JOÃO LIBANORI
OLIVIERO ROGGI
CRISTIANE BENETTI

THE CAPITAL STRUCTURE DETERMINANTS OF REITs

ABSTRACT

This paper examines the determinants of the REIT capital structure, assessing the applicability of traditional capital structure theories—trade-off, pecking order, agency costs, and market timing—to Brazilian REITs, which operate under a distinct regulatory framework. Using OLS regression models and data from Brazilian Equity REITs, we find that while the overall determinants align with the international literature, the REIT's accounting equity is significantly impacted by the semi-annual mandatory payout of 95% of its Adjusted Funds from Operations. Additionally, the study introduces a new determinant, total management compensation, which is found to have a negative influence on market leverage. This result corroborates the REIT literature, which mostly rejects the *pecking order* and supports *market timing theory*, because management has direct incentives to expand the REIT through new equity raisings, especially when market conditions are favourable, as most of their compensation comes from a percentage of the REIT's accounting equity or market capitalization.

Keywords: REIT, Optimal Capital Structure Theory, Trade Off Theory, Pecking Order Theory, Market Timing Theory, Agency Costs Theory.

1. INTRODUCTION

The Real Estate Investment Trusts (REITs) have proved popular in many countries that followed the US and created their own REIT legislation, such as Brazil, Japan, and the UK (Block, 2012; Dogan et al., 2019; B3, 2024). This asset class has a unique financial economic dynamic (Ott et al., 2005; Feng et al., 2007), and its regulatory framework can explain different capital structures amongst jurisdictions (Dogan et al., 2019). Some key regulatory provisions vary by country, such as minimum dividend payout, maximum leverage limit, and the accounting treatment of profits from capital gains, but they ultimately converge regarding: real estate portfolio, income tax exemption and pulverized investor base.

Brazilian REITs were created in 1993 and by 2024 were the world's 8th largest by market capitalization[1] (B3, 2024). They are uniquely structured as a Real Estate Investment Fund (FII - Fundo de Investimento Imobiliário), operating as exchange listed investment funds rather than companies. This means that different Laws and regulations from the Brazilian Securities Commission, "CVM", are applicable (CVM, 2022a, p. 590-601). One of the most unique features of the Brazilian REIT is the mandatory semi-annual payout of at least 95% of the Adjusted Funds from Operations, "AFFO"[2] (CVM, 2014, 2015), which significantly constrains the capability to retain earnings for reinvestment or debt amortization. Up to the literature review and to our knowledge, those features are exclusive to the Brazilian REITs.

The unique REIT regulatory provisions have spawned research on capital structure determinants, which have been analysed by optimal capital structure theories, such as trade-off, pecking order, agency costs and market timing (Ott et al., 2005; Feng et al., 2007; Boudry et al., 2010; Harrison et al., 2011; Barclay et al., 2013; Morri & Artegiani, 2015; Dogan et al., 2019). Overall, REIT literature has shown that: (1) trade-off theory has low significance, mostly because the "debt shield" benefits are removed by REIT's income tax exemption (Barclay et al., 2013; Dogan et al., 2019); (2) pecking order theory is not significant, as REIT's assets, regulations and popularity result in strong external monitoring and low information asymmetry (Boudry et al., 2010; Dogan et al., 2019); (3) agency costs theory contributed that REIT's with opaque or complex ownership structures tend to have higher cost of debt, which result in less market leverage (Harrison et al., 2011); and (4) market timing theory is strongly significant (Boudry et al., 2010; Harrison et al., 2011; Morri & Artegiani, 2015), as high price-to-book-ratio explains new equity raisings and REITs increase leverage when the cost of debt is low.

However, the literature on REITs' capital structure determinants lacks a comprehensive review and an approach to relevant emerging markets, such as the Brazilian case, which remains unexplored (Ribeiro et al., 2019). For example, Dogan et al. (2019) pooled and analysed the capital structure of REITs from 12 countries but did not consider Brazil and only South African and Turkish REITs were from emerging markets. This research paper aims to fill this literature gap, with the justification of (1) the unique regulatory provisions of the Brazilian REITs can impact capital structure determinants and how they influence leverage; and (2) Brazilian REITs operate in an emerging market context of higher interest

[1] According to Statista and B3 in December 2024, the Top 10 Countries per REIT market cap are: 1st US REITs ($ 1.400 bi); 2nd Japan ($ 108 bi); 3rd United Kingdom ($ 73 bi); 4th Singapore ($ 69 bi); 5th Australia ($ 62 bi); 6th France ($ 41 bi); 7th Canada ($ 38 bi); 8th Brazil ($ 31 bi); 9th Belgium ($ 23 bi) and 10th Hong Kong ($ 18 bi).

[2] As per the Law Nº 8,663/1993, the distributable income of the Brazilian REIT must follow a cash flow perspective, where the accounting net profit is adjusted to non-cash effects, such as rent linearization, change of property fair value, accounts payable or receivable, debt accrued interests, and depreciation.

rates and limited long-term credit (Bastos & Nakamura, 2009), in contrast to their international peers. Therefore, the following questions were developed:

How do the capital structure determinants of Brazilian REITs differ from those of international REITs, and can these differences be attributed to unique regulatory provisions?

Do unique Brazilian REIT regulatory provisions significantly impact capital structure decisions, and if so, what are the implications for investors and policymakers?

The null hypothesis (H_0) posits that the determinants of capital structure in Brazilian REITs align with findings in the REIT international literature. Conversely, the alternative hypothesis (H_1) suggests a divergence between the two. Additionally, a second hypothesis (H_2) examines whether the high mandatory payout requirements of Brazilian REITs, along with the clientele effect on dividends (Deliberato, 2022), constrain their ability to reduce leverage through retained earnings.

The econometric modelling consists of two OLS models based on Dogan et al. (2019) and Feng et al. (2007). Supported by careful literature review, adjustments to variables were made to ensure consistency with the practical realities of the Brazilian REIT, such as using the EBITDA adjusted of the mandatory annual property fair value adjustments to measure Profitability. The sample comprises 54 Brazilian Equity REITs from the IFIX index, after which 295 data points from 2019 to 2024 were extracted from public databases.

The remaining sections of this paper are organized as follows. We begin by reviewing the relevant literature on the capital structure and regulation of REITs, in order to develop our hypotheses and theoretical framework at the end of Section 2. The research method, data collection, and variables used to test the hypotheses are described in Section 3. The results of our OLS regression model and our robustness tests are provided in Section 4. We conclude and disclose the limitations of our research in Section 5.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 The Optimal Capital Structure Theory: the REIT Case

The concept of the optimal capital structure resides in factors that explain the combination of equity and debt (Brito et al., 2007). The REIT literature has used the umbrella of theories from the optimal capital structure theory to verify its capital structure determinants (Feng et al., 2007; Boudry et al., 2010; Harrison et al., 2011; Barclay et. al., 2013; Morri & Artegiani, 2015; Dogan et al., 2019). One of the main objectives has been to check if these theories also apply in the REIT context, since (1) the optimal capital structure theory was developed and matured using non-REIT companies (Durand, 1952); and (2) the REIT asset class has a unique financial economic dynamic (Ott et al., 2005; Feng et al., 2005). Moreover, analysing REITs in many countries is relevant because different regulatory requirements can explain different capital structures (Dogan et al., 2019).

The *trade-off theory*, hereafter referred to by its acronym "TOT", was developed by Durand (1952), Modigliani & Miller (1958, 1963), and Miller (1977), and posits the influence of the capital structure over firm value. The combination of debt and equity reduces the WACC and provides a tax shield, as the debt cost is lower than the equity, and the interest expenses reduce the taxable income. These benefits increase the firm value, but they can be offset by an increase in credit risk, by which creditors may demand higher interest rates. Thus, to maximize the firm's value, the optimal capital structure lies in an equilibrium between the cost of the debt and its benefits. REIT companies, however, are exempt from paying income tax, and the mandatory dividend payout of 90% constrains reinvestment.

