ISSN 1808-057X
DOI: 10.1590/1808-057x20252257.en

ORIGINAL ARTICLE

# Company valuation practices in the mergers and acquisitions market in Brazil

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Received on 11/25/2024 – Desk acceptance on 12/19/2024 – 4th version approved on 06/10/2025
Academic Editor-in-Chief: Andson Braga de Aguiar
Associate Editor: Andrea Maria Accioly Fonseca Minardi

## ABSTRACT

This article aims to highlight valuation practices in the mergers and acquisitions market of an emerging market country such as Brazil. There is a lack of analysis on the specifics of valuation practices in an emerging market that is not restricted to a specific niche or professional association. Additionally, the scope of the questionnaire was expanded. The results provide important insights into valuation practices in Brazil's mergers and acquisitions market. This study is relevant for appraisers, shareholders, and company directors who adopt inorganic growth strategies, as well as tax authorities because goodwill is tax-deductible in the event of a merger by the acquirer. A structured questionnaire with predefined answers was administered to professionals involved in valuations, and distribution and correspondence analyses were performed. The results indicate that there is no common practice among appraisers, though there is greater similarity among professionals from financial advisory and consulting firms. The results suggest that transactions may occur at prices higher than the fair value of the acquired company, particularly among strategic investors. Approximately 15% of the appraisers report being influenced by the herd effect. Most consider additional premiums beyond the conceptual basis of the Capital Asset Pricing Model, which are mainly supported by the appraiser's private knowledge. However, strategic investors do not appear to consider these premiums, as they are more concerned with the representativeness of the perpetual period. Further discussion is needed on cognitive biases and other factors that may influence pricing in mergers and acquisitions, as well as conceptual and methodological errors that may occur in the valuation process.

**Keywords:** mergers and acquisitions, market practices, valuation.

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This is a bilingual text. This article was originally written in Portuguese and published under the DOI 10.1590/1808-057x20252257.pt.

# *Práticas de avaliação de empresas no mercado de fusões e aquisições no Brasil*


## *RESUMO*

*Este artigo tem como objetivo evidenciar as práticas de valuation no mercado de fusões e aquisições em um país de mercado emergente, como é o Brasil. Como lacuna, há a ausência de uma análise das especificidades da prática de valuation em um mercado emergente sem restrições a um nicho específico de atuação ou a uma associação profissional, além da ampliação do escopo do questionário. Os resultados deste artigo trazem percepções importantes sobre a prática de valuation no mercado brasileiro de fusões e aquisições. O estudo é relevante para avaliadores, acionistas e diretores de empresas que adotam como estratégia o crescimento inorgânico, bem como para o fisco, pois o goodwill é dedutível fiscalmente em caso de incorporação pela adquirente. Um questionário estruturado com respostas pré-definidas foi aplicado a profissionais envolvidos em valuations, e foram realizadas análises de distribuição e de correspondência. Os resultados indicam que não há uma prática comum entre os avaliadores, havendo maior similaridade entre os profissionais de empresas de assessoria financeira e consultoria. Sugere-se que as transações podem ocorrer a preços superiores ao valor justo da empresa adquirida, especialmente por parte dos investidores estratégicos. Cerca de 15% dos avaliadores sinalizam estar sujeitos à influência do efeito manada. A maioria dos avaliadores considera prêmios adicionais à base conceitual do Capital Asset Pricing Model, sustentados majoritariamente por conhecimento privado do avaliador. Contudo, parece que os investidores estratégicos não os consideram, tendo uma maior preocupação com a representatividade do período perpétuo. Há espaço para discutir os vieses cognitivos e outros fatores que podem influenciar a definição do preço em uma fusão e aquisição, bem como os erros conceituais e metodológicos que podem ocorrer no processo de avaliação.*


***Palavras-chave:*** *fusão e aquisição, práticas de mercado, valuation.*

## 1. INTRODUCTION

A report published by KPMG in 2024 indicates that 776 merger and acquisition transactions were recorded in the first two quarters of that year, representing a more than 5% increase over the same period in the previous year (KPMG, 2024). According to data released by PwC, there were 1,287 merger and acquisition transactions in the Brazilian market in 2023, which is a decrease of about 17% compared to the previous year. However, the volume of transactions grew over previous years, increasing from around 650 in 2017 and 2018 to approximately 1,660 in 2021 (PwC, 2024).

A merger and acquisition transaction requires alignment of the interests of sellers and buyers, who must agree on a price that meets both parties' interests (Fernández, 2007). However, valuing companies is a complex and subjective process involving the definition of assumptions related to future prospects (Damodaran, 2024; Fernández, 2007; Kaplan & Ruback, 1994; Koller et al., 2022; Luzio, 2014; Serra & Wickert, 2021). This complexity is even greater in emerging markets such as Brazil, as Pereiro (2006) noted: "Traditional valuation techniques do not provide much guidance on how they should be applied to emerging markets."

Given this, the purpose of this article is to highlight valuation practices in the mergers and acquisitions market in an emerging market country like Brazil. The research covers methodology, cost of capital measurement, perpetuity calculation, and cash flow projection.

