

The development of the financial health within the fishing industry in the South Bohemian region

Nikola Sagapova¹, Josef Gulyás²

¹ Institute of Technology and Business in České Budějovice, Faculty of Corporate Strategy, Department of Tourism and Marketing

² Institute of Technology and Business in České Budějovice

Abstract

Ponds and the entire fishpond system are considered important cultural assets and heritage which people have benefitted from until now. They are being used for the commercial breeding of waterfowl and fish, however they are also important from the perspective of water management, recreation, aesthetics, or ecology. This paper aims to evaluate the development of the financial health of the fishing industry in the South Bohemian Region in the period 2003-2019. For the analysis, data from the Bisnode Magnusweb were used. According to the classification of economic activities CZ-NACE, it is sector "A – agriculture, forestry, and fishing, more specifically, subgroup 030000 (Fishing and aquaculture). The analysis includes only companies in the South Bohemian Region due to their highest concentration in this area. Based on the financial statements of the companies operating in the sector of fishing and protection of waters, an average sample company was determined. Subsequently, financial analysis of the whole industry is carried out using the average data. The results indicate that although this industry showed clear reactions to external and internal economic influences during the monitored period, from the economic perspective, the industry has been stabilized very well since the last economic crisis.

Keywords: financial analysis, South Bohemian Region, comprehensive evaluation, ratios, fishery, ponds, landscape

Introduction

Ponds are a common type of freshwater habitat in Europe, and they are not only being inseparable features of the landscape, but they also have several of productive functions including fish farming or waterfowl breeding, and non-productive functions that affect not only the landscape, micro-climatic conditions, retention function, but play also an

important role on flood protection, biodiversity, culture, society, education, and aesthetics (De Bie et al., 2007; Turkowski and Lirski, 2011). Ponds can be situated in lowlands, highlands, or at high altitudes; they can be located in fields, meadows, forests, or built-up areas such as in villages and towns (Chytrý et al., 2010; Kumar et al., 2012).

Most of the fish ponds have been a part of the landscape of the Czech Republic for several hundred years, and therefore play an important role in the hydrological system for ages (Pechar, 2000). Mesolithic fishermen were the first fisherman in Czech lands who concentrated their activities mainly near rivers. The first written record about pond and fishing date back to 1034 (Andreska, 1997). The first ponds in Czech lands were not dedicated to the fish farming. Their aim was to help the medieval miners to mine and float various non-ferrous ores, or to serve as water reservoir and provide drinking water for humans and cattle. The first ponds used for fish farming were established near these reservoirs mostly by monks from monasteries, and fish became a part of traditional dish of peasants but also feudals (Hule, 2009). Many fish were consumed by monasteries and other church institutions as fasting meal, but also by Jewish inhabitants for the Friday night Shabbat dinner (Andreska, 1997). Fish pond farming and aquaculture is a significant part of the primary sector of the South Bohemian Region with a long tradition, creating a typical landscape pattern of the region, moreover is responsible for more than half of the total fish production of the Czech Republic (Polanecký et al., 2018; Bednářová, 2005). The South Bohemian Region has long been perceived as an agricultural area with developed pond farming and forestry. The region is a part of the river basin of the upper and central Vltava with its tributaries – the Malše, the Lužnice, the Otava, and many others. In the past, more than 7,000 ponds were created, with the overall area achieving 30,000 ha today. The biggest ponds both in the region and in the Czech Republic, are Rožmberk, Horusický rybník, and Bezdrev. In addition to the fish production itself, the share of waterfowl breeding, mainly ducks and geese, is also significant (Český statistický úřad, 2020).

In addition to fish production, ponds in South Bohemia are of considerable importance as landscaping elements retaining water in the landscape and significantly contributing to the biodiversity of the territory. Riparian vegetation has significant benefits in terms of landscape-scale conservation of avifauna, as it provides possibilities for nesting for many species of birds even in highly modified environments, but no management in a form of rational mowing and pasture may become a threat (Hanzelka, 2010; Bennett, Nimmo and Radford, 2014). Specific vegetation can be found for instance in sandy areas with dunes that occur along the Lužnice river in southern Bohemia, or deep river valleys such as in the Vltava valley, or even in fishponds, but also in lowland taiga which occurs in Třeboňská basin (Chytrý, 2012). In this respect, many ponds located in the South Bohemian region are of great conservation importance even on an international and global level, which is confirmed also by the general delimitation of so-called bird areas specified in NATURA 2000 or by the localities included in the Ramsar Convention on Wetlands (Kušová, Těšitel and Bartoš, 2005; Chytil and Hakrová, 2001). Ponds and pond systems are also considered an important cultural heritage and part of local history contributing to regional identity and its typical landscape. The region benefits from ponds

and pond systems to this day not only in terms of the possibility of commercial fish or waterfowl farming but also concerning water management, ecological functions, tourism, recreation, as well as for its aesthetic or artistic values. In connection with the production function, there exists a wide range of events for the public such as ceremonial fish harvests with the possibility to taste fish specialties or to buy a live fish. Třeboň fishpond heritage was nominated for inclusion in UNESCO's World Heritage List (Heřmanová, 2012).

