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Resource slack and institutional ownership: A DuPont analysis in an emerging market[☆]

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ABSTRACT

This study examines resource slack (asset turnover, profit margin, leverage deviations from industry norms) on institutional ownership in Brazilian firms from 2010 to 2023. We document that, on average, institutional investors are drawn to firms with lower resource slack, especially in asset turnover, for operational stability and comparability. Similar preferences are observed when examining institutions that prioritize stronger relationships with firms, as evidenced by institutional stockholdings exceeding 5% (*'relevant'*), long-term (*'dedicated'*), and voting shares (*'voting'*). Moreover, while mutual funds prefer firms with lower resource slack, indicating conservative strategies focused on predictability, hedge funds target firms based on value orientations, viewing resource slack as a signal of potential performance gains. Our results are subjected to a comprehensive battery of endogeneity tests, including the use of instrumental variables and selection bias tests. In addition, we document the effect of a regulatory change on institutional ownership. The findings contribute to research on shareholder governance by highlighting the heterogeneity among institutional investors based on their incentives.

1. Introduction

This study examines the impact of resource slack on the attraction of institutional investment in an emerging economy. The market for institutional investors has been attracting the attention of researchers, investors, and regulators (Badhani et al., 2023; Koesrindartoto et al., 2020; Shadab, 2007) concerning both their incentives and consequences for the entire economy. In particular, the Brazilian economy has received special attention from domestic² and international institutional investors.³ Institutional investors

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² Exame (2024, February 23) retrieved May 18, 2024, from <https://exame.com/revista-exame/o-ano-da-virada-para-os-fundos/>

³ Morningstar (2024, April 22) retrieved May 18, 2024, from <https://www.morningstar.co.uk/uk/news/248457/whats-driving-brazils-economic-boom.aspx>

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represent 27 % of the equity owners, whereas 65 % are foreign institutions (OECD, 2022). Brazilian retail investors have registered over 5.5 trillion BRL (roughly 1 trillion USD), where investment funds are an important channel. However, equity fund managers have faced criticism for their investment decisions, which has generated numerous claims related to conflict of interest⁴ and migration to alternative investments (ANBIMA, 2024). This highlights the demand for rigorous analysis and oversight of these institutional investors in the country, as there might be consequences for both invested firms and other investors.

Corporate governance theory predicts that institutional investors often actively participate in the management decisions of the companies they invest in, seeking to optimize resources and maximize shareholder returns (Shleifer and Vishny, 1997). A rich body of literature supports distinct implications of institutional investors, such as the need for high-quality disclosure (Abramova et al., 2020), pressure on management to prioritize short-term utility functions (Bushee, 2001; DesJardine et al., 2022; Hadani et al., 2011; Lakonishok et al., 1992; Lou et al., 2020), adoption of new corporate governance practices (Borochin and Yang, 2017), and contributions to long-term performance (Chung et al., 2019; Ghaly et al., 2020).

However, one step back, little is known about the fundamental mechanisms that drive their stock-picking in developing economies, where interest rates are comparatively high, creating incentives to alternative investments, e.g., investing in fixed income (Barro, 1992; Gubareva and Keddad, 2022). Prior evidence of non-US firms finds that institutions have negative stock-picking skills (Badhani et al., 2023; Muñoz et al., 2015), though these studies are primarily focused on market timing. Given the increasing dominance of institutions in emerging economies (Ruiz, 2018), firms should be aware of the signals that attract the 'right' ones (Bushee, 2004). At the same time, general investors would benefit from knowing the incentives and effects of increasing institutional ownership.

Drawing this linkage is challenging because institutional investors have distinct characteristics and incentives that ultimately influence their investment decisions (Borochin and Yang, 2017; Bushee, 1998; Ferreira and Matos, 2008). For instance, institutional investors trading in individual stocks are more likely to favor firms that deviate from comparables, meanwhile, both risk-averse institutional investors (Wu and Xue, 2023) and those trading on industry momentum (Grinblatt et al., 2020; Moskowitz and Grinblatt, 1999) would favor firms with fundamentals closer to the industry norm. On the other hand, activist institutional investors aim to intervene in management decisions to improve outcomes when possible (Adams and Neururer, 2020; Albuquerque et al., 2022; Aslan and Kumar, 2016; Danis, 2020).

Regardless of the strategy and motivation, a common fundamental premise is that these fund managers aim to maximize firm value to then maximize returns for the investors they represent (Albuquerque et al., 2022; Moskowitz, 2000), often relying on fundamental analysis.⁵ Therefore, it is reasonable to assume that signals related to past operational performance compared to industry peers may influence institutional investors stakeholding decisions.

To capture this comparison, we employ the DuPont analysis framework, which decomposes the firm's overall return, relying on a faithful representation of a firm's financial and economic performance (Barth et al., 2001), particularly emphasizing the qualitative characteristic of comparability. Accounting comparability has been extensively documented as a key factor in explaining market prices and returns (Ball and Brown, 1968; Barth et al., 2023, 2001; Holthausen and Watts, 2001), and capital allocation (Chen et al., 2018; Wu and Xue, 2023). As investors typically compare the firm's performance with their peers, maximizing the comparability would reduce moral hazard issues arising from unobservability of the entrepreneurs' effort, especially when seeking diversification (Wu and Xue, 2023).

Further, prior literature suggests that slack in both operational and financial resources serves as a key metric for evaluating firm performance (George, 2005; Goodman et al., 2020; Hendricks et al., 2009). Then, we use the overall return components – on the form of 'resource slack' - to exploit a mechanism under which institutional investors are attracted to invest in a firm given their deviation from their industry norm.

Therefore, the main objective of this study is to examine the relationship between resource slack and institutional ownership. Specifically, we examine whether – and the circumstances when – the industry-adjusted DuPont components attract institutional investment. We explore this relationship across distinct institutional ownership perspectives and investment fund categories.

The paper is motivated by the relatively recent development of institutional investment in the region (Callado and Amaral, 2005; Fonseca et al., 2019; Holanda et al., 2013; Piccioni et al., 2012) and by a limited empirical literature on sophisticated investors in Latin America, likely due to restricted access to granular data. For instance, Piccioni et al. (2012) examine mutual fund participation in Latin America during the 2008–2010 period, using a sample of 861 observations, primarily focusing on foreign institutional investors and their impact on reporting quality. In Brazil, the largest economy in South America,⁶ there is limited evidence linking institutional participation to firm characteristics. For example, a negative relationship has been observed between pension funds and corporate governance (Punsuvo et al., 2007), while the presence of investment funds among major shareholders is associated with better earnings quality (Cavalcante et al., 2023), and with greater financial investments (Fonseca et al., 2019). However, little is known about the drivers of institutional investors in this context, let alone when considering their different characteristics and incentives.

This paper fills this gap by examining institutional participation through a different mechanism, utilizing a traditional fundamentalist analysis. Our sample spans a broader and more recent period (2010–2023), allowing us to account for economic shocks that

⁴ Valor Econômico (2024, February 24) retrieved May 30, 2024, from <https://valor.globo.com/financas/noticia/2024/02/23/conflito-de-interesse-e-dilema-na-distribuicao-de-investimentos.ghtml#>

⁵ Verde Asset Management (2025, May 30) retrieved Jun 30, 2025, from <https://www.verdeasset.com.br/#/performance>

⁶ International Monetary Fund, 2025. IMF Executive Board Concludes 2025 Article IV Consultation with Brazil (Press Release No. 25/252). Retrieved May 30, 2025, from <https://www.imf.org/en/News/Articles/2025/07/16/pr-25252-brazil-imf-executive-board-concludes-2025-article-iv-consultation>

have impacted global financial markets, thus expanding opportunities for institutional engagement (Ataullah et al., 2022) as well as regulatory change in the investment fund market (Storck and Ferreira, 2023).

We utilize all available fund portfolio data from the Comdinheiro® database for funds registered with the Brazilian Financial and Capital Markets Association (ANBIMA) that have at least 1 million BRL invested in a single firm. This yields 140,944 observations of equity investments during the sample period. We then match this portfolio data with financial accounting information, building a sample of 2596 firm-year observations, covering 269 companies listed on the Brazilian Stock Exchange (B3) with available data from 2010 to 2023.

The main results are fourfold: *First*, we demonstrate the signaling effect of resource slack measured using fundamental analysis. Institutional investors assess firms' fundamentals differently regarding resource slack to make investment decisions. On average, institutional investors are drawn to firms with lower resource slack in terms of asset turnover because this signal indicates a closer alignment with industry norms, making the firm more predictable and less risky. *Second*, we observe similar patterns among institutional investors who are more likely to establish stronger relationships. These relationships are characterized by relevant, dedicated, and voting shareholders. Lower resource slack signals stability and operational efficiency, making these firms attractive to investors with these traits. This is because such firms present opportunities to create value through new investments. *Third*, hedge funds are more drawn to firms with greater slack, as they perceive it as an opportunity to extract higher potential returns through active engagement and market-driven strategies. In contrast, mutual funds are attracted to firms with lower resource slack, as it signals greater predictability and reduced risk. *Fourth*, in additional analysis, we test the moderating effect of a regulatory change that affected fund governance and liquidity constraints (i.e., CVM's Instruction 555/14). We find that institutional ownership increased after this new regulation and that institutional investor preferences evolve in response to regulatory changes.

Our study contributes to three key areas of the accounting and finance literature. First, the paper contributes with detailed evidence in developing countries, as this is the first paper in South America to map the types of institutional presence. We particularly describe significant differences in investment strategies across various investment perspectives, such as relevant participation, investment horizon, and voting rights, which indicate stronger relationships with the invested firm. Furthermore, we delve into the incentives of the major classes of funds, including mutual funds and hedge funds. Such differentiation provides a more nuanced understanding of how these institutions target firms based on resource slack.

Second, the paper contributes to the ongoing discussion on whether sophisticated investors rely on accounting information (Alles et al., 2021; Cantrell and Dickinson, 2019; Cheong et al., 2022). In our setting, resource slack indicates either predictability, risk exposure, or potential for value creation. These insights can also aid current and prospective shareholders in better understanding the strategic motivations behind institutional investments, particularly in emerging markets.

Third, the paper contributes to the understanding of the institutional setting. The results show a significant change in institutional ownership following a regulatory change. Specifically, the CVM's Resolution 555/14 introduced a new framework for investment funds, clarifying portfolio liquidity management obligations, introducing more transparency, and facilitating access to international funds. In our setting, the results suggest that profitability's negative signal was clearly mitigated post-regulation, mainly for hedge funds.

In addition to this section providing the context and research motivation, Section 2 outlines the hypotheses development. Section 3 establishes the research design. Section 4 presents and discusses the results of the models, while Section 5 provides conclusions, limitations, and suggestions for future research.

2. Background and hypotheses development

2.1. Institutional investors

The literature on corporate governance and finance suggests that institutional investors are influential stakeholders, often holding substantial stock in large companies (Borochin and Yang, 2017; Brooks et al., 2018; Lakonishok et al., 1992; Shleifer and Vishny, 1997), particularly those with dispersed ownership structures (Bansal and Thenmozhi, 2020). Such ownership distribution facilitates the exercise of activism and increased scrutiny over management aimed at enhancing resource utilization and maximizing firm value (Chung et al., 2019; Shleifer and Vishny, 1997). Studies on non-U.S. firms indicate a preference among institutional investors for companies with higher transparency, stronger investment opportunities, and greater growth potential (Ferreira and Matos, 2008).

Based on the agency theory, one strand of the literature shows that attracting institutional investors offers several advantages, mostly related to the monitoring effect (Chen et al., 2007; Shleifer and Vishny, 1997). According to Bushee and Miller (2012a,b), institutional investors enhance analyst coverage, trading volume, and market value. However, different types of investors have varied incentives and goals (Bushee, 2001, 2004; Hadani et al., 2011; Lang et al., 1997).

Some focus more on the long-term organizational perspective (Bushee, 2004; Donaldson and Davis, 1991; Fathi, 2013; Fich and Nguyen, 2019). For instance, Ghaly et al. (2020) find that long-term institutional investors encourage capital optimization, leading to greater management efficiency and reduced unnecessary investments. Lou et al. (2020) find evidence that supports the notion of institutional investors improving managerial ability in the long term, but the paper finds no result for domestic institutions. Lel and Tepe (2021) show long-term institutional ownership aligns executive compensation contracts with long-term goals (e.g., extends CEO pay horizon).

On the other hand, another strand of the literature indicates the presence of institutional investors may introduce certain drawbacks. For instance, short-termism can lead institutions to pressure management to prioritize immediate stock returns (Hendricks et al., 2009; Jensen, 1986; Lakonishok et al., 1992). Moreover, Bhandari et al. (2023) show that institutions with a history of disciplinary

actions encourage firms' financial misreporting.