The characterization of the valuation techniques used in the Brazilian mergers and acquisitions market was obtained through a structured questionnaire with predefined answers. According to King (2004), this method aims to obtain accurate information from interviewees. The questionnaire was completed by appraisers active in Brazil's mergers and acquisitions market, including financial advisors and strategic or financial investors. While other studies have used interviews to highlight valuation market practices (Brotherson et al., 2014; Bancel & Mittoo, 2014; Pinto et al., 2019), this study stands out due to the scope of the questionnaire, the definition of the sample, and its focus on the Brazilian market, which is an emerging market. Previous studies have mainly focused on valuation practices in mature markets, limiting the sample base to specific niche segments or professional associations. Therefore, in addition to analyzing valuation practices in an emerging market and its specificities, this study considered a sample base with the sole restriction that respondents were involved in valuation processes.

However, the results do not allow us to conclude that there is a common practice among appraisers. The absence of dominance in the assumptions considered during the preparation of valuations raises questions about the

rationality of the agents involved, despite greater similarity in the behavior of those who identify as active appraisers or as representatives of financial advisory or consulting firms. This raises questions about which cognitive biases may influence transactions.

The responses suggest that transaction prices may exceed the company's fair value when limited to its pre-transaction operating conditions; that 15% of respondents may be subject to herd behavior; that strategic investors are more concerned about the representativeness of the perpetual period in valuations; and that some dominant behaviors indicate the possibility of methodological and/or mathematical errors or inconsistencies that warrant investigation.

This article contributes to finance theory by revealing valuation practices in the Brazilian mergers and acquisitions market – an emerging market – based on a broad sample without restrictions to a specific niche or professional association. Having a reference for market practices is important for the various agents involved in these processes, especially appraisers. It can also clarify whether creating value for shareholders of companies that adopt an inorganic growth strategy is possible. The value of transactions also has implications for tax authorities because the goodwill portion is tax-deductible in cases of mergers.

## 2. COMPANY VALUATION PRACTICES DISCUSSED IN THE LITERATURE

Luzio (2014) explains that the main objective of estimating the value of the target company in a merger and acquisition process is to align the seller's expectations regarding the potential value of the transaction. According to Fernández (2007), for a transaction to occur, the buyer (buy side) and seller (sell side) negotiate until they agree on a price, which is typically between the two extremes.

Although there are several valuation models, they are limited to intrinsic and relative approaches (Damodaran, 2024). Intrinsic value results from expected cash flows during the company's lifetime and the associated uncertainty. In the relative approach, the value of the company is estimated based on similar assets with an active market. Company valuation processes can consider both approaches.

According to Serra and Wickert (2021), the value of an asset using the discounted cash flow method is a consequence of a company's cash generation potential, discounted to present value using a rate adjusted for the risk attributed to the cash flow. Koller et al. (2022, p. 316) state that "the discounted cash flow of the company is the favorite of practitioners and academics because it is based on the cash flow that enters and leaves the company, not on accounting profits." While profit is an accounting measure linked to the accrual basis, cash flow is linked to financial transactions. According to Fernández (2007, p. 12), "the discounted cash flow method is generally used because it is the only conceptually correct valuation method." Kaplan and Ruback (1994) indicate that the reliability of discounted cash flow valuation depends on the accuracy of cash flow projections, risk measures, and assumptions used in calculating the cost of capital.

Serra and Wickert (2021, p. 135) discuss multiple valuation or relative analysis. They explain that "the assumption behind the technique is that the market, on average, provides interesting references for valuation." They state that relative analysis is supported by a simple data triangulation technique known as the rule of three (Serra & Wickert, 2021). Kaplan and Ruback (1994, p. 10) point out that "the value is estimated by multiplying the ratio of the reference companies by the performance measure of the company being valued." However, Serra and Wickert (2021) warn that due to the relative nature of multiple valuation, there may be influence from the herd effect.

Luzio (2014) explains that, since information about the target company's future is unavailable, the estimate depends on proxies (assumptions and approximations). Damodaran (2007) corroborates this idea, pointing out that appraisers often have very different assumptions about the fundamentals that determine a company's value. According to Galdi et al. (2008), cash flow projections may contain noise.

For Assaf Neto (2019, p. 181), "it is important to add that valuation is not an exact science; some points are controversial and require the analyst's opinion."

Pereiro (2006) suggests that company valuation is an even greater challenge in emerging markets, such as Brazil. Among the aspects that contribute to this condition, we can highlight the fact that these markets tend to be small, concentrated, and prone to manipulation. Thus, the author suggests that valuation professionals carefully consider adapting academic finance recommendations to specific emerging market contexts. The Capital Asset Pricing

Model (CAPM), for example, has extensive literature suggesting adaptations, each with its own specificity. Some authors, such as O'Brien (1999), Schramm and Wang (1999), and Stulz (2022), propose a Global CAPM. Others, including Lessard (1996), Godfrey and Espinosa (1996), Pereiro (2001), and Assaf Neto et al. (2008), suggest adjustments specifically for emerging markets.

Because the measurement of a company's value is associated with its future cash flow prospects, the work of appraisers is inherently uncertain. Therefore, identifying market practice in defining proxies and the elements that support assumptions about cash flow generation potential is important.

