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Earnings persistence in Brazilian football clubs

Persistência dos lucros em clubes de futebol brasileiros

Persistencia de los lucros en clubes de fútbol brasileños

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Abstract
This paper examines the earnings quality of Brazilian football clubs, focusing on earnings persistence, its relationship with club size, and the persistence of accruals and cash flow. Based on the 2020 ranking by the Brazilian Football Confederation, the sample comprises 23 teams that disclosed financial statements from 2011 to 2021. Results indicate that smaller clubs demonstrate higher earnings persistence and predictability compared to larger counterparts. Specifically, the cash flow component of earnings exhibits stronger persistence in predicting future earnings than accruals among smaller clubs. Furthermore, findings suggest enhanced earnings predictability and persistence following the implementation of regulations such as PROFUT, which restricts expenses and debts. This study underscores earnings persistence as a critical indicator of earnings quality, particularly significant in the current regulatory landscape where Brazilian clubs can opt for incorporation under the Soccer Limited Company Law (2021).
Keywords: Brazilian Football Clubs; Earnings Persistence; Earnings Predictability; Earnings Quality

Resumo
Este artigo examina a qualidade dos lucros dos clubes de futebol brasileiros, com foco na persistência dos lucros, sua relação com o tamanho do clube e a persistência dos *accruals* e fluxo de caixa. Com base no ranking de 2020 da Confederação Brasileira de Futebol, a amostra é composta por 23 times que divulgaram suas demonstrações financeiras de 2011 a 2021. Os resultados indicam que clubes menores apresentam maior persistência e previsibilidade dos lucros em comparação com clubes maiores. Especificamente, o componente de fluxo de caixa dos lucros demonstra maior persistência na previsão de lucros futuros do que os *accruals* entre os clubes menores. Além disso, os achados sugerem uma maior previsibilidade e persistência dos lucros após a implementação de regulamentações como o PROFUT, que restringe despesas e dívidas. Este estudo destaca a persistência dos lucros como um indicador crítico da qualidade dos lucros, especialmente relevante no atual cenário regulatório onde os clubes brasileiros podem optar pela incorporação sob a Lei das Sociedades Anônimas do Futebol (2021).
Palavras-chave: Clubes de Futebol Brasileiros; Persistência dos Lucros; Previsibilidade dos Lucros; Qualidade das Informações Contábeis

Resumen
Este artículo examina la calidad de los lucros de los clubes de fútbol brasileños, centrándose en la persistencia de los lucros, su relación con el tamaño del club y la persistencia de los *accruals* y el flujo de

caja. Basado en el ranking de 2020 de la Confederación Brasileña de Fútbol, la muestra está compuesta por 23 equipos que divulgaron estados financieros desde 2011 hasta 2021. Los resultados indican que los clubes más pequeños muestran una mayor persistencia y predictibilidad de los lucros en comparación con clubes más grandes. Específicamente, el componente de flujo de caja de los lucros exhibe una mayor persistencia en la predicción de beneficios futuros que los *accruals* entre los clubes más pequeños. Además, los hallazgos sugieren una mayor predictibilidad y persistencia de los lucros después de la implementación de regulaciones como el PROFUT, que restringe gastos y deudas. Este estudio subraya la persistencia como un indicador crítico de la calidad de los lucros, especialmente relevante en el actual panorama regulatorio donde los clubes brasileños pueden optar por la incorporación bajo la Ley de Sociedades Anónimas del Fútbol (2021).

Palabras clave: Clubes de Fútbol Brasileños; Persistencia de los Lucros; Previsibilidad de los Lucros; Calidad de la Información Contable

1 Introduction

According to the Financial Accounting Standards Board (2008), high-quality accounting information must be relevant for decision-making by possessing predictive value, among other characteristics. For instance, Richardson et al. (2005) considered relevance and reliability as the two primary qualities of accounting information. This implies that the information should aid users in accurately forecasting past or present events. Therefore, financial reporting should provide information about a company's financial performance over a period, enabling various stakeholders to assess the company's future prospects. Their expectations about future performance are typically based, at least partially, on evaluations of past performance (Financial Accounting Standards Board, 2008).

The accounting research literature refers to this characteristic as "earnings persistence." Seminal studies have based their models on the function of earnings persistence, which anticipates future earnings. For instance, Miller and Rock (1985) structured a two-period model that helps managers demonstrate that the magnitude of the return reaction to an earnings innovation should be a function of earnings persistence. The authors used the term "persistence coefficient" to indicate the present value of revisions in expected future earnings. Kormendi and Lipe (1987) also examined whether the magnitude of the relationship between unexpected earnings and stock returns is correlated with earnings persistence.

Dechow et al. (2010) review is supported by these previous studies, underscoring persistence as a widely accepted proxy for earnings quality. However, while prior research acknowledges investors as crucial stakeholders in understanding earnings persistence (Kajimoto et al., 2019; Richardson et al., 2005; Sloan, 1996; Wang, 2014), this proxy extends beyond studies focused solely on the stock market or firm-level analyses. Earnings quality also holds significant implications for nonprofit organizations, despite receiving comparatively less attention (Beisland & Mersland, 2014). Nonprofit organizations often grapple with the challenge of balancing mission-related goals while maintaining the financial stability necessary for their survival (Carroll & Stater, 2009).

