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IMPACT OF THE FOOTBALL MANAGEMENT MODERNIZATION AND FISCAL RESPONSIBILITY PROGRAM ON THE FINANCIAL AND SPORTING PERFORMANCE OF BRAZILIAN CLUBS

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1 INTRODUCTION

Football has a unique sociological meaning, with cultural and social developments and reflexes that transcend national borders (Assis, 2017; Giulianotti & Robertson, 2012). In the last two decades, the commercialization of professional sport (Dimitropoulos & Scafarto, 2019) and the growth of the football industry have increased the revenue streams of clubs and their products (Malagila et al. 2020). In this sense, the revenues of the main European clubs grew by 9.8% per year (Holzmayer & Schmidt, 2020), and in 2019, for example, the revenues of Spanish clubs, such as Real Madrid, reached €750.9 million euros and Barcelona €690.4 million euros, being the highest revenue of a football club globally (Leite et al. 2020).

In Brazil, football is considered an influential component in Brazilian society, related to the country's cultural and traditional roots, to the point of being considered an element of national identity (Félix & Silva, 2020). It is the most practical sport in the country, arousing the interest of several agents (Nazi & Amboni, 2020), and generating billions of dollars. In 2019, the production chain linked to the football segment impacted 0.72% of the National Gross Domestic Product - GDP (Brazilian Football Confederation, [CBF], 2019), in which the total and recurring revenues (disregarding the sale of athletes) of Brazilian clubs resulted in BRL 5.88 billion and BRL 4.55 billion, respectively (Itaú BBA, 2020).

With the process of professionalization of football, clubs began to seek a balance between success within the four lines and stable financial health (Assis, 2017), however, satisfying the interests of stakeholders strongly depends on those responsible for football management (Zulch et al. 2020). The lack of professionals prepared to manage finances contributed to the high levels of indebtedness of Brazilian clubs (Santana Filho et al. 2019). In this sense, the structure of football facilitates obtaining private benefits through favoritism, bribes, influence peddling, money laundering and other corruption cases (Assis, 2017; Pielke, 2013).

The Agency Theory presupposes the existence of conflicts of interest between the interested parties in the firms, in which the agents can act in favor of their own interests, aiming at private benefits (Jensen & Meckling, 1976). To minimize these agency conflicts, the concept of corporate governance emerges (Nazi & Amboni, 2020), which corresponds to a set of mechanisms aimed at aligning interests between the entities' Stakeholders (Jensen & Meckling, 1976). The adoption of good corporate governance practices would be an alternative for clubs to adapt to market requirements, consolidating a good reputation, which would arouse the interest of business partners and improve the management relationship with fans (Freitas & Fontes Filho, 2011; Nazi & Amboni, 2020).

To encourage clubs to promote more transparent and democratic management, with financial balance, the Brazilian government enacted Law 13,155 of August 4, 2015, which establishes guidelines for fiscal and financial responsibility and created the Management Modernization Program and the Fiscal Responsibility of Football – PROFUT (Santana Filho et al. 2019). The PROFUT grants clubs benefits such as installment payments and reduced spending on tax and fiscal debts, as well as interest rebates and fines referring to payables to the Union (Andrade Júnior et al. 2019). In this sense, the program is expected to have a positive impact on the economic, financial and sports performance of Brazilian football clubs (Umbelino et al. 2019).

However, empirical evidence regarding the effects of joining PROFUT on the financial management of clubs is not conclusive (Andrade Júnior et al. 2019). Studies such as Marotz et

al. (2020), Santana Filho et al. (2019), Silva et al. 2019 and Siqueira Junior and Oliveira (2018) suggest that PROFUT improved the financial performance of football clubs. On the other hand, after joining the program, the indebtedness levels of clubs tend to increase (Andrade Júnior et al., 2019), which suggests a worsening in the financial performance of clubs (Umbelino et al., 2019). In this context, the purpose of this study is to identify the impact of PROFUT membership on the financial and sports performance of soccer clubs in Brazil.

The topic of corporate governance in football is little explored by academic literature (Andrade Júnior et al. 2019) and can be considered a fertile field for investigations on management of clubs (Marotz et al. 2020). In this sense, our study contributes to the empirical discussion on the subject, as it includes a methodological approach not used in previous studies. Thus, the empirical evidence of this study can be useful to guide strategic decisions of directors and managers linked to football clubs and entities, and the formulation of policies and inspection procedures, by regulatory bodies.

2 GOVERNANCE IN FOOTBALL AND PROFUT: CONCEPTIONS AND HYPOTHESES

Football is one of the most practiced team sports in the world, and its popularity is a global trend, which is linked to the simplicity of resources and equipment necessary for its performance (Félix & Silva, 2020; Marotz et al. 2020). Over the years, football is no longer a purely recreational activity (Costa et al. 2018), anchored in the passion of sports fans, becoming understood as a business, with high tax revenue (Rocha et al. 2020). The growth of football as a global business is rooted in corporate advertising and brand building strategies and transnational media networks (Giulianotti & Robertson, 2012), which intensified competitiveness, the dispute for revenue and the commercialization of the sector demanding greater professionalization of its actors (Assis, 2017).

The process of industrialization of football generated immediate impacts on the finances of clubs (Nazi & Amboni, 2020), which stand out as relevant economic agents in arousing the interest of investors around the world (Malagila et al. 2020). The increase in revenues has increased the investment levels of clubs, which seek to enhance the success of their projects, which can lead football clubs into financial difficulties (Dimitropoulos & Scafarto, 2019; Zulch et al. 2020). In the same sense, the debt levels of football clubs seem to grow over time, in 2019, club debts continued their upward trend, with a growth of 18% compared to 2018, totaling R$ 8,093 billion (Itaú BBA, 2020).

This worsening in the solvency process of sports entities would be linked to the impacts of external events, such as financial crises (Rocha et al. 2020) and to internal aspects, such as an immature professionalization process and failures in the administration of entities (Freitas & Fonte Filho, 2011; Nazi & Amboni, 2020). In addition, the football segment is often in the midst of scandals related to the opportunistic conduct of managers of associations, federations, and clubs, as well as players and other sports agents (Assis, 2017; Pielke, 2013), which can undermine credibility of sports institutions and football as a whole (Nazi & Amboni, 2020).

