



Munich Personal RePEc Archive

A Brief Analysis of the Correlation Between Budget and Performance in Romanian Soccer

Cocioc, Paul

Babeş-Bolyai University, Cluj-Napoca, Romania.

November 2025

Online at <https://mpra.ub.uni-muenchen.de/126947/>
MPRA Paper No. 126947, posted 08 Feb 2026 07:21 UTC

A BRIEF ANALYSIS OF THE CORRELATION BETWEEN BUDGET AND PERFORMANCE IN ROMANIAN SOCCER

Paul COCIOC¹

ABSTRACT. Starting from the widely held idea in Romanian football (and not only) that a higher budget is almost the only requirement for better performance for a club, our study investigates the existence and intensity of such a correlation. At the same time, we sought to deepen the correlations within club expenditures, through those related to the player roster as an expression of its value, where we expect to see a higher intensity in relation to sports results. Due to data availability considerations, the analysis is limited to the latest seasons of the domestic championship. The approach is based on rank correlation, and the tools used are Kendall's coefficient and Spearman's coefficient. The results obtained confirm expectations regarding the existence of a direct relationship between the amounts spent by a club and its position in the rankings, but the intensity of this correlation is significantly lower than expected, at least at the level of total expenditures.

Keywords: budget, sport performance, rank correlation

INTRODUCTION AND LITERATURE REVIEW

It is evident that in the context of sports activities – like any other activity – the functioning and results obtained depend directly on the investments made. In team sports, a higher budget allows the recruitment of better players and coaches, as well as ensuring sufficiently large player squad and superior training conditions. All these provides a solid foundation for future high-level performances. An important aspect is the efficiency of capitalizing the available budgets, a matter related to sports management: clubs with top sports results are generally characterized by high efficiency in money spending.

Increase in investment outlays contributes to the improvement of sports results in national and international competitions (Leksowski, 2021). This enables clubs to enter in an upward spiral where higher budgets ensure a better squad, leading to performance, results that generate higher revenues (rewards for national championship positions, TV rights, international competitions,

¹ Department of Economics, Faculty of Economics and Business Administration, Babeş-Bolyai University, Cluj-Napoca, Romania. Email: paul.cocioc@econ.ubbcluj.ro

ticketing, etc.), revenues that allow greater future expenditures which can further bring better performances and even greater revenues. This is the prevailing belief among patrons, club presidents, journalists, or ordinary supporters, and as result, the managerial policy of most sports entities. Such correlation must be strong and uninterrupted; otherwise, there is a risk of entering a 'vicious circle': deficits and/or budget cuts, major player sales, squad reductions, declining aspirations and lower sporting results.

Previous studies (Kulikova and Goshunova , 2013; Dimitropoulos & Limperopoulos, 2014; Ferri et al., 2017) analyzing several different foreign championships indicates that the football-clubs performance mainly depended on the skills of players and coaches and their salaries to a greater extent than other factors, which is why our analysis will distinctly focus on the level of wage expenditures and not only on total clubs budget.

Another aspect that tends to generate problems in club management is related to the dual objectives pursued in most situations: sports performance and maximizing financial results. Although the two are intertwined and interdependent, but these is not made in an absolute manner, so there are many circumstances where the latter predominates. As follow, most existing studies focus more on the connection between sports performance and the financial results of clubs (Arnold, 1991; Sakinc, Acikalin and Soyguden, 2017), while the reverse relationship is under-explored in economic literature. Studies show mixed results on the impact of sports success on financial performance.

Such studies have used various instruments and have also considered and other influencing factors, without any of the methods used to prevail or the results obtained to prove behind any doubt and in all circumstances a certain intensity of the correlations.

PURPOSE AND METHODOLOGY

The issue we focused on in our analysis is related to the financial power of a club and its performance. More precise, we examined two aspects that we consider essential, namely:

(1) the existence of a direct and significant correlation between the total budget level and sports results, and

(2) the existence of a direct and strong correlation between the value of a squad (measured by wages' expenses as a quantitative proxy of the qualitative variable) and sports results.