According to Hofmann and McSwain (2013), profit and nonprofit entities differ in their incentives for reporting earnings. Nonprofit organizations do not aim to maximize shareholder wealth as they serve a different set of stakeholders. Moreover, one cannot assume that earnings management motivations applicable to publicly traded corporations would similarly apply to the nonprofit sector, given differences in their financing and governance structures. Previous studies have argued that motivations for earnings management may arise in nonprofit organizations to influence contractual outcomes, manage tax implications, improve efficiency ratios, meet earnings targets, and potentially mislead stakeholders (Hofmann & McSwain, 2013; Nguyen & Soobaroyen, 2019; Wen et al., 2019). Hence Hofmann and McSwain (2013) proposed the term "financial disclosure management" instead of using earnings management terminology to describe the strategic use of financial reporting to shape stakeholders' perceptions of organizational performance. Furthermore, stakeholders such as donors are particularly interested in the accuracy of an organization's earnings in conveying information about its current and future financial health (Beisland & Mersland, 2014). Thus, this study focuses on a specific type of nonprofit organization – football clubs.

Indeed, the organizational structure of football clubs varies significantly across clubs, countries, and historical periods. While many football clubs in countries like Argentina and Brazil operate as nonprofit entities, the most prominent clubs in Chile, Peru, Colombia, and European countries such as Germany, Spain, France, and Italy are structured as profit-oriented organizations. In England, for instance, some clubs have been established as companies for several decades, contrasting with other countries that are currently undergoing structural adjustments (Nakamura & Cerqueira, 2021). For example, Brazilian clubs are in the process of restructuring under the recently enacted Soccer Limited Company Law (2021) (Gomes et al., 2022). This transformation requires clubs to reconsider their strategies within a highly competitive environment, adjust their decision-making processes, and enhance transparency practices by providing more detailed financial information (Dimitropoulos, 2010; Gomes et al., 2022; Nakamura & Cerqueira, 2021).

However, some studies have discussed that football clubs are characterized by an institutionalized management culture that prioritizes on-field success over financial performance (e.g., Dimitropoulos et al., 2016; Garcia-del-Barrio & Szymanski, 2009), often emphasizing maximizing wins rather than profits (Sloane,

1971). This focus on sporting utility persists even in many European football clubs structured as companies. Consequently, legislative measures have been introduced to incentivize clubs to enhance their management and financial practices. To qualify for benefits such as facilities for debt recovery, clubs must meet specific conditions, including regular compliance with labour and tax obligations, establishment of a fiscal council, and detailed publication of financial statements. (Marotz et al., 2020; Profut Law, 2015). This is exemplified by Brazil's PROFUT legislation, which mandates fiscal and financial responsibility practices and promotes transparent management among professional football clubs.

Considering that football has evolved into a significant market in the 20th century, attracting investments amounting to billions, these organizations are increasingly accountable to shareholders and stakeholders. They are expected to provide transparent and reliable information to all interested parties (Dimitropoulos, 2010; Dimitropoulos, 2011). Thus, Dimitropoulos and Koronios (2018) investigated the predictability and persistence of earnings in European football clubs to address uncertainties in accounting information. Their study emphasized that the cash flow component of earnings is more predictive of future earnings than accruals, findings that align with discussions by Richardson et al.'s (2005) and Sloan's (1996).

Hence, we aim to extend this investigation to the context of Brazilian nonprofit football clubs prior to the enactment of the Soccer Limited Company Law (2021), ensuring a sample restricted to non-profit clubs. Our study specifically utilizes Brazilian data to focus on the effect of PROFUT regulation, although isolating its effects proved challenging. Therefore, this study analyzes the earnings quality of Brazilian football clubs considering the earnings persistence, its relationship with the club size, and the persistence of accruals and cash flow. To achieve this, we employ the models used in Sloan (1996) and related literature (Dimitropoulos & Koronios, 2018), disaggregating the earnings into two components – accruals and cash flow from operations – and assessing which component exhibits greater persistence. However, our findings indicate that Brazilian football clubs did not exhibit significant persistence and predictability in their earnings. Interestingly, smaller clubs demonstrated higher earnings persistence and predictability when segmented by size. Consistent with existing literature, our results highlight that the cash flow component of earnings showed greater persistence than accruals, particularly among smaller clubs. Moreover, we found that persistence and predictability improved following the implementation of the PROFUT legislation, suggesting a positive impact on the financial performance of clubs.

The scope of this research and its empirical findings support the importance of analyzing earnings and accounting information on nonprofit organizations (Beisland & Mersland, 2014). The financial stability of nonprofits concerns all stakeholders, as it determines their ability to achieve objectives and sustain services (Trussel, 2002). Donors, creditors, and investors are interested in understanding whether an organization's earnings provide an accurate depiction of its current and future financial performance, as they prefer to engage with financially sustainable entities (Beisland & Mersland, 2014). Additionally, there is significant variability in earnings predictability among nonprofit organizations, which underscores the relevance of studies focusing on specific entities like football clubs. Previous research has acknowledged the financial challenges faced by football clubs, with a limited number capable of generating profits and some of the most popular clubs operating on the verge of bankruptcy (Dimitropoulos et al., 2016). Therefore, football clubs should improve the quality of their financial reporting, particularly their earnings persistence, which could potentially enhance their ability to generate future revenue (Dimitropoulos, 2011).

There is an increasing number of studies analyzing the earnings quality in football clubs (Dimitropoulos, 2011; Dimitropoulos et al., 2016; Garcia-del-Barrio & Szymanski, 2009; Szymanski & Smith, 1997), with an established literature focusing on persistence and its correlation with various firms' characteristics (Kajimoto et al., 2019; Richardson et al., 2005; Sloan, 1996; Wang, 2014). However, the literature examining the earnings quality in football clubs is scarce (e.g., Dimitropoulos & Koronios, 2018; Neri et al., 2021), especially within the Brazilian context. Reviewing previous literature on the earnings quality of Brazilian football clubs reveals conflicting findings regarding the presence or absence of earnings management, although none have yet utilized an earnings persistence proxy (Braga Junior & Holanda, 2021; Nascimento et al., 2015). This gap may stem from Brazilian football clubs primarily being nonprofit organizations, often overlooking the importance of financial stability. Nonetheless, this oversight can affect creditor involvement, hinder goal achievement, and threaten their own survival (Beisland & Mersland, 2014; Trussel, 2002). Moreover, addressing this gap provides critical insights into earnings dynamics in Brazilian football, particularly in the context before the adoption of the Soccer Limited Company Law (2021), which allows football clubs to transition to for-profit entities and raise funds. This analysis can serve as a benchmark for other jurisdictions, managers, and associations examining the evolution of earnings quality in a changing football market.

