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FINANCIAL STRENGHT ASSESMENT OF FOOTBALL CLUPS: AN INTERNATIONAL COMPARISON[1]

FUTBOL KULÜPLERİNİN FİNANSAL GÜÇ DEĞERLENDİRMESİ: ULUSLARARASI BİR KARŞILAŞTIRMA

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Abstract

The aim of this research is to evaluate the financial strengths of football clubs comparatively on an international scale. In this regard, the financial strengths of 24 football clubs from six national leagues affiliated with the Union of European Football Associations (UEFA) were examined using the Piotroski F-Score method. During the analysis process, nine financial indicators across the categories of profitability, liquidity-leverage, and operational efficiency were calculated and scored from 0 to 9 for the period spanning 2019 to 2023. The research concluded that clubs exhibit moderate financial strength, suggesting an investable profile. In terms of average F-Score values, Bayern Munich and Sporting Lisbon emerged as the most successful clubs, while Lazio and AS Roma were identified as the least successful. The evaluation of the nine financial indicators revealed changes in paid-up capital, earnings quality, and cash flows from operating activities as the most successful. Conversely, return on asset, changes in leverage, and changes in gross profit margin were the least successful financial indicators.

Keywords: Financial Strength, Piotroski F-Score, Football Clubs, Union of European Football Associations

JEL Classification: F65, L83, M41.

Öz

Bu araştırmanın amacı, futbol kulüplerinin finansal güçlerini uluslararası karşılaştırmalı olarak değerlendirmektir. Bu doğrultuda, Avrupa Futbol Federasyonları Birliği'ne (UEFA) bağlı altı ulusal ligde yer alan 24 futbol kulübünün finansal güçleri Piotroski F-Skor yöntemiyle incelenmiştir. Analiz sürecinde 2019-2023 arası dönemde karlılık, likidite-borçlanma ve faaliyet etkinliği başlıkları altındaki dokuz finansal gösterge hesaplanmış ve toplam performansları 0-9 arasında puanlanarak karşılaştırmalı olarak değerlendirilmiştir. Araştırma sonucunda futbol kulüplerinin F-Skor değerlerine göre finansal güçlerinin orta düzeyde olduğu ve yatırım yapılabilir şirket profilinde oldukları belirlenmiştir. Ortalama F-Skor değerleri açısından Bayern Münih ve Sporting Lizbon'un en başarılı, Lazio ve AS Roma'nın ise en başarısız futbol kulüpleri olduğu görülmüştür. F-Skor hesaplamasında kullanılan dokuz finansal göstergenin ortalamaları bazında yapılan değerlendirmede sonucunda en başarılı üç finansal göstergenin ödenmiş sermayedeki değişim, kazanç kalitesi ve işletme faaliyetlerinden kaynaklanan nakit akışları olduğu tespit edilmiştir. Buna karşılık, en başarısız üç finansal göstergenin ise varlık karlılığı, borçlanma düzeyindeki değişim ve brüt kâr marjındaki değişim olduğu belirlenmiştir.

Anahtar Kelimeler: Finansal Güç, Piotroski F-Skoru, Futbol Kulüpleri, Avrupa Futbol Federasyonları Birliği

JEL Sınıflaması: F65, L83, M41.

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1. Introduction

Football, which is actively played by an estimated 250 million people, has reached an economic size of approximately 200 billion dollars every year during the transfer period and has turned into a huge industry that employs approximately one billion people worldwide. For this reason, football clubs, which had limited budgets at the beginning of the 20th century, have become the world's largest companies with budgets of up to billion dollars today. In this process, many football clubs are completing their corporatisation processes by being listed on the stock exchange or being acquired by large investment companies or wealthy business people (Ergün, 2020; p.1; İkiz, 2010; p.12). In recent years, broadcasting revenues, advertising and sponsorship revenues, match-day revenues, player transfers, real estate and asset sales, jersey and merchandise sales revenues have played a major role in football becoming a major industry. Today, football clubs have three important income items based on their main activities: match-day revenues, commercial revenues and broadcasting rights revenues. Matchday revenues are generated from ticket sales and merchandise sold at the stadium on match days. Commercial revenues consist of product sales, advertising and sponsorship revenues of football clubs. Broadcasting revenues are the revenues distributed to clubs by federations through the broadcasting of football matches (Saatçioğlu & Çakmak, 2019; p.335). According to the Annual Review of Football Finance report of the Deloitte consultancy company, the total revenue of football clubs competing in the leagues of England, Germany, Spain, Italy and France, which are classified as the five largest leagues in Europe, was 17 billion Euros in the 2021-2022 season and it was emphasised that this figure will increase to 18.2 billion Euros in the 2022-2023 season. Commercial revenues constitute the largest share of total revenue, while broadcasting revenues and match-day revenues rank second and third, respectively (Deloitte, 2023; p.7-8).