The literature presents studies that evaluate market practice in valuations. According to Bancel and Mittoo (2014), theory offers little guidance on estimating parameters used in valuation models, forcing professionals to make assumptions.

Brotherson et al. (2014) conducted guided telephone interviews with a small group of investment bankers in the US. Bancel and Mittoo (2014) surveyed more than 365 European professionals affiliated with professional associations and working in company valuation. The survey included more than 50 questions. In Brazil, Cunha et al. (2018) examined takeover bid reports from 2005 to 2009 and provided a qualitative content analysis of the assumptions used to determine the cost of capital. Pinto et al. (2019) surveyed approximately 2,000 Chartered Financial Analyst-certified professionals in North America, Europe, and Asia.

## 3. RESEARCH METHODOLOGY

The research was conducted using a structured questionnaire. All respondents answered the same questions in a pre-established order using the Google Forms platform. According to King (2004), interviews are one of the most common methods of data collection in qualitative research. The author states that structured interviews aim to obtain accurate information from the interviewee. In turn, Duarte (2004, p. 215) states that "interviews are essential when you need/want to map practices."

Each question was accompanied by a set of answers. Some were multiple-choice with one correct answer, while others had checkboxes that allowed more than one correct answer to be selected. This approach aims to reduce possible biases and subjectivity arising from the interviewee's interpretation of the questions.

In-depth knowledge of the context in which the research will be conducted is necessary for a good interview (Duarte, 2004). The questions were developed based on a review of the literature and previous works. They also drew on the expertise of the authors, who work in the Brazilian market, as well as the collaboration of two professionals with proven experience in valuations. These professionals suggested additions and improvements to the wording. After the initial design, the questionnaire was tested with three professionals: a valuation specialist, an M&A leader at an investment fund, and a technical expert from the Brazilian Federal Police specializing in business valuation. The professionals evaluated the questionnaire based on three criteria: the relevance and clarity of the questions and answers, and the comprehensiveness of the questionnaire in relation to the proposed objectives. Thus, the final questionnaire is closely linked to professional practice in Brazil, an emerging market. This research approach, which is based on prior knowledge, the literature, and professional review, is similar to the methods employed by Bancel and Mittoo (2014) and Pinto et al. (2019).

Research participants were contacted via LinkedIn up to two times using a standard message after their acceptance of the connection request on the platform. During the 30-day period (starting July 26, 2024) that the search was active, random requests were sent to professionals recommended by the platform according to the computational logic of its search tools. Searches on the platform were performed using the following keywords: "valuation," "M&A," and "investment banking." Accepting the connection request is also a random event and functions as another mitigator of possible biases in the sample. The standard texts provided context and the objective of the research, mentioned approval by the Research Ethics Committee of the University of Brasília, and indicated the estimated timeframe for completion.

Since participation in company valuation processes aimed at mergers and acquisitions is not dependent on possessing any specific certification, limiting the sample to a specific group would not accurately represent the professionals active in the market. It is also worth noting the guideline to identify practices limited to the Brazilian market, an emerging market.

Of the 698 professionals who were sent messages requesting their participation in the survey, 127 responded to the questionnaire, representing approximately 18% of those who were approached. The requests covered all professionals connected to the author of the survey on LinkedIn according to the indicated filters. Some respondents indicated that they did not consider themselves

qualified or claimed that they did not have the appropriate profile for the survey, citing confidentiality restrictions imposed by their institutions. These individuals are not included in the number of respondents.

It is believed that the percentage of professionals who responded is representative and that the number of respondents is linked to a personalized, direct approach that allowed for the exchange of messages and clarification of doubts as necessary. This differs from the email approach used by Bancel and Mittoo (2014) and Pinto et al. (2019), but is similar to the personal contact approach proposed by Brotherson et al. (2014).

Of the total number of respondents, 117 were considered valid. The 10 exclusions occurred because the professionals did not meet the profile requirements for the research. Those working in research, fixed asset valuation, investment monitoring, public-private partnerships, or investment advisory, as well as those without proven valuation experience as indicated on their LinkedIn profiles, were excluded from the sample.

When accessing the questionnaire, the professionals were presented with the Free and Informed Consent Form (FICF). The questionnaire included only two open-ended questions requesting the respondent's name and the company they represent or work for. This information was kept confidential and was used only to confirm the professionals' identities since the link to access the questionnaire was not restricted. All respondents' LinkedIn profiles were consulted to verify their professional history in valuation, representing the final stage of sample validation.

While there is a limitation on disclosing the companies that the professionals represent or work for, it is possible to state that the sample includes agents from institutions that are relevant in the context of mergers and acquisitions in Brazil. These institutions include large auditing and advisory firms, specialized consultancies, investment banks, publicly traded companies, and private equity funds, among others. Four professionals represented one company, three represented one company, and two represented six companies. A total of 106 companies were represented in the set of responses. However, even in cases where companies had more than one participant, there was no uniformity in practice.