The *pecking order theory*, hereafter referred to by "POT", was developed by Myers (1984) and Myers & Majluf (1984) and proposes that the capital structure is the result of a hierarchy of financing possibilities, whereby management prefers to raise new resources firstly through reinvestment, which is followed by new debt and lastly by issuing new equity. This explains, for instance, why profitable firms reinvest more and have less debt, whilst unprofitable firms are more leveraged (Bastos & Nakamura, 2009). Management preferences may differ from those of internal and external shareholders; thus, this preference hierarchy depends on transaction costs and information asymmetry. As per Harrison et al. (2011), the REIT context impacts these assumptions, since (1) a pulverized investor base means fewer shareholder blocks, which results in less shareholder power; (2) real estate assets have lower information asymmetry, as they are tangible and can be satisfactorily market evaluated; and (3) a high mandatory dividend payout significantly reduces management discretion over cash flow allocation.

The *agency costs theory*, or "ACT", as proposed by Jensen & Meckling (1976), adds a praxeological perspective and highlights the conflicts of interests that arise from the separation of ownership and management. Management has control over a firm's recourses and is comprised of people, whose preferences and actions may not align with shareholders' interests. Therefore, shareholders incur agency costs at company level to maximize management alignment and control. On top of the previously mentioned REIT features, this asset class has specific regulatory and disclosure requirements (Block, 2012; CVM, 2022c), which ultimately contribute to offset the disadvantages of a pulverized investor base (Harrison et al., 2011).

The *market timing theory*, or "MTT", differs from POT and ACT as it rejects the significance of information asymmetry and conflicts of interest. MTT proposes that management can accurately assess firms' intrinsic value as they have access to privileged information, which gives them an edge to monitor the market and actively adjust the firm's capital structure to maximize shareholder returns (Boudry et al. 2010; Harrison et al. 2011). For example, new equity issuances may be prioritized over debt financing to capitalize on a high price-to-book ratio. Conversely, debt financing tends to be the preferred option when interest rates are low, making borrowing more attractive.

The REIT literature has verified the prediction of TOT, POT, MTT and ACT theories mostly through 6 capital structure determinants: Tangibility, Size, Profitability, Conflicts of Interest, Growth Opportunities and Cost of Debt (Feng et al., 2007; Boudry et al., 2010; Harrison et al., 2011; Barclay et. al., 2013; Morri & Artegiani, 2015; Dogan et al., 2019). The predictions of the capital structure determinants are compiled in *Table 1: Matrix of Theoretical Predictions per Determinant of Leverage*.

Table 1 Matrix of Theoretical Predictions per Determinant of Leverage

Determinant	TOT	POT	MTT	ACT
Tangibility	Positive coefficient. Tangible assets are good debt collateral. This reduces credit risk, which allows more leverage.	Absent	Absent	Absent
Size	Positive coefficient. The larger the firm, the more sources of income it has. Less volatile cash flow means less credit risk; thus, size allows more leverage.	Negative coefficient. Larger firms are monitored more by external agents, which results in less information asymmetry and enhanced disclosure. Larger firms tend to leverage less.	Negative coefficient. Larger firms have more economies of scale, which also reduces costs related to new equity raising. Larger firms raise more new equity, thus leverage less.	Absent
Profitability	Positive coefficient. Profitable firms have better cash flow and debt payment capacity. Less credit risk allows more leverage.	Positive coefficient. Due to REIT's low reinvestment capacity, more profits mean that more leverage can be used to raise new resources.	Absent	Absent
Conflicts of Interest	Absent	Positive coefficient. Pulverized investor base means fewer control blocks, which results in less control over management and more information asymmetry.	Absent	Positive coefficient. Leverage can be used to reduce management discretion over cash flow allocation.
Growth Opportunities	Negative coefficient. The more growth opportunities the firm has, the less leveraged it is, as management is less prone to new undertakings.	Positive coefficient. The more growth opportunities the firm has, the more external financing it needs, especially because of REITs' low reinvestment capacity.	Negative coefficient. When markets perform well or the price-to-book ratio is high, the firm is more likely to raise new equity.	Absent
Cost of Debt or Liability Structure	Absent	Absent	Negative coefficient. The lower the cost of debt, the more the firm can afford to leverage.	Negative coefficient. Opaque, complex, or atypical structures raise risks, which in turn results in higher debt costs.

The Matrix of Theoretical Predictions outlines how the theories predict the behaviour of these key capital structure determinants. It also highlights that there is no "one size fits all" theory – some theories make opposing predictions, and some are complementary. For example, Tangibility is expected to have a positive influence on leverage under TOT, which is its only theorical prediction. Regarding Size, however, TOT suggests that larger REITs leverage more, while POT suggests the opposite, therefore one of them should have a higher explanatory power in this asset class. Profitability has convergent expectations, with TOT and POT predicting that profitability positively explains leverage. Conflicts of Interest are addressed by POT and ACT, both of which offer complementary insights: more leverage can be used to limit management discretion, and management prefers to raise debt rather than equity,

respectively. Growth Opportunities is expected to negatively explain leverage by TOT and MTT, whilst POT predicts more leverage. Lastly, MTT and ACT make predictions in opposite directions for Cost of Debt and Liability Structure, but they are complementary: lower interest rates favour leverage, and risky structures tend to require higher interest rates. This matrix provides a framework to evaluate the capital structure of Brazilian REITs in comparison to their international counterparts and was used to develop the conceptual model, as proposed in Section 3. Methodology and Data Setup.

2.2 Literature Results on the REIT Capital Structure Determinants

A relatively robust theoretical foundation has been established in the REIT capital structure literature. Ott et al. (2005) and Feng et al. (2007) were the first to deliver comprehensive studies on the subject. Their findings regarding TOT and POT were initially mixed, but the authors validated the low reinvestment capacity of the American REIT: on average, dividends represented 70% of the Funds from Operations, "FFO", (Feng et al., 2007), and retained earnings financed only 7% of their investments, whilst industrial companies financed 70% of their capital expenditure with them (Ott et al., 2005). Later, Boudry et al. (2010) and Harrison et al. (2011) analysed market leverage, instead of change of accounting leverage, and verified MTT and ACT with new determinants and more variables. Their findings enriched the literature by rejecting past mixed TOT and POT results and validating MTT. Barclay et al. (2013) compared the REIT capital structure with industrial and real estate companies and found that the debt tax shield did not explain leverage. Morri & Artegiani (2015) contributed by analysing the European REIT context and adding more variables to MTT and ACT; their results validated MTT and generally converged with Boudry et al. (2010) and Harrison et al. (2011). Lastly, Dogan et al. (2019) evidenced that different regulatory provisions can explain different capital structures.

According to the Matrix of Theoretical Predictions in Table 1, some may be conflicting or complementary, thus a comprehensive analysis of the determinants and literature is needed, as per below.

Tangibility. TOT predicts that Tangibility positively explains leverage, as real estate is good debt collateral: it has good market pricing, tends to preserve value over time, and has some liquidity. TOT was validated by Harrison et al. (2011) Dogan et al. (2019). Overall, despite the mixed results, real estate has qualities of a good debt collateral, and those features are unlikely to be rejected, specially in an asset class that must allocate most of its capital in real estate.

Size. According to TOT, size positively explains leverage because larger firms tend to have lower credit risk, as they have more sources of income. On the other hand, POT predicts that size will negatively explain leverage, as larger firms have more external oversight, which results in lower information asymmetry. TOT predictions exhibited higher explanatory capacity with REITs (Fama & French, 2002; Brown & Riddiough, 2003; Chikolwa, 2009; Harrison et al., 2011; Morri & Artegiani, 2015). POT was only validated by Dogan et al. (2019), but it is worth highlighting that they did not analyse information asymmetry, which is a key assumption that was previously rejected by Harrison et al. (2011).