The hypotheses, based on the mentioned general perception, started from the existence of a direct and strong correlation between the expenses made by a club and the performance obtained. As we have already seen, a higher budget would allow for the acquisition of players with higher market

value, both in terms of the possibility of paying substantial transfer fees and by ensuring higher salary caps. At the same time, it can attract a top technical staff and provide better training conditions. A more valuable squad and potentially better-trained players seems to be the keys to success. Since higher-rated players are usually paid better, the reasonable assumption we make is that the more substantial is the salary budget, the higher is the value of the players, thus increasing the chances of the team's sporting success

To verify these premises, we relied on the situation in the first tier of the Romanian football championship (Superliga) from the last two competitive seasons: 2023-2024 and, respectively, 2024-2025. The clubs considered are the those 14 that participated in both editions: SC Fotbal Club FCSB, Fotbal Club Rapid 1923 București, FC CFR 1907 Cluj, CS Universitatea Craiova, CS Farul Constanța, ACS Sepsi OSK Sfântu Gheorghe, SC FC Dinamo București, AS FC Universitatea Cluj, AFC UTA Arad, ACS Petrolul 52 Ploiești, AFC Hermannstadt, AFC Botoșani, ACSM Politehnica Iași și ACS Suporter Club Oțelul Galați. The extension over a longer period of time is limited by the small number of teams that manage to remain in the top league for an long period. Compared to a decade ago - when the playoff/playout system was introduced - only 5 teams have played continuously in League 1. (Farul/Viitorul Constanța, FCSB, CFR Cluj, Universitatea Craiova și FC Botoșani). This limits the sample and the analysis period, which requires interpreting the results with some reservations.

The data used in the analysis were extracted from the financial statements submitted by the clubs for licensing for the upcoming season and published on their own websites. Since these data pertain to the fiscal year (which corresponds to a calendar year) and not the competitive one, and in the absence of other data and information regarding the expenses for each month, I assumed an equal distribution of these. Thus, for determining the total expenses, including payroll expenses, for the 2023-2024 season, half of those found in the balances of the year 2023 (related to the second semester of that year and considered to cover the first part of the competitive season) were summed with half of the corresponding expenses from the balances of the year 2024 (related to the first fiscal semester and considered to cover the second half of the season). Furthermore, due to the fact that the financial statements for the year 2025 are not yet published, there is no available information for the expenses of the second part of the 2024-2025 season. However, our analysis does not require exact data, but only a comparative assessment to conclude to a ranking, order which can be determine from the trends in the evolution of these budgets. As a result, we started from the reasonable assumption that the situation existing in the first part of the season (highlighted by the budgets for the fiscal year 2024) will also be present in the second part of the season, which allowed us to use the respective data for the entire season.

Considering the organization of the championship, with a regular season and a play-off and play-out system, and wishing to make analyses as comprehensive as possible, therefore at the level of the entire chosen sample, we primarily took into account the sports results materialized in the position occupied at the end of the regular season. In any case, the final situation does not differ significantly at the play-off level (the exception was Rapid in 2023-2024 season). At the level of the play-out or relegated group, the situation has registered some major changes, which led us to also monitor the final standings in the championship.

The degree of association or the intensity of the connection between the ordinal variable sport performance (mainly from the perspective of the ranking position in the regular season standings) and the total investment, respectively that in salaries (through the hierarchy of total budget sizes, respectively that of salary expenditures) will be made using rank correlation coefficients of Spearman and Kendall's Tau. These coefficients evaluate the degree of similarity between two set of given ranks (such as sport standing and the hierarchy of clubs based on their expenses). The position in the standings essentially corresponds to the rank, except for the last two teams in the 2023-2024 regular season (Dinamo position 14 and associate rank 13, and FC Botoșani position 16 and associate rank 14), due to the exclusion from the analysis of the teams that will be relegated at the end of that season. This does not affect the analysis, as their ranks do not change.