Therefore, the present paper could prove valuable to policymakers and regulatory agencies in understanding the impact of new regulations on earnings quality, prompting them to reassess their role in enhancing the financial management and performance of football clubs. This research also reinforces the importance of football clubs effectively managing their financial performance while considering the interests of various stakeholders. Moreover, this study brings substantial contributions by highlighting earnings persistence as a hallmark of earnings quality, particularly relevant in the current context following the implementation of the Soccer Limited Company Law (2021).

2 Related Literature and Research Hypotheses

A crucial function of accounting information quality is to signal organizations' future performance to stakeholders and to discipline managerial behavior (Kang et al., 2012). However, managers are less likely to be guided in organizations with volatile earnings (Dechow et al., 2010).

Thus far, we have observed that higher earnings persistence signifies greater earnings quality, offering financial performance information that is more beneficial for decision-making (Dechow et al., 2010). In other words, firms with higher earnings persistence are more, making it easier for investors and regulators to assess the firm's future prospects with reduced information uncertainty (Dimitropoulos & Koronios, 2018). Conversely, lower earnings persistence diminishes the ability to forecast future cash flows (Li, 2019) and evaluate asset value, thereby decreasing the utility of information in assessing and predicting the company's future performance (Paulo et al., 2012).

The accounting literature proposes that one critical property of earnings is its persistence over time (Dechow et al., 2010; Sloan, 1996). Dechow and Schrand (2004, p. 5) define earnings as high quality "when the earnings number accurately annuities the intrinsic value of the firm." Dechow et al. (2010) further argue that firms with more persistent earnings provide a more reliable basis for valuation. This characteristic is crucial for nonprofit entities, influencing the decisions of donors, creditors, and investors who seek accurate information to assess current and future financial performance (Beisland & Mersland, 2014). Hence, earnings persistence serves as a proxy for its quality (Dechow & Schrand, 2004). Furthermore, predictability is a key metric of earnings quality, with the adjusted R^2 of the persistence model serving as its measure. Higher R^2 values indicate greater earnings predictability.

In the Brazilian context, Arruda et al. (2015) found greater predictability of future profits compared to present profits in private financial institutions while studying Brazilian Financial Institutions. According to the authors, private financial institutions exhibit stronger persistence in accounting earnings than public ones. Similarly, Kajimoto et al. (2019) identified earnings persistence among income accounts in their analysis of Brazilian listed companies. In contrast, Santiago et al. (2015), studying the impact of adopting CPC 17 on accounting information quality in the Brazilian construction industry, observed different behaviors before and after adoption. While accounting information showed persistence before adoption, post-adoption results did not demonstrate the same level of persistence.

Regarding the football industry in Brazil, amateur management practices by national football club managers have historically led to significant societal dissatisfaction and substantial financial and sporting crises in Brazilian clubs (Rezende et al., 2010). Several regulatory initiatives have been implemented to enhance the management and financial accountability of Brazilian football clubs, including the Zico Law 8672/93, the Pelé Law 9615/98, Resolution 1005/04 of the Federal Accounting Council (CFC), the NBCT 10.13, and the PROFUT regulation. These measures aim to improve earnings quality by fostering transparent and democratic management and achieving financial stability among professional football clubs. For example, PROFUT (2015) introduces principles and practices of fiscal and financial responsibility, such as establishing autonomous fiscal boards, publishing audited financial statements, limiting anticipated revenue, and reducing deficits. Consequently, these initiatives are expected to enhance earnings quality through increased persistence and predictability. However, there is a limited number of studies focusing on the earnings quality of Brazilian football clubs, and existing research yields contradictory results, albeit without employing an earnings persistence proxy yet (e.g., Braga Junior & Holanda, 2021; Nascimento et al., 2015).

Numerous studies in accounting literature have utilized earnings persistence as a proxy for earnings quality (e.g., Dechow et al., 2010; Kang et al., 2012; Li, 2019) including research specifically focused on accounting for football clubs (e.g., Dimitropoulos & Koronios, 2018). Previous studies have used different metrics to estimate earnings persistence, consistently associating it with earnings quality and indicating reduced earnings management. For instance, Richardson et al. (2005) and Sloan (1996) utilized the persistence of the Return on Assets (ROA), calculated as operating income divided by total assets.. However, Richardson et al. (2005) suggested that similar qualitative conclusions about earnings persistence can be drawn when using net income. Dimitropoulos and Koronios (2018) and Kajimoto et al. (2019) estimated ROA using net income after taxes divided by lagged total assets. In contrast, Richardson et al. (2006) employed Return on Net Operating Assets (RNOA), defined as income from continuing operations divided by beginning net operating assets. This study extends the existing literature by utilizing ROA, computed as operating earnings divided by lagged total assets. Consequently, the first research hypothesis is formulated as follows:

H1 – There will be earnings persistence in Brazilian football clubs.

However, persistence alone does not indicate high-quality earnings (Dechow & Schrand, 2004). Financial accounting adheres to the accrual principle for recognizing revenues and expenses, which helps to effectively portray an organization's actual financial condition (Dimitropoulos & Koronios, 2018).