The diversification and increase in the expenses of football clubs along with the increase in their revenues may adversely affect the income-expenditure balance. The deterioration of the income-expenditure balance in football clubs may cause operational and financial problems, and the sportive success of the clubs may also be adversely affected. In general, among the expenses of football clubs, it is noteworthy that the high level of financial expenses paid during the football player transfer process, the salaries of football players and the financing expenses paid in return for the financing resources obtained from the banking sector (Varol, 2014; p.2). According to the Annual Review of Football Finance report of the Deloitte consultancy company, the ratio of total salaries to total revenues in the 2021-2022 season in the English, German, Spanish, Italian and French leagues, which are classified as the five largest leagues in Europe, was 74% on average (Deloitte, 2023; p.8). Therefore, when the increase in fixed and variable expenses is higher than revenues, significant breaks may occur in the profit, profitability, cash flow, borrowing and operational sustainability of football clubs (Akşar, 2012; p.2). In this context, continuously monitoring and evaluating the financial performance and strength of football clubs is of great importance to ensure their financial sustainability.

Measuring financial performance and determining investment and financing strategies by estimating financial strength are critical for managers and current and potential investors. In global market conditions, reliable and effective methods are sought to assess the past, current and future financial strength and sustainability of enterprises. While accounting-based financial ratios and financial failure risk measurement models are frequently used in financial strength analysis, in recent years, analysis methods that focus on accounting data and stock market performance data of enterprises have also gained popularity. One of these methods, the Piotroski F-Score method, was developed by Professor Joseph Piotroski of Stanford University in 2000. The method is designed to analyse the financial strength of businesses and provide guidance on identifying potentially successful stocks. The method analyses nine criteria that affect financial performance in detail and calculates a total score by assigning specific scores for each criterion. The score is usually expressed on a scale of 0 to 9 and a high score indicates that the company has a strong financial position and may be an attractive investment opportunity for investors (Piotroski, 2000; p.7-9).

The aim of this study is to comparatively evaluate the financial strength levels of football clubs in 6 national leagues affiliated to the Union of European Football Associations (UEFA) and whose financial data can be accessed, using the Piotroski F-Score method. In this context, the research consists of five chapters. In the second section, previous research on the research topic is summarised under the title of literature. In the third section, under the title of methodology, the data sources used in the research and the analysis method applied are explained. In the fourth section, the results obtained from the analyses are presented under the title of findings. In the conclusion section, comments and suggestions are presented in line with the findings obtained from the research.

2. Literature Review

In the relevant literature, the Piotroski F-Score method has been used to assess the financial performance or risk of failure of companies in different sectors and, at the same time, to analyse their stock return performance. This method, first developed by Piotroski (2000), has been used to assess the financial performance of companies with

high book-to-market ratios, and has emphasised that it can increase the return potential for investors. Hyde (2014) found that stocks with a high F-score have a significant premium that is unrelated to factors such as size, value and momentum. Bhatt (2014) examines the validity of the Piotroski F-Score method in the short and long term for companies in the automotive and banking sectors. As a result of the research, it was suggested that the variables and weightings in the method may change in the short and long term. Mesarić (2014) used the Piotroski F-score to analyse the financial performance of companies in the automotive industry, and reported the results. Agrawal (2015) showed that the Piotroski F-Score method is effective in predicting the bankruptcy risk of firms in India. Xiaoyu (2016) found that high F-Score portfolios outperform low F-Score portfolios in the Chinese A-share market, and investors can identify mispriced stocks. Gökten et al. (2017) examined the relationship between book value, Piotroski F-Score and market capitalisation in the BIST energy sector. Hyde (2018) found that Piotroski F-Score provides significant returns in the Australian capital market. Tikkanen & Aijö (2018) found that portfolios with high Piotroski F-Scores outperformed in the European stock market. Supranoto & Juliarto (2019) found that F-score has a significant effect on the stock returns of companies listed in the LQ45 index of the Indonesian Stock Exchange. Walkshausl (2020) found that a portfolio of stocks of companies with high F-Score significantly outperforms a portfolio of stocks of companies with low F-Score. Asmadi et al. (2021) evaluated the financial performance of Indonesian companies using the Piotroski F-Score method and showed that the score is effective in determining the quality of stocks in the Islamic Index. Halim & Suhartono (2021) examined the effect of family ownership, institutional ownership and financing decisions on financial performance in the Indonesian Stock Exchange and found that institutional ownership and financing decisions have a negative effect. Tepeli and Kahraman (2023) found that short-term trade payables have a positive effect on Piotroski F-Score for companies in the BIST All Index. Pilch (2023) found that in the Polish stock market, companies with high F-Scores generally have higher returns, while companies with low F-Scores or high book/market value portfolios have lower returns.