In the Brazilian context, denunciations and accusations of embezzlement and corruption involving managers of football federations and clubs are common in the country's media. The Brazilian Football Confederation (CBF), the highest football body in the country, had its last three presidents removed due to signs of irregularities and corruption in their management (Mattos, 2018). In clubs, the most recent case is that of Cruzeiro Esporte Clube, one of the largest and most traditional teams in Brazil, whose managers were accused of crimes such as money laundering, embezzlement, misrepresentation, and formation of a criminal organization (Piu, 2020). These events, in addition to undermining the credibility of the sport among fans

and supporters, generate a loss of competitiveness in football as an entertainment industry (Assis, 2017).

The way football is structured, with high amounts of resources, increased political power and the interests of different audiences, increases the risk of opportunistic behavior by agents (Zulch et al. 2020). In this line, the Agency Theory can be an interesting theoretical framework to understand the relationship between football clubs and their stakeholders (Rezende & Dalmácio, 2015). This theory presupposes the existence of agency conflicts, in which the interests of agents are not always aligned with the objectives of their hiring (Malagila et al. 2020). Assuming that individuals aim to maximize their personal utilities (Jensen & Meckling, 1976), it is plausible to think that, given the opportunity, they will act selfishly, pursuing their own interests (Malagila et al. 2020).

Based on the assumptions of Agency Theory, corporate governance practices would inhibit opportunistic behavior, qualifying decision-making and minimizing agency conflicts (Ataay, 2018). An example applied to football would be for the club to stipulate efficient governance mechanisms to ensure the alignment of interests between managers and the club (Malagila et al. 2020), and minimize corruption scandals, in the sense that it would avoid problems such as abuse of power, errors and fraud (Schleifer & Vishny, 1997). The adoption of improved governance mechanisms would be inevitable (Zulch et al. 2020), in the sense of conferring credibility, legitimacy and boosting the gains of sports entities (Nazi & Amboni, 2020).

In 2010, the European football regulatory body, The Union of European Football Associations (UEFA), concerned with the long-term financial viability and sustainability of clubs, adopted new regulations, such as financial fair play (Assis, 2017; Szymanski & Weimar, 2019; Zulch et al. 2020). This regulation consists of a set of rules with the purpose of providing clubs with financial health, aiming at the balance between sports and financial performance (Moraes et al. 2014). In Brazil, from the 1990s onwards, the government began to play a relevant role as an agent of change in football, through the enactment of legal provisions, with the aim of improving the structuring and management of clubs (Nazi & Amboni, 2020).

In this line, in 1993 the so-called Zico Law established general rules regarding sport and made it possible for the management of sports entities to be profitable. Five years later, to promote greater transparency and professionalism in the management of Brazilian sports, the Pelé Law instituted, among other things, consumer rights in sports and accountability by sports directors. In 2003, the football moralization law provides for the principle of financial and administrative transparency and obliges sports entities to disclose their financial statements. Three years later, the Timemania law made it possible for football clubs to pay tax and social security debts in installments.

Thus, in yet another attempt to professionalize the management of football clubs in Brazil the Law 13,155 of August 4, 2015, was enacted, establishing the Program for the Modernization of Management and Fiscal Responsibility of Brazilian Football (PROFUT), known as the PROFUT Law (Umbelino et al. 2019). PROFUT establishes principles and practices of transparency, fiscal and financial responsibility and provides for reckless management, in addition to instituting special installments for the recovery of tax debts by the Federal Government, within the scope of professional football sports entities (Rezende & Dalmácio, 2015; Umbelino et al. al. 2019).

Adherence to PROFUT allows clubs to pay their debts in installments at the Federal Revenue Service, Attorney General's Office of the National Treasury, Central Bank and Ministry of Labor (Umbelino et al. 2019) in up to 20 years, with reduced monthly installments and a rebate of up to 70% fines and up to 40% of interest (Santana Filho et al. 2019). Thus, the program aims to promote the financial balance of Brazilian football clubs (Andrade Júnior et al. 2019), in the sense that it contributes to a better organization of cash flows and management

of resources destined for investments, aiming at achieving sports performance and financial (Marotz et al. 2020).

To access PROFUT benefits, clubs must meet a series of conditions imposed by the federal government (Marotz et al. 2019). Among these, the following stand out: (a) publication of the financial statements; (b) determination of the term of office of its top manager and other elective positions, not exceeding four years, with a single re-election permitted; (c) creation of an autonomous fiscal council; (d) maintenance of the regularity of federal labor and tax obligations; (e) prohibition of anticipation or commitment of future revenues, subject to certain exceptions (Umbelino et al. 2019). In addition, the Law provides for the accountability of directors and managers for irregular or reckless actions to the financial health and continuity of the clubs' activities (Marotz et al. 2020).

With these legal requirements, the Government intends to control and regulate the actions of the entities, guaranteeing the way of acting, financially and socially, of the managers of football clubs (Silva et al. 2019). In this sense, the continuity of the sports entities in the program is linked to the fulfilment of the requirements established by law, and the Public Authority for Football Governance (APFUT) is responsible for the supervision, regulation, and discipline of the conditions for the continuity of the entities in PROFUT (Andrade Júnior et al. 2019). These questions allow us to think that, in addition to a simple debt refinancing program aimed at sports entities, PROFUT can be understood as a mechanism for implementing corporate governance practices in football clubs.

Governance in football clubs is a recent topic in Brazil (Nazi & Amboni, 2020), little explored in the empirical literature (Andrade Júnior et al. 2019), and which has been gaining more attention, especially in relation to the analysis of financial management and sports of football clubs (Santana Filho et al. 2019, Umbelino et al. 2019). Regarding adherence to PROFUT, empirical research emphasizes the quality of information disclosure and the impact on sports and financial performance (Marotz et al, 2020). Along these lines, studies such as Umbelino et al. (2019) suggest that adherence to PROFUT was not able to improve the levels of disclosure of information, nor the financial performance of football clubs. For Andrade Júnior et al. (2019) clubs that joined PROFUT would have higher levels of indebtedness compared to those that did not, indicating that the program would not have improved the financial performance of clubs.