RESULTS

On the all graphs presented, the teams are ordered on horizontal axis based on their position in the standings both at the end of the regular season (left), and at the end of the season (right). It can be easily observed (see figure 1 left) that in the first analyzed season, the order of the first six clubs in the regular season standing corresponds entirely with their rank based on total budget. The situation can be explained by the substantial differences in the absolute size of their total expenses compared to those of the other participants. For example, the budget of the team in 6th place (Sepsi) was over 15 million lei (+39.5%) larger than that of the next team in terms of expenses (Dinamo) and over 19.5 million (+58.4%) more than the team ranked in 7th place (U Cluj). The situation remains the same in the next championship edition, but the gaps are noticeably narrowing in certain cases (CFR Cluj and Sepsi). Sepsi, still with the 6th largest budget (but slightly decreasing), has only 7 million (+15%) more than Dinamo, less than half the difference from the previous year. Only the top four teams based on budget level were to qualify for the playoff.

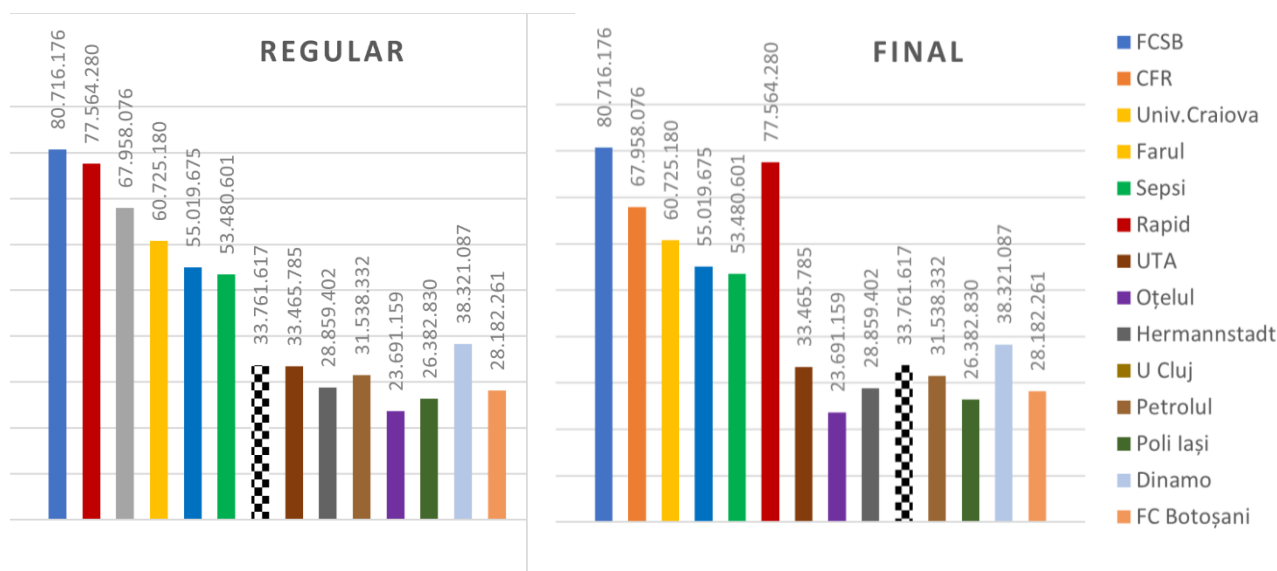


Figure 1. Total Budgets for 2023-2024 competition season

In this season, only Dinamo (minus 6 places between the budget ranking and the position in the sport standing, both in the regular season and in the end) and partially Rapid (a loss of 4 places in the playoff) seems to be the underperformers, while the biggest gain is achieved by Oțelul (plus 3 places at the end of the regular season and plus 6 places in the end). For the 2024-2025 season, the situation is more dynamic (see Figure 2). We have several teams that perform significantly below their expenses (Rapid – minus 4 places, Farul – minus 5 places, or Sepsi - the last one especially in the playout, finally minus 8 places and relagates!), but also those that perform despite their budgets (U Cluj – plus 4 places, Hermannstadt – plus 5 places, or Oțelul - plus 3 places at regular season and plus 6 at end of championship).