The importance of this industry is indisputable. Another very important aspect is the financial situation of the fishing industry. Like other types of companies, enterprises active in the fishing industry are living entities, which need to deal with finance. It is very important to be aware of the situation of the given industry, or the situation of its competitors. This paper aims to present a way to properly express the financial health of the given industry, or apply this method in the case of specific companies. The objective of the paper is thus to evaluate the development of the financial health of the fishing industry in the South Bohemian region between 2003 and 2019.

Methods and Data

The data used for the analysis will be obtained from Bisnode's Magnusweb database. According to the classification of economic activities CZ-NACE, it is the sector "A – agriculture, forestry, and fishing". More specifically, it is the subgroup 030000 (Fishing and aquaculture). The analysis includes only the companies from the South Bohemian region, as there is the highest concentration of companies active in this field.

The monitored period is defined by the time series of seventeen consecutive years. It is a period between the years 2003 and 2019. Older data were not available by means of the database used. For each year, a specific sample of companies was selected as shown in Table 1 and 2.

Tab. 1: Number of companies for given period (2003-2011)

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Companies no.	7	7	8	7	7	9	10	13	14

Source: Authors.

Tab. 2: Number of companies for given period (2012-2019)

	2012	2013	2014	2015	2016	2017	2018	2019
Companies no.	13	12	11	10	13	15	13	8

Source: Authors.

In terms of the sample companies for individual years, there shall be mentioned a fact concerning the selection. For all years, the samples consist of limited liability companies and two joint-stock companies only. However, the database does not contain data on the volume of the shares issued, dividends paid, or price of shares. In 2011 and 2017, the

maximum number of companies from the database was 14 and 15, which is twice the number of companies from the years 2003-2007.

Moreover, to provide information about the financial situation of the entire industry, it is necessary to determine an average sample company, which will be created on the basis of averaging all data of eligible companies for each year. Based on the resulting data, a balance sheet and profit and loss account will be created for each year, which will be used for financial analysis. Within the methods of comprehensive evaluation, creditworthy and bankruptcy models are being used.

Profitability ratios: ROA (Return On Assets) – Earnings before interest and taxes/Assets, ROS 1 (Return On Sales) – Earnings before interest and taxes/Sales, ROCE (Return On Capital Employed) – (Earnings before interest and taxes)/Equity + Capital employed), ROE (Return On Assets) – Net earnings/Equity.

Activity ratios: Receivables turnover – Sales/Receivables, Stock turnover – Sales/Stock, Receivables turnover period – Receivables/(Sales/360), Stock turnover period – Stock/(Sales / 360), Average collection period – Receivables/(Sales/360), Creditors payment period – Payables/(Sales/360),

Debt ratios: Equity Ratio – Equity/Assets, Debt Ratio I. – Debt/Assets, Debt Ratio II. – (Debt + Other liabilities)/Assets, Debt Equity Ratio – Debt/Equity, Interest coverage I. – Earnings before interest and taxes/Interests, Interest coverage II. – (Earnings before interest and taxes + Depreciation)/Interests.

Liquidity ratios: Net Working Capital – (Current assets – Payables), Total liquidity – Current assets/Payables, Current ratio – (Payables + Financial assets)/Payables, Cash ratio – Financial assets/Payables, Creditors payment period – Payables/(Sales/360).

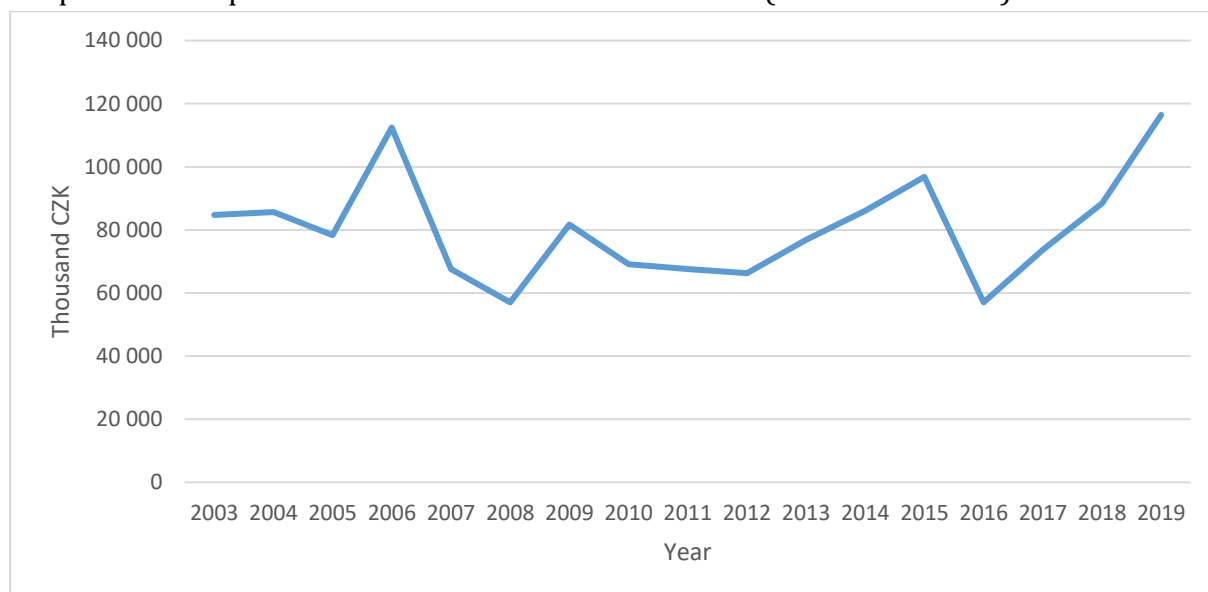
Bankruptcy and creditworthy models: Altman Z-Score for companies non-traded on financial markets and modifications for Czech companies, Indexes of Mr and Mrs Neumaier (IN 95, IN 99, IN 01, IN 05), Taffler model, Kralicek Quick Test (original and modified), Solvency index.

