

Is there any dependence between a football club's financial health and its first league performance?

Jana Heckenbergerová¹, Irena Honková²

Abstract. The presented contribution aims to analyze the financial health of Czech football clubs. Financial results of selected first league football clubs are evaluated using the summary indicator IN05. Satisfactory results are achieved only by three clubs out of twelve, one club corresponds with the so-called grey zone and the remaining clubs are in the bankruptcy zone. Furthermore, the stated hypothesis verifies whether there is no correlation between club performance and its financial health. At the first sight, it seems logical that the league's performance depends on the financial situation, and one can assume that the stated hypothesis has to be rejected. Nevertheless, provided statistical analysis utilizing the Spearman's correlation coefficient proves the opposite.

Keywords: Football club, Financial health, Index IN05, Correlation coefficient

JEL Classification: C12, G32

AMS Classification: 62G10, 62P20, 91B24

1 Introduction

We often ask ourselves, whether the financial results of companies reflect their performance. Is there any direct dependence of accounting data on performance? At first sight, it seems that yes as it should not be possible to survive with permanently negative economic results. Companies shall necessarily reach a situation in which they are not able to cover their operational activity with capital. On the contrary, a company with good financial results is sufficiently strong in the capital so that it can increase its performance as it is not limited by insufficient sources.

This contribution deals with the relationship between performance and financial health. It is focused on Czech football clubs in the first league, doing business in CZ NACE 9312 Sport club activities. With obtained league points, they are suitable for investigation of mentioned dependence as there is a direct measurement of the performance quality. In most other sectors quality of performance is hard to measure.

1.1 Literature Review

The football club economics has been mapped at the turn of the twentieth century. Vamplew in [27] presents the economics of Scottish football clubs in 1890-1914. Dobson & Goddard in [7], [8] have analyzed the performance, revenue, and cross subsidization in the Football League in 1927-1994. They believed that the unusual nature of the product of sporting leagues, and the effort for competitive balance on the field of play, provide an economic justification for redistributing financial resources between football clubs. They examined the relationship between changes in the distribution of playing. Access between different types of clubs and changes in gate revenues and attendances, and considers how flows of revenues within the football industry have been modified by various type of cross subsidy. The authors are relative optimistic about the potential for professional football to remain viable financially at all levels within the existing league structure.

In the last decade, several authors have dealt with the economics of football clubs. Demil & Lecocq in [6] designed a dynamic model for their financial stability as they believe that the environment of this sport is also dynamic. Their business model concept generally reverts to the articulation between different areas of a firm's activity designed to produce a proposition of value to customers. Two different uses of the term were noted. The first is the static approach – as a blueprint for the coherence between core business model components. The second was a more transformational approach using the concept as a tool to address change and innovation in the organization. They built the framework to try to reconcile these two approaches to consider business model evolution, looking particularly at the dynamic created by interactions between its business model's components.

¹ University of Pardubice, Faculty of Economics and Administration, Studentská 95, 532 10 Pardubice, jana.heckenbergerova@upce.cz

² University of Pardubice, Faculty of Economics and Administration, Studentská 95, 532 10 Pardubice, irena.honkova@upce.cz

They illustrated the framework with the case of the English football club Arsenal FC over the decade. They viewed business model evolution as a fine tuning process involving voluntary and emergent changes in and between permanently linked core components, and find that firm sustainability depends on anticipating and reacting to sequences of voluntary and emerging change, giving the label „dynamic consistency“ to this firm capability to build and sustain its performance while changing its business model. Dobson, in his book named „The economics of football“ [9], states economic issues and specificities of English football clubs. He presents a detailed economic analysis of professional football at club level. He reflects the development of the economics of professional football over the past ten years using a combination of economic reasoning and statistical and econometric analysis. Topics covered include some of the most hotly debated issues currently surrounding professional football, including player salaries, the effects of management on team performance, betting on football, racial discrimination and the performance of football referees. Dabscheck in [5] presented a collection of analytical contributions by internationally regarded scholars in the field, which extensively examine the many economic challenges facing the world’s most popular team sport. Littlewood in [20] explains the football financing, whereas Szymanski in [25] deals with football club bankruptcies. He states that football clubs go bankrupt following a series of negative shocks. Tabakovic & Wollmann in [26] deal with the money effect on the football of university environment.