On the other hand, studies such as Marotz et al. (2020) suggest that PROFUT improved investment in training and hiring athletes, as well as the net result and, consequently, the profitability of clubs. Along the same lines, Silva et al. (2019) suggests empirical evidence that the liquidity and indebtedness ratios of the three main football clubs in Minas Gerais, Atlético, América and Cruzeiro, improved after joining PROFUT, however, the authors emphasize that it is not possible to indicate that this improvement be a consequence of joining the program, given that the clubs maintained high levels of liabilities.

Santana Filho et al. (2019) suggests that adherence to PROFUT minimized the drop in the financial performance of clubs in the A series of the Brazilian championship, however, it did not generate expected results regarding reckless management. Along these lines, Siqueira Junior and Oliveira (2018) suggest that joining PROFUT positively impacted revenue levels, improving the financial performance of football clubs in Brazil. Based on these questions, and assuming that PROFUT improves the management and financial performance of football clubs (Andrade Júnior et al. 2019; Umbelino et al. 2019), the following hypothesis was formulated:

Hypothesis 1. Adherence to PROFUT generated greater financial performance in Brazilian soccer clubs.

In the football market, fans are loyal consumers, and their relationship with the club becomes a key part of the clubs' economic, sporting and social success (Rezende & Dalmácio, 2015). To meet the varied and peculiar requirements of their consumers, football clubs need to maintain a balance between financial and sporting performance (Dantas et al. 2015). This alignment between success on and off the field serves as the basis for important club operations, such as building and maintaining a competitive team (Kern et al., 2012; Marotz et al. 2020). In this sense, sports performance indicators are linked to the results of clubs in the competitions they compete (Umbelino, et al. 2019), and can be measured taking into account the ranking of federations, points and titles won in tournaments, as well as the rise or series downgrade (Rezende & Dalmácio, 2015).

Thus, empirical studies such as Andrade Junior et al. (2019) and Umbelino et al. (2019) suggest that adherence to PROFUT did not result in higher sports performance by clubs in Brazil. In the same sense, Marotz et al. (2020) did not identify a relationship between sporting and financial performance, suggesting that interest in success on the field is not aligned with concern for the financial health of clubs. On the other hand, studies such as Santana Filho et al. (2019) and Siqueira Junior and Oliveira (2018) point out that adherence to PROFUT positively influenced the sporting performance of football clubs. Based on these questions, and assuming that the reflections of PROFUT in the managements would increase the sports performance of football clubs (Andrade Júnior et al. 2019; Umbelino et al. 2019), the following hypothesis was formulated:

Hypothesis 2. Adherence to PROFUT generated greater sporting performance in Brazilian soccer clubs.

3 METHODOLOGICAL ASPECTS

We collected accounting data on the club's websites, and the sports performance variables on the Brazilian Football Confederation (CBF) website, in the "Brazilian Championship" field. Initially, the sample consisted of 85 (eighty-five) clubs that participated in the A, B or C series of the Brazilian championship and/or were classified among the top sixty in the CBF's National Ranking of Clubs (RNC), in at least one of the years, from 2013 to 2018 (6 years). After the survey of the financial statements of the clubs we found that data for 27 clubs are not fully available, in addition, Guaratinguetá Futebol Ltda was licensed from official competitions in 2017, reducing the sample used. Thus, our final sample consists of 57 clubs or 340 observations.

To identify the impact of PROFUT on the financial and sports performance of Brazilian clubs, we developed a -descriptive research based on quantitative methods. To test these relationships, we identified clubs that adhered to PROFUT, those that adhered and were later excluded for legal breaches as well as those that did not adhere. The deadline for joining PROFUT clubs was initially until November 30, 2015, however, Law 13,262 of march, 22, 2016 extended the deadline until July 31, 2016. Based on this, we identified that most clubs Brazilians (41) joined PROFUT, totalling approximately 70%, followed by 3 clubs that joined, but due to noncompliance with the program requirements, they were excluded, and finally, approximately 30% (or 17 clubs) did not join PROFUT.

Thus, groups can be formed to test the impact of adherence to PROFUT on financial performance (Hypothesis 1) and on sports performance (Hypothesis 2). After these definitions, to test the hypotheses we applied the Differences-in-Differences estimator (Diff-in-Diff or just DID). This estimator makes it possible to capture whether, in fact, clubs that joined PROFUT suffered greater impacts than clubs that did not. The application of DID allows significant advances in relation to previous works, since it gives PROFUT a more adequate statistical

treatment, capturing in the model the legal aspect of the program, which makes possible a more robust comparison between the clubs that joined and those that they did not. This comparison considers a period before and after the enactment of Law 13,1555 for both groups.

Furthermore, the present analysis considered the fact that treated, and control clubs have different observable characteristics. To solve this problem, we applied the Kernel Propensity Score Matching (K-PSM), as suggested by Leuven and Sianesi (2014), in which, through a set of covariates, a club from the group of control that is like the treatment group, except for the variable that distinguishes both groups (adherence to PROFUT). Therefore, DID with K-PSM was estimated by creating two main model variables. The first, the 'PROFUT Law', refers to the enactment of the Law that established the program, which represents an impact on the management of Brazilian clubs. Based on this impact, the time considered was from 2013 to 2018, with 2013 to 2015 being the 'pre-PROFUT Law' period, in which the value '0' is assigned; and from 2016 to 2018 the period 'during the PROFUT Law', in which the value '1' is assigned, constituting the variable 'PROFUT Law'.