Profitability. POT predicts that profitability will positively explain leverage, as REITs have low reinvestment capacity, and management is likely to prioritize debt over new equity. TOT also predicts that profitability will positively explain leverage because REITs have a strong cash flow. On the other hand, Boudry et al. (2010) argued that a negative coefficient supports MTT, as highly profitable REITs

have higher market-to-book-ratio and this favours new equity raising. Most results negatively explained leverage, rejecting TOT and POT, and validating MTT (Boudry et al., 2010; Harrison et al., 2011; Morri & Artegiani, 2015). The MTT was further supported by the rejections of TOT and POT in Dogan et al. (2019), which analysed REITs of 12 countries and accounted for regulatory differences. One of their tests focused exclusively on countries without mandatory dividend payout requirements, assuming that those with full reinvestment capacity would exhibit a positive coefficient. Surprisingly, the results were also negative, further rejecting TOT and POT.

Growth Opportunities. Most results supported TOT and MTT, and rejected POT, as growth opportunities negatively explained leverage (Barclay et al., 2006; Chikolwa, 2009; Boudry et al., 2010; Harrison et al., 2011; Morri & Artegiani, 2015). Sufficient evidence was found that REITs (1) raise more new equity when the market is favourable, and especially when the price-to-book ratio is above 1,00x; and (2) REITs raise leverage when the cost of debt is lower. It is worth mentioning that POT was only validated by Feng et al. (2007), but they used change of accounting leverage as a dependent variable, and the literature argues that the market leverage is the most adequate variable (Harrison et al., 2011; Morri & Artegiani, 2015).

Conflicts of Interest. POT predicts higher leverage, as firms with a pulverized investor base and lower control blocks tend to have more information asymmetry, and shareholders can use debt to reduce management discretion over the cash flow. Barclay et al. (2013) and Morri & Artegiani (2015) verified the relationship between investor concentration and leverage by comparing listed companies and REITs, and both results rejected POT. TOT predicts that firms with lower debt service coverage ratio, “DSCR”, have higher credit risk and a lower borrowing capacity, features that should negatively explain leverage. Harrison et al. (2011) analysed if REITs with low DSCR and low price-to-book ratio negatively explained leverage, and they did. Overall, literature’s findings have strongly rejected POT, and validated TOT, but more research is needed over the predictions of Agency Costs Theory.

Liability Structure & Debt Cost. Findings confirm that present debt or equity types can explain future financing decisions, and they sparsely suggest TOT’s validation, regarding how the cost and risk of an equity or debt structure influence capital allocation (lesser the risk, lesser the cost). For example, (1) REITs that concentrate liabilities in secured debt are prone to raise new equity, while those concentrated on unsecured debt tend to issue new debt on capital markets (Brown & Riddiough, 2003); (2) REITs with access to capital markets have higher leverage, while larger REITs issue them more frequently (Faulkender & Petersen, 2006); (3) REITs that issue debt with external ratings are likely to issue preferred shares and capital market debt, instead of common equity or bank debt (Boudry et al., 2010); and lastly, (4) the factors that increase credit risk strongly explain leverage negatively (Boudry et al., 2010; Harrison et al., 2011; Morri & Artegiani, 2015).

The following *Table 2 Matrix of Results* presents (1) the summarized results of the capital structure determinants; and (2) the synoptic analysis at the bottom. The Matrix of Results will be used to compare the results of the Brazilian REITs with its international peers, in section 4.1 Brazilian REIT Capital Structure Determinants.

Table 2 Matrix of Results

Literature Reference	Tangibility	Size	Profitability	Conflicts of Interest	Growth Opportunities	Debt Cost & Liability Structure
Feng et al. (2007)	Coefficient was significant and negative to change in accounting leverage, thus rejecting TOT (p.23).	Coefficient was not significant to change in accounting leverage, thus rejecting TOT (p.23).	Coefficient was not significant to change in accounting leverage. TOT and POT were rejected (p.23).	Absent.	Coefficient was significant and positive to change in accounting leverage, thus rejecting TOT and validating POT (p.23).	Absent.
Boudry et al. (2010)	Absent.	Absent.	The more profitable the REIT, the more prone to raise new equity it is (p.24), thus validating MTT and rejecting TOT and POT.	REIT equity research forecasts proved to be highly precise. This served as evidence of low information asymmetry; thus, POT was rejected (p.20).	Price-to-book ratio above 1.00x favours new equity raisings, which validates MTT (p.20) and rejects POT (p.26).	The higher the debt cost, the less prone the REIT is to new debt, thus validating MTT (p. 24).
Harrison et al. (2011)	Coefficient was significant and positive to market leverage, thus validating TOT (p.27).	Coefficient was significant and positive to market leverage in the second model (p.29), which validated TOT. In the first model, it was also positive but not significant (p.28).	Coefficient was significant and negative to market leverage (p.28), thus rejecting POT and TOT.	DSCR was significantly negative to market leverage only in low price-to-book-ratio REITs (p.35). This was evidence that low performance REITs have higher credit risk and leveraged less, which validated TOT and rejected POT.	Coefficient was significant and negative to market leverage, thus validating MTT and rejecting POT (p.27).	Coefficient was significant and negative to market leverage, showing that REITs with opaque or complex ownership structures leverage less, validating ACT (p.31).
Morri & Artegiani (2015)	Absent.	Coefficient was significant and positive to market leverage, validating TOT (p.13).	Coefficient was significant and negative to market leverage (p.12), thus rejecting POT and TOT.	Control blocks of investors do not significantly explain market leverage; thus, POT was rejected (p.13).	Coefficient was significant and positive to market leverage, validating MTT (p.13) and rejecting POT.	Coefficient was significant and negative to market leverage, thus validating MTT (p.12).
Dogan et al. (2019)	The model per country had mixed results. Only 2 countries were significant, but had negative directions, which suggested a rejection of TOT (p.21-22).	Coefficient was significant and negative to market leverage, thus rejecting TOT and validating MTT (but not POT) (p.23).	TOT was rejected in 2 countries (out of 12). POT was rejected because countries without mandatory dividend payouts did not explain negatively leverage.(p.22).	Coefficient was significant and negative to market leverage, thus validating ACT and rejecting POT (p.23).	All 12 countries had significant and negative coefficient to market leverage, thus validating MTT (p.23) and rejecting POT.	Absent.
Synoptic Analysis	**TOT had mixed results, but it is still likely that tangibility is positive to leverage, since real estate is good collateral.**	**Mixed results: larger REITs leverage more because are less risky (TOT), but they issue more equity because of their economies of scale (MTT).**	**Good evidence that Profitability explains new equity raisings. Literature converges on validating MTT and rejecting TOT and POT.**	**Good evidence of low information asymmetry on REITs, which is key to strongly reject POT.**	**Good evidence that Growth Opportunities negatively explain market leverage, validating TOT and MTT and rejecting POT.**	**Good evidence that factors that increase debt costs negatively explain market leverage, thus validating MTT and ACT**

The synoptic analysis of the literature in Table 2 shows that some determinants have had mixed results, whilst others had good convergence on significance and direction. Tangibility provided mixed results on TOT, but its predictions are still unlikely to be rejected because real estate is good collateral.

Despite TOT and MTT predicting opposite directions, Size features were validated: larger REITs can leverage more and issue more equity because of their have more diversified sources of income and economies of scale. The resultant of these vectors may explain why REITs combine issuing new equity with new debt, as shown by Feng et al. (2007). On Profitability, Conflicts of Interest, Growth Opportunities and Cost of Debt, there is good convergence on the rejection of POT and validation of MTT. The recurrent rejection of POT is consistent with the evidence provided by Boudry et al. (2010) and Harrison et al. (2011), that REITs are an asset class with low information asymmetry, as they (1) invest mostly in real estate; (2) have predictable results; and (3) in the general case, leverage was not significantly explained by shareholder control blocks or DSCR, as factors or tools to control management. Regarding MTT, there is also recurrent evidence that profitability and price-to-book favour new equity raisings, whilst lower debt cost and less risky liability structures positively explain leverage.