In the literature on football clubs, financial performance is generally measured using ratio analysis and bankruptcy risk models, and attempts are made to measure the relationship between sporting success and financial performance. Dimitropoulos (2010) found that clubs in the Greek national football league have high levels of debt, liquidity and profitability problems. Karadeniz et al. (2014), Uluyol (2014) and Aslan (2018) used ratio analysis in their studies and found that the financial structures of football clubs listed in Borsa Istanbul are weak and they cannot use their assets effectively and they fail to generate profits. Güngör & Uzun Kocamış (2018) determined that the return on equity of English football clubs is low due to the high cost of debt. Beyazgül & Karadeniz (2019), found that clubs in 11 national football leagues affiliated to UEFA are successful companies in terms of cash flow profiles. Alaminos, Esteban & Fernández-Gámez (2020) found that the variables that most influence the financial performance of football clubs in national leagues in 23 countries on the European continent are liquidity, financial structure and sporting performance. Pawlowski (2020) found that football clubs in Poland have liquidity and leverage problems and their profitability is negative. Karadeniz & İskenderoğlu (2022) found that the liquidity and financial risk of football clubs in five national leagues affiliated to UEFA are very high, while their profitability, operating and cash flow performance are weak, and that the Covid-19 outbreak negatively affects the financial performance of football clubs. Apart from the studies summarised above, there is no research in the literature on football clubs that measures the financial strength of football clubs using the Piotroski F-Score method. Therefore, it is believed that this study will contribute to the literature by examining the financial performance of football clubs using the Piotroski F-Score method for 24 football clubs in 6 UEFA national leagues.

3. Methodology

3.1.1. Data

In the study, the data obtained from the annual balance sheets, income statements and cash flow statements of a total of 24 football clubs in 6 national leagues affiliated to UEFA, whose financial data were accessed, prepared in accordance with the International Financial Reporting Standards format, covering the financial period between 1 June-31 May between 2019-2023. It is accepted that football league seasons generally end on 31 May and preparations for the new season start on 1 June, and the financial reporting periods of the clubs are applied as 1 June-31 May. Since the financial statements of the football clubs within the scope of the analysis were not available or incomplete before 2018, the years 2019-2023, in which the data can be obtained in a healthy and complete manner, were determined as the analysis period. Within the scope of the research, the balance sheets, income statements and statement of cash flow of football clubs in Turkey were accessed from the Public Disclosure Platform (KAP) website (www.kap.org.tr). The balance sheet, income statement and statement of cash flow of football clubs in Italy were accessed on the Investing (www.investing.com) website. Financial statements of football clubs in Portugal were accessed from Yahoo Finance (www.finance.yahoo.com) and The Wall Street Journal (www.wsj.com). Financial statements of football clubs in England, Spain and Germany were accessed from the Football Finance (https://www.footballfinance.de) websites. Nine financial variables in the Piotroski F-Score model were calculated using the balance sheet, income statement and cash flow statements accessed from

these websites. The country and league names of the football clubs included in the analysis are presented in Table 1.

Table 1. Football Clubs in the Scope of Analysis

No	Country/League	Club Name
1	**Türkiye / Spor Toto Super League**	Beşiktaş Futbol Yatırımları Sanayi ve Ticaret A.Ş
2		Fenerbahçe Futbol A.Ş.
3		Galatasaray Sportif Sınai ve Ticari Yatırımlar A.Ş.
4		Trabzonspor Sportif Yat. ve Futbol İşl. Tic. A.Ş.
5	**Italy / Serie A**	Juventus Football Club S.p.A.
6		Societa Sportiva Lazio S.p.A.
7		FC Inter
8		AC Milan
9		A.S. Roma S.p.A.
10	**England / Premier League**	Manchester United Plc
11		Manchester City Plc
12		Arsenal Plc
13		Liverpool FC
14		Chelsea FC
15	**Spain / La Liga**	Real Madrid
16		FC Barcelona
17		Athletico Madrid
18		FC Sevilla
19	**Germany / Bundesliga**	Bayern Munich
20		Borussia Dortmund
21	**Portugal / Liga NOS**	Futebol Clube do Porto SAD
22		Sport Lisboa e Benfica-Futebol SAD
23		Sporting Clube de Portugal Futebol SAD
24		Sporting Clube de Braga-Futebol SAD

3.1.2. Analysis Method

In the analysis process, the financial strength of a total of 24 football clubs in 6 national leagues affiliated to UEFA was calculated by applying the Piotroski F-Score method on the data obtained from annual balance sheets, income statements and cash flow statements between 2019-2023. The Piotroski F-Score method evaluates the financial performance and soundness of companies based on nine different financial indicators. A score of 1 or 0 is given for each financial indicator and the Piotroski-F score is calculated by summing these scores. The score ranges from 0 to 9, with 0 representing the lowest financial performance and 9 representing the highest financial performance (Piotroski, 2000; p.9). In other words, it is accepted that as the F score approaches 9, the financial strength of the company increases, and as it approaches zero, the financial strength weakens (Gökten et al., 2017; p.843). In a more detailed classification, if the F score value is less than 4, the financial strength of the company is considered weak; if it is between 4-6, it is considered to be at a medium level, and 7-9 is considered to be high (Asmadi et al., 2021; p.70).