An average sample company is determined by the arithmetical average of companies active in fishery and water protection. First, the balance sheet and profit and loss account will be used to analyse absolute ratios. Subsequently, ratio analysis of selected ratios will be performed. The values are presented in thousand CZK.

Results

The analysis of the data clearly shows that the value of the total assets of an average sample company in the monitored period fluctuated significantly. The largest volume of assets was in 2019 (CZK 116,453). The smallest volume was in 2008 (CZK 57,029). The fluctuation was largely caused by the ratio of fixed tangible assets to stock. The development of the total assets is presented also in Graph 1.

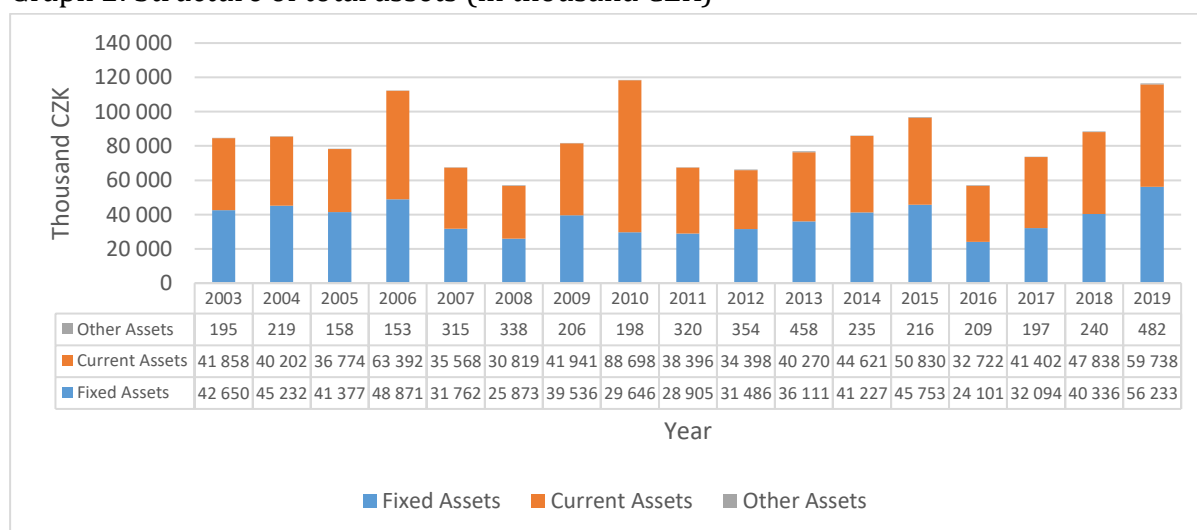
Graph 1: Development of the volume of the total assets (in thousand CZK)



Source: Authors.

The total assets volume of the average sample company active in fishery and water protection showed an unusual increase in 2006 compared to other years. Another significant fluctuation in the form of a decrease in the volume of the total assets was between 2015 and 2016; afterward, it started to increase sharply up to the highest value recorded during the monitored period. The average sample company active in fishery and water protection is interesting also in terms of the structure of the total assets. The structure is shown in Graph 2.

Graph 2: Structure of total assets (in thousand CZK)