In sum, the relationship between institutional ownership and firm performance is driven by the incentives to target these firms. Prior empirical literature presents three main perspectives to such incentives: ESG management (Park and Jang, 2021), governance characteristics (Chung et al., 2010; Shleifer and Vishny, 1997), and firms' performance stability, whereas such performance stability reduces investment risks and enhances returns (Ferreira and Matos, 2008). This paper delves into the latter to provide additional contributions regarding operational and financial slack perspectives via fundamentalist analysis.

2.2. Resource slack signals via DuPont analysis

Resource slack is typically viewed as "potentially utilizable resources that can be diverted or redeployed for the achievement of organizational goals" (George, 2005, p. 661). Consequently, the manner in which such a "cushion" is employed in a competitive setting serves as a pivotal factor in determining its success (Cyert and March, 1963). A recent study suggests a higher Return on Asset is a potential indicator of generating operational slack (Alshorman et al., 2024), while another relies on the days in inventories (Yang and Jiang, 2023). On the other hand, studies focused on financial slack typically use the percentage of cash holdings (Alshorman et al., 2024; Yang and Jiang, 2023).

Due to the fact that the firm's operational structure is part of a more complex mechanism influenced by financial decisions, analyzing resource slack requires considering more than just isolated variables. These variables alone do not provide insights into the channels of performance (Brav et al., 2015). Furthermore, the utility of accounting numbers is enhanced when compared to their peers (Chen et al., 2018; Gjerde et al., 2010; Wu and Xue, 2023). In light of this, Soliman (2004) proposes to analyze the difference between the overall return decomposition and the relative industry norm.

Traditionally, the DuPont Analysis breaks down the firm's overall Return on Equity (ROE) into three components: Profit Margin (PM), Asset Turnover (ATO), and Leverage (LEV):

$$ROE = PM * ATO * LEV$$

or, more specifically:

$$ROE = \left(\frac{\text{Net Income}}{\text{Sales}} \right) * \left(\frac{\text{Sales}}{\text{Assets}} \right) * \left(\frac{\text{Assets}}{\text{Book Value of Equity}} \right)$$

Some researchers focus on the operating return on assets (Angotti et al., 2016; Soliman, 2008), while others include the leverage ratio to consider how firms' managers deal with external resources to enhance the firm performance (Eljelly, 2004; Uremandu et al., 2016). Prior research suggests that indicators anchored in the DuPont analysis contribute to predicting the firm's future results as well as predicting stock returns (Soliman, 2008), especially when compared to industry competitors (Soliman, 2004). In this paper, the deviation of the firm's DuPont components from their relative industry median is interpreted as resource slack.

Noteworthy, resource slack displays a twofold role in the informed investors' perspective. On the one hand, firms closely aligned with industry medians exhibit performance metrics that are easier to compare against peers, thus reducing uncertainty for investors (Wu and Xue, 2023). Therefore, the deviation from the industry reflects the comparability (Givoly and Biddle, 2018). On the other hand, from a fundamental perspective, the direct information about the company's operations significantly impacts valuation when forecasting specific components such as revenue growth, costs, future investment, and working capital. Consequently, the industry-adjusted information regarding slack can indicate the reasonableness of these forecasts (Andersson and Hellman, 2020).

2.3. Hypotheses development

Aligned with Signaling Theory (Spence, 1973), prior research indicates that resource slack signals business value and influences investment decisions (You et al., 2020). On the one hand, institutional investors generally favor diversification, valuing the predictability signaled by proximity to industry norms (Anderson et al., 2011). Wu and Xue (2023) suggest that diversified investors benefit by maximizing comparability, which reduces idiosyncratic risks. Investing in firms with lower resource slack compared to industry peers helps mitigate downside risk and improves risk-adjusted returns (Soydemir et al., 2014). Additionally, Moskowitz and Grinblatt (1999) demonstrate that trading on industry momentum yields better results than trading on individual stock performance. Thus, given that closer alignment with industry norms enhances both comparability and predictability, we hypothesize:

H_{1a} : Firms with lower resource slack attract more institutional ownership.

On the other hand, resource slack might also reflect a firm's flexibility and its capacity to adapt in dynamic environments (Baker and Nelson, 2005; Greenley and Oktemgil, 1998). Under the behavioral theory of the firm (March, 1994; Pitelis, 2007), slack represents "potentially utilizable resources" for achieving organizational goals. Operational and financial slack, therefore, provides a channel through which institutional investors would assess firms, reflecting managerial resource allocation (Bushee, 2004; Clifford, 2008). Thus, institutional investors may view more resource slack as an indicator of growth potential, appealing to institutional investors who prioritize flexibility for future expansion. Therefore, institutional investors may interpret the slack as a strategic reserve for future expansion. Accordingly, the conflicting hypothesis is:

H_{1b} : Firms with greater resource slack attract more institutional ownership.

Some institutional investors aim to establish stronger relationships⁷ with the firms they invest in, often through active engagement to influence operational and financial decisions (Adams and Neururer, 2020; Albuquerque et al., 2022; Aslan and Kumar, 2016; Danis, 2020), aligning with the objectives of long-term value creation and improved governance (Bushee, 2001; Clifford, 2008).

Consistent with this view, firms with less resource slack (i.e., performance metrics closer to industry norms) signal stability and operational efficiency, which are attractive traits for investors seeking for opportunities to create value (Bushee, 1998; Ferreira and Matos, 2008). For example, recent research indicates that long-term institutional investors mitigate agency conflicts in firms' labor investment decisions by reducing both under and over-hiring (Ghaly et al., 2020). Additionally, pressure-resistant institutional investors weaken the relationship between resource slack and corporate innovation investment (Zhang et al., 2021). Ultimately, high slack increases the vulnerability to agency problems, providing room for managerial opportunism, which long-term investors aim to avoid (Tan and Peng, 2003). Thus, we hypothesize:

H_{2a} : Firms with lower resource slack attract more institutional investors seeking stronger relationships

Alternatively, from the operational perspective (Cyert and March, 1963), more slack implies that a firm has excess capacity, indicating the potential for optimizing operational resource allocation, which is also an opportunity to create value through active monitoring and managerial intervention (Brav et al., 2008). For example, recent research shows long-term investors help firms improve operational efficiency (Borochin and Yang, 2017). Moreover, long-term institutional investors are associated with reductions in cost stickiness (Chung et al., 2019). Therefore, from this perspective, institutional investors aiming for stronger relationships are more likely to target firms with more slack, where institutions efforts can yield quicker results upon enhancing firm performance (Fu et al., 2024). Thus, we hypothesize:

H_{2b} : Firms with greater resource slack attract more institutional investors seeking stronger relationships

Addressing the heterogeneity among institutional investors via another angle, prior studies highlight systematic differences between hedge funds and mutual funds (Agarwal and Ren, 2023; Bushee, 2001; Ferreira and Matos, 2008; Grinblatt et al., 2020). Mutual funds typically adhere to more conservative strategies (Joenväärä et al., 2019). For instance, Klein and Zur (2009) find that mutual funds investment strategies and target firm characteristics are restricted by political costs and regulatory barriers. Moreover, prior research indicates that mutual funds are more likely to focus on predictability and stable returns (Bushee, 1998; Ferreira and Matos, 2008), therefore more likely prioritize firms with lower resource slack. Then, we hypothesize:

H_{3a} : Firms with lower resource slack attract more mutual funds than hedge funds.

In contrast, hedge funds typically adopt proactive and dynamic strategies, hedging against downside risk, also using alternative approaches⁸ to improve risk-adjusted returns (Agarwal et al., 2017; Agarwal and Ren, 2023; Bali et al., 2007). This dynamic management allows them to capitalize on opportunities and avoid potential losses (Patton and Ramadorai, 2013). Unlike mutual funds, hedge funds often i) operate with greater flexibility, allowing them to pursue contrarian strategies (Grinblatt et al., 2020), ii) capitalize on market inefficiencies (Kokkonen and Suominen, 2015), and iii) take larger positions in firms with the potential for substantial performance improvements (Brav et al., 2008; Clifford, 2008).

Given their typical *higher risk tolerance*, hedge fund managers may view firms with greater slack as strategic investments that provide both flexibility and a buffer for future expansion (Klein and Zur, 2009). First, prior research shows that slack in leverage may indicate the capacity to finance growth initiatives or acquisitions, while slack in operational resources might suggest adaptability to competitive pressures or opportunities to improve efficiency (George, 2005; Soliman, 2008). Moreover, hedge funds often target firms with characteristics that deviate from industry norms, perceiving these deviations as opportunities to exploit undervalued assets or inefficiencies (Grinblatt et al., 2020; Moskowitz and Grinblatt, 1999). Ultimately, hedge funds strategically target firms with underutilized resources, including financial slack, to unlock latent value (Brav et al., 2015). Target firms may benefit from active engagement by hedge funds, which can include restructuring, improving governance, or optimizing resource allocation (Borochin and Yang, 2017).

Thus, the greater flexibility and contrarian tendencies of hedge funds align with the notion that they are more willing to invest in firms with more resource slack, viewing these firms as vehicles for higher potential returns through both active engagement and market-driven strategies. Consequently, we hypothesize:

H_{3b} : Firms with greater resource slack attract more hedge funds than mutual funds.

⁷ As further explained in section 3.3.1, "strong relationships" is alternatively proxied by stockholdings exceeding 5% regarded as relevant, participation of long-term institutional investors, and voting shares stockholdings.

⁸ Patton and Ramadorai (2013) detail common strategies used by hedge funds, such as *security selection*, *global macro*, *relative value*, *directional traders*, *funds of funds*, among others. In the Brazilian Capital Market, Funchal et al. (2016) document the levels of risk being driven by the target audience, and more recently, Storck and Motoki (2021) find that hedge fund's manager discretion is associated with better performance, but not associated with risk.

3. Research design

3.1. Sample selection

Table 1, Panels A and B, outlines the sample selection of both financial accounting and fund databases. In both samples, we obtain data from Comdinheiro® due to the unavailability of granular institutional ownership information for developing countries on traditional databases (Castilho et al., 2019; Correia and Lucena, 2020; Silva et al., 2019). We use a sample of 2696 firm-year observations, comprising 284 companies listed on the Brazilian Stock Exchange (B3) with available data for the period from 2010 to 2023. Following prior literature (Demerjian et al., 2012; Penman and Zhang, 2002), we exclude firms from the financial industry due to the accounting patterns specific to this industry, and we drop firms with both negative book values of equity and firms without industry information.

Next, we extract all the available information regarding the portfolios of funds registered with the Brazilian Financial and Capital Markets Association ('ANBIMA'), which serves as the regulatory authority overseeing investment funds in the country. These portfolios are filed with the Brazilian SEC, providing detailed information about equity shares, the amounts invested, and other investments such as fixed-income bonds or other funds (see Appendix B for a portfolio example).

To alleviate survivorship bias, we broaden the screening to comprise funds no longer active. We keep funds with at least 1 million BRL invested in a single firm, resulting in 4565 funds and 140,944 fund-year observations of equity investments during the sample period, mainly represented by Mutual funds (65.8 %) and Hedge Funds (30.1 %). However, after matching the funds' portfolio information with the accounting database (using the 4-digit ticker), we observe that only 261 funds invest in non-financial listed firms, with a similar proportion of Mutual funds (69 %) and Hedge Funds (27 %) in the final sample.

3.2. Institutional context

The significant drop (from 4565–261 funds) can be explained by a consistent preference for fixed-income bonds and other investment alternatives (ANBIMA, 2024). Regarding equity investment funds, a recent examination of institutional investors shows a greater preference for targeting financial firms (OECD, 2022), which are not covered by our sample. ANBIMA has recently recorded that Brazilian retail investors registered over 5.5 trillion BRL (1 trillion USD) in domestic investment (Cancel, 2023). Following regulatory and political changes that permitted the Central Bank to substantially reduce interest rates from 14.17 % in 2016 to 2.72 % in 2020, market participants have witnessed a surge in equity investment. The subsequent COVID-19 pandemic led to a subsequent interest rate increase, reaching 13.75 % in 2023. This elevated interest rate has prompted investors to seek alternative investment options, particularly fixed income instruments such as treasury bonds. Consequently, as the economy is anticipated to recover, interest rates are experiencing a downward trend, presenting an opportunity for institutional investors, particularly investment funds (XP, 2024).