The definition of accruals has evolved over time and varies among authors. Initially described as changes in non-cash working capital minus depreciation expense by Healy (1985) and Sloan (1996), it was later broadened to include non-capital accruals by Richardson et al. (2005). Hence, according to Richardson

et al. (2005, p. 439), "ignoring such accruals results in noisy measures of both accruals and cash flows (because cash flows are typically computed as the difference between earnings and accruals)". For this reason and extending the research of Sloan (1996), the authors emphasize that less reliable accruals contribute to lower earnings persistence, leading to significant mispricing of securities and associated costs.

Sloan's (1996) seminal paper identified that the accrual component of earnings exhibits less persistence compared to the cash flow component. Moreover, high earnings performance driven by cash flow is more likely to persist than that driven by accruals. Similar findings are reported by Leal et al. (2017), who observed that cash flows of Brazilian public firms demonstrate greater persistence than earnings, primarily due to the less persistent nature of accruals within earnings. Therefore, extreme values in both earnings and cash flows significantly influence the persistence of these variables, with a pronounced and negative effect on cash flows. These behaviors can be attributed to the higher subjectivity involved in accruals compared to operational cash flow (Sloan, 1996).

One example illustrating the subjectivity in accrual measurement is the recognition of provisions. Provisions are recognized if they are more likely than not to occur, a calculation that inherently carries a subjective element. Consequently, recognizing a provision entails the recognition of a liability and an expense as a counterpart. In the football context, revenue from player registration rights significantly impacts clubs' financial outcomes. However, it is not uncommon for clubs to encounter difficulties in realizing this revenue. In such cases, adjustments may be made, either reducing the recorded value or acknowledging a lack of transaction that affects cash flow (Dimitropoulos & Koronios, 2018).

Dimitropoulos and Koronios (2018) examined the persistence of earnings of 109 European football clubs over the 2008-2016 period. Consistent with existing literature, the results indicated that the cash flow component of earnings was more predictive than accruals. Moreover, following the implementation of Financial Fair Play regulations, earnings predictability increased during that period. This study was the first in the literature to measure the persistence and predictability of earnings in the football context. Building upon this perspective, we extend this analysis to the Brazilian context with the following hypothesis:

H2 – Accruals will be less persistent than cash flows in Brazilian football clubs.

The accounting research literature also considers organizational size when analyzing earnings quality. Dechow et al. (2010) outlined this relationship by recognizing that data values can vary significantly based on the type and characteristics of the enterprise under consideration. Similarly, Beisland and Mersland (2014) found negligible differences in persistence and predictability among large and nonprofit organizations when studying the earnings quality of microfinance institutions. Conversely, for for-profit institutions, predictability was found to be higher in smaller microfinance institutions.

Additionally, other studies have considered the size of football clubs in the analysis of earnings quality. However, while we adopt an approach that considers earnings persistence as an important characteristic of earnings quality – since sustainable and repeatable earnings are more useful for general decisions (Dechow et al., 2010; Dichev et al., 2013) – against earnings management practices that represent a temporary deviation to meet a short-term financial reporting target, requiring a reverse conduct in the next period (Srivastava, 2019), previous studies have used different proxies for earnings quality. Dimitropoulos (2011), for example, used three different measures of earnings management and found that larger European football clubs are associated with less earnings management, either by reporting smaller positive earnings or through discretionary accruals. Likewise, Dimitropoulos et al. (2016) employed three proxies for earnings quality: earnings management, conditional accounting conservatism, and auditor switching. By controlling the clubs' size, the authors provide evidence suggesting that large-sized clubs engage less in earnings management than their smaller counterparts.

Panagiotis (2011) indicated that the size of the Greek football clubs, measured as a fraction of the club's assets, also positively affects profitability. Garcia-del-Barrio and Szymanski (2009) considered club performance, in addition to size, as another factor that may affect earnings. Furthermore, Dantas et al. (2015) examined both financial aspects and their importance to the Brazilian market in relation to Brazil's 12 largest football clubs.

Neri et al. (2021) and Rossi et al. (2021) conducted studies on the earnings management practices of Italian football clubs through player sales. Both results showed that clubs in the Italian Serie A have chronically relied on player trading to maintain financial sustainability, with this effect being more pronounced in the league's larger clubs. Rossi et al. (2021) suggest that UEFA's regulations should be assessed and modified to prevent and uncover the true activities and dynamics behind the player transfer market, including profit-smoothing behaviors.

According to Dimitropoulos and Koronios (2018), smaller football clubs in the Union of European Football Associations (UEFA) are more incentivized to produce predictable earnings as they heavily rely on UEFA prize money, which constitutes a significant portion of their annual revenues (Menary, 2016). This understanding stems from their empirical evidence on European football clubs, which indicated that smaller league clubs exhibit greater earnings persistence and predictability(Dimitropoulos & Koronios, 2018). In this vein, the third research hypothesis is formulated as follows:

H3 – There will be a difference in the earnings persistence between large and small Brazilian Clubs.

3   Data Collection and Research Design

Our study focuses on the 50 best teams of the 2020 Brazilian Football Confederation ranking, which is based on club performance over the past five years, along with other specific measures related to the championship and year. We removed clubs with missing data, resulting in a sample of 23 teams that published financial statements covering the period from 2011 to 2021. We decided to maintain the pandemic period (2020-2021) and limit the study to 2021 to better reflect the non-profit scenario before the Soccer Limited Company Law (2021). Information prior to 2011 was excluded because only a few clubs had published data on their websites. Consequently, we employ a balanced panel with 227 observations.