## 4. BRAZILIAN MARKET PRACTICES IN VALUATIONS

The interpretation of the data is divided into two perspectives: distribution analysis, which quantifies the representativeness of each response; and correspondence analysis, which identifies strong relationships and similarities in behavior. These analyses were constructed using Orange Data Mining.

### 4.1. Distribution Analysis

Table 1 shows that the sample mainly consists of individuals under the age of 35 and who are predominantly male and have a postgraduate degree as their minimum level of education. These individuals mainly hold managerial or higher positions, have more than five years of experience in valuation, and primarily work in consulting or financial advisory firms.

For the appraisers, the valuation of companies in merger and acquisition processes primarily relies on the discounted cash flow method. Relative valuation or multiple analysis is considered a secondary element (Table 2). While most appraisers use the firm's cash flow, many also use a combination of the firm's cash flow, shareholder cash flow, and the discounted dividend model.

Table 3 shows that the process of defining target companies is generally linked to the buyer's investment thesis. Technical and cultural aspects are relevant in addition to identifying minimum revenue and/or earnings before interest, taxes, depreciation, and amortization (EBITDA) levels that can contribute to the acquirer's results. The target company's results are fundamental to the pricing process. However, about 33% of respondents indicated that the offered price may be impacted if the acquiring company's results are lower. The appraisers predominantly consider synergies in the pricing process, including those specific to the acquiring company.

As shown in Table 4, the definition of the required rate of return is mainly obtained through techniques for measuring the cost of equity capital. Almost unanimously, the basis for this measurement is the CAPM (Capital Asset Pricing Model). Most evaluators consider the size premium, and a significant portion of respondents also take into account other types of premiums.

Regarding the risk-free rate, Table 5 shows that a US market parameter is predominant. However, there is no dominant characteristic related to the price or to the maturity of the security used. It is evident that in cases where the projection has a time limit, the maturity of the security is linked to the term established in the model.

Table 6 shows that the main assumption regarding the country risk premium is the EMBI+ average. The EMBI+ index was publicly disclosed by J.P. Morgan in partnership with Ipeadata but was discontinued in July 2024. Due to this discontinuation, the practice may undergo changes.

**Table 1**
*Sample Profile*

| **Regarding your age, select the corresponding option:** | |
|---|---|
| Over 55 | 1.71% |
| Between 46 and 55 | 5.98% |
| Between 35 and 55 | 21.37% |
| Under 35 | 70.94% |
| **What sex were you assigned at birth?** | |
| Male | 88.89% |
| Female | 11.11% |
| **What is your level of education?** | |
| Up to completed higher education | 41.88% |
| Doctorate | 0.85% |
| Master's degree | 11.11% |
| Postgraduate | 46.15% |
| **What is your position in the company?** | |
| C-level or partner | 23.93% |
| Below management level | 41.03% |
| Management level | 35.04% |
| **Regarding valuation-related activities, how many years of experience do you have?** | |
| Over 15 | 8.55% |
| Between 10 and 15 | 13.68% |
| Between 5 and 10 | 38.46% |
| Less than 5 | 39.32% |
| **What is the best qualification for your company?** | |
| Financial advisor/Consulting firm | 58.97% |
| Strategic investor | 35.90% |
| Financial investor | 5.13% |

**Source:** *Prepared by the authors.*

**Table 2**
*Methodology*

| **Regarding company valuation techniques with business combinations in mind, which statement best defines your practice?** | |
|---|---|
| I use relative valuation or multiple analysis as my primary reference and discounted cash flow as a secondary element | 9.40% |
| I use only relative valuation or multiple analysis | 0.85% |
| I use only discounted cash flow | 2.56% |
| I use discounted cash flow as my primary reference and relative valuation or multiple analysis as a secondary element | 87.18% |
| **Regarding the discounted cash flow methodology, which statement best defines your practice?** | |
| I use both firm and shareholder discounted cash flow together | 31.62% |
| I use firm and shareholder discounted cash flow and the discounted dividend model together | 12.82% |
| I prefer to use firm discounted cash flow | 45.30% |
| I prefer to use shareholder discounted cash flow | 9.40% |
| I prefer to use the discounted dividend model | 0.85% |