The other variable created, 'PROFUT treatment' refers to the treatment and control groups, in which they were considered, assigning the value '1' to clubs that joined PROFUT and, consequently, need to follow a series of legal lengths; and '0' for clubs that did not adhere to it. In addition, variables representing financial, and sports performance were considered as covariates of the model. The interaction of the variables, 'PROFUT Law' and 'PROFUT treatment', generate the DID variable, shown in equation (1).

$$y_{i,t} = \delta_0 + \delta_1 Lei\ PROFUT_t + \delta_2 tratamentoPROFUT_i + \delta_3 (LeiPROFUT_t x tratamentoPROFUT_i) + \varepsilon_{i,t} \quad (1)$$

Where *i* represents the club; *t* the time; $y_{i,t}$ the dependent variable, δ_1 captures aggregate factors that can cause changes in $y_{i,t}$ over the time, even in the absence of PROFUT; δ_2 captures possible differences between pre-law treatment and control groups (shock); δ_3 captures the coefficient of interest and $\varepsilon_{i,t}$ is the error term. The δ_3 coefficient was calculated by the difference between the treatment group (adherence to PROFUT) before and after the 'PROFUT Law' minus the difference between the control group (non-adherence to PROFUT) before and after the 'PROFUT Law', as shown in equation (2).

$$\hat{\delta}_3 = (\hat{y}_{tratamentoPROFUT,LeiPROFUT=1} - \hat{y}_{tratamento\ PROFUT,Lei\ PROFUT=0}) - (\hat{y}_{controle\ PROFUT,\ \ Lei\ PROFUT=0} - \hat{y}_{controle\ PROFUT\ ,Lei\ PROFUT=0}) \quad (2)$$

In addition to the K-PSM estimation, regressions were estimated using the Feasible Generalized Least Squares Method (GLS) and Probit models to identify the effect of a set of variables on financial and sports performance. This model was estimated for two reasons: first, it allows capturing the heterogeneity of DID effects, and second, it adds robustness to the results (Tristão and Sonza 2021). Therefore, the complementation of the DID model, through covariates, increases the efficiency in the analyses, adjusting its randomization as well as decreasing the variance of the error term (Roberts & Whited, 2013). The inclusion of covariates follows the model as shown in equation (3).

$$y_{i,t} = \delta_0 + \delta_1 Lei\ PROFUT_t + \delta_2 tratamento\ PROFUT_i + \delta_3 (Lei\ PROFUT_t x tratamento\ PROFUT_i) + \beta X_{igt} + \gamma_g + \lambda_t + \varepsilon_{i,t} \quad (3)$$

Where *i* represents the club, *t* the time; $y_{i,t}$ the dependent variable, that is, financial performance (H1) or sports performance (H2); δ_3 DID estimator; βX_{igt} the vector of covariates;

γ_g and λ_t represent state and temporal effects; and, finally, $\varepsilon_{i,t}$ represents the error term. The variables, as well as the covariates, can be seen in Table 1. Furthermore, to avoid the effects of outliers, the variables were winsorized at 1% in the tails of the distribution (1% and 99%) and all measurements were performed using the Stata14 © software.

Table 1 – Variables Definition

Variables	Authors	Description
	Financial Performance	
Indebtedness (IND) Indebtedness PROFUT (INDP)	Holanda (2015); Benin et al. (2016); Umbelino et al., (2019)	$END = \frac{(NCL + NNCL)}{TA}$ or $ENDP = \frac{(OCLP + NOCLP)}{TA}$
Sales Revenue (SR) Natual Logarthm Sales Revenue (LNSR)	Adapted Marotz et al. (2020)	$SR = Sales\ Revenue$ or $LNSR = ln\ (Sales\ Revenue)$
Sales Revenue Diversification (SR DIV)	Adapted Colla et al. (2020)	$SR\ DIV = \frac{SSI^1 - \frac{1}{5}}{(1 - \frac{1}{5})}$
	Sports Performance	
Ranking CBF (CBF) Ranking Variation (ΔCBF)	Umbelino et al., (2019)	$CBF = Score\ CBF$ or $\Delta CBF = ScoreCBF_{i,t} - Score\ CBF_{i,t-1}$
Champion (CHAN)	Not identified	*Dummy* equal to 1 if the club was champion in the year and 0 otherwise
Acess Libertadores (LIB) Access (ACES)	Umbelino et al., (2019)	*Dummy* equal to 1 if there was classification for Libertadores (access) and 0 otherwis
Serie (SER)	Rezende and Dálmacio (2015), Umbelino et al., (2019)	Categorical Variable: 1 = Série A; 2 = Serie B; 3 = Série C; 4 = Serie D
Relegation (REL)	Not identified	*Dummy* equal to 1 if the club was relegated in the year and 0 otherwise
	Control Variables	
Size (TA)	Holanda (2015), Umbelino et al., (2019)	$LN\_TA = ln\ (Ativo\ Total)$
Temporary Fixed Effects (TFE)	Sonza & Kloeckner (2014)	Categorical Variable: encoding of the variable in numerical order (2013 to 2018).
State Fixed Effects (SFE)	Sonza & Kloeckner (2014)	Categorical Variable: encoding of the variable in numerical order (16 states).

Nota: [1]. $SSI = \left(\frac{BIR}{SR}\right)^2 + \left(\frac{RSAGM}{SR}\right)^2 + \left(\frac{ATR}{SR}\right)^2 + \left(\frac{TR}{SR}\right)^2 + \left(\frac{ISA}{SR}\right)^2$, in that: BIR =Broadcast and Image Revenue; SAGMR = Sponsorships, Advertising, Glove and Marketing Revenue; ATR = Athlete Transfer Revenue; TR = Ticket Revenue; SAR = Social Activity Revenue; SR = Sales Revenue; NCL = net current liabilities; NNCL = net non-current liabilities; OCLP = onerous current liabilities PROFUT; NCOLP = non-current onerous liabilities PROFUT; TA = total assets.
Source: authors (2022)

Also, to avoid outliers affecting the results, the data, in all analyses, were winsorized at 1% in both tails of the distribution (1% and 99%). Finally, all analyzes were performed using the Stata 14 © software.