To estimate the Return on Assets (ROA), we use earnings before financial results divided by lagged total assets, following the approach employed in related literature (Richardson et al., 2005; Sloan, 1996). According to Richardson et al. (2005), using operating income enhances the overall power of the persistence regressions, as it is unaffected by explicitly identified non-recurring components of net income. Therefore, we also employ the persistence model, which regresses the ROA in t+1 on the current ROA.

The financial variables are operating income, accruals, total assets, and cash flow from operations. We hand-collect them in Brazilian football clubs' financial statements published on their websites. In cases where financial statements were not available online, data were collected from state football federations or reputable newspaper websites.

Earnings persistence is measured using models adapted from Sloan (1996) and related literature. Specifically, we estimate earnings persistence by regressing future Return on Assets (t+1) on current Return on Assets (t) following methodologies outlined in prior studies (e.g., Dimitropoulos & Koronios, 2018; Sloan, 1996) – Equation 1. Lagged total assets are utilized as a proxy for club size to scale earnings, cash flow from operations, and accruals.

To test the research hypothesis that the cash flow component will be more persistent than the accrual component (H2), we employ Model 2 established by Sloan (1996) and first adapted for the football context by Dimitropoulos and Koronios (2018). We anticipate that $\alpha1$ will be higher than $\alpha2$.

$$ROA_{it+1} = \alpha_0 + \alpha_1 ROA_{it} + \varepsilon_{it} \qquad (1)$$

$$ROA_{it+1} = \alpha_0 + \alpha_1 OCF_{it} + \alpha_2 TACC_{it} + \varepsilon_{it} \qquad (2)$$

Where:

ROA_{it} = Return on assets of club i in period t, calculated as the operating income scaled by lagged total assets;

OCF_{it} = Operating cash flow of club i in period t, calculated as the operating cash flow scaled by lagged total assets;

$TACC_{it}$ = Total accruals of club i in period t, calculated as the difference between the operating income and operating cash flow scaled by lagged total assets.

Equations (1) and (2) are estimated to test the third research hypothesis by categorizing the sample into two groups, i.e., large clubs and small clubs. Club size is measured based on sporting performance criteria used by Dantas et al. (2015). The 12 largest clubs in our sample are Atlético Mineiro, Botafogo, Cruzeiro, Corinthians, Flamengo, Fluminense, Grêmio, Internacional, Palmeiras, São Paulo, Santos, and Vasco.

Additionally, we examine the impact of PROFUT on clubs' earnings persistence. Therefore, we re-estimate Models 1 and 2 for periods before (2011-2015) and after (2016-2021) the implementation of this regulation. Consistent with prior literature (e.g., Dimitropoulos et al., 2016; Dimitropoulos & Koronios, 2018; Marotz et al., 2020; Schubert, 2014) we anticipate higher persistence and predictability estimates following the regulation's implementation. However, it is noteworthy that studies such as Rocha et al. (2021) and Umbelino et al. (2019) have reported no discernible effect of the PROFUT regulation on the financial disclosure quality of Brazilian football clubs.

Given the panel data nature of our study, we compare pooled ordinary least squares (OLS) regression with fixed effects models using the Chow test. We employ the Breusch Pagan test to detect heteroscedasticity in our models. To mitigate the influence of extreme outliers, all variables are winsorized at the first and 99th percentiles before model estimation.

We conducted model implementations and statistical tests using the R statistical software and its associated packages (i.e., plm, psych, car, and lmtest) (Croissant & Millo, 2008; Fox & Weisberg, 2019; Revelle, 2017; Zeileis & Hothorn, 2002).

According to Chow test results, all models presented in this study were estimated using pooled regression. Except for models 2 and 5, the other models exhibited heteroscedasticity issues as per the Breusch-Pagan test, which were corrected using White robust standard errors. Finally, we conducted robustness tests excluding 2020-2021 to assess if the effects are similar without the influence of the pandemic period. We also used net income instead of EBIT as a complementary analysis.

4 Empirical Results
4.1 Descriptive Results

Table 1 presents the descriptive statistics of ROA and accruals per club. Despite all clubs being ranked among the top 50 teams in 2020 based on their performance over the past five years, there is considerable variability among them. While some clubs reported operating profits during the analyzed period, others accumulated losses.

Most Brazilian football clubs exhibited a positive mean and median ROA during the period (16 and 15 out of 23, respectively). In contrast, most clubs presented mean and median negative accruals (17 and 15 out of 23, respectively). This finding mirrors the observations of Dimitropoulos and Koronios (2018), in their study of European football clubs, suggesting that these organizations generated more cash flow from operating activities than net income.