**Source:** *Prepared by the authors.*

**Table 3**
*Target Company Qualifications and Relevance of the Acquired Company's Results in the Valuation Process*

| **Regarding the process of defining target companies, check all statements that are associated with your practice.** | |
|---|---|
| I define the buyer's investment thesis | 66.67% |
| I define minimum revenue and/or EBITDA levels sufficient to contribute to the buyer's results | 54.70% |
| I define maximum revenue and/or EBITDA levels based on their representativeness for the buyer | 33.33% |
| I define minimum technical, operational, and/or cultural conditions according to the buyer's characteristics | 61.54% |
| **Regarding synergy, which statement best defines your practice in valuations prior to business combinations?** | |
| The operating results of the company to be acquired are paramount for pricing, regardless of whether the buyer company presents considerably different results | 66.67% |
| If the operating results of the buying company are lower than those of the selling company, the price offered will be impacted since changes in the expense structure are expected after the acquisition | 33.33% |
| **Regarding synergy, which statement best defines your practice in valuations prior to business combinations?** | |
| I consider the beneficial effects of synergy in the pricing process for acquisitions | 61.54% |
| The effects of synergy are uncertain, so I do not consider them in the pricing process for acquisitions | 38.46% |
| **Regarding synergy, which statement best defines your practice in valuations prior to business combinations?** | |
| I consider the market synergies that could be obtained by other competitors | 15.38% |
| I consider synergies specific to the acquirer | 58.97% |
| I do not consider synergies | 25.64% |
| **Regarding company valuation techniques and business combination processes, which statement best defines your practice?** | |
| Not applicable | 5.13% |
| If the discounted cash flow valuation is outside a range identified through relative valuation or multiple analysis, I seek to identify the variables that justify obtaining multiples lower or higher than those perceived in the market | 79.49% |
| If the discounted cash flow valuation is outside a range identified through relative valuation or multiple analysis, I review the assumptions used in the discounted cash flow model so that it is closer to the range identified through relative valuation or multiple analysis | 15.38% |

**Source:** *Prepared by the authors.*

**Table 4**
*Basis for Identifying the Cost of Equity*

| **Regarding the definition of the cost of equity, which statement best defines your practice?** | |
|---|---|
| I use the minimum attractiveness rate defined by the buyer | 18.80% |
| I use the cost of equity capital obtained from comparable companies | 16.24% |
| I use techniques to measure the cost of capital | 64.96% |
| **Regarding the technique for measuring the cost of equity, which statement best defines your practice?** | |
| I use the CAPM (Capital Asset Pricing Model) | 92.31% |
| I use the APT (Arbitrage Pricing Theory) model | 0.00% |
| I use a model not specified in the questionnaire | 7.69% |
| **Regarding the cost of equity, which parameter(s) do you consider for measurement in a typical valuation?** | |
| Risk-free rate | 98.29% |
| Country risk premium | 91.45% |
| Beta | 90.60% |
| Market risk premium | 86.32% |
| Size premium | 68.38% |
| Specific premium | 30.77% |
| Illiquidity premium | 25.64% |
| Control premium | 16.24% |
| Other premium not specified in the questionnaire | 11.11% |

**Source:** *Prepared by the authors.*

**Table 5**
*Risk-Free Rate Assumptions*

| **Regarding the risk-free rate, which statement best defines your practice?** | |
|---|---|
| I use a US market rate | 81.20% |
| I use a Brazilian market rate | 14.53% |
| I use a rate not specified in the questionnaire | 4.27% |
| **Regarding the risk-free rate, which statement best defines your practice?** | |
| I use the base date quote | 19.66% |
| I use the average rate for a period between five and ten years | 27.35% |
| I use the average rate for a period of less than or equal to five years | 27.35% |
| I use the average rate for a period of more than ten years | 17.09% |
| I use an estimate without relying directly on historical references | 8.55% |
| **For those who identified that they use the average rate, regarding the risk-free rate, which statement best defines your practice?** | |
| Not applicable | 33.33% |
| I use the average rate based on an arithmetic mean | 47.86% |
| I use the average rate based on a geometric mean | 18.80% |
| **Regarding the risk-free rate for projections that consider perpetuity, which statement best defines your practice?** | |
| I use securities with a maturity of 10 years | 47.86% |
| I use securities with a maturity of 20 years | 17.95% |
| I use securities with a maturity of 30 years | 15.38% |
| I use securities with maturities close to the explicit projection period | 18.80% |
| **Regarding the risk-free rate for projections that do NOT consider perpetuity, which statement best defines your practice?** | |
| I use securities with maturities close to the explicit projection period | 72.65% |
| I use securities with maturities that are not directly related to the explicit projection period | 27.35% |

**Source:** *Prepared by the authors.*

**Table 6**
*Country Risk Premium Assumptions*

| **Regarding the country risk premium, which statement best defines your practice?** | |
|---|---|
| I use the CDS (Credit Default Swap) | 24.79% |
| I use the EMBI+ | 65.81% |
| I use a parameter not specified in the questionnaire | 9.40% |
| **Regarding the country risk premium, which statement best defines your practice?** | |
| I use the base date quote | 30.77% |
| I use the average rate based on an arithmetic mean | 46.15% |
| I use the average rate based on a geometric mean | 14.53% |
| I use an estimate without relying directly on historical references | 8.55% |

**Source:** *Prepared by the authors.*

As shown in Table 7, beta is defined based on segment benchmarks from either a set of comparable companies or sector indices. Notably, most respondents indicated that they use beta based on the local index of the stock exchange on which the comparable company is listed.

Table 8 below shows that the market risk premium primarily considers US market parameters obtained through an arithmetic mean. However, the base period used in the calculation is unclear.

In general, the appraisers indicate the use of premiums that are additional to the original CAPM model, as shown in Table 9 below. The size premium is the exception; its reference, based on data disclosed by the annual and private publication Ibbotson/Duff & Phelps, is predominant. Ultimately, the appraiser's individual knowledge of the evaluated company and the market is significant.