The Piotroski-F score is the sum of nine financial indicators calculated under three main headings: profitability, liquidity-debt and operating efficiency. Under profitability, return on assets (ROA), cash flow from operations (CFO), earnings quality (EQ) and change in return on assets (ΔROA) are calculated. Under liquidity and indebtedness, the change in the company's leverage ratio (ΔLEV), the change in the current ratio (ΔCR) and the change in paid-in capital (ΔPIC) are taken into account to determine whether there is a rights issue in order to detect share dilution. Under the operating efficiency heading, two financial indicators such as the change in gross profit margin ratio (ΔGPMR) and the change in asset turnover (ΔAT) are calculated (Gökten et al., 2017; p.844). Below, it is presented how the model is formed by using the financial indicators (Agrawal, 2015, p.181);

F-Score= F_ROA + F_CFO + F_EQ + F_ΔROA + F_ΔLEV + F_ΔCR + F_ΔPIC + F_ΔGPMR + F_ΔAT

Where;

- Return on Asset (ROA): Calculated as net profit divided by total assets. This measure shows the profitability obtained through asset investments. The greater the return on assets, the higher the ability of the entity's assets to generate profit (Ceylan & Korkmaz, 2018; p.77). In the Piotroski F-Score method, if the ROA value is positive, the F_ROA score is considered as 1, and if the ROA value is negative, the F_ROA score is considered as 0 (Agrawal, 2015; p.182).

- Cash Flow From Operations (CFO): It is calculated by dividing the cash flows generated from the company's main operating activities by the total assets. This measure reflects the cash performance of the firm based on its main operating results. In Piotroski F-Score method, if the CFO value is positive, the F_CFO score is considered as 1, while if the CFO value is negative, the F_CFO score is considered as 0 (Piotroski, 2000; p.11).

- Earnings Quality (EQ): Earnings quality (EQ) refers to the difference between CFO and ROA variables in the model. CFO and ROA are important indicators of net profit and cash flow generated by companies. However, net income is calculated on an accrual basis and may not fully reflect cash flow. Companies need cash flow to grow and fulfil their obligations. Because net profit may not show the amount of cash that can be used in operations. Therefore, it is preferred that cash flow exceeds net profit (Gökten et al., 2017; p.843). In the Piotroski F-Score method, if the difference between CFO and ROA is positive, the F_EQ score is evaluated as 1, while when it is negative, the F_EQ score is recorded as 0 (Tepeli & Kahraman, 2023; p.4).

- Change in Return on Assets (ΔROA): This variable expresses the change in the return on assets ratio compared to the previous period. It is desirable that the return on assets of the enterprise in the current period increases compared to the previous period. According to the Piotroski F-Score method, when ΔROA is positive, the F_ΔROA score is considered to be 1, while when it is negative, the F_ΔROA score is considered to be 0 (Asmadi et al., 2021; p.71).

- Change in Leverage Ratio (ΔLEV): The relevant variable in the model expresses the change in the leverage ratio compared to the previous period. Leverage ratio is calculated by dividing total debt by total assets and shows how much of the assets are financed by debt. A high leverage ratio indicates that the entity is in a more financially risky position (Aydın et al., 2014; p.104). According to the Piotroski F-Score method, the F_ΔLEV score is 0 when ΔLEV is positive, and 1 when it is negative (Gökten et al., 2017; p.844).

- Change in Current Ratio (ΔCR): The current ratio (CR) is calculated by dividing current assets by total short-term debt. This measure shows a company's working capital adequacy and its capacity to pay its short-term debts (Ceylan & Korkmaz, 2018, p.53). The change in the current ratio (ΔCR) is calculated by the change in the current ratio in the current period compared to the previous period. The higher current ratio of the company in the current period compared to the previous period indicates that the liquidity situation has improved. In the Piotroski F-Score method, the F_ ΔCO score takes the value of 1 if ΔCR is positive and 0 if it is negative (Hyde, 2018, p.444).

- Change in Paid-in Capital (ΔPIC): This variable is measured in the model to determine whether there is a dilution effect in shares. The dilution effect is the decrease in the ownership shares of the economically weaker shareholders in the company through capital increase through rights issue. This situation is not desirable for the company. In this context, the change in the paid-in capital amount of the company compared to the previous period is calculated. If the change in the amount of paid-in capital in the current period compared to the previous period is positive, the F_ΔPIC score takes the value 0, and if there is no change, it takes the value 1 (Piotroski, 2000; p.11).