Considering the value of the Kendall coefficient (τ) that we calculated, a positive correlation is identified in both seasons, although the intensity of the relationship varies significantly. Such a direct relationship indicates that clubs with higher budgets tend to occupy better positions in the standing of the competition. The correlation is relatively strong at the end of the analyzed regular season of the 2023-2024 championship with $\tau = 0.78$ (value associated with a moderately strong correlation almost inferior borderline), while in the following edition the intensity is average (with a value of $\tau = 0.56$). Considering the final rankings, the correlations are much lower: $\tau = 0.582$ for the first analyzed year and an almost insignificant $\tau = 0.385$ for the following year. In summary, we would assess the intensity as moderate, but at the upper limit of the range for the regular season and weak to moderate for the entire season. If we exclude what happened in the play-out of the last season (and in the analysis of which the correlation measured by the Kendall coefficient is not significant), the intensity can be considered moderate at a general level.

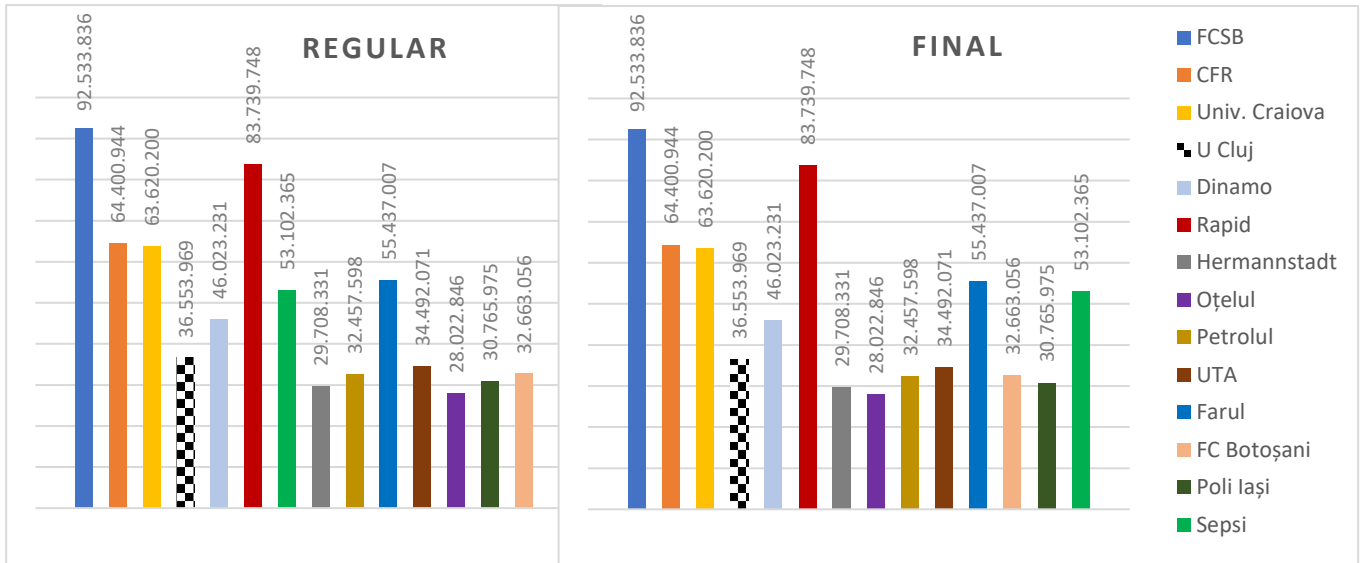


Figure 2. Total Budgets for 2024-2025 competition season

A clearer determination could be obtained by using other methods, such as Spearman's rank correlation coefficient. The calculated values for this are $\eta = 0.877$ for the regular season of the first year and $\eta = 0.758$ for the end of that championship, respectively $\eta = 0.763$ and $\eta = 0.53$ for the following season. The connections measured in this way are stronger in all analyzed situations (with a relevant deviation only for final ranking from the last season).