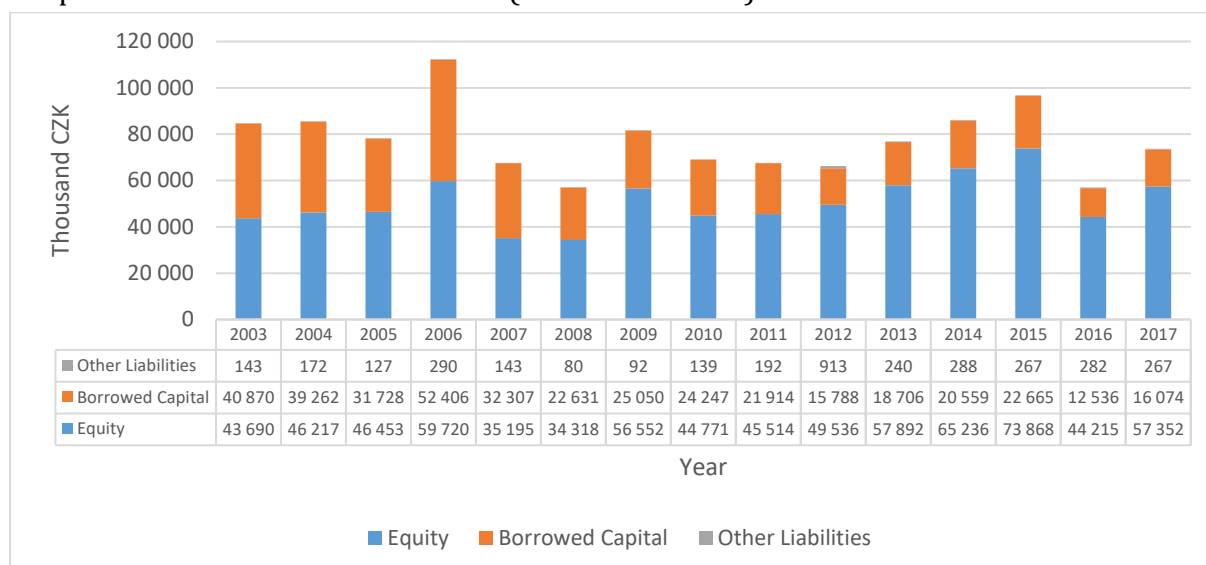
Source: Authors.

Graph 2 clearly shows that the total assets in every year consist only of a negligible part of other assets. In most of the monitored years, it is evident that half of the total assets

consist of current assets and fixed assets of the company. The only exception is the year 2010 when the current assets account for 74.95 % (CZK 8,869) of the total assets.

Subsequently, the structure of the liabilities of the average sample company active in fishery and water protection can be analysed. Graph 3 shows a simplified version of the liabilities of the average sample company. The values are presented in thousand CZK. The analysis of the data shows that the volume of equity during the monitored years increased slowly. The highest value was recorded in the year 2015 (CZK 73,868), but also in the year 2019 (CZK 91,566) which is not represented in the graphical presentation. On the contrary, the volume of the borrowed capital have decreased over the years. The highest volume of the borrowed capital was in the year 2003 (CZK 40,870), while the lowest volume was in the year 2016 (CZK 12,536). In terms of the structure of the liabilities of the average sample company active in fishery and water protection, it is evident that from 2008, the share of the borrowed capital on the total volume of liabilities decreased significantly. The borrowed capital formed the largest share of the liabilities in 2006 (CZK 5,240). In terms of the borrowed capital to equity ratio, it was in 2003 (48.3 %). However, the overall development trend of the total liabilities increased continuously. A more detailed view of the liabilities structure of the average sample company active in fishery and water protection in the period 2003-2017 is presented in Graph 3.

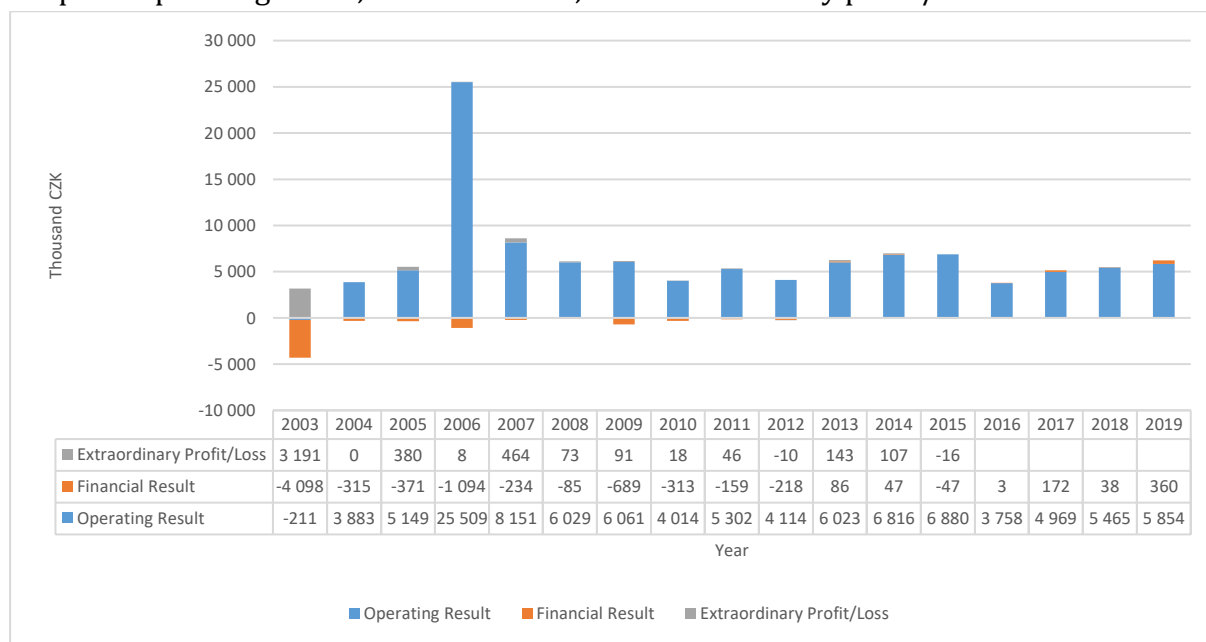
Graph 3: Structure of total liabilities (in thousand CZK)



Source: Authors.