4 RESULTS AND DISCUSSIONS

To better describe the analysis of the results, we divided this section into two parts, as follows: a) Descriptive statistics and correlation; and b) Difference-in-Differences model estimation.

4.1 Descriptive statistics and correlation

Initially, we generate the correlation matrix between the variables considered in the model. Although there is a strong (above 0.7) and significant correlation between the CBF Points, the series, the revenue obtained and the total assets, the Variance Inflation Vector (VIF) did not confirm multicollinearity between the variables. Then, Table 2 presents the initial descriptive statistics in two periods (pre-PROFUT Law and PROFUT Law) and the clubs that adhered to PROFUT (treatment group) and those that did not (control group).

Furthermore, the Wilconox test statistics suggest that there are significant differences between the medians of the variables of the treatment group, revealing an effect of the PROFUT Law. However, the same impact is not observed for the group control, with practically no significant differences between the medians. In this line, significant differences can be observed for the revenue diversification (SR DIV) as well as for the underlying sources of the same. The results reveal that clubs that joined PROFUT made their income more concentrated (specialized) in some sources, as the SR DIV varies from 18% pre-Law to 23% after joining.

Regarding the underlying sources contained to calculate the total revenue, significant differences can be observed for three of the five sources, among them the revenues from image transmission to the revenues from advertising, advertising, gloves and marketing as well as for box office revenues, in which, while the first showed a median increase after joining PROFUT, the other two showed a drop, justifying the higher concentration of revenues referred to by the IHH Index. Finally, the median score obtained by the CBF ranking of clubs that joined PROFUT declined after joining, but this relationship was not significant.

In general, the descriptive statistics suggest that clubs that joined PROFUT are more indebted (46% > 14%), generate more revenue (690 million > ~10 million), and diversify more their sources of revenue (0.23 < 0.35). These clubs have a greater representation of revenue from image transmission (50% > 39%) and of revenue from transactions with athletes (20% > 18%). However, they have a smaller representation of revenue from advertising, advertising, gloves, and marketing (12% < 15%), revenue from ticket sales (6%% < 16%), and representation of revenue from social activities (10% < 11%).

In terms of CBF classification ranking, clubs that joined PROFUT have a better score (6932 > 2988). Specifically, the relationship between indebtedness and PROFUT indebtedness draws attention, because while clubs that joined PROFUT increased their indebtedness from 32% on assets to 46% after joining, PROFUT indebtedness decreased from 31% to 30% (or from 57% to 43% on average).

After that, we performed tests of fit the model. The multivariate normality test, according to Mardia, et al., (1979), showed statistical significance at the 1% level for univariate, bivariate and multivariate normality. Wooldridge's autocorrelation test did not show significance at the 5% level, suggesting data autocorrelation. The Breusch-Pagan (1979) and Cook-Weisberg (1983) test was statistically significant, suggesting the presence of heteroscedasticity in the model. Based on this, we generated robust estimators in all econometric models.

Table 2 - Descriptive statistics

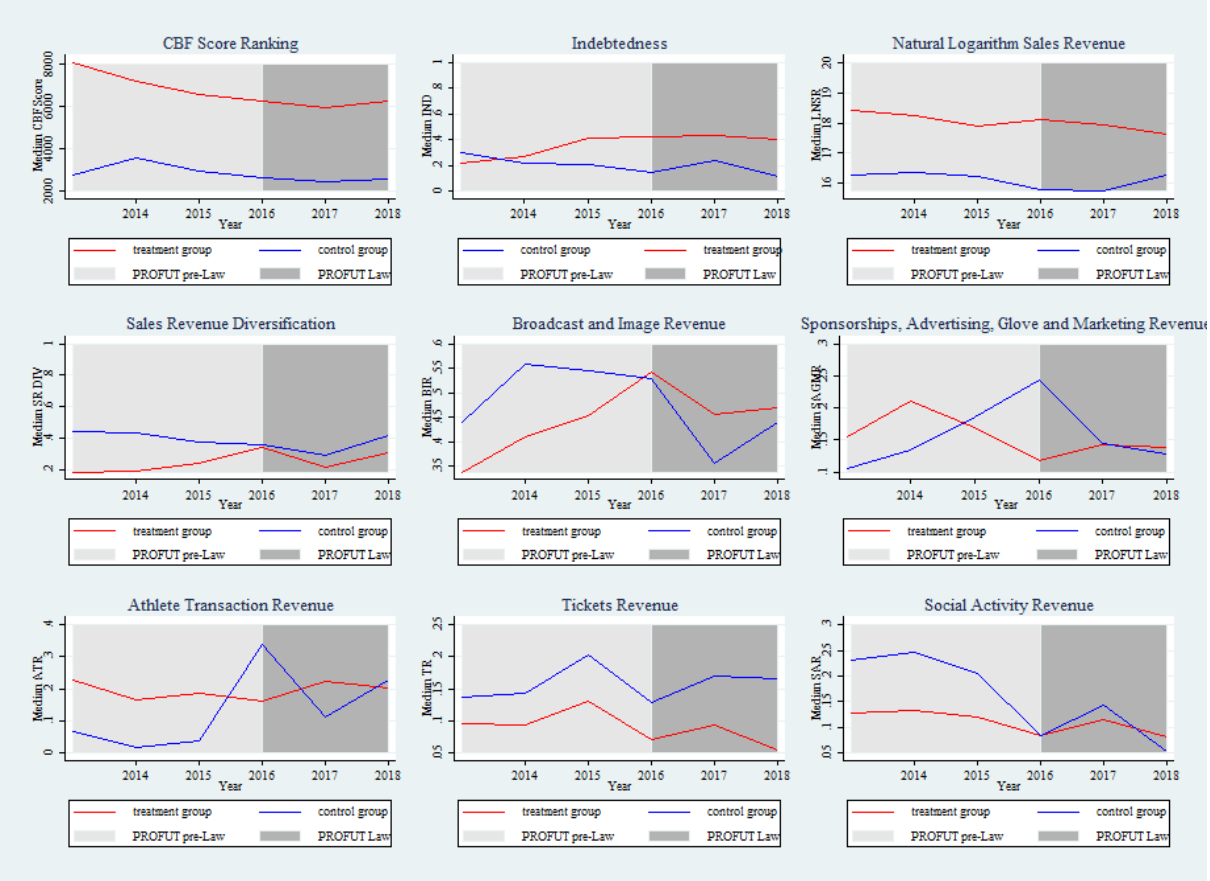
	Control Group: Non-Adherence to PROFUT								
	Before PROFUT's Law					After PROFUT's			
Variable	**(n)**	**Mean**	**Med.**	**Min.**	**Max.**	**SD**	**(n)**	**Mean**	**Med.**	**Min.**
IND	82	0,72	0,32	0,00	19,00	2,22	102	0,72	0,46	0,00
INDP	22	0,57	0,31	0,00	13,00	2,94	102	0,43	0,30	0,00
SR	80	1,37B	870M	4M	4,8B	1,3B	99	1,36B	690M	540Mi
SR DIV	70	0,30	0,18	0,04	1	0,28	86	0,35	0,23	0,05
BIR	57	0,42	0,42	0,05	0,74	0,17	71	0,49	0,50	0,03
SAGMR	63	0,23	0,18	0,02	0,98	0,20	80	0,19	0,12	0,02
ATR	59	0,20	0,17	0,00	0,57	0,14	73	0,21	0,20	0,00
TR	55	0,15	0,10	0,00	0,70	0,14	70	0,11	0,06	0,00
SAR	47	0,23	0,19	0,00	1,00	0,31	59	0,20	0,10	0,00
CBF	82	9286	10210	153	16208	4615	102	7843	6932	459
	Control Group: Non-Adherence to PROFUT								
	Before PROFUT's Law						**After PROFUT's**		
Variable	**(n)**	**Mean**	**Med.**	**Min.**	**Max.**	**SD**	**(n)**	**Mean**	**Med.**	**Min.**
IND	31	0,71	0,22	0,00	7,41	1,44	39	0,92	0,14	0,00
INDP	0	0,00	0,00	0,00	0,00	0,00	0	0,00	0,00	0,00
SR	31	539Mi	126Mi	34Mil	3,9Bi	929Mi	39	593Mi	9,75Mi	34Mil
SR DIV	20	0,48	0,37	0,05	1,00	0,31	27	0,39	0,35	0,03
BIR	16	0,46	0,51	0,00	0,73	0,25	18	0,43	0,39	0,00
SAGMR	20	0,27	0,13	0,00	1,00	0,35	27	0,25	0,15	0,00
ATR	17	0,09	0,03	0,00	0,47	0,14	21	0,29	0,18	0,00
TR	19	0,27	0,14	0,00	0,98	0,28	25	0,24	0,16	0,04
SAR	3	0,23	0,23	0,21	0,25	0,02	5	0,08	0,11	0,00
CBF	29	5448	4781	625	14256	3237	39	4533	2988	567