3.3. Variables

3.3.1. Institutional investors – ownership and characteristics

Measuring Institutional Investor's participation and their characteristics is challenging in this context, given the unavailability of data in traditional databases (e.g., Refinitiv) and the limited availability of granular data in local databases. To address this challenge, we collect the equity positions from the funds' portfolio of each fund f in year t . In the spirit of Bushee (1998), we calculate the percentage of institutional holdings (hereafter "Institutional Ownership") in each firm i , segregating the participation into three investment perspectives: *Relevance*, *Voting Right*, and *Dedicated Shareholders*. Additionally, we segregate the institutional investors into *Mutual Funds* and *Hedge Funds* using the Brazilian SEC's class classification. Unlike the US setting, where multiple classes of institutions invest in public companies (Baghdadi et al., 2018; Bushee, 2001; Bushee and Miller 2012a,b); Ferreira and Matos, 2008), the investment fund industry in Brazil is primarily populated by investment banks.

To calculate the Institutional Ownership (IO) in the spirit of Bushee (1998), we use the Eq. 1:

$$INST_OWN_{it} = \frac{\sum FundHoldings_{fit}}{Firm\ Market\ Value_{it}} \quad (1)$$

First, we collect each fund j 's stockholding using all possible classes of shares (*i.e.*, ordinary, preferred, or a mix),⁹ and divide it by the firm market value. Then, we calculate the total Institutional Ownership ($INST_OWN$) as the sum of each fund participation in firm i in year t . Each information is collected at the beginning of May in $t + 1$. Consistent with the market efficiency hypothesis (Fama, 1970), we assume that all the public information related to the annual report is fully priced by May of the subsequent year. As a result, we expect the fund managers to have had enough time to process and to (re)calibrate and/or (re)select the firms to be in their portfolio of assets. By doing this, we also lessen the likelihood of a market timing strategy (Muñoz et al., 2015).

To account for a stronger relationship intent, we address three alternative perspectives, following prior literature (Albuquerque

⁹ In the Brazilian Stock Exchange, a regular ticker has five digits, consisting of four letters and one digit that determines the share class. For example, PETR3, where the number 3 indicates the class of ordinary stocks of Petrobras. However, we use only the 4-digit firm's ticker in order to consider all the class. Therefore, by using "PETR", we are able to capture funds' position in ordinary, preferred, or mixed classes of share, if any.

Table 1
Sample selection process.

Panel A: Financial Database	# Obs	# Firms	
Comdinheiro® information of Brazilian listed firms (2010–2023)	8793	805	
Less: firms from financial services	–1087	–113	
Less: Observation without relevant information	–5010	–408	
Subtotal	2696	284	
Panel B: Funds	# Obs	# Firms	# Funds
Comdinheiro® information of Funds (2010–2023)	217,351		5250
Less: Observations where tickers are omitted	–1800		
Less: Duplicated observations	–105		
Less: Observations without Market Value	–74,503		
Subtotal	140,943	305	4565
Less: Duplicated observation of invested firms	–138,780		
Less: non-matched observation with accounting dataset	–215	–31	–4304
Subtotal	1948	274	261
Total Sample	2696	284	261
% Observation of firms invested by funds during the period	72 %		

This table presents the sample selection process. Panel A shows the steps to obtain the funds' portfolios on the Comdinheiro® for the 2010–2023 period and matches the information with the financial accounting database of non-financial firms, assuming the firm as a unit of analysis (Panel B).

et al., 2022; Brav et al., 2008; Bushee, 2004). These perspectives include identifying investment funds that hold a position for more than one year (*dedicated shareholder*), funds that hold common shares (*voting rights*), and funds that hold more than 5 % (*relevant shareholder*).

Specifically, to identify the dedicated shareholders, we create an indicator that assumes 1 if the fund f holds any position in firm i for more than one year. Then, we multiply the general institutional ownership variable, i.e., $INST_OWN$, by such indicator, creating the variable "INST_OWN_DEDICATED". Similarly, to identify the voting shares, we focus on funds' participation in ordinary shares. To this end, an indicator assumes 1 if the ticker ends with the number 3 (which indicates the ordinary class of shares), and 0 otherwise. Subsequently, we multiply $INST_OWN$ by this indicator, obtaining the variable "INST_OWN_VOTING". Ultimately, the participation of relevant shareholders is estimated by an indicator that assumes 1 if the fund f holds more than 5 % in each firm i in year t . Again, we multiply the original variable by such indicator, generating the variable "INST_OWN_RELEVANT".

Finally, we use the Brazilian SEC classification of funds to capture the participation of Hedge Funds ($INST_OWN_HF$) and Mutual funds ($INST_OWN_MF$).

3.3.2. Resource slack (via DuPont components)

The traditional DuPont analysis is based on the decomposition of the Total Return on Equity (ROE) into Profit Margin (PM), Asset Turnover (ATO), and Leverage (LEV). By analyzing each component, one can further observe the strategy to build the overall return (Dickinson, 2011; Fischer, 2017; Korteweg, 2010; Soliman, 2008). We follow the Mohanram (2005) rationale, so we calculate the deviation of each component to the firm relative industry median, using the Brazilian Stock Exchange's industry classification (ind_I), as follows:

$$cPM = |PM_{it} - PM_{it}^j| \quad (2)$$

$$cATO = |ATO_{it} - ATO_{it}^j| \quad (3)$$

$$cLEV = |LEV_{it} - LEV_{it}^j| \quad (4)$$

Where the superscript j indicates the median values of the industry in which the firm operates. Therefore, since the variables are "centered on the industry median," we interpret each of them in terms of "resource slack." However, such a signaling is not straightforward. We use their absolute values¹⁰ to enable the analysis of proximity to (or distance from) the industry norm since comparability seems to impact the selection of firms during a valuation process (Chen et al., 2018; Ferreira and Matos, 2008; Moskowitz and Grinblatt, 1999).

3.3.3. Control variables

Following prior research (Bushee, 2004; Bushee, 1998; Bushee and Miller 2012a,b); Ghaly et al., 2020; Mohanram, 2005; Piotroski, 2000), we isolate the effects of fundamental accounting numbers on the institutional holdings by using a large set of control variables comprising variables related to the *firm*, *capital market*, *industry*, and *macroeconomy*. In additional analyses, we further examine the influence of funds managed by the same manager. Specifically, we check whether the results are driven by top-five fund managers.

¹⁰ In additional analysis, we also use the original deviation, and the results are consistent with baseline.

Lastly, we check for Corporate Governance (*HIGH_CG*) proxied by an indicator that assumes 1 if the firm is listed in the highest segment of corporate governance (“*New Market*”) and zero otherwise. Definitions of all explanatory variables are shown in Appendix A.

3.4. Research design

To test the hypotheses, we firstly estimate the following OLS regression model using the firm-level as the unit of analysis. Eq. 5 tests the effect of resource slack on institutional investors participation.

$$INST_OWN_{it}^j = \beta_0 + \beta_1 cPM_{it} + \beta_2 cATO_{it} + \beta_3 cLEV_{it} + \beta_j CONTROLS_{it} + \alpha_{ind} + \varepsilon_{it} \quad (5)$$

Where *INST_OWN* represents the general institutional ownership, and the superscript *j* represents the different characteristics related to the investment fund at the firm level: Relevant Shareholders (*INST_OWN_RELEVANT*), Shareholders Voting Right (*INST_OWN_VOTING*), Dedicated Shareholders (*INST_OWN_DEDICATED*), Hedge Funds (*INST_OWN_HF*), and Mutual funds (*INST_OWN_MF*).

cPM, *cATO*, and *cLEV* are the absolute value of the deviation of firm’s Profit Margin, Asset Turnover, and Leverage from the respective industry average. Therefore, in this specification, negative and significant coefficients β_1 , β_2 , and β_3 indicate greater preference for more firms with fundamentals closer to the industry norm (lower resource slack). Consequently, positive and significant coefficients are interpreted as a preference for greater slack, as a signal of flexibility and growth opportunities.

Finally, *CONTROLS* is a vector of control variables (described in Appendix A) associated with the valuation process that precedes the decision to invest in a firm. We also control for industry-fixed effects, but not for year-fixed effects because time effects are captured by the multiple macro-level variables included in the model.

4. Results

4.1. Descriptive statistics

Table 2 presents the descriptive statistics for the primary variables used in the paper.

Table 2
Descriptive statistics.

Variable	N	Mean	SD	Min	p25	p50	p75	Max
Panel A: Dependent Variables								
<i>INST_OWN</i>	2696	7.83 %	0.11	0.00 %	0.00 %	3.50 %	11.11 %	98.99 %
<i>INST_OWN_RELEVANT</i>	2696	2.03 %	0.07	0.00 %	0.00 %	0.00 %	0.00 %	98.99 %
<i>INST_OWN_DEDICATED</i>	2696	0.63 %	0.02	0.00 %	0.00 %	0.00 %	0.33 %	55.27 %
<i>INST_OWN_VOTING</i>	2696	3.74 %	0.08	0.00 %	0.00 %	0.53 %	3.76 %	95.43 %
<i>INST_OWN_HF</i>	2696	0.95 %	0.03	0.00 %	0.00 %	0.07 %	0.87 %	61.58 %
<i>INST_OWN_MF</i>	2696	3.20 %	0.07	0.00 %	0.00 %	0.67 %	3.49 %	98.99 %
Panel B: Explanatory Variables of Interest								
<i>ROE</i>	2380	0.01	1.34	−23.19	0.01	0.10	0.20	23.13
<i>PM</i>	2465	−0.08	7.55	−370.17	0.01	0.07	0.14	47.14
<i>AT</i>	2480	0.70	0.53	0.00	0.36	0.59	0.89	4.50
<i>LEV</i>	2696	6.22	104.03	1.00	1.68	2.26	3.21	5254.59
<i>C_ROE</i>	2380	0.23	0.50	0.00	0.04	0.09	0.19	4.63
<i>C_PM</i>	2465	0.12	0.30	0.00	0.02	0.06	0.12	8.82
<i>C_AT</i>	2480	0.31	0.36	0.00	0.10	0.22	0.39	2.60
<i>C_LEV</i>	2696	1.77	13.53	0.00	0.23	0.61	1.14	495.81
Panel C: Control Variables								
<i>SIZE</i>	2696	21.51	2.74	10.40	20.51	21.89	23.14	26.31
<i>CASH_LIQ</i>	2204	0.15	0.12	0.00	0.07	0.12	0.19	0.76
<i>LOSS</i>	2696	0.23						
<i>PAYOUT</i>	2200	36.72	81.70	−226.74	0.00	21.91	50.22	564.61
<i>LIQ</i>	2302	0.23	0.41	0.00	0.00	0.05	0.26	2.37
<i>VOL</i>	1633	48.72	26.24	21.79	33.70	43.05	55.14	209.29
<i>UNCERTAINTY</i>	2696	110.90	13.65	85.10	105.70	112.40	117.00	142.30
<i>UP_CONF</i>	2696	0.56		0.00				1.00
<i>INTEREST_RATE</i>	1900	8.78	3.73		6.50	9.25	11.75	13.75
<i>BUSINESS_CYCLE</i>	2696	0.40		0.00				1.00
<i>COVID19</i>	2696	0.18	0.39	0.00				1.00
<i>HHI</i>	2696	0.14	0.15	0.00	0.06	0.09	0.19	1.00

This table presents descriptive statistics for the main sample, including non-financial firms invested and not invested by institutional investors during the 2010–2023 period. Financial data are retrieved from Comdinheiro®. Dependent variables consist of Institutional Ownership (*INST_OWN*) segregated into different characteristics of investment, as follow: *INST_OWN_RELEVANT* refers to ‘Relevant Shareholders’, *INST_OWN_DEDICATED* is ‘Dedicated Shareholders’, *INST_OWN_VOTING* stands for ‘Voting Rights’, *INST_OWN_HF* is ‘Hedge Funds’, and *INST_OWN_MF* is ‘Mutual Funds’. Meanwhile, the variables of interest are the components of DuPont analysis (centered on the industry): *ROE* is the Return On Equity, *PM* is Profit Margin, *ATO* is the Asset Turnover, and *LEV* stands for the Leverage.

The table shows an average institutional ownership of 7.83 %. However, these variables do not follow normal distributions across the sample, which is consistent with the idea of some firms (and industries) being preferable than others. Moreover, the table presents a median profit margin of 7 %, which surpasses the 2.7 % reported by [Ferreira and Matos \(2008\)](#) in their study of a non-US global sample. Furthermore, the median total Return on Equity (ROE) is higher, at 10 %, compared to the reported 6.4 % by [Ferreira and Matos \(2008\)](#). [Table 3](#) presents the different, not necessarily independent, characteristics of Institutional Participation across industries.