- Change in Gross Profit Margin Ratio (ΔGPMR): This variable expresses the change in the gross profit margin of an enterprise in the model compared to the previous period. Gross profit margin is calculated by dividing gross profit by net revenue. This measure shows how much of the sales realised by the company is obtained as gross profit (Demirhan, 2018; p.38). ΔGPMR is determined by the increase or decrease in the gross profit margin of the company in the current period compared to the previous period. An increase in gross profit margin may indicate a decrease in the production and sales costs of the company or an increase in the price of the products sold and is considered a positive situation for the company. According to the Piotroski F-Score method, the F_ΔGPMR score is 1 when ΔGPMR is positive, and 0 when it is negative (Tepeli and Kahraman, 2023; p.4).

- Change in Asset Turnover (ΔAT): This variable expresses the change in asset turnover ratio in the model compared to the previous period. Asset turnover ratio (AT) is calculated by dividing net revenue by total assets. This measure shows how efficiently an enterprise utilises its assets. A high asset turnover ratio indicates that the enterprise operates close to full capacity by using its assets effectively (Aydın et al., 2014; p.104). According to the Piotroski F-Score method, the F_ΔAT score is 1 when ΔAT is positive, and 0 when it is negative (Asmadi et al., 2021; p.71).

4. Results

In the analysis, calculations related to nine financial indicators between 2019-2023 in a total of 24 football clubs in 6 national leagues affiliated to UEFA were carried out by applying them in Excel environment. Then, Piotroski F-Scores were determined in terms of the values obtained. The findings obtained are first presented in Table 2 below on an annual basis in the context of 24 football clubs within the scope of the analysis. Then, averages on the basis of financial indicator and football club are presented in Table 3. In Table 2 and Table 3, values with F scores lower than 4 are highlighted in red, values between 4-6 are highlighted in yellow and values between 7-9 are highlighted in green.

Table 2. Piotroski F-Score Results of Football Clubs

Financial Indicators	Beşiktaş					Fenerbahçe					Galatasaray				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
F_ROA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
F_CFO	1	1	0	1	1	1	0	0	1	0	1	1	0	1	1
F_EQ	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1
F_ΔROA	1	0	1	0	0	1	0	1	1	1	0	1	0	0	1
F_ΔLEV	1	0	1	0	0	1	1	1	0	1	0	0	0	1	1
F_ΔCR	0	0	1	1	0	0	1	0	0	0	1	0	1	1	1
F_ΔPIC	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
F_ΔGPMR	1	0	1	0	0	0	1	0	1	0	0	1	0	0	1
F_ΔAT	1	1	0	0	0	0	1	1	1	0	0	1	0	0	1
F-SCORE	**7**	**4**	**6**	**4**	**3**	**5**	**6**	**4**	**6**	**2**	**4**	**6**	**3**	**5**	**9**

Financial Indicators	Trabzonspor					Juventus					Lazio				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
F_ROA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F_CFO	1	1	1	0	1	0	0	1	0	0	1	0	1	1	0
F_EQ	1	1	1	0	1	1	0	0	0	0	1	0	1	1	1
F_ΔROA	0	1	0	1	1	1	1	1	1	1	0	1	0	0	0
F_ΔLEV	1	1	1	1	0	0	1	0	1	0	0	0	0	0	0
F_ΔCR	1	0	1	1	0	0	1	0	1	1	1	0	0	0	0
F_ΔPIC	1	1	0	0	0	1	0	1	0	1	1	1	1	1	1
F_ΔGPMR	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0
F_ΔAT	0	0	0	0	1	1	0	1	0	0	1	0	1	0	0
F-SCORE	**5**	**5**	**4**	**3**	**5**	**5**	**3**	**4**	**4**	**3**	**5**	**2**	**4**	**3**	**2**

Financial Indicators	FC Inter					AC Milan					AS Roma				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
F_ROA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F_CFO	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0
F_EQ	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
F_ΔROA	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0
F_ΔLEV	0	0	1	0	0	1	1	1	0	1	0	0	0	0	0
F_ΔCR	1	0	0	0	1	1	1	1	1	1	1	1	1	0	0
F_ΔPIC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
F_ΔGPMR	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0
F_ΔAT	1	1	0	0	1	0	0	1	0	0	1	1	1	0	0

F-SCORE	**6**	**5**	**3**	**3**	**5**	**7**	**7**	**8**	**4**	**5**	**4**	**4**	**4**	**2**	**2**
Financial Indicators	**Manchester United**					**Manchester City**					**Arsenal**				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
F_ROA	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0
F_CFO	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1
F_EQ	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1
F_ΔROA	1	0	0	0	1	1	1	1	0	0	1	1	0	0	0
F_ΔLEV	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1
F_ΔCR	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0
F_ΔPIC	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
F_ΔGPMR	1	0	0	0	1	0	1	1	0	1	1	1	0	0	0
F_ΔAT	1	1	1	0	1	0	0	1	0	1	1	1	1	0	1
F-SCORE	**6**	**4**	**4**	**2**	**9**	**5**	**6**	**7**	**2**	**8**	**6**	**6**	**4**	**3**	**5**