2.3 REIT Institutional Background and Unique Regulatory Provisions

The Real Estate Investment Trust (REIT) was created in 1960 in the USA, and one of the goals was to provide more funding to the real estate market, accelerating its development (Block, 2012). The main strategy was to enable the pooling of resources from all types of investors. The exchange-listed REIT, especially, enabled the democratization of the indirect investment in real estate, as it provided a vehicle (1) managed by professionals; (2) of a size and scale that provide more portfolio diversification and cost-efficiency; (3) whose stocks have reasonable liquidity; and (4) that follow specific regulatory requirements and governance, with varying levels of supervision from regulatory agencies. In the 1990s, many European, Asian, and Latin American countries followed the US and created their own REIT legislation. As per Dogan et al. (2019), some key regulatory provisions vary by country, such as minimum dividend payout, maximum leverage level, and the accounting treatment of profits from capital gains, but they ultimately converge regarding: real estate portfolio, income tax exemption and pulverized investor base.

The industry has grown rapidly and according to NAREIT there were 940 listed REITs worldwide in 2024, with a combined market capitalization of approximately USD 2.0 trillion[3]. Brazilian REITs ranked as the 8th largest market capitalization in world in 2024, yet to date the REIT literature[4] has never analysed its capital structure or the impacts of its unique regulatory provisions, such as the *mandatory semi-annual 95% payout of the AFFO*. Put simply, the Brazilian AFFO represents the net profit (or loss) from a cash flow perspective. It consists of removing all non-cash impacts from the net profit and considering only the income that has been received and the costs, expenses or taxes paid (CVM, 2014, 2015). This cash flow method of calculating the distributable income is inherently different from the Earnings Before Taxes, "EBT", of US REITs, which is net of depreciation, provisions, rent linearization and other accounting effects that do not have an immediate cash flow.

[3] According to Statista and B3, the Top 10 Countries per REIT market size are: 1st US REITs ($ 1.400 bln); 2nd Japan ($ 108 bln); 3rd United Kingdom ($ 73 bln); 4th Singapore ($ 69 bln); 5th Australia ($ 62 bln); 6th France ($ 41 bln); 7th Canada ($ 38 bln); 8th Brazil ($ 31 bln); 9th Belgium ($ 23 bln) and 10th Hong Kong ($ 18 bln).

[4] The Brazilian REIT literature has focused on performance and risk aspects, occasionally comparing it to other asset classes or foreign REITs and has not yet researched its capital structure or the impacts of its regulatory framework (Cosentino, 2011; Ferreira et al., 2014; Scolese et al., 2015. Yokoyama et al., 2016; Fernandes, 2020).

The semi-annual 95% payout of the AFFO makes the Brazilian REIT the most cash management constrained. For example, the American REIT must distribute 90% of its annual earnings before taxes, but this represents only an average of 70% of its FFO (Feng et al., 2007). The Brazilian AFFO may differ from FFO, but the comparison is sufficient to prove that it is highly cash flow constrained. Moreover, the inability to retain more than 5% of the AFFO[5] directly influences capital expenditure and debt amortization strategies, because if the cash expenditure is higher, the Brazilian REIT will have to use previously held cash, sell assets, or ultimately raise new equity or debt. Finally, unlike its international peers, the Brazilian REIT is an investment fund and in Brazil, such funds cannot access bank credit[6] (CVM, 2022c). Their options consist of accounts receivable securitization or seller financing[7].

2.4 Hypothesis Development

The hypothesis development was based on the following inferences: (1) the REIT capital structure is worth researching because it has a unique economic financial dynamic; (2) the optimal capital structure theory was developed in a non-REIT context and its applicability to REITs had to be verified; (3) the regulatory framework is relevant to the REIT capital structure and can explain differences between countries; (4) the Brazilian REIT capital structure and its unique mandatory payout of 95% of the AFFO have never been verified before, and this high mandatory payout may hamper the capability to retain earnings and deleverage; (5) TOT, POT, ACT and MTT provide contingent insights per determinant and can be complementary, thus a comprehensive analysis of their results is worthful; (6) REIT literature has concentrated in REITs of developed markets, and an approach to relevant emerging markets, such as the Brazilian case is missing. The following hypotheses were developed regarding the Brazilian REIT:

H_0: The theories supported by its capital structure determinants converge with the literature.

H_1: Its capital structure determinants support different theories, diverging from the literature.

H_2: Change in retained earnings does not significantly explain change in accounting leverage.

The null hypothesis, "H_0", and the alternative hypothesis, "*H_1*", were developed conservatively and translates into assessing whether the differences in significance and direction are significant enough to make Brazilian REITs an outlier. The second alternative hypothesis, "*H_2*", was introduced to verify if the Brazilian REIT can deleverage by retaining earnings, despite having to distribute 95% of the AFFO, also contributing to identify potential differences to its international peers. This strategy was chosen because (1) the literature on REIT capital structure shows some maturity; and (2) this is the first analysis of the Brazilian REIT capital structure.

---

[5] To retain more than 5% of the AFFO, this has to be approved at an investor's meeting. This is rarely done, because of transaction costs, the pulverized investor base, and the clientele effect for dividends.

[6] As per Article 101, item II of Resolução CVM 175 (2023).

[7] In real estate markets, "seller financing" is a financing arrangement where the seller of the property provides a loan to the buyer instead of the buyer securing a traditional mortgage from a bank or lender. Instead of paying the full price upfront, the buyer pays in installments directly to the seller and the seller retains a lien (legal claim) on the property until the loan is fully repaid.

3. METHODOLOGY AND DATA SETUP

3.1 Quantitative Method Selection

We first analyse the explanatory capability of firm-specific variables from the key capital structure determinants, as per Dogan et al. (2019), see Table 1 and Table 2. To that end, the following OLS regression model was developed for the 1st Model:

$$Market\ Leverage_{i,t} = \beta_0 + \beta_1 * Tangibility_{i,t} + \beta_2 * Size_{i,t} + \beta_3 * Profitability_{i,t} + \beta_4 * Growth\ Opportunities_{i,t} + \beta_5 * Conflicts\ of\ Interest_{i,t} + \beta_6 * Cost\ of\ Debt_{i,t}$$

The variable definitions are shown in Table 3. In order to favour analytical simplicity and replicability, Market Leverage, Tangibility, Size, Profitability, Growth Opportunities and Cost of Debt used standard definitions from the literature. Minor adjustments to Profitability and Cost of Debt were done, in order to adapt it to Brazilian features and maintain comparability to the literature: Brazilian REITs must perform annual appraisal of its assets (CVM, 2022c), which transits as "Fair Value Adjustments" in the Income Statement, therefore the variable EBITDA in Operating Return on Assets was adjusted of it. As for Cost of Debt, as credit market conditions are more volatile in emerging countries and Brazil historically have high interest rates, Cost of Debt considered 1,5 years ahead of interest rates (DI Futures[8]), as future interest rates are key to market time decisions, and expectations are embedded in market prices, debt cost and real estate capitalization rates. Both choices are supported by the additional tests done with other variables, as disclosed in *4.1 Brazilian REIT Capital Structure Determinants*.

As a proxy for Conflicts of Interest, the literature has used variables related to the corporate structure (Harrison et al., 2011), shareholder governance (Morri & Cristanziani, 2015), and debt interest coverage ratio (Dogan et al., 2019). We introduced a praxeological perspective by using Total Compensation, whose relationship with leverage had not been verified before. Ultimately, we propose that REIT management will decide the capital structure with the goal of maximizing their compensation. Regarding the Brazilian REITs of IFIX, management's total compensation is composed of (1) a recurring monthly management fee, which is a percentage of the REIT market capitalization[9]; and (2) some REITs pay performance fees, as a non-recurrent type of compensation, which are linked to surpassing a market benchmark. Both types of compensation can be identified in audited financial statements, and their reporting is a regulatory requirement.