Panel A shows that all identified industries (i.e., except “others”) are strongly populated by institutional investors, led by Health (where 88 % of the firms have at least one institutional investor), Oil & Gas (86 %), and Cyclical consumption (82 %). Meanwhile, 28 out of the 51 relevant stakeholders (those with stockholdings equal to or greater than 5 %) are positioned in the Cyclical Consumption industry. Institutional investors seem particularly interested in this industry, regardless of the type of relationship. Moreover, while 15 % of the firms are invested by hedge funds, 56 % are invested by mutual funds.

Panel B delves into institutional holdings, revealing that, on average, institutional resources are predominantly allocated to Cyclical Consumption, irrespective of the segregation of institutions. However, when using the median as a parameter, we notice a slight difference in the participation of hedge funds and mutual funds. While hedge funds tend to invest more in Oil & Gas firms and the Cyclical Consumption industry, mutual funds exhibit a preference for the opposite order. Hedge funds are more likely to pursue idiosyncratic returns through sector-specific bets. Sectors like Oil & Gas and Cyclical Consumption offer high volatility and valuation dispersion, which hedge funds can exploit through long-short positions or event-driven strategies ([Fung and Hsieh, 2004](#)). Meanwhile, mutual funds may prefer firms in the cyclical consumption industry due to higher asset liquidity, which mitigates fragility from investor outflows ([Chen et al., 2010](#)).

Additionally, Panel C indicates that the overall level of institutional participation has remained steady over time. However, there have been changes in the characteristics of these institutions. For example, hedge funds have been increasing their presence. They accounted for 4 % of the total in 2010 and reached their peak at 35 % in both 2019 and 2023, following a decline between 2020 and 2022. Conversely, while mutual funds have generally been more prevalent (around 60 %), their participation was at its lowest in 2019 (32 %) and 2023 (36 %). This is potentially explained by the changes in the interest rate. In 2019, Brazil’s central bank kept the interest rate at a historic low of 6.50 % to stimulate economic growth and support the ongoing recovery from a recession ([International Monetary Fund, 2019](#)).

[Table 4](#) presents the Correlation Matrixes. To ease the exposure, we organize as follows: Panel A provides the correlation between the dependent variables; Panel B shows the correlation between each dependent variable and all the explanatory variables; and Panel C shows the correlations among the explanatory variables.

Panel A shows an expected overlapping among some of the dependent variables, such as the participation of relevant shareholders, shareholders with voting rights, and the total percentage holdings. However, we observe that dedicated and hedge fund participations are less strongly correlated with the others. This confirms that institutional investors have “different colors” and may follow different strategies while investing in a firm ([Buffa and Hodor, 2023](#); [Bushee, 2001](#); [Ferreira and Matos, 2008](#)). On top of that, Panel B shows different correlations amongst the explanatory variables, where profit margin (*cPM*), asset turnover (*cATO*), and leverage (*cLEV*) are significantly correlated with Hedge fund participation. Except for institutions with voting shareholders and the participation of dedicated shareholders, institutional participation is negatively correlated with asset turnover (*cATO*). In other words, such negative associations with asset turnover suggest an inclination for firms closer to the industry level, though it will be further investigated in more robust examinations. Lastly, Panel C lessens eventual concerns about multicollinearity amongst the explanatory variables.

4.2. Impact of resource slack on institutional holdings

[Table 5](#) presents the baseline OLS estimators for the impact of resource slack on institutional ownership (*INST_OWN*). To alleviate concerns about heteroskedasticity, we use the robust White’s estimator. We also control for industry-fixed effects due to the seeming heterogeneity among them, as reported in the descriptive statistics.

The table shows a negative relationship (-0.030^{***}) between *cATO_abs* and the total percentage holdings of institutional investors *INST_OWN*. In other words, for each additional point by which a firm’s asset turnover moves towards the industry median, the institutional holdings are expected to increase by 3 percentage points, *ceteris paribus*. Economically, institutional investors increase their ownership stakes to the extent the firms’ fundamental indicator moves towards the industry norm, which means lower resource slack. This scenario indicates greater comparability, stability, and predictability of future performance, consistent with hypothesis H1a, rejecting H1b as a consequence. Particularly, the asset turnover indicator helps in evaluating how well a company utilizes its assets to generate sales or revenue. Therefore, aligned with prior evidence ([Anderson et al., 2011](#); [Wu and Xue, 2023](#)), by targeting stable firms in terms of asset turnover, fund managers are potentially looking for a firm’s strategy well-aligned with broader industry standards.

Regarding the control variables at the firm level, an average institutional investor is more attracted by loss and by cash-rich firms while repelled by greater dividend distributions and stock volume. We also observe a positive effect of uncertainty, which indicates that, on average, institutions favor equity investment when the macro environment faces ups and downs. Even motivated by different incentives, better-informed investors are attracted by uncertainty. The unique period of COVID-19 shows no overall effect on the participation of institutions. Jointly, some relations are aligned with the expectation of opportunity to intervene via cost reduction, new or better investment given the greater access to funds ([Aslan and Kumar, 2016](#); [Clifford, 2008](#); [Danis, 2020](#)), as well as by the natural macroeconomic movement regarding interest rates ([Barro, 1992](#); [Gubareva and Keddad, 2022](#)).

In order to test the hypotheses H2a and H2b, [Table 6](#) presents the results of similar model, broking down the dependent variable

Table 3
Participation of Institutions across industries.

<i>Panel A: Institutional Presence Across Industries</i>																		
<i>Industry</i>	<i>INSTITUTIONAL</i>			<i>RELEVANT</i>			<i>DEDICATED</i>			<i>VOTING</i>			<i>HEDGE</i>			<i>MUTUAL</i>		
	<i>0</i>	<i>1</i>	<i>%</i>	<i>0</i>	<i>1</i>	<i>%</i>	<i>0</i>	<i>1</i>	<i>%</i>	<i>0</i>	<i>1</i>	<i>%</i>	<i>0</i>	<i>1</i>	<i>%</i>	<i>0</i>	<i>1</i>	<i>%</i>
Industrial Goods	136	349	72 %	476	9	2 %	441	44	9 %	219	266	55 %	408	77	16 %	218	267	55 %
Communications	7	32	82 %	37	2	5 %	34	5	13 %	17	22	56 %	35	4	10 %	11	28	72 %
Cyclical Consumption	109	555	84 %	636	28	4 %	579	85	13 %	165	499	75 %	552	112	17 %	232	432	65 %
Non-cyclical Consumpt	39	183	82 %	222	0	0 %	206	16	7 %	48	174	78 %	166	56	25 %	96	126	57 %
Basic Materials	94	192	67 %	285	1	0 %	264	22	8 %	223	63	22 %	244	42	15 %	139	147	51 %
Others	171	1	1 %	172	0	0 %	172	0	0 %	171	1	1 %	172	0	0 %	171	1	1 %
Oil, Gas, and Biogas	12	73	86 %	85	0	0 %	75	10	12 %	25	60	71 %	76	9	11 %	21	64	75 %
Health	23	168	88 %	185	6	3 %	169	22	12 %	27	164	86 %	138	53	28 %	77	114	60 %
IT	31	65	68 %	94	2	2 %	90	6	6 %	31	65	68 %	89	7	7 %	40	56	58 %
Utilities	125	331	73 %	453	3	1 %	426	30	7 %	224	232	51 %	404	52	11 %	183	273	60 %
Total	747	1949	72 %	2645	51	2 %	2456	240	9 %	1150	1546	57 %	2284	412	15 %	1188	1508	56 %

<i>Panel B: Institutional Ownership Across Industries</i>																		
	<i>INSTITUTIONAL</i>			<i>RELEVANT</i>			<i>DEDICATED</i>			<i>VOTING</i>			<i>HEDGE</i>			<i>MUTUAL</i>		
	<i>n</i>	<i>mean</i>	<i>p50</i>	<i>n</i>	<i>mean</i>	<i>p50</i>	<i>n</i>	<i>mean</i>	<i>p50</i>	<i>n</i>	<i>mean</i>	<i>p50</i>	<i>n</i>	<i>mean</i>	<i>p50</i>	<i>n</i>	<i>mean</i>	<i>p50</i>
Industrial Goods	485	8.3 %	4.1 %	485	2.3 %	0.0 %	485	4.4 %	0.5 %	485	0.9 %	0.0 %	485	0.7 %	0.0 %	485	4.0 %	1.0 %
Communications	39	4.2 %	1.4 %	39	0.6 %	0.0 %	39	1.6 %	0.3 %	39	0.4 %	0.0 %	39	1.1 %	0.1 %	39	1.4 %	0.5 %
Cyclical Consumption	664	12.4 %	8.2 %	664	3.7 %	0.0 %	664	6.6 %	2.7 %	664	1.0 %	0.0 %	664	1.7 %	0.3 %	664	5.1 %	2.0 %
Non-cyclical Consumpt	222	7.1 %	3.4 %	222	1.9 %	0.0 %	222	3.7 %	0.8 %	222	0.3 %	0.0 %	222	0.9 %	0.2 %	222	2.4 %	0.7 %
Basic Materials	286	5.1 %	2.4 %	286	0.3 %	0.0 %	286	1.0 %	0.0 %	286	0.4 %	0.0 %	286	0.9 %	0.0 %	286	1.7 %	0.3 %
Others	172	0.0 %	0.0 %	172	0.0 %	0.0 %	172	0.0 %	0.0 %	172	0.0 %	0.0 %	172	0.0 %	0.0 %	172	0.0 %	0.0 %
Oil, Gas, and Biogas	85	9.2 %	5.9 %	85	1.1 %	0.0 %	85	4.5 %	1.9 %	85	0.9 %	0.2 %	85	1.3 %	0.4 %	85	3.2 %	1.6 %
Health	191	7.6 %	6.2 %	191	1.3 %	0.0 %	191	4.1 %	2.4 %	191	0.6 %	0.0 %	191	0.8 %	0.2 %	191	2.9 %	1.4 %
IT	96	7.8 %	2.7 %	96	2.2 %	0.0 %	96	4.0 %	1.3 %	96	0.5 %	0.0 %	96	0.8 %	0.0 %	96	3.3 %	0.6 %
Utilities	456	5.8 %	0.7 %	456	1.7 %	0.0 %	456	1.8 %	0.0 %	456	0.3 %	0.0 %	456	0.5 %	0.0 %	456	2.4 %	0.2 %

<i>Panel C: Institutional Presence Across Time</i>																		
<i>Year</i>	<i>INSTITUTIONAL</i>			<i>RELEVANT</i>			<i>DEDICATED</i>			<i>VOTING</i>			<i>HEDGE</i>			<i>MUTUAL</i>		
	<i>0</i>	<i>1</i>	<i>%</i>	<i>0</i>	<i>1</i>	<i>%</i>	<i>0</i>	<i>1</i>	<i>%</i>	<i>0</i>	<i>1</i>	<i>%</i>	<i>0</i>	<i>1</i>	<i>%</i>	<i>0</i>	<i>1</i>	<i>%</i>
2010	45	92	67 %	135	2	1 %	137	0	0 %	70	67	49 %	131	6	4 %	51	86	63 %
2011	49	98	67 %	145	2	1 %	136	11	7 %	75	72	49 %	140	7	5 %	56	91	62 %
2012	46	107	70 %	149	4	3 %	138	15	10 %	76	77	50 %	141	12	8 %	58	95	62 %
2013	47	115	71 %	160	2	1 %	139	23	14 %	77	85	52 %	151	11	7 %	60	102	63 %
2014	55	113	67 %	165	3	2 %	149	19	11 %	83	85	51 %	150	18	11 %	75	93	55 %
2015	53	111	68 %	158	6	4 %	144	20	12 %	79	85	52 %	152	12	7 %	65	99	60 %
2016	49	121	71 %	166	4	2 %	155	15	9 %	79	91	54 %	155	15	9 %	64	106	62 %
2017	55	126	70 %	180	1	1 %	173	8	4 %	86	95	52 %	155	26	14 %	84	97	54 %
2018	53	130	71 %	178	5	3 %	169	14	8 %	83	100	55 %	159	24	13 %	78	105	57 %
2019	62	130	68 %	189	3	2 %	183	9	5 %	85	107	56 %	125	67	35 %	131	61	32 %
2020	51	170	77 %	218	3	1 %	210	11	5 %	81	140	63 %	172	49	22 %	104	117	53 %
2021	51	218	81 %	268	1	0 %	238	31	12 %	86	183	68 %	226	43	16 %	97	172	64 %
2022	53	218	80 %	264	7	3 %	232	39	14 %	88	183	68 %	245	26	10 %	87	184	68 %
2023	78	200	72 %	270	8	3 %	253	25	9 %	102	176	63 %	182	96	35 %	178	100	36 %
Total	747	1949	72 %	2645	51	2 %	2456	240	9 %	1150	1546	57 %	2284	412	15 %	1188	1508	56 %

This table presents additional descriptive statistics for the sample, including non-financial firms invested and not invested by institutional investors during the 2010–2023 period. Financial data are retrieved from Comdinheiro®. Panel A presents the distribution of institutional holdings mean and median, disaggregated the overall one (INSTITUTIONAL) into different types of institutions. RELEVANT refers to ‘Relevant Shareholders’, SHR_DED is ‘Dedicated Shareholders’, SHR_VOT stands for ‘Voting Rights’, HF is ‘Hedge Funds’, and MF is ‘Mutual Funds’. Panel B presents the frequency of each type of investor across the industries, and Panel C shows the frequency across time.