Note: (n) = number of observations; Med = median; Min. = minimum; Max. = maximum; SD = standard deviation indebtedness; INDP = PROFUT indebtedness; SR = sales revenue; SR DIV = Sales Revenue Diversification; B SAGMR = advertising, publicity, gloves and marketing revenue; ATR = athlete transaction revenue; TR = tickets reve CBF = CBF ranking score. Wilc. = Wilcoxon test for median difference. ***, ** and * represent significance at 1%
Source: Authors (2022)

4.2. Difference-in-Differences model estimation

After describing the data statistics, we graphically analyze the behavior of the variables of interest around adherence to PROFUT. Figure 1 presents the graphic analysis of the variables, which suggests that, in general, the clubs that joined the program do not seem to suffer an immediate impact on their sports performance represented by the points in the CBF ranking, as well as on their indebtedness, which, according to the graph, remains constant over the years. In contrast, adherence to PROFUT appears to have an impact on the financial performance observed through sales revenues and their underlying structure.

Figure 1 - Graphical Analysis



Source: Authors (2022).

Specifically, the graphical analysis reveals that clubs focused more on their revenue capture revealed by the IHH Index, as well as an impact on revenue from image transmission, advertising, publicity, gloves and marketing, athlete transaction, box office and social activities. However, to infer this impact, it is necessary to perform the difference in differences estimation with the covariates.

To examine the sporting and financial efficiency, we compared the clubs of the treatment and control group, before and during the PROFUT Law by estimating the DID with the Kernel Propensity Score Matching (KPSM). Table 3 shows the difference in difference (DID) models referring to financial and sports performance variables, which suggest to significant differences between the groups.

Table 3 - Financial and Sports Performance – DID Kernel Propensity Score Matching Estimation