Table 3 Composition of the 1st Model

Determinant	Type	Variable	Code	Formula
Market Leverage	Dependent	Market Leverage	ML	Debt/(Debt+Market Cap)
Tangibility	Independent	Real Estate Assets	REA	Real Estate Assets/Total Assets

[8] DI is the Brazilian interbank deposit rate. The 1.5-year timeframe was set using a Spline interpolation, which calculated the future interest rate of a particular date as per the previous and the next vertices of DI futures.

[9] The bylaws of all the Brazilian REITs in the sample were reviewed and they were unanimous: when the Brazilian REIT joins IFIX, management's recurrent compensation is set as a percentage of market capitalization.

Size	Independent	Logarithm of Total Assets	logTA	Logarithm of Total Assets
Conflicts of Interest	Independent	Logarithm of Total Compensation	logTC	Logarithm of Total Compensation
Profitability	Independent	Adjusted Operating Return on Assets	adjOROA	(EBITDA – Fair Value Adjustments)/Total Assets
Growth Opportunities	Independent	Market to Book Ratio	MBR	(Total Assets - Equity+Market Cap)/Total Assets
Cost of Debt	Independent	Future Interest Rate	FIR	1.5 year ahead of DI futures

The 2nd OLS regression model below uses an accounting identity used by Feng et al. (2007) to verify how the change in new equity, retained earnings and equity to assets explains the change in accounting leverage. This analysis is fruitful in this unique context, because (1) successful follow-ons depend on market conditions; (2) 95% of the AFFO must be distributed semi-annually, reducing the capacity to significantly retain earnings; and (3) regulations only allow them to raise new debt by issuing receivables-backed-securities or doing seller financing thus they have only few options to indebt.

$$\Delta D/A_{i,t} = \beta_0 + \beta_1 * \Delta NE_{i,t} + \beta_2 * \Delta RE_{i,t} + \beta_3 * \Delta EA_{i,t}$$

Table 4 Composition of the 2nd Model

Component	Type	Variable	Code	Formula
Accounting Leverage	Dependent	Change in Accounting Leverage	ΔAL	Δ Debt/Assets
New Equity	Independent	New Equity	NE	Net New Equity/Assets
Retained Earnings	Independent	Change in Retained Earnings	ΔRE	Δ Retained Earnings/Assets
Equity to Assets	Independent	Change in Equity to Assets	ΔEA	Equity *t-1* * ((1/Assets *t*) - (1/Assets *t-1*))

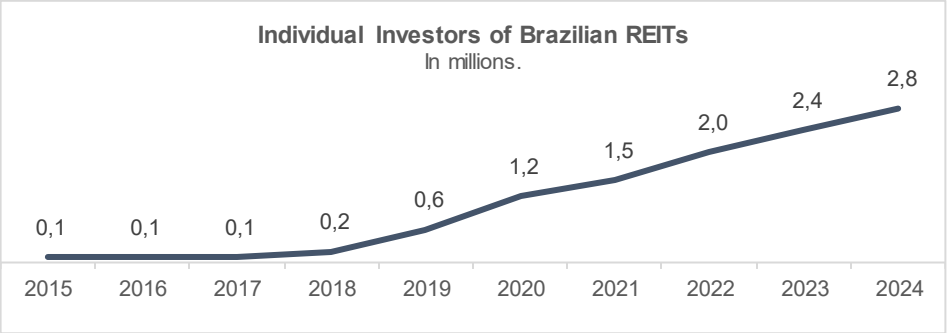
Both OLS regression models were estimated using panel data and subjected to the Variance Inflation Factor (VIF), Hausman and F tests, in order to verify multicollinearity and the applicability of fixed or random effects. Regarding the 1st model, the firm specific variables that did not achieve at least 95% of significance were removed. The 2nd model focuses on the variable ΔRE (Change in Retained Earnings); thus, the first result is sufficient to analyse it, and the removal of insignificant variables is not necessary.

3.2 Database

The database consisted of 54 Equity REITs of 2024, of which 53 were part of IFIX on December 31st and 1 had been part of IFIX until September 2024. That single Equity REIT was included because it was the most leveraged of the sample, and we preferred to enlarge the database with valuable data, instead of discarding it due to the IFIX's 3-month difference. The financial data from 2019 to 2024 were extracted from annual audited financial statements, which can be downloaded directly from CVM and the B3 website. Market prices and future interest rates were extracted by Quantum Finance.

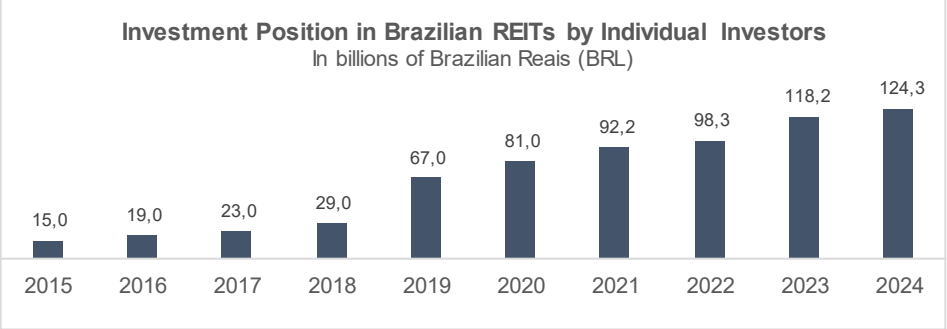
The timeline between 2019 and 2024 was chosen because many market-friendly regulations regarding Brazilian REITs were introduced at that time, and that is when they became truly popular and

achieved a meaningful size (B3, 2024). The regulatory changes can be summarized in: (1) pension funds can no longer directly invest in real estate, and must either invest indirectly through a REIT or sell the property (CMN, 2018); (2) new regulatory framework that strongly reduced costs and barriers of entry for new REITs (CVM, 2019a); (3) more flexibility to perform public offerings for all types of investors (CVM, 2019; CVM, 2021; CVM, 2022b); and (4) strengthened REIT governance, accountability and oversight (CVM, 2022c; CVM, 2023). As per Graph 1 and Graph 2, below between 2019-2024, the Compound Annual Growth Rate, "CAGR", of individual investors (people investing) and their investment position in Brazilian REITs was of 36,1% p.a. and 13,2% p.a., respectively.



Graph 1.

Elaborated by the author. Data from B3 (2024).



Graph 2.

Elaborated by the author. Data from B3 (2024).

The database started with 295 annual data points from 54 Equity REITs, before their review. 1 REIT with 6 data was removed from both models, because it mostly owned real estate companies[10]. 99 data were removed from the 1st model, as they did not have debt at the time (market leverage was zero). 25 data from IPOs were removed from the 2nd model, as its equation considers change between years. Therefore, the adjusted database for the 1st and 2nd model consisted, respectively, of 196 data from 45 REITs with positive market leverage, and 264 data that provided change in accounting leverage from 53 REITs.

Lastly, it is important to highlight that most of the sample was created or started leveraging in 2019. In 2018, before those regulatory changes came to effect, for example, only 8 Equity REITs from IFIX had debt, and adding their data did not significantly change the results. This further corroborated

[10] Consolidated leverage could not be properly estimated, and Tangibility was always below 11% in the timeline.

to select the timeframe between 2019 and 2024, in which regulatory rules significantly changed, and the Brazilian REITs grew fast and became popular. We assess this database as sufficient, because the objectives were achieved and raising a large annual database of REITs from a single country can be challenging. For example, Morri & Artegiani (2015) considered all European Equity REITs from EPRA/NAREIT Europe Index between 2002 and 2012 (11 years), and their database consisted of 528 annual data from 68 Equity REITs.