**Table 7**
*Beta Assumptions*

| **Regarding beta, which statement best defines your practice?** | |
|---|---|
| I use the company's own beta | 9.40% |
| I use the mean (or median) beta of comparable companies | 51.28% |
| I use the sector beta, such as that provided by Damodaran or similar sources | 33.33% |
| I use a beta identified based on sector and market understanding without relying directly on references or historical data | 5.98% |
| **Regarding beta, which statement best defines your practice:** | |
| I use the annual reference | 52.99% |
| I use the daily reference | 12.82% |
| I use the monthly reference | 19.66% |
| I use the weekly reference | 14.53% |
| **Regarding beta, which statement best defines your practice:** | |
| Not applicable | 11.97% |
| I use the local index of the company indicated as comparable as a market proxy | 45.30% |
| I use the benchmark index used to define the market risk premium as a market proxy | 42.74% |

**Source:** *Prepared by the authors.*

**Table 8**
*Market Risk Premium Assumptions*

| **Regarding the market risk premium, which statement best defines your practice?** | |
|---|---|
| I use an U.S. market parameter | 65.81% |
| I use a Brazilian market parameter | 26.50% |
| I use a parameter not specified in the questionnaire | 7.69% |
| **Regarding the market risk premium, which statement best defines your practice?** | |
| I use the implied rate using the relationship between the expected market return and the risk-free rate | 30.77% |
| I use the average rate for a period between five and ten years | 23.93% |
| I use the average rate for a period of less than or equal to five years | 24.79% |
| I use the average rate for a period greater than ten years | 20.51% |
| **For those who identified that they use the average rate, regarding the market risk premium, which statement best defines your practice?** | |
| Not applicable | 31.62% |
| I use the average rate based on an arithmetic mean | 52.14% |
| I use the average rate based on a geometric mean | 16.24% |
| **For those who identified that they use the implied rate, regarding market return, which statement best defines your practice?** | |
| Not applicable | 52.14% |
| I use the average rate for a period between five and ten years | 13.68% |
| I use the average rate for a period of less than or equal to five years | 10.26% |
| I use the average rate for a period greater than ten years | 16.24% |
| I use an estimate without relying directly on historical references | 7.69% |
| **For those who identified that they use the average rate, regarding market return, which statement best defines your practice?** | |
| Not applicable | 40.17% |
| I use the average rate based on an arithmetic mean | 41.03% |
| I use the average rate based on a geometric mean | 18.80% |

**Source:** *Prepared by the authors.*

**Table 9**
*Additional Premium Assumptions*

| | |
|---|---|
| **Regarding the size premium, which statement best defines your practice?** | |
| Not applicable | 23.08% |
| I use the Ibbotson/Duff & Phelps study as a reference | 48.72% |
| I use metrics developed internally at my company | 20.51% |
| I use an estimate without relying directly on references | 7.69% |
| **Regarding the specific premium, which statement best defines your practice?** | |
| Not applicable | 51.28% |
| I use an estimate based on a technical/scientific reference | 18.80% |
| I use an estimate based on my knowledge of the market and the company being evaluated without relying directly on references | 29.91% |
| **Regarding the illiquidity premium, which statement best defines your practice?** | |
| Not applicable | 67.52% |
| I use an estimate based on a technical/scientific reference | 18.80% |
| I use an estimate based on my knowledge of the market and the company being evaluated without relying directly on references | 13.68% |

**Source:** *Prepared by the authors.*

The other assumptions considered when calculating the discount rate are presented in Table 10. The practice used to define the debt-to-equity ratio when measuring the discount rate is unclear. Regarding the cost of third-party capital, the most appropriate approach is to use the company's current average rates while primarily considering Brazilian market parameters. Since US market data is used primarily in determining the discount rate assumptions, an adjustment is made for the inflation differential in the total cost of capital.

The appraisers primarily use the mid-term convention, the effective tax rate, and a constant cost of capital throughout the projection period. In general, they use a projection period sufficient for the company to reach maturity.

According to Table 11, the appraisers calculate the value at "perpetuity" using the Gordon model. This model estimates the perpetual period based on cash flow growth at a constant rate, generally limited to long-term inflation. The effects of tax benefits are not perpetuated. In most cases, the perpetual cash flow is based on the free operating cash flow of the last projection period, and a net CAPEX of zero is assumed so that the investment equals depreciation. The appraisers disagree about adjusting the perpetual growth rate g based on the representativeness of the "perpetuity" moment in the company's total value.

Table 12 shows that projections are usually made in nominal terms, taking into account an inflation curve over the projected period. The projected growth should align with the sector's economic outlook.

The appraisers have differing opinions on the projected margins: some use sectoral margins as a reference, while others claim that the projections are based exclusively on the evaluated company's expenditure structure. Depreciation calculations are primarily based on rates compatible with each fixed asset component, and variations in working capital needs are supported by historical financial cycles.

## 4.2. Correspondence Analysis

Hair et al. (2005) explain that correspondence analysis is a statistical technique used to examine relationships between variables through visual representation. Elements that are spatially close on the map reflect relative similarity. Proximity on the map indicates a strong association; therefore, when an association is identified, one answer is associated with a particular answer to another question.