An interesting fact is the development of the profit and loss account of the average sample company active in fishery and water protection. The most important items in the profit and loss account for each kind of company are operating results, financial results, and extraordinary profit/loss. The items are presented in detail in Graph 4.

Graph 4: Operating result, financial result, and extraordinary profit/loss

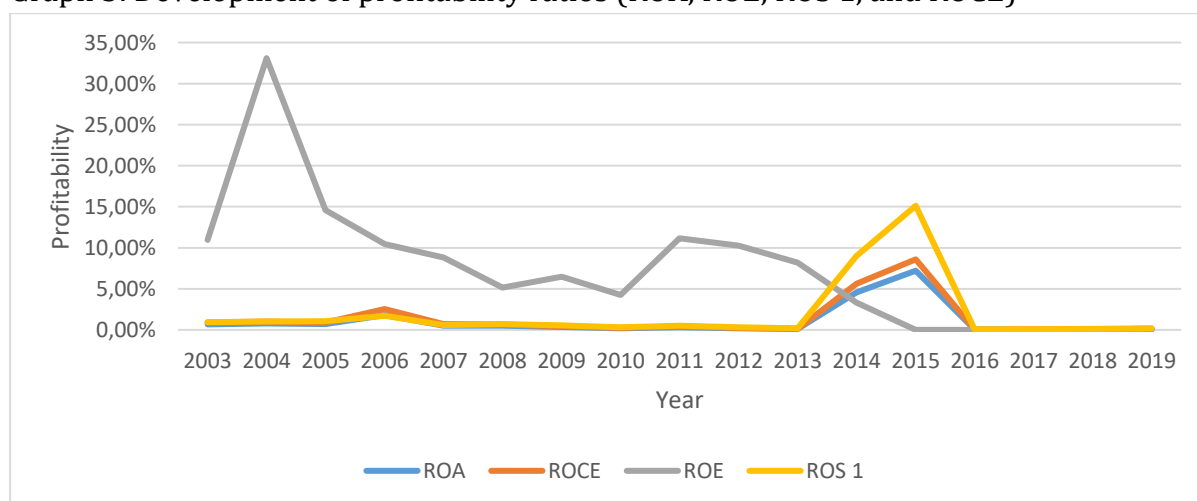


Source: Authors.

Graph 4 indicates that in 2006, the average sample company active in fishery and water protection showed extremely high operating results. Compared to this, the operating result in other monitored years was approximately the same, with a noticeable regular cyclicity. In 2003, the company showed very negative financial results, and this trend continued until 2012. The financial result was positive from the year 2013. Extraordinary profit/loss was recorded in terms of the volume only in the year 2003; from the following year, the value of this item in the profit and loss account was negligible.

In terms of the profitability of the average sample company active in fishery and water protection, the most important profitability ratios are ROA, ROE, ROS 1, and ROCE. Graph 5 shows the development of all these ratios.

Graph 5: Development of profitability ratios (ROA, ROE, ROS 1, and ROCE)