4. DISCUSSION OF EMPIRICAL RESULTS

4.1 Brazilian REIT Capital Structure Determinants

The pooled linear model allows the initial assessment of multicollinearity using the Variance Inflation Factor (VIF). No variable had VIF above 10, thus no adjustments were made. The Hausman Test was conducted to determine whether a fixed-effects or random-effects model is appropriate, and it confirmed the fixed-effects model. As per Table 5, all capital structure determinants were significant, and the model achieved explanatory capacity of 17,49%. The most significant determinants were, respectively, Profitability, Tangibility, Size, Growth Opportunities, Conflicts of Interest, and Cost of Debt.

Table 5 1st Model Results

Market Leverage	Tangibility	Size	Conflicts of Interest	Profitability	Growth Opportunities	Cost of Debt	Constant	R^2
ML	REA	logTA	logTC	adjOROA	MBR	FIR	β_0	
Full model	0.2173*** (3.23)	0.1622** (2.15)	-0.1180*** (-3.08)	-1.0778*** (2.70)	-0.1407*** (-2.90)	0.6657*** (2.80)	-0.5319 (-0.93)	17,49%

The test statistics are given in parentheses under the coefficients.
Significance at 10%, 5% and 1% levels are indicated as *, ** and ***, respectively.

The Matrix of Theoretical Predictions on Table 2 showed that Tangibility and Size results in REIT literature had been mixed, but the evidence ultimately suggest the validation of TOT and the rejection of POT (Harrison et al., 2011; Morri & Artegiani, 2015; Dogan et al., 2019). In the Brazilian case, both determinants are consistent with the literature: Tangibility and Size were significantly positive to market leverage, which validates TOT, and rejects POT. Ultimately, features that reduce credit risk in Brazil, such as using tangible assets as debt collateral and having diversified sources of income, favors more leverage. Emerging markets are characterized by higher interest rates and lower availability of long-term credit (Brito et al., 2007), therefore having a good risk profile is key to access debt with lower cost and longer maturity.

Profitability was the most significant capital structure determinant for the Brazilian REITs. The variable adjOROA presented a strong negative coefficient of -1.0778***, converging with the literature, which has mostly rejected TOT and POT, and validated MTT (Boudry et al., 2010; Harrison et al., 2011; Morri & Artegiani, 2015). The Brazilian result strongly rejects TOT and POT, because the former predicts that higher cash flows can support more debt service, and the latter predicts that management would prefer to raise new resources through debt, as the Brazilian REIT can retain only 5% of the AFFO. In

order to validate this result, we also tested the variables: (1) EBITDA/Assets, which was used by most of the literature, in spite that the annual fair value adjustments are considered in the Brazilian REIT EBITDA; and (2) and NOI/Assets, in which we only removed result from selling assets (non-recurrent) from adjOROA. EBITDA/Assets was not significant, which indicates that the Brazilian regulatory features of not depreciating real estate and having them annual reappraised is relevant, and justified using adjOROA. As for NOI/Assets, the result was also significant with a negative direction, which ultimately confirms the choice of adjOROA and convergence of Profitability with the literature.

Growth Opportunities was significantly negative (-0.1406***), which means that Brazilian REITs tend to issue new equity when their market-to-book-ratio is high. This validates MTT and rejects POT, also converging with the literature (Barclay et al., 2006; Chikolwa, 2009; Boudry et al., 2010; Harrison et al., 2011; and Morri & Artegiani, 2015). As per the synoptic analysis in the Matrix of Results (Table 2), we propose that the negative direction of Profitability is consistent with the result of Growth Opportunities, because (1) the most profitable Brazilian REITs are necessarily the ones with the highest dividend distribution (95% of the AFFO); (2) higher dividends directly contribute to increase market-to-book-ratio; (3) there is less capital available in emerging markets, thus the most profitable REITs are better positioned to raise most of it.

Conflicts of Interests was significantly negative (-0.1180***). This rejection of POT means that management prefers to raise new equity instead of debt, converging with the literature. It also validates ACT and introduces to the REIT literature that management compensation can explain the capital structure. Management's total compensation of all the Brazilian REITs from IFIX are directly related to its market capitalization, therefore the negative direction indicates that raising new equity is directly linked to an increase in their compensation. It is worth noticing, however, that new equity raisings when price-to-book-ratio is higher than 1,0x allows shareholders to benefit, as it is accretive to book value per share. Therefore, in order for this conflict of interest to be prejudicial to shareholders, new equity would have to be issued without clear financial economic grounds – only for the sake of growing the REIT. This could result in bad asset allocation, which can ultimately reduce performance, or increase risk. Further research on REIT's performance or risk metrics after new equity raisings can be fruitful, in order to verify their benefits to investors, especially after the REIT is already large enough to have captured the benefits of scale and diversification.

The result for Cost of Debt (FIR) was significantly positive (0.6657***). Although the direction seems surprising, the variable used was Future Interest Rates, therefore this result indicates that higher expectations of future interest rates, mean higher the market leverage. In order to confirm this assessment, instead of FIR we also tested: (1) "Incurred Cost of Debt", which considered the formula "interest expenses/debt"; and (2) "Current Market Cost of Debt", which considered the current annualized DI (Brazilian Interbank Deposit rate). In both cases, the determinant Cost of Debt was not significant, which suggests that past or current cost of debt does not explain market leverage – but futures does. We assess this as a validation of the MTT, because results indicate that when the future signals less liquidity and higher cost of capital, Brazilian REITs market time and raise cheaper debt before it materialized. Conversely, lower future interest rates translate into more opportunities to issue new equity, which is also consistent with the results on Profitability, Conflicts of Interests and Growth Opportunities.

Table 6 Synoptic Analysis of the Results for Brazilian REITs

Synoptic Analysis	Tangibility	Size	Conflicts of Interest	Profitability	Growth Opportunities	Cost of Debt
Brazilian Results	**Converge.** Significantly positive. TOT validated, confirming Harrison et al. (2011) results. REIT literature has not, so far, rejected that real estate serves as good collateral.	**Converge.** Significantly positive. TOT validated. POT rejected. Ultimately, larger REITs have lower credit risk, which explains more leverage.	**Converge.** Significantly negative. ACT validated. POT rejected. **Add new findings** Management favours issuing new equity, instead of new debt, as the former directly increases their compensation. **Further research is needed in developed markets, to confirm its general relevance.**	**Converge.** Significantly negative. TOT rejected. POT rejected. MTT validated. The result was confirmed using both adjusted OROA and NOI.	**Converge.** Significantly negative. MTT validated. POT rejected. Higher market-to-book-ratio favours issuing new equity.	**Converge** Significantly positive. MTT validated. The variable future interest rates was significant, whilst the variables current market cost of debt and incurred cost of debt were not. Result converges with Profitability, Conflicts of Interest and Growth Opportunities, whereas REITs will issue new equity when market conditions favour.

Lastly, as presented above in Table 6, a synoptic analysis of the REIT literature and the Brazilian REIT results was conducted to assess whether the latter diverged from the former. Overall, (H_1) was rejected and the null hypothesis (H_0) was not, as Tangibility, Size, Conflicts of Interest, Profitability, Growth Opportunities and Cost of Debt presented significance and direction consistent with the REIT literature. This corroborates with Determinants Results Matrix in Table 2, where TOT has some significance, despite the absence of the debt tax shield in REITs; POT is mostly rejected, with good evidence that REITs have low information asymmetry[11]; and MTT is strongly supported, as REITs issue new debt and equity when market conditions are favourable. Lastly, ACT was validated, which added new findings to the literature, as management compensation can explain the REIT capital structure. However, further research is needed in developed REIT markets, such as EUA, Europe and Japan, in order to confirm if ACT's finding is of general relevance for the asset class.