Financial Indicators	**Liverpool FC**					**Chelsea FC**					**Real Madrid**				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
F_ROA	1	1	0	0	1	0	0	0	1	0	1	1	1	1	1
F_CFO	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1
F_EQ	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1
F_ΔROA	1	1	1	0	0	1	1	0	1	0	1	1	1	0	1
F_ΔLEV	1	1	0	0	1	1	1	0	1	1	0	0	0	0	1
F_ΔCR	0	0	0	1	0	1	1	0	1	0	1	1	0	0	1
F_ΔPIC	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
F_ΔGPMR	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1
F_ΔAT	1	1	1	0	1	1	1	1	0	0	0	0	0	0	0
F-SCORE	**7**	**7**	**6**	**4**	**7**	**7**	**6**	**4**	**6**	**3**	**7**	**6**	**5**	**2**	**8**

Financial Indicators	**FC Barcelona**					**Athletico Madrid**					**FC Sevilla**				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
F_ROA	1	1	0	0	1	1	0	0	1	1	1	0	0	1	1
F_CFO	0	1	0	0	1	0	1	0	0	0	1	1	1	0	1
F_EQ	0	1	1	1	1	1	1	1	0	0	1	1	1	0	1
F_ΔROA	1	1	0	0	0	0	1	0	0	1	0	1	0	0	0
F_ΔLEV	1	1	0	0	0	1	1	0	0	1	0	0	0	0	0
F_ΔCR	1	1	0	0	1	1	1	0	0	1	1	1	0	1	0
F_ΔPIC	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
F_ΔGPMR	0	1	0	1	1	0	1	0	0	0	0	1	0	0	0
F_ΔAT	0	0	1	0	0	1	1	1	0	0	1	1	1	0	0
F-SCORE	**5**	**8**	**3**	**3**	**6**	**6**	**7**	**3**	**2**	**5**	**6**	**7**	**4**	**3**	**4**

Financial Indicators	**Bayern Münich**					**Borussia Dortmund**					**Futebol Clube do Porto**				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
F_ROA	1	1	1	1	1	1	0	0	0	1	0	1	1	0	1
F_CFO	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1
F_EQ	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0

F_ΔROA	1	1	0	0	1	1	1	0	0	0	0	1	1	0	1
F_ΔLEV	0	1	1	0	1	0	1	0	0	1	0	1	1	0	0
F_ΔCR	0	1	1	0	1	0	1	0	0	0	0	0	1	0	0
F_ΔPIC	1	1	1	1	1	1	0	1	0	1	1	1	1	1	0
F_ΔGPMR	1	1	0	0	1	1	1	0	1	0	1	1	1	0	1
F_ΔAT	0	1	0	0	1	1	1	1	0	0	1	0	1	0	1
F-SCORE	**6**	**9**	**6**	**4**	**9**	**7**	**7**	**4**	**2**	**5**	**4**	**5**	**7**	**2**	**5**

Financial Indicators	**Benfica**					**Sporting Lisbon**					**Sporting Clube de Braga Futebol**				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
F_ROA	1	0	0	1	1	1	1	0	1	0	1	0	0	1	1
F_CFO	0	0	0	0	0	1	1	1	1	0	1	1	1	1	0
F_EQ	0	1	0	0	0	1	1	1	1	0	0	1	1	0	0
F_ΔROA	1	0	0	1	1	1	1	0	1	1	1	1	0	1	1
F_ΔLEV	0	0	0	1	1	0	1	0	1	1	1	1	1	1	1
F_ΔCR	1	1	0	0	1	1	1	0	1	1	0	0	0	1	1
F_ΔPIC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
F_ΔGPMR	1	0	0	1	1	1	1	0	1	1	1	1	0	0	0
F_ΔAT	1	1	0	0	1	1	1	0	0	1	1	1	1	0	0
F-SCORE	**6**	**4**	**1**	**5**	**7**	**8**	**9**	**3**	**8**	**6**	**7**	**7**	**5**	**6**	**5**