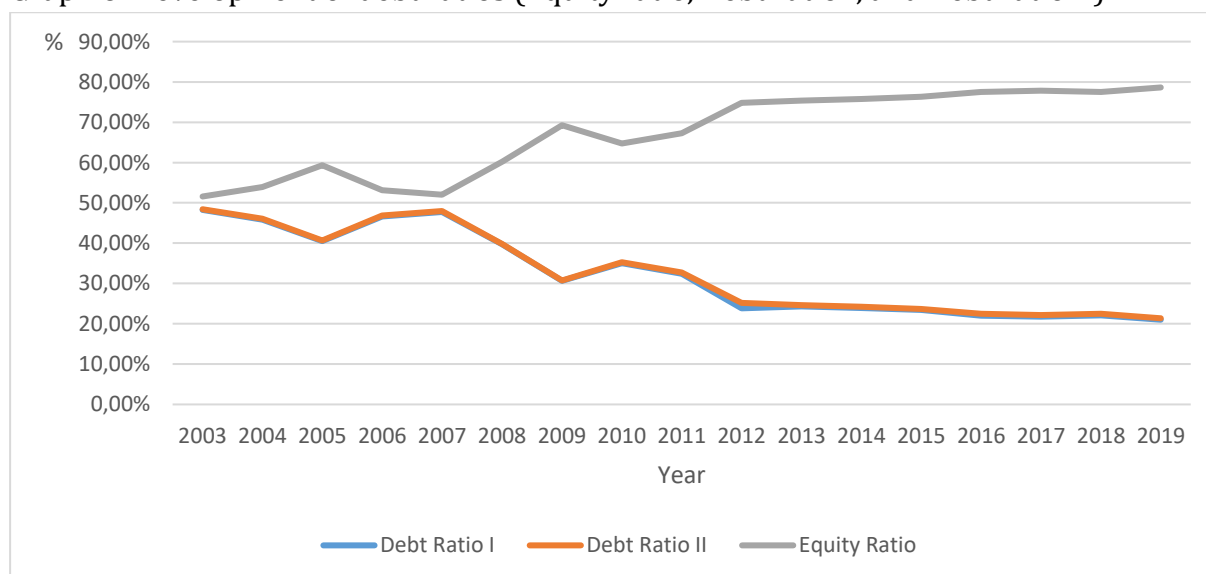


Source: Authors

It follows from Graph 5 that the ROE of the average sample company active in fishery and water protection showed major changes in the monitored period. In 2004, an extreme value of this ratio was recorded (33.1 %), which subsequently decreased gradually. However, from 2015, it was not possible to determine this ratio due to the absence of the data. ROA, ROS 1, and ROCE showed a similar development trend for the whole monitored period. The values were very low for most of the monitored period (ROA ~ 0.5 %; ROS 1 ~ 0.6 %; ROCE ~ 0.6 %). In 2015, the values of these ratios increased to 7.21 % (ROA), 15.12 % (ROS 1), and 8.59 % (ROCE).

In terms of activity ratios of the average sample company active in fishery and water protection, the receivables turnover periods were very long. For all monitored years, the period was longer than one year. In the years 2003-2019, the receivables turnover period was extended every year, the longest one being in 2015 (755 days). In this year, assets turnover was only 0.48. After 2015, there was only a slight decrease (by several days). The shortest receivables turnover period was in 2006 (344 days). Assets turnover in this year achieved the maximum value (1.04). The stock turnover period of the average sample company active in fishery and water protection in the monitored period was between 76 and 188 days, where the periods changed for every year. Stock turnover achieved the values of 4.71-1.90. The average collection period of the average sample company active in fishery and water protection in the monitored period was 75-117 days. At the end of the monitored period, this period was rather shorter, i.e. closed to the lower limit of the aforementioned interval. The shortest creditors payment period of the average sample company active in fishery and water protection was in 2004 (59 days). From this year until the end of the monitored period, the period extended continuously to 97 days in the year 2019. The most interesting debt ratios include the Equity ratio, Debt ratio I, and Debt ratio II. The graphical representation of their development is shown in Graph 6.

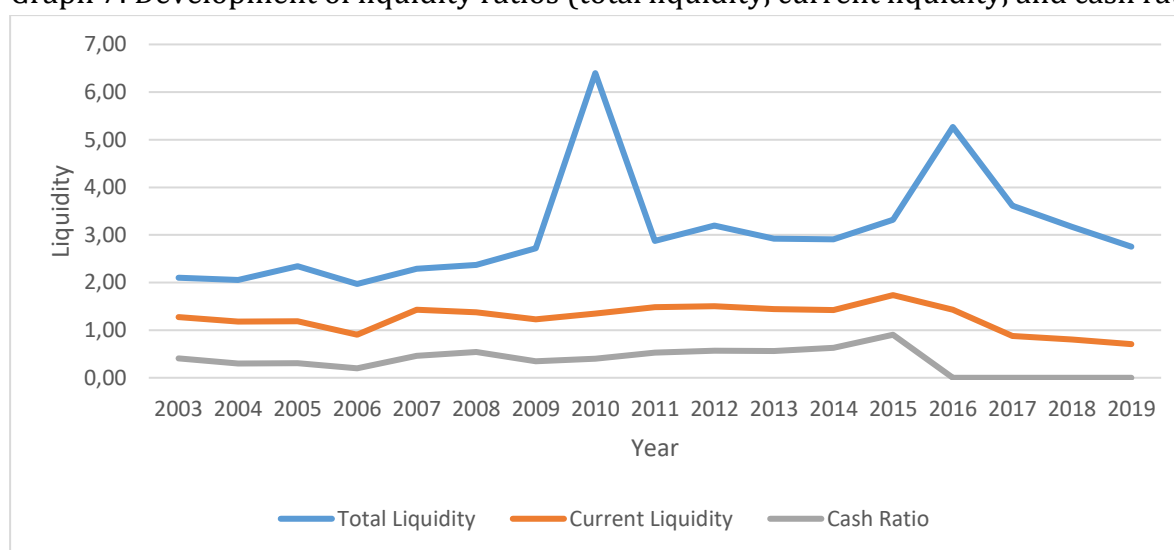
Graph 6: Development of debt ratios (Equity ratio, Debt ratio I, and Debt ratio II)



Source: Authors.