When we analyze the sports performance from the two seasons (at the end of the regular season and complementarily at the end of the championship) in relation to the variable wage expenditures (ordinal approach), the results is not significantly different. For the regular season, the Kendall rank correlation coefficient (τ) calculated based on this data provides values ranging from $\tau = 0.714$ in the 2023-2024 championship (see figure 3) to $\tau = 0.473$ in the following edition (see figure 4). The values of the coefficient at the end of the championships are even lower $\tau = 0.516$ in 2023-2024 and $\tau = 0.297$ in 2024-2025 (the coefficient isn't significant, too). Under such conditions, the correlation is also one of moderate intensity ($\tau < 0.7$), with only one of the calculated values exceeding at borderline the limit of the interval.

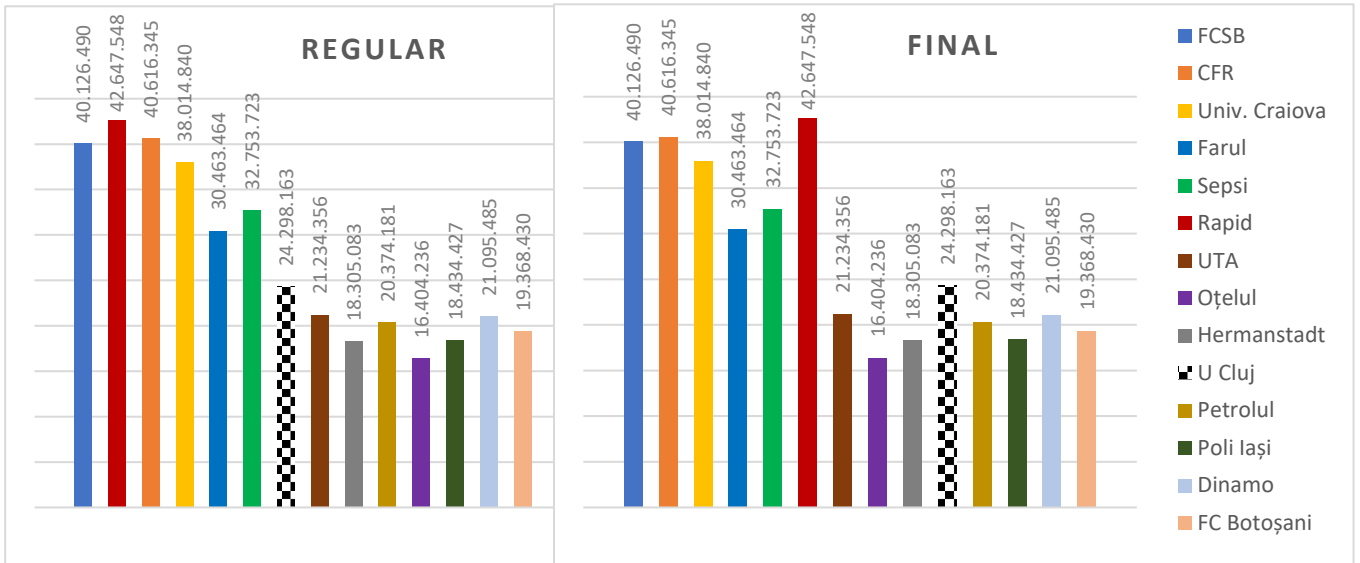


Figure 3. Wages Expenses for 2023-2024 competition season

If we consider the Spearman coefficient, its values are significant and indicate a strong correlation for the first season: $\eta = 0.873$ (regular) and $\eta = 0.732$ (final). For the next championship edition, the correlation is much lower: medium level ($\eta = 0.684$) for the regular season, and medium to low ($\eta = 0.486$) when considering the final standing.