Table 1
Descriptive Statistics of ROA and Accrual per Club

Club	ROA				Accrual			
	Min	Mean	Median	Max	Min	Mean	Median	Max
América MG	-0.05	0.01	-0.02	0.17	-0.05	0.02	0.01	0.14
Atlético MG	-0.05	0.03	0.03	0.11	-0.05	0.01	0.01	0.09
Atlético PR	-0.03	0.07	0.04	0.35	-0.08	0.02	-0.02	0.42
Avaí	-0.24	-0.05	-0.10	0.13	-1.02	-0.17	-0.12	0.11
Bahia	-0.92	0.05	0.13	0.45	-0.97	-0.02	0.09	0.44
Botafogo	-1.65	-0.20	-0.09	1.25	-1.79	-0.37	-0.15	0.50
Corinthians	-0.15	0.02	0.03	0.21	-0.25	-0.08	-0.06	0.17
Coritiba	-0.18	-0.03	0.01	0.12	-0.33	-0.11	-0.15	0.10
Criciúma	-0.14	0.01	0.02	0.13	-0.08	-0.01	0.00	0.06
Cruzeiro	-0.79	-0.13	-0.03	0.13	-0.54	-0.10	-0.08	0.15
Flamengo	-0.07	0.18	0.16	0.43	-0.29	0.01	-0.01	0.26
Fluminense	-0.05	0.03	0.02	0.10	-0.12	-0.03	-0.03	0.03
Goiás	-0.73	0.22	0.19	1.24	-1.08	0.02	0.03	1.14
Grêmio	-0.07	0.12	0.15	0.31	-0.30	-0.13	-0.13	0.03
Internacional	-0.05	0.00	0.01	0.06	-0.16	-0.05	-0.05	0.02
Juventude	-0.12	0.01	-0.02	0.54	-0.14	-0.01	-0.05	0.26
Palmeiras	-0.12	0.09	0.09	0.35	-0.54	-0.20	-0.20	0.01
Ponte Preta	-0.45	-0.09	-0.03	0.02	-5.26	-0.58	-0.02	0.01
Santos	-0.55	0.05	0.10	0.72	-0.89	-0.30	-0.44	0.60
São Paulo	-0.13	-0.02	0.02	0.07	-0.28	-0.12	-0.12	-0.07
Sport	-0.10	0.02	-0.01	0.15	-0.31	-0.06	0.00	0.21
Vasco	-0.13	0.12	0.05	0.50	-0.41	0.04	0.08	0.50
Vitória	-1.06	0.05	-0.01	1.39	-1.46	-0.03	0.02	1.40

Goiás, a small club, exhibited the highest mean and median ROA in the period. Flamengo, one of Brazil's largest clubs, showed the highest ROA among the major clubs. Cruzeiro, which faced financial difficulties in 2019 and was relegated to the second division, reported the lowest ROA among the major clubs. Among smaller clubs, Ponte Preta recorded the lowest mean ROA and accruals.

Clubs experiencing accumulated losses and negative operating cash flow may indicate potential insolvency risks. In the long term, these factors, when combined, can erode equity and escalate overall debt levels. In Europe, substantial evidence exists regarding insolvency issues among football clubs (Alaminos & Fernández, 2019; Scelles et al., 2018; Szymanski & Weimar, 2019). In the Brazilian context, evidence suggests challenges related to negative equity (Dantas et al., 2015, 2017; Oliveira & Borba, 2021; Minatto & Borba, 2021).

Table 2 presents the descriptive statistics of the variables employed in the models. We categorized clubs into large and small based on the criteria established by Dantas et al. (2015). The difference between the mean values of these groups was tested using an ANOVA T-Test. On average, large clubs exhibited lower ROA compared to small clubs, while larger clubs showed higher OCF than smaller ones. Across all clubs, operating profit averaged 2.4% of total assets.

Quantile analysis revealed that at least half of both large and small clubs reported negative accruals. A significant majority (at least 75%) of large clubs had positive operating cash flow, compared to 50% among small clubs. ANOVA results indicated a marginally significant difference only in OCF values (p-value = 0.087), suggesting variability in operating cash flow relative to total assets among clubs. This variability may stem from differences in financial management practices or operational efficiency. However, ROA (p-value = 0.322) and Accrual (p-value = 0.252) did not exhibit significant differences, indicating consistent profitability and non-cash accounting adjustments across clubs. Factors such as regulatory environments, market conditions, and financial strategies could explain these findings, alongside high standard deviations indicating wide value dispersion.

Concerning outliers in our sample, the descriptive statistics presented in the table are pre-winsorization. Therefore, to mitigate their impact on the proposed models, we winsorized all variables at the 1st percentile.

Table 2
Descriptive Statistics of Sample Variables

	Variable	Min	25%	Median	Mean	75%	Max	SD	n
All Clubs	ROA	-1.646	-0.048	0.017	0.024	0.097	1.386	0.291	250
	OCF	-0.482	0.004	0.065	0.122	0.165	4.814	0.343	250
	Accruals	-5.264	-0.151	-0.046	-0.098	0.022	1.398	0.452	250
Large Clubs	ROA	-1.646	-0.033	0.028	0.025	0.119	1.252	0.295	132
	OCF	-0.482	0.027	0.089	0.135	0.211	0.748	0.178	132
	Accruals	-1.792	-0.178	-0.070	-0.110	0.010	0.599	0.300	132
Small Clubs	ROA	-1.058	-0.056	0.006	0.024	0.078	1.386	0.287	118
	OCF	-0.359	-0.012	0.028	0.108	0.123	4.814	0.463	118
	Accruals	-5.264	-0.115	-0.020	-0.084	0.047	1.398	0.578	118

Note: All variables scaled by lagged total assets. SD = Standard Deviation. n = number of observations (2011-2021).

4.2 Model Results

Table 3 presents the results of the models where we regress the lagged ROA on the current ROA. We separated segmented the analysis into three models: (1) incorporating all clubs in a unified regression, and separately for (2) large clubs and (3) small clubs. Additionally, we conducted an interaction analysis between lagged ROA and club size.