4.2 Components of Change of Accounting Leverage

Firstly, the equation was analysed using the pooled model to check multicollinearity. The Variance Inflation Factor, "VIF", was calculated and all variables had a VIF lower than 10. Afterwards, the Hausman test was carried out to verify the applicability of fixed or random effects, and fixed effect was confirmed. A total of 264 data points from 53 REITs were analysed and Table 7 shows the results, which explained 99.88% of the change in accounting leverage. High explanatory capacity was expected, as the equation represents an accounting identity.

Table 7 2nd Model Results

Change in Accounting Leverage	New Equity	Change in Retained Earnings	Change in Equity to Assets	Constant	R^2
ΔAL	NE	ΔREA	ΔEA	β_0	

11 Worth mentioning that all Brazilian REITs must report their monthly balance sheet, quarterly results, annual audited financial statements, and real estate property appraisal reports to a public CVM database. Moreover, it is market practice for Brazilian REITs to publish a monthly managerial report "Relatório Gerencial", featuring comments by the management about the month's performance and portfolio updates.

Full model	-1.01721*** (-424.22)	-1.0116*** (-224.79)	-1.0141*** (-427.14)	0.0001 (0.984)	99.88%

The test statistics are given in parentheses under the coefficients.
Significance at 10%, 5% and 1% levels are indicated as *, ** and ***, respectively.

All remaining variables were significant and exhibited negative coefficients. Initial expectations were that Change in Retained Earnings (ΔREA) would not be significant, as the only way to retain more than 5% of the AFFO is through approval at an investors' meeting. This strategy is unlikely because of transaction costs, because IFIX REITs have a highly pulverized investors base, and the clientele effect for dividends is high. However, ΔREA was significant and the results rejected H_2.

To understand this result required a close review of all financial statements from the sample. Surprisingly, the Retained Earnings mostly came from property fair value adjustments. In Brazil, properties owned by REITs do not incur depreciation and must be appraised annually by external consultants. Thus, if a property gains value over time, the resulting adjustment of fair value will transit through the income statement, ultimately resulting in profit (or loss). However, these profits do not include a cash flow and thus remain as Retained Earnings until the asset is sold.

The rejection of H_2 concludes that Equity REITs from IFIX tend to retain properties that have gained value in their portfolios. These retained earnings increase equity and reduce accounting leverage. Despite the clientele effect for dividends, the strategic preference appears to be retaining profitable properties, rather than of selling them to maximize short-term dividends (as only 5% can be retained).

On the other hand, this dynamic can be problematic, as management can avoid selling assets with a loss in order to avoid reducing the distributable income. All Equity REITs in IFIX distribute dividends monthly, so a significant loss could temporarily disrupt distributions. Because of the clientele effect, investors might become wary of this disruption and sell their shares, which could negatively impact the REIT's market capitalization - and reduce management compensation. Further research on these potential conflicts of interest is needed, as management may avoid selling properties at a loss to minimize market price volatility (due to temporary dividends interruption). This concept is compatible with the result of FIR (Cost of Debt), where the Brazilian REITs did not deleverage when interest rates were high, and their properties lost market value.

5. CONCLUSION

This study analysed the determinants of the capital structure of Brazilian REITs, and focused on whether unique regulatory provisions, such as the semi-annual mandatory payout of 95% of AFFO, influenced leverage. To address this, two OLS regression models were used. The first model focused on standard determinants like size, profitability, and growth opportunities, while the second model verified if changes in retained earnings explained changes in accounting leverage. The data from 54 Brazilian Equity REITs between 2019 and 2024 ensured a dataset that captured recent market dynamics.

Throughout the research, several challenges arose, such as the lack of previous Brazilian literature regarding the capital structure of REITs, the need to adjust EBITDA of annual fair value adjustments and, notably, the limited availability of historical data, as most of the REITs from IFIX were began

leveraging between 2019 and 2021. Additionally, to understand how retained earnings explained deleveraging and the origin of these earnings, the REITs' audited financial statements had to be individually analysed. These constraints were addressed through a careful literature review, using data from public databases of quality, and a selection of established quantitative methodologies, which ensured that the analysis remained consistent with both the theoretical framework and the practical realities of the Brazilian REITs.

Overall, the findings of this study converged with the existing literature on REIT capital structure. The alternative hypothesis (H_1) and the second hypothesis (H_2) were rejected, and the null hypothesis (H_0) was not. Most determinants, such as tangibility, size, conflicts of interest, and growth opportunities showed results consistent with the trade-off (TOT) and market timing (MTT) theories, whilst rejecting pecking order theory (POT). The verification that retained earnings explained deleveraging, despite the 95% AFFO payout, further contributed towards the convergence of the Brazilian results. This was relevant because that is a unique regulatory provision of the Brazilian REIT, which the literature had not verified before.

Additionally, this is a pioneering study on the Brazilian REIT capital structure, which paves the way for future research and highlights some of its unique regulatory requirements, which may have substantial effects on its financial economic dynamics. For instance, this verification sheds light on a specific characteristic of Brazilian REITs, i.e., (1) accounting profits or losses only impact the distributable income when they become cash flow (AFFO); (2) properties' fair value adjustments are the primary source of retained earnings, which is significant enough to explain deleveraging; (3) they tend to retain profitable properties instead of selling them, contradicting the clientele effect for dividends; and (4) investor's must be aware that when a profitable property is sold, accounting leverage may increase, as 95% of those profits will have to be distributed in the same semester.

Finally, management compensation was analysed for the first time as an REIT capital structure determinant. A praxeological perspective of the agency costs theory was introduced, and the result was promising. It negatively explained market leverage, which suggested that management prefers to raise new equity instead of debt, as the former surely increases recurrent compensation, whilst the latter adds risk and may contribute to uncertain performance fees. Management has clear financial incentives to expand the REIT, especially when price-to-book-ratio is high, because it is accretive to book value per share and also benefit investors. Therefore, this validation of agency costs theory also validates market timing and strongly rejects pecking order, which is consistent with Boudry et al. (2010), Harrison et al. (2011), and Morri & Artegiani (2015).

Future research could explore whether the dynamics observed in Brazilian REITs hold true in other countries, particularly whether management compensation also negatively explains leverage. If that's also validated in larger REIT markets, this would be a significant validation as to why REITs prefer to raise new equity over debt. Another research opportunity lies in examining the praxeological impact of using AFFO as the metric for distributable income, which may disincentivize selling loss-making assets. This could be verified by analysing the incidence of loss-making transactions by Brazilian REITs, because an extremely low incidence would be a strong indication that management avoids selling assets

at a loss. The negative impact on short-term dividend distribution would stress investors and impact market capitalization, which would ultimately also impact management compensation.

6. REFERENCES

Barclay, M. J., Smith, Jr., C. W., & Morellec, E. (2006). On the Debt Capacity of Growth Options. The Journal of Business, 79(1), 37–60. https://doi.org/10.1086/497404

Barclay, M. J., Heitzman, S. M., & Smith, C. W. (2013). Debt and taxes: evidence from the real estate industry. Journal of Corporate Finance, 20, 74–93.

Bastos, D. D.; Nakamura, W. T. (2009). Determinantes da estrutura de capital das companhias abertas no Brasil, México e Chile no período 2001-2006. Revista de Contabilidade & Finanças, v. 20, n. 50, p. 75-94.

Block, R. L. (2012). Investing in REITs: real estate investment trusts. John Wiley & Sons Inc: New Jersey. Fourth edition.

Boudry, W. I., Kallberg, J. G., & Liu, C. H. (2010). An analysis of REIT security issuance decisions. Real Estate Economics, 38(1), 91–120.