Graph 6 shows that the values of both analysed debt indicators are very similar, with the same decreasing trend during the whole monitored period. Equity ratio shows an opposite trend in comparison with Debt ratio I. and Debt ratio II. Interest coverage I., however, cannot be determined for most year of the monitored period due to the absence of necessary data. It can be determined only for the years 2012-2015, where the highest rate of interest coverage I. was recorded in 2015 (76.42). Interest coverage II. was very low at the beginning of the monitored period, about 6.0. From the year 2007, however, the value increased gradually, reaching its maximum in the year 2015 (106.52). Another ratio characterizing the financial health of a company is liquidity ratio. In a company, liquidity can be divided into total, current, and cash. The development trend of all types of liquidity is presented in Graph 7.

Graph 7: Development of liquidity ratios (total liquidity, current liquidity, and cash ratio)



Source: Authors

According to Graph 7, cash and current liquidity showed a similar development trend for the whole monitored period, with the same decrease after 2016. Due to the absence of the input data, however, it was not possible to determine the cash ratio after 2016. On the contrary, total liquidity showed an upward trend with two fluctuations in 2010 and 2016, reaching 6.4 % (in 2010) and 5.26 % (in 2016). Another interesting parameter is net working capital. Based on the analysis of this item, it can be stated that the volume of net working capital of the average sample company active in fishery and water protection showed an upward trend, with the volume achieving CZK 37,613 at the end of the monitored period. In 2010, the volume of net working capital was CZK 73,916. On the contrary, the lowest volume of net working capital was in the year 2008 (CZK 16,201). The creditors payment period did not exceed 100 days, with the longest creditors payment period being 98 days in the year 2010, while the shortest creditors payment period was recorded 2016 (56 days).

From the methods of comprehensive business evaluation, the following methods were selected for the financial analysis of the average sample company active in fishery and water protection in the years 2003-2019: Altman Z-Score, IN (IN 95, IN 99, IN 01, IN 05), Taffler

model, Kralicek Quick Test, and Solvency index. Altman Z-Score showed that the average sample company active in fishery and water protection in terms of the results for companies non-traded on financial markets decline for most of the monitored period. In the years 2006-2007 and 2015-2016, the company was in the grey zone. According to Altman Z-Score modified for companies operating in the Czech Republic, the development in the monitored period is identical. Other indicators of financial health are IN indexes. According to the results of IN 95, the company was in the grey zone for most of the monitored period. In the years 2014-2015, the company appeared to be able to survive possible financial distress. According to the index IN 99, the company was going to go bankrupt in the years 2003-2005 and 2007-2019. However, in 2006, the company was in the grey zone. The index IN 01 indicates that in 2003, the company was going to go bankrupt; nevertheless, from 2004 to 2013, the company was in the grey zone. In the years 2014-2015, the company appeared to be able to survive possible financial distress. From the year 2016 until the end of the monitored period, the company was again in the grey zone. IN 05 evaluates the company as a bankrupting company in the period of 2003-2009. However, from the year 2010, the company was in the grey zone, except for the year 2011, when it was considered rather a bankrupting company. Taffler model is very specific for the calculation structure. According to Taffler model, the average sample company active in fishery and water protection was not going to go bankrupt for the entire monitored period. According to the original version of Kralicek Quick Test, the average sample company active in fishery and water protection was considered an unhealthy company in the year 2003. However, in the years 2004-2014, the company was considered average. In 2015, its reputation declined and could be considered a financially unhealthy company again. In the following years, however, it was again evaluated as an average company. On the other hand, according to the modified version of Kralicek Quick Test from the year 1999, the average sample company active in fishery and water protection in the years 2003-2019 was considered a bankrupting company. In the years 2006 and 2013, however, it showed the parameters of a creditworthy company. The last financial and analytical indicator is the solvency index. According to its results, the average sample company active in fishery and water protection is a company with certain financial problems at the beginning of the monitored period. From the year 2005 to the end of the monitored period, however, its solvency is considered to be good, in the year 2006 even very good.

Discussion

All industries usually go through cyclical repeated fluctuations in terms of their financial ratios. An average sample company is thus a suitable tool for presenting the financial health of a specific industry. During the monitored period, there were individual repeated phases caused by both external and internal economic factors. One of the most important external economic factors is the global economic crisis, which hit the Czech Republic in 2008. A positive fact is that companies active in fishery and water protection were able to maintain the downward trend in terms of their indebtedness despite the unfavorable conditions. This was possible also thanks to the gradual increasing of the total liquidity even after the crisis. In terms of the financial result, it is obvious that the results were

negative for most of the monitored period; this can, however, be considered normal in this industry, since these companies do not improve their financial result by means of the operations with shares and other financial derivatives. What is more essential for these companies is the operating result achieved mainly by selling the products (fish, fishing tackle, etc.). Compared to other years, the operating result was stable even during the crisis, which means that this industry was able to cope with the financial crisis very well. It is also apparent that since this crisis, companies active in this industry have become interested in reducing the ratio of borrowed capital to equity. This step was supposed to lead to the optimization of the financial leverage function. Within the monitored period, the year 2006 can be considered very interesting, as companies in this industry showed larger volumes of the total assets, liabilities, and economic results. On the other hand, this had another effect in the form of higher indebtedness, which had shown a downward trend until then. Nevertheless, the companies were able to reduce their debt constantly. This was possible also thanks to the slight growth rate of liquidity after the year 2006. Another interesting year is 2010 when ROE showed more significant growth.