Panel A - Financial Performance - Hypothesis H1											
	Before				After				Diff-in-Diff		
Model	*Con.*	*Trea.*	*Diff*	**t**	*Con.*	*Tra.*	*Diff*	**t**	**DiD**	**t**	**Obs**
IND	0,62	0,70	0,08	0,09	1,37	1,61	0,24	0,33	0,16	0,14	221
ΔIND	0,20	-0,46	-0,66	-0,64	0,10	-0,67	-0,77	1,10	-0,11	0,09	178
LNSR	17,81	18,83	0,42	1,25	16,13	17,81	1,67	**5,73*** **	1,25	**2,79*** **	220
SR DIV	0,46	0,32	-0,14	**-2,33** **	0,22	0,36	0,13	**2,65*** **	0,28	**3,48*** **	218
BIR	0,47	0,41	-0,05	-0,93	0,37	0,49	0,12	**3,52*** **	0,18	**2,61*** **	161
SAGMR	0,16	0,23	0,08	1,69	0,25	0,22	-0,03	0,94	-0,11	**-1,89***	201
ATR	0,10	0,23	0,12	**3,23*** **	0,24	0,21	-0,020	0,59	-0,14	**-2,81*** **	177
TR	0,44	0,17	-0,27	**-5,20*** **	0,19	0,12	-0,07	1,46	0,20	**2,74*** **	171
SAR	0,23	0,28	0,06	0,57	0,03	0,18	0,16	**3,00*** **	0,09	0,78	89
Panel B - Sports Performance - Hypothesis H2											
	Before				**After**				**Diff-in-Diff**		
Model	*Con.*	*Tra.*	*Diff*	**T**	*Con.*	*Tra.*	*Diff*	**T**	**DiD**	**t**	**Obs**
CBF	4016	7482	3466	**5,07*** **	6442	6864	422	*0,65*	-3044	**-3,24*** **	337
ΔCBF	-327	-217	109	0,54	497	-110	-607	**-4,25*** **	-717	**-2,88*** **	246
CHAN	0,35	0,39	0,04	0,50	0,40	0,40	0,00	0,06	-0,04	0,34	291
LIBERT	0,00	0,34	0,34	**3,18*** **	0,45	0,31	-0,14	1,20	-0,48	***-3,03*** **	111
ACESS	0,72	0,39	-0,32	***-1,85****	0,01	0,28	0,27	**2,52*** **	0,60	***2,90*** **	79
REL	0,27	0,11	-0,16	***-2,33****	0,03	0,15	0,11	**1,96** **	0,27	***3,04*** **	239
SERIE	1,85	1,65	-0,20	-0,96	2,78	1,95	-0,82	**4,56*** **	-0,61	**-2,20** **	248

Note: IND = indebtedness; ΔIND = change in indebtedness ($\Delta IND_{i,t} = IND_{i,t} - IND_{i,t-1}$); LNSR = Neperian logarithm of sales revenue; ; SR DIV = Sales Revenue Diversification; BIR = image transmission revenue; SAGMR = advertising, publicity, gloves and marketing revenue; ATR = athlete transaction revenue; TR = tickets revenue; SAR = social activity revenue; CBF = points referring to the CBF ranking; ΔCBF = points variation referring to the CBF ranking ($\Delta CBF_{i,t} = CBF_{i,t} - CBF_{i,t-1}$); LIBERT = LIBERT = Libertadores da América classification; REL = drawdown; SD represents standard error; t represents the t-test. Regressions were estimated using Kernel-PSM. The covariates are the variables representing financial and sports performance. ***, ** and * represent significance at 1%, 5% and 10%, respectively.
Source: Authors (2022)

The first model (panel A of table 3) refers to the financial efficiency of the clubs that joined PROFUT, represented by the indebtedness and its variation as well as by the variables of sales revenue and its underlying structure, that is, its private sources. After joining, the difference between the two groups is statistically significant, mainly due to the change in sales revenue of clubs that joined PROFUT.

Regarding financial efficiency, the results of the DID models suggest that the adhesion to PROFUT only impacted the capture of sales revenue and not the indebtedness. The adhesion to PROFUT had a positive and significant impact on the Neperian logarithm of total revenue and on the IHH Index. This relationship suggests that clubs that adhered to PROFUT would have a more concentrated revenue source structure, as observed in the initial descriptive statistics.

Furthermore, the results report distinct effects of PROFUT membership on the revenue structure. Adherence to the program generated a positive impact on revenues from image transmission and box office, and a negative impact on revenues from advertising, advertising, gloves and athlete marketing and transaction. The parameters of the DID estimators reveal that

the greatest impact among the sources of revenue was for tickets revenue (0.20) followed by the impact on revenue from image transmission (0.18).

These results are in line with the study by Siqueira Junior and Oliveira (2018) in which they identified that joining PROFUT positively impacted revenue levels, improving the financial performance of football clubs in Brazil. Additionally, they are also in agreement with the studies by Andrade Júnior et al. (2019), Santana Filho et al. (2019) and Umbelino et al. (2019), in which they suggest that adherence to PROFUT was not able to improve the financial performance of football clubs, maintaining high levels of indebtedness compared to those who did not, that is, not generating the expected results regarding reckless management.

Therefore, these results allow the partial non-rejection of the hypothesis H1 on the relationship between financial efficiency and adherence to PROFUT. In summary, a positive impact on aggregate sales revenue was identified, but a significance on the indebtedness of clubs was not identified, which leads to the need for further discussions on the effectiveness of this Law in terms of significantly impacting the indebtedness of Brazilian clubs.

In relation to sports efficiency models (panel B of table 3), an adverse impact of adherence to PROFUT on most of the variables representing sports performance. Adherence to PROFUT generated a negative and significant impact on the score referring to the CBF ranking, as well as its variation. This adverse impact is observed in the classification dummy variable for Libertadores da América, as well as for relegation and series. In other words, the DID estimator showed that joining PROFUT reduced the propensity of clubs to qualify for the biggest competition in Latin America, in addition to increasing the possibility of being relegated to lower series, and thus being left out of series A (top football division in the country).

These results corroborate with Andrade Junior et al. (2019) and Umbelino et al. (2019), which suggest that adherence to PROFUT did not result in greater sporting performance by clubs in Brazil. Marotz et al. (2020), by not identifying a relationship between sport and financial performance, suggested that the interest in success in the field is not aligned with the concern for the financial health of clubs. Based on these results, the H2 hypothesis that adherence to PROFUT had a positive impact on sports efficiency was rejected.

As a complement to the main analysis, we estimate models including covariates through the standard structure of DID by Feasible Generalized Least Squares (GLS) and Probit method. Table 4 shows the results of the GLS and Probit estimates with covariates. Regarding the DID estimator, the results of the GLS and Probit models confirm the findings of the Differences in Differences models reported in Table 3, and report that the DID coefficient is significant, with a positive effect on total revenue and diversification of the underlying structure, and negative for most sports performance variables. In addition, the DID estimator is not statistically relevant in relation to indebtedness, reinforcing the idea that adherence to PROFUT does not impact clubs' debt levels.