Table 3
Persistence Models

	Dependent variable: ROA_t			
	All (1)	**Large (2)**	**Small (3)**	**Interaction**
ROA_{t-1}	0.200***	0.116	0.310***	0.339
	(0.091)	(0.083)	(0.097)	(0.103)
Size	-	-	-	0.009
	-	-	-	(0.038)
ROA_{t-1} X Size	-	-	-	-0.214
	-	-	-	(0.145)
Constant	0.033	0.037	0.027	0.025
	(0.023)	(0.024)	(0.026)	(0.028)
Observations	227	120	107	227
R^2	0.043	0.017	0.088	0.057
Adjusted R^2	0.038	0.008	0.079	0.043
F Statistic	10.021*** (df = 1; 225)	1.992 (df = 1; 118)	10.127*** (df = 1; 105)	4.098*** (df = 3; 223)

Note: *p<0.10; **p<0.05; ***p<0.01

The results indicate that the lagged ROA can predict 20% of the current ROA when considering all clubs. Small clubs exhibit a higher regression coefficient and R^2 compared to large clubs, suggesting they generate a more persistent and predictable earnings stream, potentially due to negotiating larger proportions of revenue than their larger counterparts. These results align with Dimitropoulos and Koronios (2018), who observed similar patterns between major and minor European leagues, attributing the greater earnings persistence of smaller clubs to their need to maintain consistent earnings for creditors compared to larger clubs (Dimitropoulos & Koronios, 2018). Large clubs typically benefit from multiple revenue streams, whereas smaller clubs rely more heavily on television rights revenues. Although an interaction test between lagged ROA and club size was conducted, the results did not reach statistical significance.

Table 4 presents the results of the models where we segmented the lagged ROA and subsequently regressed the lagged cash flow and accrual components on the current ROA. The accrual component was less persistent than the cash flow across all clubs. However, the difference was minimal, with both components showing similar confidence intervals. Compared to Dimitropoulos and Koronios's (2018), who reported higher predictability (41.6%) among European clubs, the accrual component was not statistically significant in their context, and the persistence of the cash flow component was lower (0.162) compared to Brazilian clubs. It is important to note that their study encompassed a much larger dataset with 844 firm-year observations.

Table 4
Persistence Models – OCF and Accruals

	Dependent variable: ROA		
	All (4)	**Large (5)**	**Small (6)**
OCF_{t-1}	0.233**	0.191	0.367***
	(0.102)	(0.141)	(0.141)
$Accrual_{t-1}$	0.198***	0.096	0.325***
	(0.081)	(0.085)	(0.102)
Constant	0.029	0.024	0.022
	(0.016)	(0.030)	(0.024)
Observations	227	120	107
R^2	0.044	0.020	0.094
Adjusted R^2	0.035	0.003	0.077
F Statistic	5.129*** (df = 2; 224)	1.168 (df = 2; 117)	5.395*** (df = 2; 104)
Mean VIF	2.41	1.13	4.34

Note: *p<0.10; **p<0.05; ***p<0.01

Regarding the results focusing on large clubs, both the accrual and cash flow components in model 5 were not statistically significant. This finding contrasts with Dimitropoulos and Koronios (2018), whereas major European leagues clubs showed a higher accrual stream compared to operating cash flow.

Finally, in model 6, small clubs exhibited higher persistence in their cash flow than in the accrual component, consistent with the findings of Dimitropoulos and Koronios (2018) and related literature (Sloan, 1996). Small clubs also presented higher predictability in their earnings when compared to large clubs. Persistent and predictable earnings are crucial for reducing the information asymmetry between the management and stakeholders, an essential aspect of earnings quality that both small and large clubs must address.

Table 5 presents the persistence models considering the periods before and after the PROFUT regulation. As expected and confirmed, the period after the regulation showed higher coefficients of persistence and predictability. Marotz et al. (2020), when analyzing PROFUT in the Brazilian context, found a positive influence of the regulation on investments in intangible assets measured by the ROA indicator. Moreover, in the European context, Dimitropoulos and Koronios (2018) indicated that regulations like Financial Fair Play also positively affected both measures of earnings quality. The interaction model included a dummy variable for the PROFUT period and its interaction with lagged ROA, but the interaction variable did not yield statistically significant results.

Table 5
Persistence Models – PROFUT

	Dependent variable: ROA_t			
	All (1)	**Before PROFUT (2)**	**After PROFUT (3)**	**Interaction**
ROA_{t-1}	0.200*	0.170*	0.216**	0.170**
	(0.124)	(0.099)	(0.084)	(0.086)
PROFUT	-	-	-	0.020
	-	-	-	(0.042)
ROA_{t-1} X PROFUT	-	-	-	0.046
	-	-	-	(0.129)
Constant	0.033*	0.020	0.040*	0.020
	(0.021)	(0.030)	(0.022)	(0.034)
Observations	227	89	138	227
R^2	0.043	0.033	0.046	0.044
Adjusted R^2	0.038	0.022	0.039	0.032
F Statistic	10.021*** (df = 1; 225)	2.936* (df = 1; 87)	6.568** (df = 1; 136)	3.457** (df = 3; 223)

Note: *p<0.10; **p<0.05; ***p<0.01

Furthermore, to delve into the persistence of ROA components (i.e., accrual and cash flow), we tested Equation 2 by splitting the sample into periods before and after the implementation of the PROFUT regulation. The results presented in Table 6 appear to support our expectations, showing that the period

after PROFUT had higher persistence and predictability compared to the period before. Moreover, the cash flow component exceeded the accrual component, aligning with expectations from the literature (Dimitropoulos & Koronios, 2018; Sloan, 1996). We also found that after the PROFUT period, the cash flow component became statistically significant, while the accrual component lost its significance. This underscores the impact of stricter regulations on clubs' financial practices and transparent management. The interaction model incorporated a dummy variable for the PROFUT period and its interaction with lagged ROA components, although the interaction variable did not yield statistically significant results.