In this study, the correspondence analysis considered three characteristics of the sample profile: company qualification, number of years of experience, and position held in the company. These factors were considered due to their relationship with professional experience and maturity, as well as the different conditions that different groups of companies may represent. They were then associated with the other responses. Figure 1 below shows the graphical representation obtained from the correspondence analysis. The graphical proximity highlights the associations between the variables. In this example, it is evident that individuals employed in financial advisory or consulting firms tend to favor the firm's discounted cash flow method.

**Table 10**
*Other Assumptions Considered in the Discount Rate*

| | |
|---|---|
| **Regarding the debt-to-equity ratio, which statement best defines your practice?** | |
| I use the debt-to-equity ratio based on the industry benchmark | 12.82% |
| I use the debt-to-equity ratio based on comparable companies | 32.48% |
| I use the debt-to-equity ratio of the company itself at book value (balance sheet) | 34.19% |
| I use the debt-to-equity ratio of the company itself at market value | 20.51% |
| **Regarding the cost of third-party capital, which statement best defines your practice?** | |
| I use the company's current average rates | 47.86% |
| I use the risk-free rate plus a spread based on a credit risk assessment simulation of the company being evaluated | 21.37% |
| I use the rate obtained from comparable companies | 11.11% |
| I use the rate obtained in the most recent contract as a reference | 19.66% |
| **Regarding the cost of third-party capital, which statement best defines your practice?** | |
| The composition of the cost of third-party capital considers the risk-free rate of the US market and the country risk premium | 27.35% |
| The composition of the cost of third-party capital considers the risk-free rate of the Brazilian market | 45.30% |
| Not applicable | 27.35% |
| **For those who responded that they use US market parameters, regarding the inflation differential (Brazilian inflation vs. US inflation), which statement best defines your practice?** | |
| I apply the inflation differential to some element(s) that make up the cost of equity obtained from US parameters | 35.04% |
| I apply the inflation differential to the entire cost of equity obtained from US parameters | 64.96% |
| **Regarding the discount rate, which statement best defines your practice?** | |
| I use the mid-term convention and update the rate considering capitalization every mid-term | 71.79% |
| I consider the full period and update the rate taking into account capitalization for the complete cycle | 28.21% |
| **Regarding the tax rate, which statement best defines your practice?** | |
| I use the effective rate | 79.49% |
| I use the marginal rate | 20.51% |
| **Regarding the weighted average cost of capital, which statement best defines your practice?** | |
| I use a fixed cost of capital for the entire projection | 68.38% |
| I use a cost of capital that varies according to the debt-to-equity ratio, the characteristics of the debt, and macroeconomic parameters throughout the period (rolling WACC) | 31.62% |

**Source:** *Prepared by the authors.*

**Table 11**
*Perpetuity Assumptions*

| | |
|---|---|
| **Regarding the projection period, which statement best defines your practice?** | |
| I use the period necessary for the company to reach maturity, which can be a small or considerable number of years | 61.54% |
| I use a projection period of up to five years | 9.40% |
| I use a projection period of up to ten years | 29.06% |
| **Regarding perpetuity, which statement best defines your practice?** | |
| I use a calculation based on the Gordon model | 82.05% |
| I use an exit market multiple | 10.26% |
| I use a parameter not specified in the questionnaire | 7.69% |
| **Regarding perpetuity, which statement best defines your practice?** | |
| I use the free operating cash flow reference from the last projection period | 65.81% |
| I use a specific projection period, projecting all accounts and adjusting perpetuity conditions | 30.77% |
| I use a method not specified in the questionnaire | 3.42% |

**Table 11**
*Cont.*

| **Regarding perpetuity, which statement best defines your practice?** | |
|---|---|
| I use the reference that CAPEX will be equal to depreciation, resulting in net CAPEX equal to zero | 59.83% |
| I use a reinvestment rate that links growth to the cost of capital, ensuring that there is no value creation in perpetuity | 17.95% |
| I use a reinvestment rate that links growth to return on investment | 22.22% |
| **Regarding perpetuity, which statement best defines your practice?** | |
| I use a growth rate g limited to the long-term inflation projection | 76.92% |
| I use a growth rate g that is higher than the long-term inflation projection | 23.08% |
| **Regarding perpetuity, which statement best defines your practice?** | |
| The representativeness of the perpetuity moment in relation to the total value of the company does not impact my definition of the perpetual growth rate g | 52.99% |
| I can adjust the perpetual growth rate based on the representativeness of the perpetuity moment in relation to the total value of the company | 47.01% |
| **Regarding perpetuity, which statement best defines your practice?** | |
| I do not perpetuate the effects of tax benefits | 77.78% |
| I can perpetuate the effect of tax benefits | 22.22% |