Table 4
Correlation matrix.

<i>Panel A: Correlation of Dependent Variables</i>											
#	Variables	a	b	c	d	e					
a	INST_OWN	1									
b	INST_OWN_RELEVANT	0.748***	1								
c	INST_OWN_VOTING	0.765***	0.598***	1							
d	INST_OWN_DEDICATED	0.426***	0.288***	0.394***	1						
e	INST_OWN_HF	0.455***	0.271***	0.393***	0.469***	1					
f	INST_OWN_SF	0.742***	0.618***	0.593***	0.456***	0.293***					
<i>Panel B: Correlation between Dependent Variables and Explanatory Variables</i>											
#	Variables	a	b	c	d	e	f				
(1)	c_PM	0.005	0.024	0.005	0.022	0.047**	-0.003				
(2)	c_AT	-0.088***	-0.055***	-0.023	-0.033	-0.041**	-0.060***				
(3)	c_LEV	-0.007	0.011	-0.013	0.001	0.056***	-0.015				
(4)	SIZE	0.172***	0.017	0.047**	0.082***	0.097***	0.101***				
(5)	CASH_LIQ	0.051**	0.026	0.02	0.053**	0.059***	0.053**				
(6)	LIQ	-0.005	-0.098***	-0.03	-0.047**	0.001	-0.033				
(7)	VOL	-0.037	0.034	0.028	0.012	0.010	-0.017				
(8)	HHI	-0.131***	-0.093***	-0.071***	-0.108***	-0.040**	-0.111***				
(9)	UNCERTAINTY	0.124***	0.063***	0.025	0.123***	0.087***	0.075***				
(10)	UP_CONF	-0.107***	-0.053***	-0.133***	-0.074***	-0.033*	-0.073***				
(11)	BUSINESS CYCLE	-0.077***	-0.024	-0.035*	-0.046**	-0.020	-0.070***				
<i>Panel C: Correlation of Explanatory Variables</i>											
#	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	c_PM	1									
(2)	c_AT	-0.018	1								
(3)	c_LEV	0.048**	0.004	1							
(4)	SIZE	-0.049**	-0.065***	0.027	1						
(5)	CASH_LIQ	-0.007	-0.042*	-0.021	-0.238***	1					
(6)	LIQ	-0.041*	-0.025	-0.023	0.620***	-0.111***	1				
(7)	VOL	0.103***	-0.004	0.035	-0.304***	0.035	-0.151***	1			
(8)	HHI	0.204***	0.115***	0.143***	-0.083***	0.0428**	0.176***	0.116***	1		
(9)	UNCERTAINTY	0.005	-0.040**	-0.026	0.054***	0.0850***	0.005	0.165***	0.059***	1	
(10)	UP_CONF	0.036*	-0.015	-0.025	-0.009	-0.005	0.034	0.051**	0.056***	0.221***	1
(11)	BUSINESS CYCLE	0.004	-0.012	-0.019	0.050***	-0.006	0.011	0.053**	-0.022	0.192***	0.318***

This table presents the correlation matrixes segregated into three panels to better explore the linear relation between the variables. The sample consists of non-financial firms invested and not invested by institutional investors during the period 2010–2023. Financial data are retrieved from Comdinheiro®. Due to the nature of the test, we only compute the metric form of the Dependent variables: Institutional Ownership (INST_OWN) is the aggregate general participation of investment funds in the firms included in the sample, INST_OWN_RELEVANT refers to ‘Relevant Shareholders’, INST_OWN_DEDICATED is ‘Dedicated Shareholders’, INST_OWN_VOTING stands for ‘Voting Rights’, INST_OWN_HF is ‘Hedge Funds’, and INST_OWN_MF is ‘Mutual Funds’. The variables of interest are the components of DuPont analysis (centered on the industry): PM is Profit Margin, ATO is Asset Turnover, and LEV stands for Leverage.

Table 5
Impact of resource-slack on institutional ownership.

Variables	Dep. Var.: INST_OWN	
	Coef.	t-stat
<i>cPM_abs</i>	-0.008	(-0.359)
<i>cATO_abs</i>	-0.030***	(-3.236)
<i>cLEV_abs</i>	0.000	(0.449)
<i>Controls</i>		
<i>SIZE</i>	-0.002	(-0.599)
<i>CASH</i>	0.072*	(1.708)
<i>LOSS</i>	0.030**	(2.552)
<i>PAYOUT</i>	-0.000*	(-1.892)
<i>LIQ</i>	-0.002	(-0.228)
<i>VOL</i>	-0.000*	(-1.713)
<i>UNCERTAINTY</i>	0.001**	(2.197)
<i>UP_CONF</i>	-0.058***	(-4.952)
<i>INTEREST_RATE</i>	-0.002	(-1.233)
<i>BUSINESS_CYCLE</i>	-0.038***	(-5.277)
<i>COVID19</i>	0.003	(0.199)
<i>HHI</i>	-0.093	(-1.398)
<i>Constant</i>	0.096	(1.008)
<i>Observations</i>	1064	
<i>Adjusted R2</i>	14.5 %	
<i>FE Industry</i>	Yes	

This table shows the impact of resource slack via DuPont components on institutional ownership. The sample consists of non-financial firms, both invested and not invested by institutional investors during the period 2010–2023. Financial data are retrieved from Comdinheiro®. The dependent variables consist of overall stakeholding (INST_OWN). The variables of interest are the components of DuPont analysis (centered on the industry median) in absolute values: cPM is Profit Margin, cATO is Asset Turnover, and cLEV stands for Leverage. The robust t-statistics are reported next to coefficient estimates in parentheses. ***, **, and * denote significance at the 1 %, 5 %, and 10 % levels, respectively, using a two-tailed t-test.

into the three investment perspectives that denote stronger relationships (i.e., *Shareholding Relevance (1)*, *Dedicated Investors (2)*, and *Shareholder Voting Rights (3)*).

The estimations 1, 2, and 3 also show a negative effect of resource slack on institutional ownership, indicating that institutions interested in stronger relations with the invested firms also favor lower slack, precisely regarding asset turnover. Based on the signaling theory (Spence, 1973), we interpreted these results as an opportunity to create value through greater monitoring (Albuquerque et al., 2022; Borochin and Yang, 2017; Chen et al., 2007), precisely in investment decisions, as shown in prior studies (Ghaly et al., 2020; Zhang et al., 2021). Therefore, the results are consistent with H2a, rejecting H2b as a consequence.

Table 7 exhibits the estimations focused on hedge funds and mutual funds ownerships, testing the hypotheses 3a and 3b.

The table show no significant result for hedge fund ownership, whilst mutual funds are attracted by lower slack in asset turnover (-0.016***), as signaled in the baseline results. The first estimation does not allow to confirm H3a while the second one aligns with the H3b. In general, the results highlight a distinct mechanism to target firms. Noteworthy, mutual funds represent almost 70 % of the funds in the sample. As expected, a closer look enables the identification of different motives to target a firm, which may be consistent with their bylaws, prospectus, and clients' expectations (Agarwal et al., 2017; Chen et al., 2010; Soydemir et al., 2014).

Economically, the aggregate findings suggest two complementary explanations: *perceived risk* and *predictability*. In the former view, mutual fund managers tend to perceive these firms as more stable in an attempt to minimize such a perceived risk in the portfolio. In the latter, the proximity to the median industry is interpreted as more reliably performing within the expected parameters. As a result, these companies are more attractive to funds seeking consistent returns (Shawky et al., 2012).

4.3. Endogeneity test

4.3.1. Instrumental variables

Whether certain resource slacks attract institutional investors or the institutional investors' involvement affects firms' level of resource slack in the same year can be a concern. Firstly, as outlined in Section 3.3.1., we collect the fund's participation one month after the annual reports are released. This allows the fund managers to interpret the firm's financials prior to (re)allocating the capital. Furthermore, if this strategy cannot completely eliminate the possibility of reverse causality, we re-assess the main model testing two sets of instrumental variables within the Generalized Methods of Moments (GMM). Particularly, we use the lagged measures of resource slacks and the industry average of them as "approximately exogenous" variables (Brown et al., 2011; Larcker and Rusticus, 2010). Table 8 shows the results with reference to the two main conditions for instrumental variables: *exogeneity* (Panel A) and *relevance* (Panel B).

Table 6
Impact of resource-slack on institutional ownership with stronger relationship.

Variables	Dep. Var.: <i>INST_OWN</i>					
	(1)		(2)		(3)	
	<i>RELEVANT</i>		<i>DEDICATED</i>		<i>VOTING</i>	
	<i>Coef.</i>	<i>t-stat</i>	<i>Coef.</i>	<i>t-stat</i>	<i>Coef.</i>	<i>t-stat</i>
<i>cPM_abs</i>	-0.006	(-0.382)	0.000	(0.101)	-0.020	(-1.422)
<i>cATO_abs</i>	-0.017***	(-2.917)	-0.003*	(-1.855)	-0.014***	(-2.770)
<i>cLEV_abs</i>	0.000	(0.024)	-0.000	(-1.583)	0.000	(1.062)
<i>Controls</i>						
<i>SIZE</i>	-0.012***	(-4.593)	-0.000	(-0.514)	-0.002	(-0.596)
<i>CASH</i>	0.001	(0.019)	0.001	(0.119)	0.029	(0.935)
<i>LOSS</i>	0.033***	(3.615)	0.005**	(2.137)	0.023**	(2.417)
<i>PAYOUT</i>	-0.001	(-0.179)	-0.001	(-0.465)	-0.001	(-0.184)
<i>LIQ</i>	0.000	(0.217)	-0.000	(-0.718)	-0.000	(-0.922)
<i>VOL</i>	-0.000***	(-2.745)	-0.000	(-1.211)	-0.000	(-1.616)
<i>UNCERTAINTY</i>	0.001***	(3.403)	0.000***	(2.731)	0.001*	(1.947)
<i>UP_CONF</i>	-0.027***	(-3.077)	-0.014***	(-5.956)	-0.021**	(-2.432)
<i>INTEREST_RATE</i>	0.002*	(1.829)	0.000	(0.718)	-0.000	(-0.478)
<i>BUSINESS_CYCLE</i>	-0.008	(-1.598)	0.001	(0.897)	-0.017***	(-3.380)
<i>COVID19</i>	-0.012	(-0.916)	-0.009*	(-1.824)	-0.011	(-0.889)
<i>HHI</i>	-0.028	(-0.591)	-0.002	(-0.236)	-0.081	(-1.589)
<i>Constant</i>	0.162**	(2.409)	-0.012	(-0.592)	0.030	(0.447)
<i>Observations</i>	1064		1064		1064	
<i>Adj R2</i>	8.7 %		3.2 %		7.8 %	
<i>FE Industry</i>	Yes		Yes		Yes	

This table shows the impact of resource slack via DuPont components on institutional ownership focusing on institutions seeking stronger relationship. The sample consists of non-financial firms, both invested and not invested by institutional investors during the period 2010–2023. Financial data are retrieved from Comdinheiro®. The dependent variable is alternatively (1) *INST_OWN_RELEVANT* representing the relevant position (i.e., greater than 5 %), (2) *INST_OWN_DEDICATED* to capture institutions that keep investing on firm *i* for more than 1 year, and (3) *INST_OWN_VOTING* that stands for ‘Voting Rights’. The independent variables of interest are the components of DuPont analysis (centered on the industry median) in absolute values: *cPM* is Profit Margin, *cATO* is Asset Turnover, and *cLEV* stands for Leverage. The robust *t*-statistics are reported next to coefficient estimates in parentheses. ***, **, and * denote significance at the 1 %, 5 %, and 10 % levels, respectively, using a two-tailed *t*-test.

