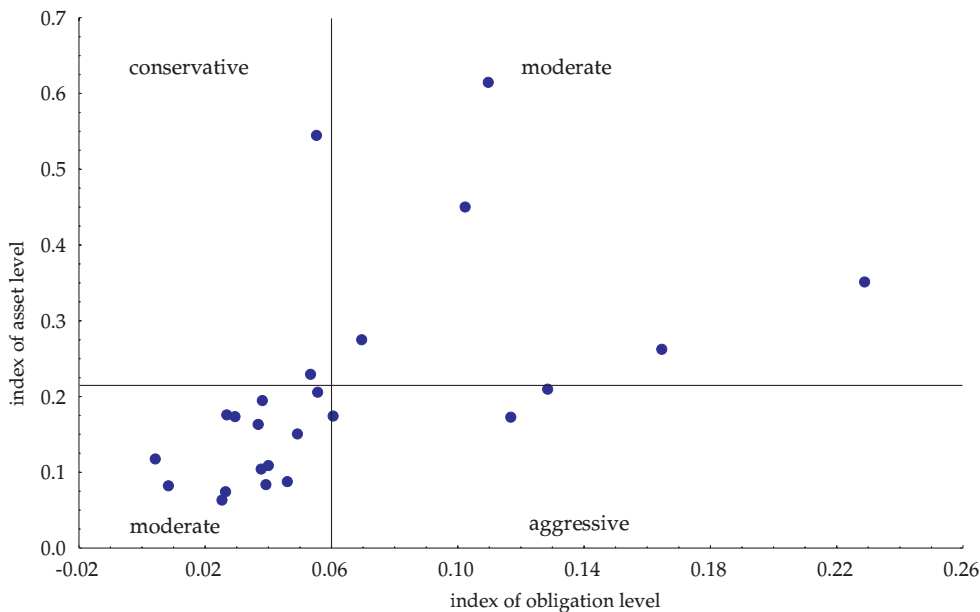
Fig. 11. Partial strategies of engineering the gross circulating assets in lake fishery enterprises (N = 24). Moderate strategy - 83.4%, aggressive strategy - 8.3%, conservative strategy - 8.3%
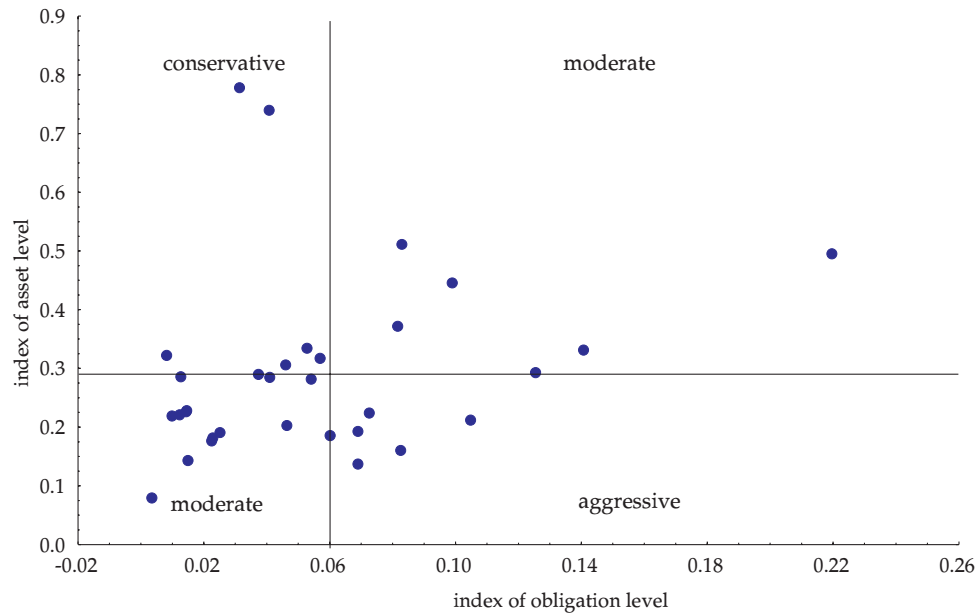

Fig. 12. Partial strategies of engineering the gross circulating assets in pond fish farms (N = 32). Moderate strategy - 6 5.6%, aggressive strategy - 15.6%, conservative strategy - 18.8%

fishery enterprises. In pond farms aggressive strategy was adopted in as many as 34.4%, and conservative one - in 28.1%.