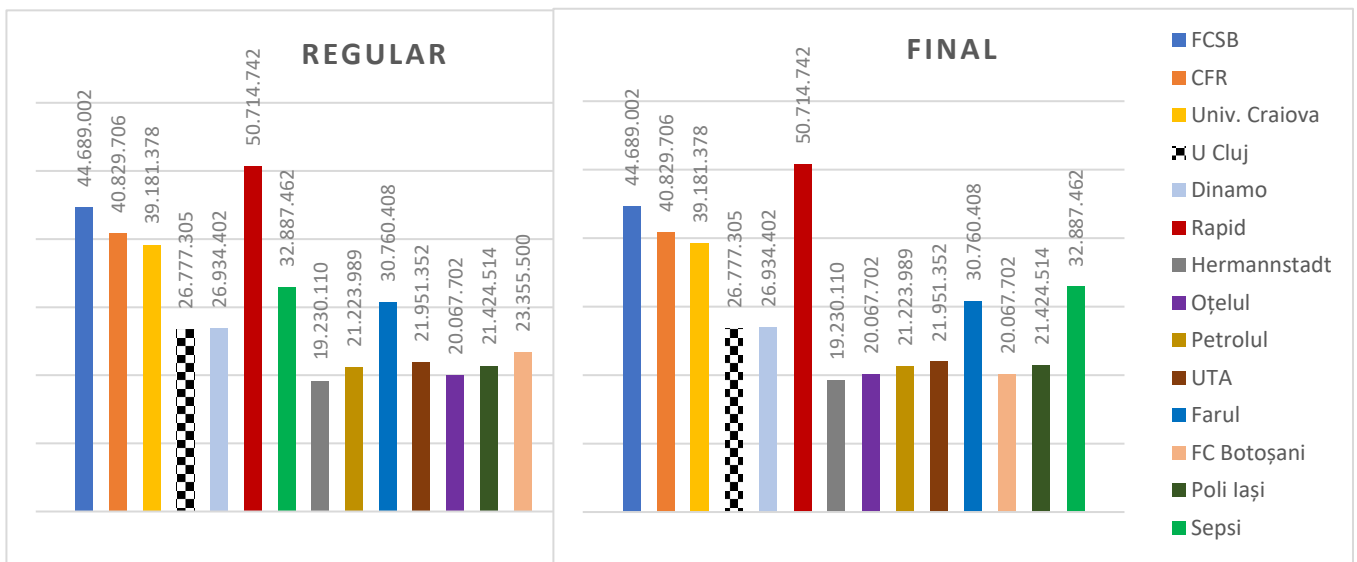


Figure 4. Wages Expenses for 2024-2025 competition season

Correlating all this information, the result indicates a positive (direct) but relatively moderate (medium intensity) correlation between the level of salary expenditures and sports performance. Teams that offer higher salaries will normally achieve a better position in championship, but this correlation seems to be less intense than in the case of total expenditures.

CONCLUSION

The statistical analysis conducted indicates a positive relationship exists between money spent by a club and its standing position, particularly when we look at the total spendings. Somewhat surprisingly from the perspective of economic literature on this topic, where rather the expenses on wages and not the total ones appear to be more strongly correlated with sports performances. The explanation may be related to the smaller differences between the salary budgets of the teams in the Romanian championship compared to the differences existing in other championships for which the respective studies were conducted. Such a moderate connection also may suggest that although the salary budget is an important factor in ensuring sports competitiveness, it is not sufficient on its own. The results obtained also depend on other internal factors (the quality of training, player motivation, the homogeneity and stability of the team and coaching staff) and external factors (the schedule of matches in relation to the team's own situation and that of the opponents – the interval and distances between matches, injuries, suspensions). At the same time, there are aspects related to other categories of expenses: transfers, training conditions (facilities, training camps) and travel (means of transport, accommodation conditions)

The analyzed correlations appear stronger when measured using the Spearman coefficient. But in this case too, it is observed that the playoff and playout diminish the intensity of all these correlations. The way they are organized (separating teams into two groups, halving the points obtained during the regular season, having only one match in the playout) largely explains these discrepancies. The correlations seem to deteriorate significantly especially due to the playout. Middle-level teams generally seem to have a higher chance of failing at this stage of the championship, likely explicable by the demoralization of those who missed the playoffs (U Cluj in the first analyzed season, Farul and Sepsi in the last season).