When Table 2 is analysed, it is generally observed that football clubs received similar F-Score values from time to time and different F-Score values from time to time during the analysis period. In the analysis period, out of 24 football clubs and a total of 120 football club observations in the context of the 5-year analysis period, 28 F-Score values between 7-9 occurred and it was determined that the financial strength was high in the relevant observation. On the other hand, 65 F-Score values between 4-6 were observed and it was determined that the financial strength was at a medium level as of the results of the relevant observation. In addition, 27 F-Score values less than 4 were observed and it was determined that the financial strength was weak in the related observations. In this context, it is predominantly determined that the financial strength of football clubs was at a medium level during the analysis period. Therefore, it can be said that the majority of football clubs performed as investment grade companies during the analysis period. Among the football clubs, the Piotroski F-Scores of Galatasaray and Manchester United in 2019, Bayern Munich in 2019 and 2022, Sporting Lisbon in 2022 were 9, and it was determined that these clubs met all the success criteria in the Piotroski F-Score method in the relevant years. On the other hand, the F-Score value of Benfica football club was calculated as 1 in 2021 and it was determined that it received the lowest value in the analysis period. AC Milan, Liverpool FC, Bayern Munich and Braga have never had an F-Score value lower than 4 during the analysis period and are in the investable company profile. On the other hand, Lazio football club, which has the highest F-Score value less than 4, has been determined to be in the profile of companies with weak financial strength and should not be invested in terms of the number of years in the analysis period.

Table 3 presents the Piotoroski F-Score values of football clubs between 2019 and 2023 and the five-year averages of 9 financial indicators used in F-Score calculation on the basis of club and variable. When Table 3 is examined, it is observed that the average F-Score values of the majority of football clubs are between 4-6 in terms of 5-year averages of F-Scores and that their financial strength during the analysis period is moderately acceptable and shows investment grade company performance. Bayern Munich and Sporting Lisbon have the highest F-Score values in terms of 5-year averages and are the clubs with the highest financial strength. On the other hand, Lazio and AS Roma have the lowest F-Score average of 3.2 and their financial strength is weak on average and they stand out as football clubs that should not be invested in.

When the average of the 9 financial indicators used in the Piotroski F-Score calculation and the average of the F-Score values are analysed, it is found that the average F-Score of the football clubs is 5, which is an investment grade average score in general. When analysed in terms of financial indicators, it is determined that the indicators with the lowest and in this context the weakest performance are return on assets (F_ROA) with an average value of 0.4, change in borrowing level (F_ΔLEV) and change in gross profit margin (F_ΔGPMR). On the other hand, the indicators with the highest and strongest performance in terms of financial indicators in football clubs are

changes in paid-in capital (F_ΔPIC), earnings quality (F_EQ) and cash flows from operating activities (F_CFO), respectively.

Table 3. Piotroski F-Score and Financial Indicator Averages of Football Clubs

Football Clubs	F_ ROA	F_ CFO	F_ EQ	F_ ΔROA	F_ ΔLEV	F_ ΔCR	F_ ΔPIC	F_ ΔGPMR	F_ ΔAT	**F-SCR**
Beşiktaş	0	0,8	1	0,4	0,4	0,4	1	0,4	0,4	4,8
Fenerbahçe	0	0,4	0,6	0,8	0,8	0,2	0,8	0,4	0,6	4,6
Galatasaray	0,2	0,8	1	0,4	0,4	0,8	1	0,4	0,4	5,4
Trabzonspor	0	0,8	0,8	0,6	0,8	0,6	0,4	0,2	0,2	4,4
Juventus	0	0,2	1	0,2	0,4	0,6	0,6	0,4	0,4	3,8
Lazio	0	0,6	0,8	0,2	0	0,2	1	0	0,4	3,2
FC Inter	0	0,4	1	0,4	0,2	0,4	1	0,4	0,6	4,4
AC Milan	0	1	1	0,6	0,8	1	1	0,6	0,2	6,2
AS Roma	0	0	1	0	0	0,6	1	0	0,6	3,2
Manc. Untd.	0,2	0,8	1	0,4	0,2	0,2	1	0,4	0,8	5
Manc. City	0,8	0,8	0,6	0,6	0,2	0,8	0,8	0,6	0,4	5,6
Arsenal	0	1	1	0,4	0,2	0	1	0,4	0,8	4,8
Liverpool	0,6	1	1	0,6	0,6	0,2	1	0,4	0,8	6,2
Chelsea	0,2	0,8	0,8	0,6	0,8	0,6	0,8	0	0,6	5,2
Real Madrid	1	0,8	0,8	0,8	0,2	0,6	1	0,4	0	5,6
Barcelona	0,6	0,4	0,8	0,4	0,4	0,6	1	0,6	0,2	5
Ath. Madrid	0,6	0,2	0,6	0,4	0,6	0,6	0,8	0,2	0,6	4,6
FC Sevilla	0,6	0,8	0,8	0,2	0	0,6	1	0,2	0,6	4,8
Bayern Münich	1	1	1	0,6	0,6	0,6	1	0,6	0,4	6,8
Bors. Dortmund	0,4	0,8	1	0,4	0,4	0,2	0,6	0,6	0,6	5
Porto	0,6	0,2	0,4	0,6	0,4	0,2	0,8	0,8	0,6	4,6
Benfica	0,6	0	0,2	0,6	0,4	0,6	1	0,6	0,6	4,6
Sporting Lisbon	0,6	0,8	0,8	0,8	0,6	0,8	1	0,8	0,6	6,8
Braga	0,6	0,8	0,4	0,8	1	0,4	1	0,4	0,6	6
Ortalama	**0,4**	**0,6**	**0,8**	**0,5**	**0,4**	**0,5**	**0,9**	**0,4**	**0,5**	**5,0**