It results from the above that many authors deal with football finances but do not address the effectiveness. This can be divided in a technical and a financial effectiveness. The technical effectiveness is focused on the match victory [14] and deals with factors that affect it, for example the pass strategy [10]. The financial effectiveness is addressed by Miragaia et al in [21] who states that in monitored period 2009-2014 only 10 professional clubs of 15 were financial effective. Skrinjaric & Barisic in [24] dealt with the effect of success/failure of the Croatian national team on the Croatian stock exchange in 2014-2018 and found that there was no dependence.

The correlation between victories of the specific team Juventus with shares traded on a stock exchange and its shares was examined by Botoc et al in [4]. Their positive effect was found. In the same way, the study of Godinho & Cerqueira [13] confirms for most of clubs with shares traded on a stock exchange that the victory has positive effect on their shares price. Floros states in his research [11] that from four analysed football clubs two clubs showed the positive effect, one club showed the negative effect and one club the neutral effect. Bell et al in [2] states that the match importance matters and Scholtens & Peenstra in [23] state that the stock exchange is rather affected by losses than by victories. Aglietta et al in [1] state that losses/victories are not related to the stock exchange, a random is rather concerned. Leach & Szymanski in [19] state that when the football clubs are traded in the stock exchange, they are usually focused on profit.

The research of the effect of financial results on the position in national or international football competitions is focused only on the dependence of the stock exchange index on this position. Football clubs that do not trade their stock on the public stock exchange have not been analyzed in this way yet. Due to this reason, our contribution deals with the positions of the Czech football clubs in the 1st league with dependence on their financial health. The hypothesis that the position of Czech football clubs in the basic part of the 1st league does not depend on their financial health is verified.

2 Methodology

Results from the basic part of 1st league 2019/2020 were found from the source Fortuna Liga [12]. In addition, accounting data for 2019 were found in the Magnus Web database [3].

The ROE indicator and synthetic indicators (IN99, IN05) were considered as financial health evaluation methods. According to [18], ROE indicator was proven to be not too much reliable predictive indicator. This study demonstrated no statistically significant linkage between the value of bankruptcy model and the prosperity of the business in the following year expressed by ROE values.

The accuracy of synthetic model ranges from 45-95%. In the Czech environment, accuracy of the IN05 indicator overcomes others commonly used synthetic indicators [17]. For this reason, the IN05 index was chosen to define the financial situation of analyzed football clubs. It is defined as:

$$\begin{aligned}
 IN05 = & 0.13 * \frac{Assets}{Liabilities} + 0.04 * \frac{EBIT}{Paid\ interest} + \\
 & + 3.97 * \frac{EBIT}{Assets} + 0.21 * \frac{Revenues}{Assets} + 0.09 * \frac{Current\ assets}{Short-term\ liabilities}
 \end{aligned}
 \tag{1}$$

The IN05 index shows the highest success rate for middle companies bankruptcy risk identification, for other companies the mention index is overall successful. The IN05 index has two limits: 0.90 as the lower limit and 1.60 as the upper limit. Based on the survey [22], companies with the IN05 index below the minimum value do not create any value and they have 97% chance to reach their bankruptcy. Companies above the upper limit have 92% chance not to bankrupt. Companies of which the IN05 index is found in the so-called grey zone 0.90 – 1.60 have similar chances of bankruptcy or not; nevertheless, the mentioned classification is not suitable for the predictions.

Relation between two datasets can be identified using correlation tests. Pearson’s correlation coefficient (R) shows the power of linear dependence and requires normality of input datasets. Monotony can be verified by Spearman test. The Spearman’s coefficient (Rs) can be defined as the regular Pearson correlation coefficient in term of the proportion of variability accounted for, except that Spearman Rs is computed from ranks. It assumes that the variables under consideration were measured at least an ordinal (rank order) scale and the individual observations (cases) can be ranked into two ordered series (p_i, q_i).

$$R_s = 1 - \frac{6 \sum_i^n (p_i - q_i)^2}{n(n^2 - 1)} \quad (2)$$

The Spearman’s coefficient is dimensionless number and as it does not require any information about distribution, it is part of non-parametric statistics. [28]

Both coefficients range from -1 to 1. Value -1 shows decreasing dependence and value 1 shows increasing dependence. If correlation coefficient is equal to 0 then there is no statistically detectable linear dependency between variables. It should be noted that variables can be dependent even if correlation coefficient is equal to 0. [15] Critical values for Pearson and Spearman test are summarized in the Statistical tables [16].

3 Results and Discussion

The number of clubs in the 1st league in 2019/2020, in its basic part, was sixteen. Due to the fact that four clubs have not published their final accounts for given period, only twelve selected clubs were considered, see the table 1.