Conclusion

The objective of this paper was to evaluate the development of the financial health of the fishing industry in the South Bohemian region for the years 2003-2019. The objective of the paper project was achieved. On the basis of the financial statements of companies active in fishery and water protection, an average sample company was determined. Based on the average data, a financial analysis of the entire industry was performed. Although this industry showed clear responses to external and internal economic factors during the monitored period, it can be stated that from the economic point of view, this industry has stabilized very well since the last economic crisis.

References

- ANDRESKA, J., 1997. *Lesk a sláva českého rybářství*. Pacov: NUGA. ISBN 80-85903-06-7.
- BEDNÁŘOVÁ, D., 2005. Conditions of development of border area cooperation of the South Bohemian region and Upper Austria. *Agricultural Economics – Czech*, **51**(6), 250-256.
- BENNETT, A. F., D. G. NIMMO and J. Q. RADFORD, 2014. Riparian vegetation has disproportionate benefits for landscape-scale conservation of woodland birds in highly modified environments. *Journal of Applied Ecology*, **51**(2), 514-523.
- CHYTIL, J. and P. HAKROVÁ (eds.), 2001. *Wetlands of the Czech Republic. The list of wetland sites of the Czech Republic*. Mikulov.
- CHYTRÝ, M., 2012. Vegetation of the Czech Republic: diversity, ecology, history and dynamics. *Preslia*, **84**, 427-504.
- CHYTRÝ, M., T. KUČERA, M. KOČÍ, V. GRULICH and P. LUSTYK (eds.), 2010. *Katalog biotopů České republiky*. Praha: Agentura ochrany přírody a krajiny ČR. ISBN 978-80-87457-03-0.

ČESKÝ STATISTICKÝ ÚŘAD, 2020. *Statistická ročenka Jihočeského kraje: Statistical Yearbook of the Jihočeský Region*. České Budějovice: Český statistický úřad. ISBN 978-80-250-3028-8.

DE BIE, T., S. DECLERCK, K. MARTENS, L. DE MEESTER and L. BRENDONCK, 2007. A comparative analysis of cladoceran communities from different water body types: patterns in community composition and diversity. In: OERTLI, B., CÉRÉGHINO, R., BIGGS, J., DECLERCK, S., HULL, A. and M. R. MIRACLE (eds.), *Ponds conservation in Europe: Developments in Hydrobiology 210*. Dordrecht: Springer, pp. 19-27. ISBN 978-90-481-9087-4.

HANZELKA, J., 2010. *Vybrané faktory ovlivňující ekologickou stabilitu NPR Novozámecký rybník*. Praha. Bakalářská práce. Univerzita Karlova v Praze, Přírodovědecká fakulta, Ústav pro životní prostředí.

HEŘMANOVÁ, E., 2012. Jihočeské rybníky a rybníkářství. *Geografické Rozhledy*, **21**(3), 5-7.

HULE, M., 2009. *Rybáři na Třeboňsku: Die Fischer von Třeboň: The fishermen of the Třeboň Region: Рыбаки в Тршебоньско*. Praha: Jakura. ISBN 978-80-903862-5-9.

KUMAR, P., A. WANGANEO, F. SONAULLAH and R. WANGANEO, 2012. Limnological study on two high altitude Himalayan ponds, Badrinath, Uttarakhand. *International Journal of Ecosystem*, **2**(5), 103-111.

KUŠOVÁ, D., J. TĚŠITEL and M. BARTOŠ, 2005. The media image of the relationship between nature protection and socio-economic development in selected Protected Landscape Areas. *Silva Gabreta*, **11**(2-3), 123-133.

PECHAR, L., 2000. Impacts of long-term changes in fishery management on the trophic level water quality in Czech fish ponds. *Fisheries Management and Ecology*, **70**(1-2), 23-31.

POLANECKÝ, L., Z. CAHA, K. KABOURKOVÁ, P. PÁRTLOVÁ, R. SOBĚHART, F. STELLNER, J. STRAKOVÁ, J. VÁCHAL, M. VOCHOZKA and M. VOKOUN, 2018. *Primární sektor v Jihočeském kraji v 21. století*. Lüdenscheid: RAM - Verlag. ISBN 978-3-942303-75-0.

TURKOWSKI, K. and A. LIRSKI, 2011. Non-productive functions of fish ponds and their possible economic evaluation. In: LIRSKI, A. and A. PYĆ (eds.), *Carp culture in Europe: Current status, problems, perspective*. Olsztyn: IRŚ, pp. 25-42. ISBN 978-83-60111-57-4.

Contact address of the authors:

Ing. et Ing. Nikola Sagapova, Department of Tourism and Marketing, Faculty of Corporate Strategy, Institute of Technology and Business in České Budějovice, Nemanická 436/7, 370 10, Czech Republic, e-mail: sagapova@mail.vstecb.cz

Bc. Josef Gulyás, Institute of Technology and Business in České Budějovice, Czech Republic, e-mail: 21482@mail.vstecb.cz