One aspect that must be considered is that the budgets of all clubs are showing a tendency to increase, so a higher budget level of a club that is likely to improve performance should be seen as one that registers a larger increase than that of other competitors. For example, in 2024 alone, the revenue of the clubs in the Super League increased overall by 81 million lei (approximately 16 million euros) compared to the previous year, reaching a level of 570 million lei (approximately 114 million

euros) in 2024 (FRF, 2025). This would mean that only clubs that have raised their budget by more than the average increase of 16.5% have recorded a comparatively higher budget. In addition, it is necessary to take into account that the absolute gaps compared to clubs with higher budgets, the recovery of these differences, as well as the still remaining differences represent explanations and obstacles in improving performance, even in the context of superior budget increases. Precisely in order to consider the general evolutions and the comparative situation, the ranking correlation was used as a working method.

According to our knowledge, this is the first paper that studies such correlations with focus on the Romanian football championship. Among the limitations of the research are the lack of detailed data regarding the players' individual contracts or unofficial funding sources, which could have influenced the interpretation of the correlations between performance and budgets. Additionally, the analysis focused on a single national league and a very limited time frame, which reduces the applicability of generalizations. Any of its conclusions apply only to a specific case: Romanian football. Further research also need to include more clubs and assess long-term impacts of financial investments.

Reality highlights the fact that, although there is a statistical link between budget and performance, it is not absolute. Sports success does not solely depend on financial investments, but is also influenced by other factors: sports strategy, management quality, team homogeneity, infrastructure, team cohesion, or even hazard. As in all businesses calculated spending is essential, but blind investment does not guarantee success

REFERENCE

- ACS Petrolul 52 Ploiești (2025). *Contul de profit si pierderi (Financial Statement) 2024*. <https://fcpetrolul.ro/wp-content/uploads/2025/03/CONTUL-DE-PROFIT-SI-PERDERE2024.pdf>
- ACS Sepsi OSK Sfântu Gheorghe (2025). *Contul de profit si pierderi (Financial Statement) 2024*. https://sepsiosk.ro/index.php/ro/?option=com_attachments&task=download&id=72
- ACS Suporter Club Oțelul Galați (2025). *Financial Statement 2024*. <https://ascotelul.ro/wp-content/uploads/2025/03/situatii-financiare-24-de-publicat.pdf>