5. Conclusion

In this study, the financial strength levels of 24 football clubs in 6 national leagues affiliated to the Union of European Football Associations (UEFA) between 2019 and 2023 were measured by applying the Piotroski F-Score method. In the analysis process, 9 financial indicators used in the Piotroski F-Score method were calculated, scored and collected. Then, the obtained 9 financial indicator scores and total F-Score values are analysed both on the basis of year and football club and in comparison with the average values in general.

When the F-Scores obtained as a result of the calculations are evaluated in general, it is observed that the football clubs received similar and different F-Score values from time to time during the analysis period. However, it has been determined that the financial strength of the football clubs was predominantly at a medium level during the analysis period, whereas high and low performances occurred in the number of observations closer to each other. In this context, it can be said that the majority of football clubs performed as investable companies during the analysis period. As a result of the analysis, it was determined that Galatasaray, Manchester United, Bayern Munich and Sporting Lisbon were the football clubs that received the full F-Score value of 9 in at least one year between 2019 and 2023. Therefore, it has been determined that these clubs fulfil all the success criteria in the Piotroski F-Score method in the relevant years. On the other hand, the F-Score value of Benfica football club was calculated as 1 in 2021 and it was determined that it received the lowest value in the analysis period. It was also determined that AC Milan, Liverpool FC, Bayern Munich and Sporting Clube de Braga did not have any weaknesses in their financial strength in terms of F-Score values during the analysis period and that they were in the investable company profile during the entire analysis period. Lazio was found to be the most unsuccessful football club in terms of the year.

When the five-year average values of Piotroski F-Scores between 2019-2023 are calculated on football club basis, the average F-Score value of 24 football clubs is calculated as 5. Again, in terms of average F-Score values, it was determined that 20 football clubs have medium financial strength, 2 football clubs (Bayern Munich and Sporting Lisbon) have high financial strength and a total of 22 clubs perform at an investable level. 2 football clubs (Lazio and AS Roma) were found to have the lowest F-Score average value and were found to have weak financial strength and to be in a non-investable company profile. Therefore, in general, it can be stated that 92% of the football clubs in the sample are investable companies in terms of their average values. Based on the mean values of the 9 financial indicators used in the Piotroski F-Score calculation, the top three variables with the highest mean value and therefore the most successful variables for football clubs are the change in paid-in capital (F_ΔPIC), earnings quality (F_EQ) and cash flows from operating activities (F_CFO). On the other hand, the three least successful variables are return on assets (F_ROA), change in debt level (F_ΔLEV) and change in gross profit margin (F_ΔGPMR). The financial indicators found to be unsuccessful are in line with the results of previous studies on football clubs using ratio analysis (Dimitropoulos, 2010; Karadeniz et al. 2014; Uluyol, 2014; Aslan, 2018; Güngör & Uzun Kocamış, 2018; Pawlowski, 2020).

It is thought that the poor return on assets performance is due to the excessive increase in expenses and costs (especially due to wrong transfer policies and excessive borrowing) despite the increase in revenues of football clubs in recent years. The failure of the football clubs in terms of the change in the level of borrowing is thought to be due to the high use of foreign resources in the financial structures of the football clubs and the increase in the use of foreign resources in the analysis period and the bankruptcy of some clubs. Again, it is thought that the reason for the failure of football clubs in terms of the change in gross profit margin is that costs are not kept under control or increased expenses (especially football players' salary payments). In this context, it can be suggested that football clubs should be careful especially in stadium rent, maintenance and repair expenses incurred in the activities and in football players' transfer or salary payments and avoid excessively high transfer and salary payments by considering the income-expense balance.

This research was conducted with the data of 24 football clubs in six national leagues affiliated to UEFA in Europe covering the years 2019-2023. Unlike previous studies, there is no research that measures the financial health and financial strength of football clubs using the Piotroski F-Score method. This situation increases the importance of the research in terms of its contribution to the literature on sports economics, football industry and football clubs and to investors and managers in the sector. In the future, it is foreseen that studies comparatively analysing football clubs in the leagues of different countries in different continents according to the Piotroski F-Score method and studies examining the relationships between F-Score values and financial failure, profitability, capital structure, firm value and stock performance of football clubs will contribute to the literature.

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