Position	Football club
1.	Slavia
2.	Plzeň
3.	Sparta
4.	Jablonec
5.	Liberec
6.	Baník
7.	Slovácko
8.	Bohemians
9.	Mladá Boleslav
10.	Olomouc
11.	Teplice
12.	Zlín

Table 1 Position of football clubs after basic part of the 1st league in the season 2019/2020
Source: own processing from [12]

For selected football clubs, the summary index IN05 was evaluated using (1). Results are summarized in following Table 2. When the value of the IN05 index exceeds the limit of 1.6, the company is financially healthy. This is valid only in three cases – Sparta, Plzeň and Mladá Boleslav. On the contrary, IN05 values under 0.9 indicate serious financial issues and the bankruptcy zone. Surprisingly, most of the selected football clubs have financial troubles. Therefore we recommend that deeper financial analyses of such sports clubs should be performed. Generally, it seems that the football clubs are over-financed by foreign capital and their own capital is negative. There must be financial sources that are permanently lending to sports clubs. But their economical motivation is questionable as these clubs are not able to pay back the borrowed capital.

Football club	IN05 index	Position
Sparta	1.691232	3.
Plzeň	1.665086	2.
Mladá Boleslav	1.664807	9.
Liberec	1.161018	5.
Olomouc	0.476984	10.
Slavia	-1.51992	1.
Jablonec	-1.86418	4.
Baník	-2.27616	6.
Zlín	-2.49145	12.
Teplice	-4.87937	11.
Bohemians	-9.79435	8.
Slovácko	-11.4299	7.

Table 2 IN05 index values for selected clubs

Source: own processing from [12]

Let us state our hypothesis,

H0: There is no correlation between IN05 index and league position.

The Pearson's coefficient $R = -0.29281$ and its critical value $R_{crit} = 0.576$ ($n=12$, $\alpha=0.05$). As $|R| < R_{crit}$ H0 cannot be rejected on significance level 0.05. Therefore, this test confirms that there is no linear dependence between the position of Czech football clubs in the basic part of the 1st league in 2019/2020 and its financial health.

The value of Spearman's coefficient was calculated and $R_s = -0.48252$. Tabular critical value for $n=12$ and $\alpha=0.05$ corresponds to $R_{scrit} = 0.5804$. This results in the inequality $|R_s| < R_{scrit}$ and therefore H0 cannot be rejected again. Spearman's test shows that there is no monotony (ranked dependence) between the bankruptcy risk and 1st league position.

Values of both Pearson's and Spearman's coefficients are negative. This shows a nonsignificant decreasing effect between analyzed variables. It can be explained in a natural expected way, football clubs with higher financial health perform better in 1st league than clubs with financial troubles.

As mentioned above in the literature review, most of the published studies are focused on the success rate of football clubs in competitions that positively affect the value of their market value through the growth of their share price. This study aims at smaller clubs, namely first-league football clubs in the Czech Republic, where the effect of success on the share price growth cannot be tested. Nevertheless, it can be analogically assumed that there is a dependence of success on the summary financial results. In our case, football club financial health is expressed by the IN05 synthetic indicator.

From performed financial analysis using the IN05 summary index, we can conclude that only three clubs of twelve were above the limit of 1.6 indicating their financial health. It is important to remark that rather than above the limit, they were directly on it. The remaining football clubs showed absolutely alarming financial results and it is strange how they can survive from a long-term point of view.

Performed statistical tests surprisingly confirm that there is no significant dependence between football clubs' financial situation and their 1st league results. However, negative values of evaluated correlation coefficients show that a higher resulting position is connected with a lower summary index value. This confirms the natural behavior of the Czech football environment.

4 Conclusion

The company's financial health should be the keystone of its effectiveness. Football clubs same as other companies have been established in order to generate profit and the same economic principles should be valid for them as for others. Even football clubs need to have a positive cash flow for activities and proper financing. Surprisingly, performed financial analyses of Czech first-league football clubs show that most of them are over-financed by foreign capital. Their summary index IN05 indicates serious financial troubles and high bankruptcy chances. Only three clubs (Sparta, Plzeň and Mladá Boleslav) of the selected twelve have satisfactory financial results. In addition, another surprising feature of the Czech football environment has been found. There is neither significant correlation nor ranked correlation between the IN05 index and club 1st league position. Only insignificant negative dependence between a football club's financial health and its first league performance has been found in the season 2019/2020.

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