Table 7
Impact of resource-slack on hedge funds and mutual funds ownership.

Variables	<i>INST_OWN_HF</i>		<i>INST_OWN_MF</i>	
	<i>Coef</i>	<i>t-stat</i>	<i>Coef</i>	<i>t-stat</i>
<i>cPM_abs</i>	0.011	(0.660)	0.008	(0.741)
<i>cATO_abs</i>	-0.001	(-0.518)	-0.016***	(-3.249)
<i>cLEV_abs</i>	0.000	(0.901)	-0.000	(-0.368)
<i>Controls</i>				
<i>SIZE</i>	-0.001	(-0.512)	-0.003	(-1.602)
<i>CASH</i>	0.065**	(2.327)	-0.015	(-0.669)
<i>LOSS</i>	0.013**	(2.449)	0.010	(1.386)
<i>PAYOUT</i>	0.002	(0.594)	-0.003	(-0.609)
<i>LIQ</i>	-0.000**	(-2.317)	-0.000	(-0.398)
<i>VOL</i>	0.000	(0.044)	-0.000	(-0.937)
<i>UNCERTAINTY</i>	0.000	(0.660)	0.000	(0.487)
<i>UP_CONF</i>	-0.013***	(-3.345)	-0.015*	(-1.927)
<i>INTEREST_RATE</i>	-0.001**	(-2.499)	0.001	(0.640)
<i>BUSINESS_CYCLE</i>	-0.003	(-1.382)	-0.019***	(-4.071)
<i>COVID19</i>	-0.007	(-1.201)	0.010	(0.906)
<i>HHI</i>	-0.005	(-0.278)	-0.083*	(-1.832)
<i>Constant</i>	0.022	(0.896)	0.126**	(2.298)
<i>Observations</i>	1064		1064	
<i>Adj R2</i>	7.9 %		4.8 %	
<i>FE Industry</i>	Yes		Yes	

This table shows the impact of resource slack via DuPont components on institutional ownership focusing on institutions seeking stronger relationship. The sample consists of non-financial firms, both invested and not invested by institutional investors during the period 2010–2023. Financial data are retrieved from Comdinheiro®. The dependent variable is alternatively (1) the participation of hedge funds (*INST_OWN_HF*) and mutual funds (*INST_OWN_MF*). The independent variables of interest are the components of DuPont analysis (centered on the industry median) in absolute values: *cPM* is Profit Margin, *cATO* is Asset Turnover, and *cLEV* stands for Leverage. The robust *t*-statistics are reported next to coefficient estimates in parentheses. ***, **, and * denote significance at the 1 %, 5 %, and 10 % levels, respectively, using a two-tailed *t*-test.

Panel A shows near zero and non-significant correlations between the residuals from a baseline OLS regression and all the potential instruments. Panel B shows that the potential instruments significantly explain the suspected endogenous variables. As we use three variables of interest (ATO, PM, and LEV) and two set of alternative instruments with three variables each, we test both *just-identified* ($\#IV = \#X$) and *over-identified* ($\#IV > \#X$) model estimations (Lu et al., 2018).

Table 9 presents the results comparison, where Column 1 exhibits the baseline estimates (OLS), Column 2 incorporates the Industry Fixed effects (OLS_FE) as an initial strategy to address endogeneity (Brown et al., 2011), and Columns 3–5 showcasing the Generalized Method of Moments (GMM) using alternative sets of instruments, either isolated (GMM_1 and GMM_2) or combined (GMM_3).

The estimation combining both instruments (lag and industry average) (GMM_3) leads to strong identification (highest Stock-Yogo Test), better model fit (lowest AIC), and acceptable instrument validity (Sargan Test p-value = 0.0159). Given the non-trivial task of finding a perfect exogenous instrument (Lu et al., 2018), especially in small samples, the focus should be on whether the problem significantly impacts estimation, as “exogenous variables are always endogenous to some extent” (Ketokivi and McIntosh, 2017). In this regard, we note the same magnitude of $cATO_{abs}$ (-0.028**), with slightly lower significance compared to the baseline one (-0.028***), thereby reinforcing the predicted relationship between resource slack and institutional investors on average.

This estimation also reveals a positive and significant coefficient for slack in the profit margin. To investigate the factors driving this motivation, Table 10 presents the results obtained using the GMM estimator with two instrumental variables for H3a and H3b, which explore the preferences of hedge funds and mutual funds.

The results obtained using a more restrictive estimator provide a clearer distinction between hedge funds and mutual funds. While the low magnitude of leverage undermines its economic interpretation, the significant coefficient of Profit Margin (0.043***) indicates that hedge funds are drawn to firms with greater resource slack in terms of Profit Margin, aligned with H3b. The interpretation lies on the exploring market inefficiencies and, consequently, opportunities to unlock latent value (Brav et al., 2015; Grinblatt et al., 2020; Moskowitz and Grinblatt, 1999). The efforts would less on the operation and more on improving governance and optimizing investments (Borochin and Yang, 2017). Noteworthy, the results remain robust for mutual funds.

4.3.2. Selection bias

To address potential selection bias, we test whether the observed results are driven by the presence of dominant competitors in the investment fund industry. Due to the absence of a standardized definition for “top” funds, we employ two alternative measures: (i) TOP_5_n , identifying the five most diversified funds based on their annual frequency of allocation to firms in the sample, and (ii) TOP_5_p , capturing the top 5th percentile of funds ranked by total annual allocation to firms in the sample.

Using TOP_5_n , we find no statistically significant association between resource slack and the likelihood of investment, suggesting that frequent allocators do not systematically favor or avoid slack-rich firms. For TOP_5_p , we compute the 95th percentile of annual fund-level allocations and classify firms meeting or exceeding this threshold as being targeted by top-tier funds. A logit model estimating the likelihood of a firm receiving investment from these top-5 percentile funds also reveals no significant effect of resource slack.

While these findings indicate that our main results are not driven by top-tier institutional investors, we further test this by focusing on $TOP_5_manager_p$ - a manager-level measure aggregating fund managers who, collectively across all their funds, allocate the highest total assets to sample firms. Therefore, we test whether the institutional ownership is different between the group with and without top-tier fund managers. Firms receiving allocations from these managers are coded as 1, and others as 0.

To rule-out the potential selection effect, we construct a control group using three matching procedures: (i) nearest neighbor, (ii) kernel, and (iii) radius matching (see Table 11, Panel A). We then compute the *Average Treatment Effect on the Treated* (ATET) for Institutional Ownership ($INST_OWN$), our main dependent variable, as reported in Panel B.

None of the estimated effects are statistically significant at conventional levels, except for the radius matching method (T-stat = -1.66), which rejects the null only at 10 %. Therefore, the lack of significant treatment effects across matching estimators and the ATET model suggests that firms held by top-tier fund managers do not exhibit systematically different institutional ownership levels compared to matched peers. These findings reduce concerns that our main results are driven by selection bias linked to visibility or prestige effects associated with large institutional investors. Moreover, in non-tabulated test, we employ the same procedure switching the measurement of grouping, but the results remain consistent.

4.4. Regulatory change

During the period under analysis, the Brazilian SEC (CVM) released an important regulation change, the CVM Instruction 555/2014. The regulatory change introduced new rules governing the incorporation, management, and portfolio liquidity requirements for investment funds. As the regulation exclusively targeted institutional investors - clarifying fund manager responsibilities and emphasizing liquidity management - it represents an exogenous shock to fund behavior. To capture potential shifts in institutional investor behavior after a regulatory shock, we interact post-regulation indicators with firm-level resource slack variables. Table 12 reveals the results.

While the baseline models indicate a nuanced negative association between resource slack and institutional ownership, the interaction analysis exploiting CVM Instruction 555/2014 reveals that this relationship softened following the regulatory reform. Specifically, the significantly positive coefficient on $post_reg$ (0.115***) indicates that, on average, institutional ownership increased by 11.5 percentage points after the regulation’s implementation. This substantial shift reflects a broad reallocation of capital by institutional investors in response to the new regulatory framework.

Furthermore, while the significance of slack in profitability and leverage diminishes after the reform, asset turnover slack remains

Table 8
Instrumental variables.

Panel A - Exogenous Condition									
	<i>lag_cATO_abs</i>	<i>lag_cPM_abs</i>	<i>lag_cLEV_abs</i>	<i>avg_cATO_abs</i>	<i>avg_cPM_abs</i>	<i>avg_cLEV_abs</i>			
<i>Corr (residuals, IVs)</i>	−0.005	0.0087	−0.0278	0.0075	0.048	0.0044			
<i>p-value</i>	0.8767	0.7868	0.3877	0.8167	0.1355	0.8903			
Panel B - Relevance Condition									
<i>Variables</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	<i>cATO_abs</i>	<i>cPM_abs</i>	<i>cLEV_abs</i>	<i>cATO_abs</i>	<i>cPM_abs</i>	<i>cLEV_abs</i>	<i>cATO_abs</i>	<i>cPM_abs</i>	<i>cLEV_abs</i>
<i>lag_cATO_abs</i>	0.938*** (74.497)	−0.009 (−0.722)	1.235 (0.716)				0.937*** (73.946)	−0.015 (−1.238)	0.090 (0.382)
<i>lag_cPM_abs</i>	− 0.058** (−2.427)	0.514*** (20.714)	11.412*** (3.467)				− 0.059** (−2.419)	0.512*** (21.655)	0.309 (0.684)
<i>lag_cLEV_abs</i>	0.001 (0.720)	−0.001 (−0.963)	0.620*** (3.077)				0.001 (0.749)	−0.001 (−0.648)	0.567*** (20.603)
<i>avg_cATO_abs</i>				0.697*** (2.790)	0.138 (1.208)	0.964 (0.455)	0.101 (0.880)	1.091*** (9.735)	1.370 (0.646)
<i>avg_cPM_abs</i>				0.544* (1.808)	1.236*** (8.969)	−1.049 (−0.416)	0.010 (0.103)	0.087 (0.931)	−0.408 (−0.230)
<i>avg_cLEV_abs</i>				0.000 (0.681)	−0.000 (−1.208)	0.998*** (186.758)	−0.000 (−0.286)	− 0.001*** (−3.889)	0.996*** (222.809)
<i>Constant</i>	0.308** (2.155)	0.245* (1.661)	1.275 (0.065)	0.434 (1.116)	0.686*** (3.851)	− 6.351* (−1.919)	0.319** (2.140)	0.371** (2.557)	−4.098 (−1.478)
<i>Observations</i>	966	966	967	969	968	978	966	966	967
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Ind FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Adj R2</i>	0.875	0.472	0.282	0.131	0.298	0.98	0.875	0.527	0.987

This table shows the impact of the chosen instrumental variables (lagged measures resource slack and the industry average of them) on the suspected endogenous variables. Controls and constants are included but omitted to ease the exposure. The robust t-statistics are reported below coefficient estimates in parentheses. ***, **, and * denote significance at the 1 %, 5 %, and 10 % levels, respectively, using a two-tailed *t*-test.

Table 9
Endogeneity tests - GMM.

Variables	Dep Var.: INST_OWN (General)				
	(1) OLS	(2) OLS FE	(3) GMM 1	(4) GMM 2	(5) GMM 3
<i>cPM_abs</i>	0.013 (0.586)	-0.007 (-0.309)	0.099 (1.566)	0.241*** (3.579)	0.078** (2.286)
<i>cATO_abs</i>	-0.028*** (-2.783)	-0.027*** (-2.925)	-0.033*** (-2.727)	0.001 (0.036)	-0.028** (-2.491)
<i>cLEV_abs</i>	0.000** (1.970)	0.000 (0.547)	-0.002 (-1.067)	0.000 (1.067)	0.000 (0.916)
Constant	-0.049 (-0.433)	0.018 (0.144)	-0.046 (-0.388)	-0.154 (-1.254)	-0.070 (-0.625)
Observations	968	968	966	968	966
Controls	Yes	Yes	Yes	Yes	Yes
Ind FE	No	Yes	No	No	No
Adj. R2	0.165	0.175	0.0799	0.0638	0.158
Instruments	-	-	lag	ind_avg	lag / ind_avg
F-Stat	12.00	12.12	11.22	11.29	12.46
AIC	-1336.72	-1339.44	-1238.42	-1225.66	-1324.26
LM (Identification Test)	-	-	16.05***	80.06***	403.48***
Stock-Yogo Test	-	-	5.342	28.555	112.972
Sargan Test (p-value)	-	-	0.000	0.000	0.0159

This table shows the impact of resource slack via DuPont components on the participation of institutional investors using different estimates. Column 1 shows the basic OLS, Column 2 adds the Industry Fixed effects as the primary pathway to overcome endogeneity, Column 3–5 uses the Generalized Methods of Moments (GMM) in two stages, using alternative instrumental variables. The sample consists of non-financial firms, both invested and not invested by institutional investors during the period 2010–2023. Financial data are retrieved from Comdinheiro®. The dependent variable is the overall institutional stakeholding (INST_OWN), while the variables of interest are the components of DuPont analysis (centered on the industry median) in absolute values: *cPM* is Profit Margin, *cATO* is Asset Turnover, and *cLEV* stands for Leverage. The t-statistics and z-statistics are reported below coefficient estimates in parentheses. ***, **, and * denote significance at the 1 %, 5 %, and 10 % levels, respectively, using a two-tailed t-test.