Graphs of the partial strategy of engineering gross working assets reveal similar patterns of strategy fields as the preceding graphs. The only difference consists of the index along the y-axis: level of working assets. The adopted strategies differed in this case mostly as regards frequency of moderate strategy, which was represented by 83.4% of lake fishery enterprises and 65.6% of pond fish farms (Fig. 11 and 12). Hence, these graphs show the highest frequencies of moderate strategy among the three partial strategies in question. The other strategies were represented more or less equally: 8.3% each in lake fisheries, and 15.6 and 18.8% in pond farms (aggressive and conservative strategy respectively).

CONCLUSIONS

1. The following significant differences were found between lake and pond fisheries as regards the indices analysed in this study: index of the level of working assets, and index of the liquidity of these assets. There was no significant difference as regards the index of current obligations.
2. Moderate strategy was adopted most frequently, both in lake and pond fisheries (minimum 37.5%, maximum 83.4%).
3. Lake fishery enterprises adopted moderate strategy more frequently (from 58.4 to 83.4%) than pond farms (from 37.5 to 65.6%).
4. The highest frequency of enterprises characterised by aggressive strategy was found in pond fish farms when sources of financing the working assets were taken into account (34.4%), and in lake fisheries - when attention was given to the engineering of the working assets (25%).
5. Conservative strategy was most frequently adopted in case of engineering the sources used to finance the working assets (20.8% in lake fisheries and 28.1% in pond fish farms).

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STRESZCZENIE

KSZTAŁTOWANIE I FINANSOWANIE MAJĄTKU OBROTOWEGO W GOSPODAR-
STWACH RYBACKICH

Celem pracy było zbadanie jakie strategie kształtowania i finansowania majątku obrotowego są naj-
częściej stosowane w rybactwie śródlądowym oraz wyliczenie średnich dla tej branży wskaźników cha-
rakteryzujących różne strategie. Badania przeprowadzono w oparciu o materiały z 56 gospodarstw rybac-
kich [w tym 24 jeziorowych i 32 stawowych]. Dane pochodziły z lat 1995 i 1996. W badaniach posłużono się
wykresami sporządzonymi w oparciu o wskaźniki poziomu i płynności majątku obrotowego oraz
zobowiązań bieżących. Istotność różnic między wskaźnikami w obu typach gospodarstw oceniano
testem t. Stwierdzono istotne statystycznie różnice w przypadku wielkości wskaźników poziomu i
płynności majątku obrotowego , a nieistotne w przypadku wielkości wskaźników poziomu i płynności
zobowiązań bieżących. W obu typach gospodarstw najczęściej stosowaną strategią była strategia umiarko-
wana [od 37,5% do 83,4%] przy czym częściej stosowały ją gospodarstwa jeziorowe [od 58,4% do 83,4%]
niż stawowe [od 37,5% do 65,6%]. Największy udział gospodarstw stosujących strategię agresywną
występował w grupie gospodarstw stawowych przy kształtowaniu źródeł finansowania majątku obroto-
wego [34,4%], a w grupie gospodarstw jeziorowych przy kształtowaniu majątku obrotowego [25%]. Strate-
gia konserwatywna najczęściej była stosowana przy kształtowaniu źródeł finansowania majątku obroto-
wego [20,8% w grupie gospodarstw jeziorowych i 28,1% w grupie gospodarstw stawowych].

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