Table 6

Persistence Models – OCF and Accruals

	Dependent variable: ROA			
	All (4)	**Before PROFUT (5)**	**After PROFUT (6)**	**Interaction**
OCF_{t-1}	0.233[*]	0.175	0.377[*]	0.175
	(0.102)	(0.128)	(0.227)	(0.119)
$Accrual_{t-1}$	0.198	0.174[*]	0.155	0.175
	(0.081)	(0.102)	(0.119)	(0.119)
PROFUT	-	-	-	-0.001
	-	-	-	(0.040)
OCF_{t-1} x PROFUT	-	-	-	0.202
	-	-	-	(0.180)
$Accrual_{t-1}$ x PROFUT	-	-	-	-0.018
	-	-	-	(0.133)
Constant	0.029	0.020	0.020	0.020
	(0.016)	(0.032)	(0.030)	(0.029)
Observations	227	89	138	227
R^2	0.044	0.033	0.064	0.055
Adjusted R^2	0.035	0.011	0.050	0.033
F Statistic	5.129[***] (df = 2; 224)	1.489 (df = 2; 86)	4.608[**] (df = 2; 135)	2.559** (df = 5; 221)
Mean VIF	2.41	4.13	1.13	3.24

Note: [*]p<0.10; [**]p<0.05; [***]p<0.01

All models demonstrated a Variance Inflation Factor (VIF) below 5, suggesting that multicollinearity, which could potentially bias our results, was not a significant concern. Furthermore, we conducted tests for autocorrelation in the residuals. The Durbin-Watson test results revealed no evidence of serial correlation in the residuals across the observed years.

In our robustness analyses, we excluded the 2020-2021 period due to potential distortions caused by the pandemic. Results from the PROFUT models without these years showed higher and statistically significant coefficients, suggesting that the pandemic period led to decreased revenue streams and financial losses for nearly all clubs. Therefore, including the pandemic period in our main analysis, limited to 2021, better reflects the pre-Soccer Limited Company Law (2021) non-profit scenario.

5 Conclusions

Our study aimed to assess the earnings quality of Brazilian football clubs, focusing on earnings persistence, its relationship with club size, and the persistence of accruals and cash flow. Using data from the 2020 Brazilian Football Confederation rank, our sample comprised 23 teams that published financial statements from 2011 to 2021. Specifically, we examined the impact of the PROFUT regulation, analysing both pre- and post-regulation periods, including the last year before the adoption of the Soccer Limited Company Law, which facilitated clubs' transition to for-profit entities.

In our analysis of large and small clubs separately, we observed that small clubs exhibited greater earnings persistence and predictability compared to large clubs, consistent with findings by Dimitropoulos and Koronios (2018) in European football clubs. This disparity may stem from the greater imperative of smaller clubs to maintain a stable earnings stream for creditors, contrasting with larger clubs that engage in occasional high-value transactions such as player transfers, which contribute significantly to operating income. Moreover, in line with previous studies (Dimitropoulos & Koronios, 2018; Sloan, 1996), we found that the cash flow component of earnings demonstrated higher persistence than the accrual component across small clubs and the entire sample.

The findings of this study hold practical implications for the Brazilian football market and for countries with lenient financial constraints. According to Dimitropoulos and Koronios (2018), football clubs report more predictable earnings streams following the implementation of Financial Fair Play regulations. Our research

supports this assertion by examining the impact of the PROFUT regulation within the Brazilian context. Following the enactment of PROFUT, Brazilian football clubs demonstrated increased predictability and persistence in their earnings. This underscores the importance for policymakers and regulatory bodies to acknowledge their role in enhancing the financial management and overall performance of football clubs through effective regulation. Additionally, our study underscores the significance of earnings quality for football managers, particularly in Brazil where recent legislation, such as the Soccer Limited Company Law (2021), enables clubs to transition into for-profit entities.

In addition to regulators and managers, this study holds implications for a wide range of stakeholders. Potential investors, for instance, may seek greater earnings persistence from Brazilian clubs, as more reliable earnings data can support safer investment decisions. Creditors, as previously mentioned, seem to justify the earnings behavior of smaller clubs. While some studies have indicated that fans and supporters prioritize sporting performance over financial considerations (e.g., Buchholz & Lopatta, 2017; Huth, 2020), it is crucial to consider their impact. Enhanced earnings quality can foster better alignment of interests among stakeholders, which in turn may contribute to overall improvements in sporting performance. This underscores the broader relevance of earnings quality beyond financial stakeholders, encompassing the broader ecosystem of football clubs and their supporters.

Regarding the limitations of this study, our dataset is limited to the 23 Brazilian clubs that published complete financial statements from 2011 to 2021. As such, generalizing these findings to other countries or different time periods should be approached cautiously. Also, isolating the specific impact of the PROFUT regulation in our model was not feasible. Although we segmented our analysis into periods before and after PROFUT's implementation, we cannot definitively attribute all observed changes solely to this regulation. Other factors likely influenced our results across both periods. Furthermore, our method of calculating accruals – based on the difference between income and operating cash flow – has its limitations. Alternative methods, such as the balance sheet approach, could provide different insights and potentially include more clubs, particularly those that do not publish cash flow statements. Lastly, our findings did not persist when we substituted net income for earnings before interest. This highlights the sensitivity of our results to different accounting measures and underscores the importance of methodological consistency in future research.

Future studies could further investigate the influence of revenue streams and their diversification on earnings persistence within football clubs. Integrating sports performance metrics as control variables in the models could enhance understanding of the interplay between on-field success and financial outcomes. Additionally, there remains a significant gap in the literature concerning earnings quality in other types of nonprofit organizations in Brazil, warranting further exploration (Guevara et al., 2021; Wen et al., 2019). Finally, examining the financial transparency practices of Brazilian clubs that have transitioned into companies under the Soccer Limited Company Law (2021) could provide valuable insights into the impact of regulatory changes on governance structures and financial reporting practices (Nakamura & Cerqueira, 2021). These future studies are crucial for advancing knowledge in both sports management and accounting disciplines, contributing to more comprehensive strategies for organizational governance and financial sustainability in the sports sector.

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Conception and preparation of the manuscript: F. Minatto, S. Meurer
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