Table 10
Summary GMM – impact of resource slack on institutional ownership.

VARIABLES	Dependent Variable:		
	(1) INST_OWN	(2) INST_OWN_HF	(3) INST_OWN_MF
<i>cPM_abs</i>	0.078** (2.286)	0.043*** (4.319)	0.036 (1.639)
<i>cATO_abs</i>	-0.028** (-2.491)	0.001 (0.236)	-0.017** (-2.335)
<i>cLEV_abs</i>	0.000 (0.916)	0.000** (2.023)	-0.000 (-0.096)
Constant	-0.070 (-0.625)	-0.052 (-1.617)	0.067 (0.930)
Observations	966	966	966
Controls	Yes	Yes	Yes
Ind FE	No	No	No
Adj R2	0.158	0.0796	0.0568
Instruments	lag / ind_avg	lag / ind_avg	lag / ind_avg
F-stat	12.46	7.453	4.741
AIC	-1324.26	-3719.02	-2163.23
LM (Identif. Test)	403.48	403.5	403.5
Stock-Yogo Test	112.972	113	113
Sargan Test (p-value)	0.0159	0.239	0.160

This table shows the impact of resource slack via DuPont components on the participation of institutional investors using different estimates. Column 1 shows the basic OLS, Column 2 adds the Industry Fixed effects as the primary pathway to overcome endogeneity, Column 3–5 uses the Generalized Methods of Moments (GMM) in two stages, using alternative instrumental variables. The sample consists of non-financial firms, both invested and not invested by institutional investors during the period 2010–2023. Financial data are retrieved from Comdinheiro®. The dependent variables are as follows: Institutional Ownership (INST_OWN) is the aggregate general participation of investment funds in the firms included in the sample, INST_OWN_HF is the 'Hedge Funds' ownership, and INST_OWN_MF is the 'Mutual Funds' ownership. The variables of interest are the components of DuPont analysis (centered on the industry median) in absolute values: *cPM* is Profit Margin, *cATO* is Asset Turnover, and *cLEV* stands for Leverage. The robust t-statistics are reported below coefficient estimates in parentheses. ***, **, and * denote significance at the 1 %, 5 %, and 10 % levels, respectively, using a two-tailed t-test.

Table 11
Propensity score matching - top-five fund managers.

Panel A - Matching Methods						
Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
<i>I - Nearest-neighbor matching (caliper 0.5)</i>						
INST_OWN	Unmatched	0.0894	0.1107	-0.0213	0.0112	1.91
	ATT	0.0894	0.1131	-0.0237	0.0164	1.45
<i>II - Kernel matching</i>						
INST_OWN	Unmatched	0.0894	0.1107	-0.0213	0.0112	-1.91
	ATT	0.0894	0.1108	-0.0214	0.0130	-1.64
<i>III - Radius matching</i>						
INST_OWN	Unmatched	0.0894	0.1107	-0.0213	0.0112	-1.91
	ATT	0.0894	0.1107	-0.0213	0.0128	-1.66
Panel B - ATET - Treatment-effects estimation for observational data						
		Top-5 Managers	Coefficient	AI rob SE	z	P > z
INST_OWN		(1 vs 0)	-0.0237398	0.017019	-1.39	0.163

This table shows the impact of resource slack via DuPont components on the participation of top-five institutional investors. To begin, we employ a logistic regression model, wherein resource slack and other covariates serve as predictors for the dependent variable ($Y = 1$ when the fund manager falls within the 95th percentile in terms of the value allocated to the firms utilized within the sample). Based on the propensity scores, we used the three most common used matching methods available within the command *psmatch2* (Panel A): I – Nearest Neighbor, II – Kernel, and III – Radius. Finally, Panel B shows the estimate the ultimate treatment effects for observational data (ATET) on the Institutional Ownership (INST_OWN).

Table 12
Regulatory change – moderating effect.

VARIABLES	INST_OWN		INST_OWN_HF		INST_OWN_MF	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
<i>Post_reg</i>	0.115***	(4.295)	0.010	(1.460)	0.063***	(3.522)
<i>cPM_abs</i>	-0.086**	(-2.315)	-0.021***	(-2.926)	-0.015	(-0.473)
<i>cATO_abs</i>	-0.037**	(-2.213)	-0.005	(-1.355)	-0.019**	(-1.999)
<i>cLEV_abs</i>	0.000**	(2.384)	0.000	(1.555)	0.000	(0.987)
<i>Post_reg x c_PM</i>	0.084**	(2.004)	0.034**	(2.213)	0.024	(0.721)
<i>Post_reg x c_ATO</i>	0.008	(0.406)	0.004	(1.076)	0.003	(0.252)
<i>Post_reg x c_LEV</i>	-0.002*	(-1.901)	-0.000	(-0.964)	-0.001	(-1.457)
Controls						
<i>SIZE</i>	-0.002	(-0.545)	-0.001	(-0.451)	-0.003	(-1.582)
<i>CASH</i>	0.075*	(1.785)	0.064**	(2.310)	-0.013	(-0.569)
<i>LOSS</i>	0.036***	(3.093)	0.014**	(2.570)	0.013*	(1.757)
<i>PAYOUT</i>	-0.004	(-0.431)	0.002	(0.454)	-0.004	(-0.754)
<i>LIQ</i>	-0.000**	(-2.002)	-0.000**	(-2.291)	-0.000	(-0.470)
<i>VOL</i>	-0.000**	(-2.271)	-0.000	(-0.080)	-0.000	(-1.419)
<i>UNCERTAINTY</i>	-0.003***	(-3.002)	-0.000	(-1.333)	-0.002***	(-2.994)
<i>UP_CONF</i>	-0.032***	(-2.597)	-0.011***	(-2.842)	-0.001	(-0.074)
<i>INTEREST_RATE</i>	-0.002*	(-1.688)	-0.001***	(-2.733)	0.000	(0.297)
<i>BUSINESS_CYCLE</i>	-0.092***	(-7.243)	-0.009***	(-2.857)	-0.047***	(-5.487)
<i>COVID19</i>	0.092***	(3.758)	0.002	(0.345)	0.058***	(3.558)
<i>HHI</i>	-0.082	(-1.286)	-0.001	(-0.060)	-0.079*	(-1.751)
<i>Constant</i>	0.532***	(4.051)	0.070**	(1.977)	0.357***	(4.349)
Observations	1064		1064		1064	
Ind FE	Yes		Yes		Yes	
Adj R2	0.165		0.0826		0.0589	

This table shows the impact of a significant regulatory chance (i.e., CVM Instruction 555/2014) on the relationship between resource slack via DuPont components on the participation of institutional investors. The sample consists of non-financial firms, both invested and not invested by institutional investors during the period 2010–2023. Financial data are retrieved from Comdinheiro®. The dependent variables are as follows: Institutional Ownership (INST_OWN) is the aggregate general participation of investment funds in the firms included in the sample, INST_OWN_HF is the 'Hedge Funds' ownership, and INST_OWN_MF is the 'Mutual Funds' ownership. The variables of interest are the components of DuPont analysis (centered on the industry median) in absolute values: cPM is Profit Margin, cATO is Asset Turnover, and cLEV stands for Leverage. The robust t-statistics are reported next to coefficient estimates in parentheses. ***, **, and * denote significance at the 1 %, 5 %, and 10 % levels, respectively, using a two-tailed t-test.

unaffected, suggesting it provides a consistent signal for institutional investors across time. In particular, the results on hedge funds before ($cPM_abs = -0.021***$) and after the regulation change ($Post_reg\ x\ cPM_abs = 0.034**$) reveals a fundamentally change how they respond to this signal. A possible explanation is that, after the regulation, hedge funds may have prioritized transparency and defensibility of holdings to reduce redemption risk. Profitable firms may be easier to justify to investors and regulators, especially under increased disclosure requirements.

These findings indicate that investor preferences are not static but evolve in response to regulatory changes—particularly those

affecting fund governance and liquidity constraints. Rather than contradicting our earlier results, this evidence underscores a policy-driven shift in how institutional capital is allocated across firms. Notably, another significant regulatory change was released in 2022 (CVM's Resolution 175/2022), which came into effect in 2023, the last year of our sample. Consequently, we lack sufficient data to estimate a regression.

4.5. Sensitivity analysis

We run a battery of sensitivity tests concerning different subsamples (all results are available under request). First, we examine whether the effect of resource slack varies across time. We find no significant change in the main results. Second, we also test the period before and during COVID-19 times, and we find that resource slack is still significant to impact the institutional investors' stock picking as the firm moves to industry norms, except for the hedge funds, where we find no significant effect. This specific result contrasts recent evidence on the unchanged behavior of hedge funds during COVID-19 in the US market (Khelifa et al., 2022).

4.6. Alternative explanation

Prior literature provides strong evidence of the relationship between institutional participation and corporate governance practices (Bushee and Miller 2012a,b; Gillan and Starks, 2003; Sakawa and Watanabel, 2020; Shleifer and Vishny, 1997). Therefore, we run the main tests by adding an indicator *HIGH_CG* that assumes 1 if the firm belongs to the largest segment of governance ("New Market") and 0 otherwise. We find the resource slack to still significantly impact the selection of a firm to the extent their accounting fundamental indicators move towards the industry norm.

Next, to alleviate concerns that institutions' decisions are driven by market movements, such as stock return and volatility, instead of firms' fundamentals (Chang and Dong, 2006), we include the past industry-adjusted twelve-month return as an additional control variable. All other tests show significance for our resource slack variables. In addition, the industry mean-reverting earnings can be

Table 13
Additional analysis.

Panel A - Original Deviation						
	Dep. Var.: INST_OW_N_					
	(1)	(2)	(3)	(4)	(5)	(6)
<i>VARIABLES</i>	<i>GENERAL</i>	<i>RELEVANT</i>	<i>DEDICATED</i>	<i>VOTING</i>	<i>HF</i>	<i>MF</i>
<i>cPM</i>	-0.075*** (-3.567)	-0.049*** (-2.981)	-0.005 (-1.474)	-0.017 (-1.244)	-0.017 (-1.175)	-0.035*** (-2.920)
<i>cATO</i>	-0.017*** (-2.610)	-0.009** (-2.458)	-0.002 (-1.273)	-0.008** (-2.012)	-0.003 (-1.494)	-0.012*** (-3.236)
<i>cLEV</i>	-0.000 (-1.020)	-0.000 (-0.651)	0.000 (0.920)	-0.000 (-1.269)	-0.000 (-1.042)	-0.000 (-0.256)
<i>Constant</i>	0.054 (0.571)	0.135** (2.015)	-0.014 (-0.722)	0.008 (0.118)	0.023 (0.898)	0.116** (2.110)
<i>Observations</i>	1064	1064	1064	1064	1064	1064
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Ind FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Adj R2</i>	0.153	0.0942	0.0328	0.0761	0.0852	0.0523
Panel B - Above Industry Median						
	Dep. Var.: INST_OW_N_					
	(1)	(2)	(3)	(4)	(5)	(6)
<i>VARIABLES</i>	<i>GENERAL</i>	<i>RELEVANT</i>	<i>DEDICATED</i>	<i>VOTING</i>	<i>HF</i>	<i>MF</i>
<i>PM_above_ind</i>	-0.024** (-2.425)	-0.028*** (-3.708)	-0.000 (-0.088)	-0.013* (-1.959)	-0.001 (-0.633)	-0.014* (-1.899)
<i>ATO_above_ind</i>	-0.010 (-1.264)	-0.013** (-2.160)	-0.001 (-0.531)	-0.003 (-0.539)	-0.000 (-0.007)	-0.007 (-1.370)
<i>LEV_above_ind</i>	-0.003 (-0.327)	0.001 (0.112)	-0.001 (-0.733)	0.006 (1.110)	0.005** (2.028)	-0.010* (-1.784)
<i>Constant</i>	0.140 (1.424)	0.230*** (3.246)	-0.015 (-0.852)	0.053 (0.798)	0.040 (1.237)	0.138** (2.523)
<i>Observations</i>	1074	1074	1074	1074	1074	1074
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Ind FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Adj R2</i>	0.141	0.101	0.0314	0.0797	0.0775	0.048

This table shows the impact of resource slack via DuPont components on institutional ownership focusing on institutions seeking stronger relationship. The sample consists of non-financial firms, both invested and not invested by institutional investors during the period 2010–2023. Financial data are retrieved from Comdinheiro®. The dependent variable is alternatively (1) the participation of hedge funds ('INST_OW_N_HF') and mutual funds ('INST_OW_N_MF'). Panel A uses the components of DuPont analysis (centered on the industry median) in original values: *cPM* is Profit Margin, *cATO* is Asset Turnover, and *cLEV* stands for Leverage. Panel B uses an indicator that assumes 1 if the firm component is greater than the industry median. The robust t-statistics are reported next to coefficient estimates in parentheses. ***, **, and * denote significance at the 1 %, 5 %, and 10 % levels, respectively, using a two-tailed t-test

argued as a concern. Following Soliman (2008), we also include the changes in the three DuPont components to further isolate the effect of the variables of interest and the results remain consistent.