Brito, G. A. S., Corrar, L. J., & Batistella, F. D. (2007). Fatores determinantes da estrutura de capital das maiores empresas que atuam no Brasil. Revista Contabilidade & Finanças, 18(43), 9-19. https://doi.org/10.1590/S1519-70772007000100002

Brown, D. T., Riddiough, T. J. (2003). Financing choice and liability structure of real estate investment trusts. Real Estate Economics. 31, p. 313-346.

B3 – Brasil, Bolsa e Balcão S.A. (2024). Pessoas físicas, uma análise da evolução dos investidores na B3, dezembro de 2024. Available at: https://www.b3.com.br/data/files/92/17/8E/B7/E232591029BEEC39AC094EA8/Book%20Pessoa%20Fisica%20-%204TRI%202024.pdf. Accessed on: 12/03/2025.

Chikolwa, B. (2009). Determinants of capital structure for A-REITs. 15th Annual Conference of Pacific Rim Real Estate Society.

Cosentino, R. M. S., Alencar, C. T. (2011). Fundos de Investimento Imobiliário: Análise do desempenho e comparação com US-REITs, UK-REITs, G-REITs e SIIC. Latin American Real Estate Society, 11ª Conferência Internacional da LARES.

Comissão de Valores Mobiliários, “CVM”. (2014). Ofício-Circular CVM/SIN/SNC 01/14. Available at: https://conteudo.cvm.gov.br/legislacao/oficios-circulares/sin-snc/oc-sin-snc-0114.html. Accessed on: 20/02/2024.

Comissão de Valores Mobiliários, “CVM”. (2015). Ofício-Circular CVM/SIN/SNC 01/15 Anexo II – MEMO/CVM/SIN/SNC/nº01/2015. Available at: https://conteudo.cvm.gov.br/legislacao/oficios-circulares/sin-snc/oc-sin-snc-0115.html. Accessed on: 20/02/2024.

Conselho Monetário Nacional, “CMN”. (2018). Resolução CMN 4661/2018. Available at: https://www.gov.br/previc/pt-br/normas/resolucoes/resolucoes-cmn/resolucao-cmn-no-4-661-de-25-de-maio-de-2018/@@download/file. Accessed on: 20/12/2024.

Comissão de Valores Mobiliários, “CVM”. (2019). Instrução CVM nº 601. Disponível em: https://conteudo.cvm.gov.br/export/sites/cvm/legislacao/instrucoes/anexos/600/inst601.pdf. Accessed on: 20/12/2024.

Comissão de Valores Mobiliários, “CVM”. (2021). Resolução CVM nº 19. Disponível em: https://conteudo.cvm.gov.br/export/sites/cvm/legislacao/resolucoes/anexos/001/resol019consolid.pdf Accessed on: 20/12/2024.

Comissão de Valores Mobiliários, “CVM”. (2022a). Direito do Mercado de Valores Mobiliários. Rio de Janeiro, 2ª edição. Available at: https://www.gov.br/investidor/pt-br/educacional/publicacoes-educacionais/livros-cvm/direito-do-mercado-de-valores-mobiliarios. Accessed on: 20/02/2024.

Comissão de Valores Mobiliários, “CVM”. (2022b). Resolução CVM nº 160. Disponível em: https://conteudo.cvm.gov.br/export/sites/cvm/legislacao/resolucoes/anexos/100/resol160consolid.pdf . Accessed on: 20/12/2024.

Comissão de Valores Mobiliários, “CVM”. (2022c). Resolução CVM nº 175. Disponível em: https://conteudo.cvm.gov.br/export/sites/cvm/legislacao/resolucoes/anexos/100/resol175consolid.pdf. Accessed on: 20/12/2024.

Comissão de Valores Mobiliários, “CVM”. (2023). Resolução CVM nº 179. Disponível em: https://conteudo.cvm.gov.br/export/sites/cvm/legislacao/resolucoes/anexos/100/resol179consolid.pdf. Accessed on: 20/12/2024.Deliberato, G. D. R. (2022). Análise empírica do Dividend Yield dos Fundos de Investimento Imobiliário. Trabalho de Conclusão de Curso (Bacharelado em Ciências Contábeis) - Universidade Federal de São Paulo, Escola Paulista de Política, Economia e Negócios, Osasco.

Dogan YY, Ghosh C, Petrova M (2019) On the determinants of REIT capital structure: evidence from around the world. J Real Estate Finance Econ 59(2):295–328

Durand, D. (1952). Cost of debt and equity funds for business: trends and problems of measurement. In: Conference on Research on Business Finance. New York: National Bureau of Economic Research.

Fama, E., French, K. (2002). Testing trade-off and pecking order predictions about dividends and debt. Review of Financial Studies. Vol. 15. Nº1.

Faulkender, M., & Petersen, M. A. (2006). Does the Source of Capital Affect Capital Structure? The Review of Financial Studies, 19(1), 45–79. http://www.jstor.org/stable/3598031

Feng, Z., Ghosh, C., & Sirmans, C. F. (2007). On the capital structure of real estate investment trusts (REITs). Journal of Real Estate Finance and Economics, 34(1), 81–105.

Fernandes, P. S. (2020). Análise do binômio risco e retorno de diferentes segmentos de atuação e tipo de gestão de fundos de investimento imobiliário no mercado brasileiro no período entre 2015 e 2019. Escola Politécnica, Universidade de São Paulo, São Paulo.

Ferreira, A. P., Gonzales, A., Santos, F. A. (2014). Efeitos de Eventual Término da Isenção do Imposto de Renda dentro de Fundos de Investimento Imobiliário. Revista Fatec Zona Sul, Refas. 1ª edition, October of 2014.

Harrison, D. M., Panasian, A. C., & Seiler, M. J. (2011). Further evidence on the capital structure of REITs. Real Estate Economics, 39(1), 133–166.

Jensen, M. C.; Meckling, W. H. (1976). Theory of the firm: Managerial behaviour, agency costs and ownership structure. Journal of financial economics, v. 3, n. 4, p. 305-360.

Miller, M.H. (1977). Debt and Taxes. The Journal of Finance, 32: 261-275. https://doi.org/10.1111/j.1540-6261.1977.tb03267.x

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. American Economic Review, 48(3), 261–297.

Modigliani, F.; Miller, M.H. (1963). Corporate income taxes and the cost of capital: a correction. American Economic Review, Nashville: American Economic Association, v.53, n.3.

Morri, G., & Artegiani, A. (2015), The effects of the global financial crisis on the capital structure of EPRA/NAREIT Europe index companies, Journal of European Real Estate Research, Vol. 8 No. 1, pp. 3-23. https://doi.org/10.1108/JERER-04-2014-0017

Myers, S. C. (1984). The capital structure puzzle. The Journal of Finance, v. 39, n. 3, p. 574-592.

Myers, S. C.; Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, v. 13, n. 2, p. 187-221.

Ott, S. H., Riddiough, T. J., & Yi, H. C. (2005). Finance, investment, and investment performance: Evidence from the REIT sector. Real Estate Economics, 33(1), 203–235.

Ribeiro, J. E., Maciel, C. F., Carvalho, G. A., Carmo, L. J. O., Assis, C. L. B. (2019). Estrutura de capital: Bibliometria sobre a produção científica brasileira no período 2007-2016 RAU/UEG – Revista de Administração da UEG – ISSN 2236-1197, v.10, n.2.

Scolese, D., Bergmann, D. R., Silva, F. L., Savoia, J. R. F. (2015). Análise de Estilo de Fundos Imobiliários no Brasil. Revista de Contabilidade e Organizações 23, 24-35. DOI: http://dx.doi.org/10.11606/rco.v9i23.83452

Yokoyama, K., Neto, A. Cunha, C. (2017). Brazilian REIT: Alternative Investment to Real Estate, Stock and Bonds. Revista Brasileira de Finanças: Vol. 14 No. 4. DOI: https://doi.org/10.12660/rbfin.v14n4.2016.56743