- ACSM Politehnica Iași (2025). *Financial Statement* 2024. https://www.politehnicaiasi.ro/ckfinder/userfiles/files/CONT_PROFIT_SI_PIERDERI_2025.pdf
- AFC Botoșani (2025). *Financial Statement* 2024. https://fcbt.ro/wp-content/uploads/2025/04/SKMBT_C45425042609240.pdf
- AFC Hermannstadt (2025). *Contul de profit si pierderi (Financial Statement)* 2024. <https://fchermannstadt.ro/wp-content/uploads/2025/04/CONTUL-DE-PROFIT-SI-PIERDERE-2024-2025.pdf>
- AFC UTA Arad (2025). *Contul de profit si pierderi (Financial Statement)* 2024. <https://www.uta-arad.ro/informatii-financiare>
- AS FC Universitatea Cluj (2025). *Contul de profit si pierderi (Financial Statement)* 2024. <https://www.fccluj.ro/cont-profit-pierderi-uefa>
- Arnold, A. J. (1991). An industry in decline? The trend in football league gate receipts. *Service Industries Journal*, Vol. 11(2), pp. 179-188. [Doi.org/10.1080/02642069100000027](https://doi.org/10.1080/02642069100000027)
- Brandon, B. (2024). Does Money Really Buy Success? Empirical Analysis of Money Spent Effect on English Premier League Team's Performances/Success: A Panel Data Analysis. *Empirical Economic Bulletin*. Vol 17.
- CS Farul Constanța (2025). *Contul de profit si pierderi (Financial Statement)* 2024. <https://www.farulconstanta.com/plugins/ckfinder/userfiles/files/Informatii%20financiare%202025/Contul%20de%20profit%20si%20pierderi%202025.pdf>
- CS Universitatea Craiova (2025). *Contul de profit si pierderi (Financial Statement)* 2024. <https://www.ucv1948.ro/upload/files/PPP%20-%202024.pdf>
- Dimitropoulos, P. E., & Limperopoulos, V. (2014). Player contracts, athletic and financial performance of the Greek football clubs. *Global Business and Economics Review*, Vol. 16(2), pp. 123-141. [Doi.org/10.1504/GBER.2014.060181](https://doi.org/10.1504/GBER.2014.060181)
- Lazar D., Buiga A., Dragoș C., Brednea G., Litan C., Mare C. & Filip D. (2019) Statistică descriptivă. Suport de curs. Cluj-Napoca. [Suport de curs ID MG statistica descriptiva.pdf](https://cursuri.elearning.ubbcluj.ro/pluginfile.php/14870/course/overviewfiles/Suport%20e%20curs%20ID%20MG%20statistica%20descriptiva.pdf)
(<https://cursuri.elearning.ubbcluj.ro/pluginfile.php/14870/course/overviewfiles/Suport%20e%20curs%20ID%20MG%20statistica%20descriptiva.pdf>)
- FC CFR 1907 Cluj (2025). *Contul de profit si pierderi (Financial Statement)* 2024. <https://cfr1907.ro/wp-content/uploads/2025/03/Contul-de-profit-si-pierdere-consolidat-2024.pdf>

- FC Rapid 1923 București (2025). *Contul de profit si pierderi (Financial Statement) 2024*.
<https://www.fcrapid.ro/wp-content/uploads/2025/03/Contul-de-Profit-si-Pierdere-consolidat-la-31.12.2024.pdf>
- Ferri, L., Macchioni, R., Maffei, M. & Zampella, A. (2017) Financial Versus Sports Performance: The Missing Link. *International Journal of Business and Management*. Vol. 12, No. 3, pp. 36-48. DOI:10.5539/ijbm.v12n3p36.
- F.R.F. (2025, April 17). Situațiile financiare ale anului 2024 pentru cluburile care participă în Superliga în sezonul 2024–2025 și sumele alocate către academiile de copii și juniori | FEDERAȚIA ROMÂNĂ DE FOTBAL <https://www.frf.ro/comunicari/comunicate-frf/>.
- Kulikova, L., Goshunova, A. V. (2013). Measuring efficiency of professional football club in contemporary researches. *World Applied Sciences Journal*, Vol. 25(2), pp. 247–257. DOI: 10.5829/idosi.wasj.2013.25.02.13307.
- Leksowski, L. (2021) Relationship between sport and financial performance in top European football clubs. *The Małopolska School of Economics in Tarnów Research Papers Collection*. Vol. 49(1), pp. 41–59. DOI: 10.25944/znmwse.2021.01.4159.
- Sakinc, I., Acikalin, S. and Soyguden, , A. (2017) Evaluation of the Relationship between Financial Performance and Sport Success in European Football. *Journal of Physical Education and Sport*, Vol 17 Supplement issue 1, Art 3, pp. 16 – 22. DOI:10.7752/jpes.2017.s1003
- SC FC Dinamo București (2025). *Contul de profit si pierderi (Financial Statement) 2024*.
https://dinamo1948.ro/wp-content/uploads/2025/04/Dinamo_CPP_2024.pdf
- SC Fotbal Club FCSB (2025). *Contul de profit si pierderi (Financial Statement) 2024*
<https://www.fcsb.ro/img/financiar/Contuldeprofitsipierdere2023-2024.pdf>