Ultimately, While our primary framework captures the comparability perspective using absolute deviations from industry benchmarks, it remains unclear whether the direction of deviation (i.e., whether firms perform above or below the industry) matters to investors—particularly when considering interpretations related to flexibility or superior performance. To explore this, we re-estimate the models using two alternative specifications: (i) the original signed deviations from the industry median (Panel A), and (ii) an indicator variable that equals one if the firm's DuPont component is above the industry median and zero otherwise (Panel B). Table 13 presents the results.

Broadly, the findings remain qualitatively consistent with those in Tables 5 and 6. The general ownership patterns (column 1) closely align with those of more relevant investors (column 2) and those with voting rights (column 4), reinforcing the robustness of the main results. As anticipated, hedge funds and mutual funds continue to display distinct investment patterns, with hedge funds showing less aversion to firms with above-industry slack, suggesting greater tolerance for potential agency risks in pursuit of high-return opportunities.

5. Conclusion

We investigate the impact of resource slack on institutional ownership. To do so, we examine the strategic use of accounting fundamentals relative to industry median to select firms, potentially according to the level of risk exposure of the fund. We use a detailed investment fund's portfolio database between 2010 and 2023 to develop the proxies for institutional investors. We provide robust evidence of how institutions differently assess firm's fundamentals regarding resource slacks to ground their decision to invest, where such decision is sensitive to the institutional characteristics.

Specifically, we find that (1) institutional investors generally are attracted by firms with lower resource slack in terms of asset turnover. (2) Similar pattern is identified among those institutions more likely to engage in stronger relationship with the invested firm. (3) Hedge funds are more drawn to firms with greater slack, as they perceive it as an opportunity to extract higher potential returns through active engagement and market-driven strategies. In contrast, mutual funds are attracted to firms with lower resource slack, as it signals greater predictability and reduced risk.

Our study contributes to three streams of the literature, as follows. *First*, this paper answers a call for a more granular examination of the investment funds industry in a developing economy with the growing attention of retail investors (International Monetary Fund, 2018). *Second*, we extend the literature on institutional ownership in developing economies, specifically in Latin America (Ferreira and Matos, 2008), by providing evidence of the marginal effects of resource slack on institutional ownership even after being subjected to numerous controls and alternative explanations. *Third*, our findings add depth to prior literature in developing economies about subsequent implications on a firm's performance (Bessler and Vendrasco, 2022; Sakawa and Watanabel, 2020).

In addition, our findings also have significant implications for market participants, such as firms, institutional and retail investors, and analysts. Although there is no consensus about the 'right' investor to attract (Bushee, 2004), our results enable the firms to identify a fundamentalist mechanism they likely rely upon.

5.1. Caveats and avenues for future research

Although we stress the results through numerous robustness checks, the paper is subjected to some caveats. *First*, even though we argue that resource slack drives the decision to invest in a firm, we are aware of other trading strategies that we do not cover, e.g., short positions, arbitrage, and momentum (Froot et al., 1992). *Second*, we attempt to isolate our findings from momentum effects by reconciling the fund's portfolio and the corresponding market value in May, allowing all the public information to be fully incorporated into stock prices more than one month after the annual report is released. This procedure also attempts to lessen concerns about endogeneity and reverse causality on our results. *Third*, we also do not cover the event trading strategy, such as M&A (Koester et al., 2016) as they are out of the scope of this study. *Forth*, institutional investors are often accused of trading based on private information (Bushee and Goodman, 2007; Qian and Zhong, 2018). Moreover, prior research indicates that institutional investors are attracted by direct access to management, such as enhanced firm visibility through the Investors Relations channel (Bushee and Miller 2012a,b) and political connections (Christensen et al., 2017). While our results are robust when controlling for corporate governance, it remains an empirical question whether such a detailed level of potential engagement aligns with the perspective of governance represented by our proxy measures.

Future research can explore different segments of institutions, such as foreign and domestic (Sakawa and Watanabel, 2020), risk exposure (Funchal et al., 2016), and eventual acquisitions among institutions. Also, one may address the effect of resource slack-related choices on the fund's performance. Finally, following the most recent regulation modification implemented in 2023, future research endeavors may explore the impact on institutional investors' propensity to invest, and specific positions on board of directors.

CRediT authorship contribution statement

Paulo Victor G. Novaes: Conceptualization, Methodology, Data Curation, Investigation, Formal Analysis, Writing - Original Draft preparation, Writing - Reviewing and Editing; **Wagner M. Lamounier:** Conceptualization, Supervision; **Luiz Cláudio Louzada:** Conceptualization, Visualization, Investigation; **Valéria G. F. Bressan:** Conceptualization, Supervision; **Laura Edith T. Pinheiro:** Conceptualization, Supervision

Declaration of Competing Interest

None.

Appendix A

Variables definition

This appendix provides a detailed description of procedures to compute the variables used in our analysis. Financial and Fund portfolio data are obtained from Comdinheiro®, while macro-level data are obtained from official institutions' websites.

Label	Description
Funds Characteristics and Participation	
<i>INST_OWN</i>	Institutional Ownership is the sum of each fund participation in each firm <i>i</i> divided by the firm's market value.
<i>RELVANT</i>	Relevant Shareholder Indicator that assumes 1 if the fund's stakeholding is equal or greater than 5 % in each firm <i>i</i> in each year <i>t</i> , and 0 otherwise.
<i>INST_OWN_RELEVANT</i>	Total participation of relevant shareholder is the sum of the product of <i>INST_OWN</i> and <i>REL_SHR</i> in each firm <i>i</i> and year <i>t</i> .
<i>DEDICATED</i>	Dedicated Shareholder Indicator that assumes 1 if the fund holds the investment in firm <i>i</i> for more than 1 year.
<i>INST_OWN_DEDICATED</i>	Total participation of Dedicated Shareholders is the sum of the product of <i>INST_OWN</i> and <i>SHR_DED</i> in each firm <i>i</i> and year <i>t</i> .
<i>VOTING</i>	Voting Shareholder Indicator that assumes 1 if the 5-digit ticker ends with the number 3, and 0 otherwise.
<i>INST_OWN_VOTING</i>	Total participation of Voting Rights is the sum of the product of <i>INST_OWN</i> and <i>SHR_VOT</i> in each firm <i>i</i> and year <i>t</i> .
<i>MUTUAL_FUND</i>	Mutual Fund Indicator that assumes 1 if the Brazilian SEC's class is 'Equity Fund', and 0 otherwise. Particularly, the Brazilian regulation (CVM Rule 175) allows equity fund managers to invest a max of 33 % in investments other than equity or related assets. As a consequence, this group of participants fits the concept of mutual fund.
<i>INST_OWN_MF</i>	Total participation of Mutual Funds is the sum of the product of <i>INST_OWN</i> and <i>MF</i> in each firm <i>i</i> and year <i>t</i> .
<i>HEDGE_FUND</i>	Hedge Fund Indicator that assumes 1 if the Brazilian SEC's class is 'Hedge Fund', and 0 otherwise.
<i>INST_OWN_HF</i>	Total participation of Hedge Funds is the sum of the product of <i>INST_OWN</i> and <i>MF</i> in each firm <i>i</i> and year <i>t</i> .
<i>TOP5_freq</i>	Indicator that assumes 1 if the investment fund is on the top-five in terms of frequency in the sample (Sabiá, BRAM, Itaú, Mainá, e Santander).
<i>TOP5_percentile</i>	Indicator that assumes 1 if the investment fund falls within the 95th percentile in terms of the value allocated to the firms utilized within the sample per year.
<i>TOP5_manager_percentile</i>	Indicator that assumes 1 if the fund manager falls within the 95th percentile in terms of the value allocated to the firms utilized within the sample.
ROE Decomposition	
<i>cPM_abs</i>	Profit Margin (PM) is the absolute value of the ratio of Net Income to Net Revenue minus the relative industry median.
<i>cATO_abs</i>	Asset Turnover is the absolute value of the ratio of Net Revenue to the Total Assets minus the relative industry median.
<i>cLEV_abs</i>	Leverage is the absolute value of the Total Assets to Book Value of Equity minus the relative industry median.
Firm-level	
<i>SIZE</i>	Natural logarithm of Total Assets at the end of the fiscal-year
<i>CASH_LIQ</i>	Cash and Equivalents scaled by Total Assets at the end of the fiscal year
<i>LOSS</i>	Indicator that assumes 1 if the firm reports negative net income, and 0 otherwise.
<i>PAYOUT</i>	Ratio of Dividend to corresponding Net Income
Capital Market-level	
<i>LIQUIDITY</i>	Stock liquidity over the past 36 months
<i>VOLATILITY</i>	Stock volatility over the past 36 months
<i>BTM</i>	Ratio of Book Value of Equity to the Market Value at the end of fiscal year.
Industry-level	
<i>HHI</i>	Herfindahl-Hirschman Index
<i>INDUSTRY</i>	Indicator for each industry, following the Brazilian Stock Exchange industry classification.
Macroeconomy-level	
<i>INTEREST</i>	Basic Interest Rate as reported by the Central Bank of Brazil (BACEN, 2024)
<i>UNCERTAINTY</i>	Economy Uncertainty Index (FGV IBRE, 2024a).
<i>UP_CONF</i>	Indicator that assumes 1 if the Business Confidence Index increases (YoY), and 0 otherwise (FGV IBRE, 2024b)
<i>BUS_CYCLE</i>	Indicator that assumes 1 if the overall GDP increases (YoY), and 0 otherwise
<i>COVID19</i>	Indicator that assumes 1–2020 and 2021, and 0 otherwise.
<i>POST_REG</i>	Indicator that assumes 1 if the year is equal to or superior to 2015, when the new regulation came into effect.

Appendix B

Fund portfolio

This appendix provides an example of the portfolio of 'BRAM H Fundo de Investimento Ações Institucionais' recently filed with the Brazilian SEC system. We calculate the shareholding by using the market value described at the end of the period (as highlighted below) divided by the corresponding firm market value on the same date.

Reporting Period: 04/2024										
Fund Name: BRAM H Institutional Equities Investment Fund					Corporate Tax Number (Fund): 01.496.940/0001-86					
Manager: BEM – Securities and Investment Distribution Company Ltd.					Corporate Tax Number (Manager): 00.066.670/0001-00					
Version: 4.0										
Asset	Classification	Related Party	Transactions During the Month				Qty.	Final Position		
			Sales		Purchases			Cost	Value (BRL)	% Equity
			Qty.	Value	Qty.	Value				
Stocks Asset Code: PETR4 Effective Date: 09/18/1973	For trading	No	14,500	601,260.78	34,300	1,391,419.82	287,224	12,069,152.48	7.96%	
Stocks Asset Code: VALE3 Effective Date: 02/15/1982	For trading	No	12,000	735,722.35	4,800	297,312.00	162,897	10,309,751.13	6.80%	
Stocks Asset Code: ITUB4 Effective Date: 05/20/2009	For trading	No	12,600	400,343.61	14,600	706,611.76	316,900	9,937,984.00	6.56%	
Stocks Asset Code: ELET3 Effective Date: 09/01/1983	For trading	No	2,500	204,672.00	18,000	706,976.65	169,106	6,402,353.16	4.23%	
Stocks Asset Code: BBA3S Effective Date: 05/31/1973	For trading	No	6,600	169,860.36	34,100	940,893.47	186,209	5,188,082.53	3.42%	

Data Availability

Data will be made available on request.

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