By joining the PROFUT, the club's management would be signaling the interested parties to the club, such as fans, businessmen, investors, government, etc. interest in modernizing management decisions, which would create a favorable environment around the club capable of leveraging revenues. However, within the field, the adhesion of PROFUT seems to harm the clubs, showing an imbalance between the financial and sporting performance of the clubs. An example of this would be the sale of an important player, in which case the club usually obtains an express financial gain, however, it loses the technical quality of that player, what can hamper the results on the field.

Table 4 - GLS and PROBIT estimation with covariates

Model	IND[1]	ΔIND[1]	LNSR[1]	SR DIV[1]	BIR[1]	SAGM[1]	ATR[1]	TR[1]	SAR[1]	CBF[2]	ΔCBF[2]	CI
DID	-0,06	-0,09	**0,33**	**0,08**	**0,07**	0,01	**-0,14**	**-0,12**	0,07	**-733**	-201	0
T	-0,06	-0,11	**2,90*****	**2,11****	**2,71*****	0,22	**-2,63*****	**-2,44*****	1,38	**-2,03****	-0,98	0
CBF	**-0,00**	**0,00**	**0,00**	-5,81	-5,59	-0,00	-9,44	5,33	-7,90	-	-	0
t	-0,38	**1,95****	**5,31*****	-1,47	-0,76	-1,52	-0,14	0,75	-1,44	-	-	1
SER	**1,58**	**0,79**	**-0,46**	**0,04**	-0,01	0,02	0,01	0,02	0,01	**-1375**	**-353**	-0
t	**2,85*****	**1,85***	**-7,69*****	**2,43*****	-0,43	0,96	0,40	0,55	0,81	**-6,72*****	**-3,71*****	-0
CHAN	0,02	-0,15	**0,13**	-0,00	0,03	-0,02	-0,02	-0,02	0,00	-20,35	**319**	
t	0,03	-0,26	**2,53*****	-0,12	0,92	-0,80	-0,51	-0,63	-0,90	-0,11	**2,41*****	
LIB	0,48	-0,37	**0,14**	-0,01	-0,04	0,00	0,01	0,01	0,00	**1528**	227	-0
t	0,51	-0,42	**2,05****	-0,49	-1,00	0,09	0,24	0,38	0,20	**5,07*****	1,17	**-1**
ACES	1,02	**-1,64**	0,01	-0,02	0,01	-0,02	-0,02	-0,04	-0,02	**-1370**	**-394**	-0
t	0,21	**-1,87***	0,11	-0,99	0,14	-0,52	-0,51	-0,89	-0,78	**-5,60*****	**-2,28*****	-0
REL	1,00	-0,11	-0,06	0,03	-0,02	0,03	-0,01	0,02	-0,00	**1322**	256	-0
t	0,56	-0,06	-0,86	1,34	-0,49	0,77	-1,56	0,54	-0,38	**4,63*****	1,35	-0
SR	**0,23**	-0,45	-	-0,04	-	-	-	-	-	**738**	**-162**	**0**
t	**1,85***	-1,40	-	-1,46	-	-	-	-	-	**5,72*****	**-2,74*****	**2,**
TA	-	-	**0,14**	-	-	-	-	-	-	**472**	**-160**	
t	-	-	**3,55*****	-	-	-	-	-	-	**4,08*****	**-3,38*****	
ΔIND	-	-	**-0,01**	-0,00	**-0,07**	0,00	-0,01	-0,01	0,00	28,13	-14,83	-0
t	-	-	**-2,93*****	-0,29	**-2,07****	1,48	-0,82	-0,82	1,60	1,13	-0,89	-0
R^2	13,43%	3,71%	52,37%	14,73%	6,13%	4,79%	25,06%	27,93%	22,24%	29,60%	22,43%	14
SFT/TFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Y
Obs.	250	200	163	163	132	154	138	137	97	200	189	2

Note: (1)- Financial performance variables; 2- Sports performance variables; DID is the difference-in-difference estimator, obtained
change in indebtedness (ΔI〖ND〗_(i,t)=〖IND〗_(i,t)-〖IND〗_(i,t-1)); LNSR = Neperian logarithm of sales revenue; SR DIV = S
revenue; SAGMR = advertising, publicity, gloves and marketing revenue; ATR = athlete transaction revenue; TR = tickets revenue; S
the CBF ranking; ΔCBF = points variation referring to the CBF ranking (Δ〖CBF〗_(i,t)=〖CBF〗_(i,t)-〖CBF〗_(i,t-1)); CHAN =
REL = relegation; TIT = Title; ACES = access; SER = series; t represents the t-test. The covariates are the variables representing financ
is R-squared; SFE and TFE represent state fixed effects and temporal fixed effects, respectively. The symbols *, **, and *** indicate s
Source: authors (2021).

5. CONCLUSIONS

The results suggest that joining PROFUT increased the clubs' total revenue levels, with a greater impact on box office and image transmission revenues, while making the revenue structure more concentrated. These findings are in line with the studies by Santana Filho et al. (2019) and Siqueira Junior and Oliveira (2018) and suggest that the financial performance of clubs that joined PROFUT is boosted by increasing their revenues. Based on these results, hypothesis 1 of this study is not rejected. However, no significant relationship was found between adherence to the program and the indebtedness of football clubs, which corroborates the findings of Santana Filho et al. (2019) and suggests that PROFUT was not able to regulate the clubs' debts, not generating results in the fight against the reckless management of football clubs.

Furthermore, corroborating the findings of Andrade Junior et al. (2019) and Umbelino et al. (2019) the results indicate that PROFUT had a negative impact on the sports performance of Brazilian clubs. These findings suggest rejecting hypothesis 2 of this study and indicate that adherence to PROFUT alone is not enough to achieve a balance between success in the field and in finance. The transfer of qualified and increasingly younger players (Santana Filho et al. 2019) to European and Asian markets may be an indication that concern for the health and financial sustainability of Brazilian clubs may be speaking louder than hunger by titles.

We emphasize that this study may have some endogenous origin, being limited to the information available on the websites of clubs and federations available on the Internet. Finally, we believe that the investigation of compliance with legal requirements aiming at continuity in PROFUT, as well as the use of corporate governance variables, would be good paths for future research.

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