**Source:** *Prepared by the authors.*

**Table 12**
*Cash Flow Assumptions*

| **Regarding free cash flow, which statement best defines your practice?** | |
|---|---|
| I prefer to make projections in nominal terms | 76.07% |
| I prefer to make projections in real terms | 23.93% |
| **Regarding free cash flow, which statement best defines your practice?** | |
| I prefer to make projections in dollars | 5.13% |
| I prefer to make projections in Brazilian reais | 94.87% |
| **Regarding free cash flow, which statement best defines your practice?** | |
| I use revenue growth rates for the projection period based on the business plan, but ensure that they align with the sector's economic outlook | 76.07% |
| I use revenue growth rates for the projection period based exclusively on the business plan | 23.93% |
| **Regarding free cash flow, which statement best defines your practice?** | |
| I use industry or comparable company margins as a benchmark for expense projections | 48.72% |
| I use individual company characteristics to project the expense structure without referring to industry margins or comparable companies | 51.28% |
| **Regarding free cash flow, which statement best defines your practice?** | |
| In nominal projections, I use the inflation curve over the projection period | 82.05% |
| In nominal projections, I use a fixed inflation rate over the projection period | 17.95% |
| **Regarding depreciation, which statement best defines your practice?** | |
| I use a rate based on the historical depreciation carried out by the company being valued | 16.24% |
| I use a rate compatible with each of the elements that make up the fixed assets of the company being valued | 50.43% |
| I use an average rate based on the elements that make up the fixed assets of the company being valued | 33.33% |
| **Regarding the variation in working capital requirements for companies already in operation, which statement best defines your practice?** | |
| I use the expected financial cycle for each operating account | 35.04% |
| I use the average historical financial cycle to project operating accounts | 49.57% |
| I use a curve that varies the financial cycle over the projection period for operating accounts | 15.38% |

**Source:** *Prepared by the authors.*

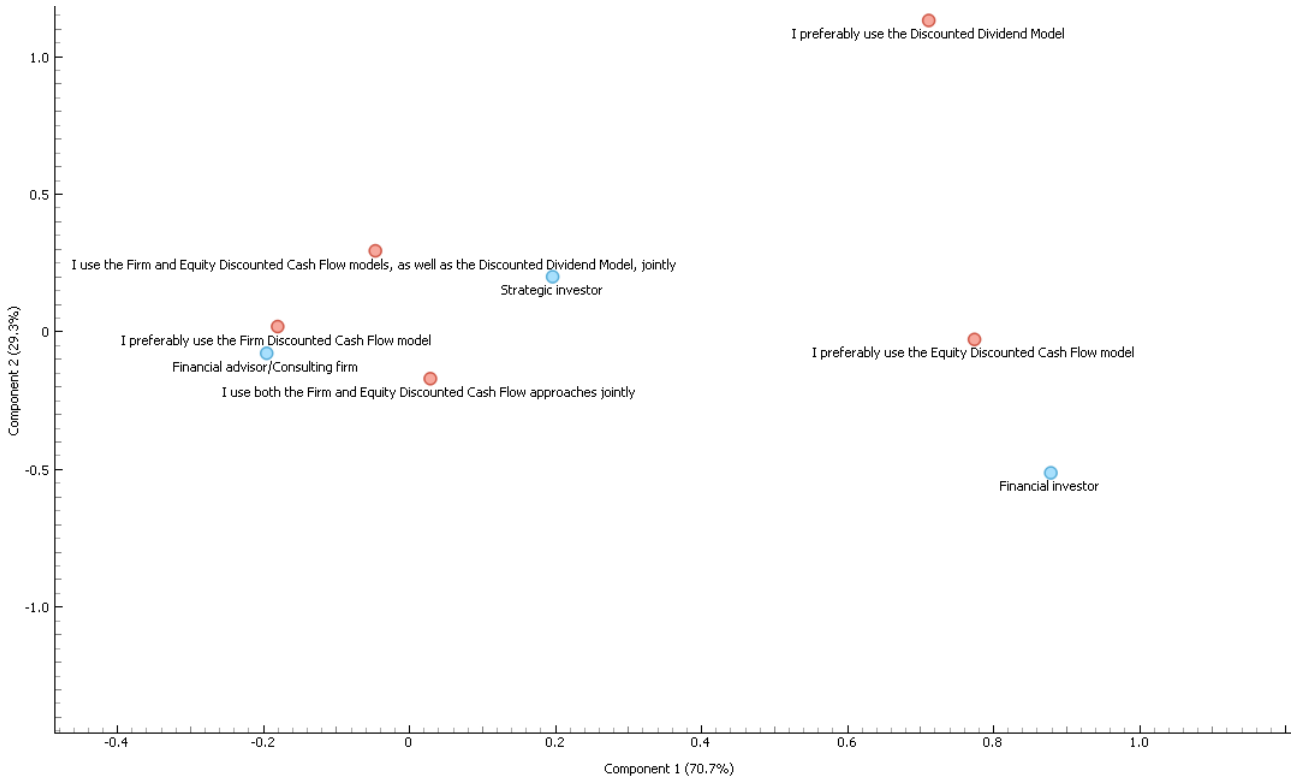


**Figure 1** *Example of the representation resulting from the graphical correspondence analysis obtained through Orange Data Mining, in which each axis represents a question used to identify associations between responses*
**Note:** *Component 1 – Question: "What is the best qualification for your company?" and Component 2 – Question: "Regarding the discounted cash flow methodology, which statement best defines your practice?"*
**Source:** *Prepared by the authors based on Orange Data Mining.*

The correspondence analysis identified strong associations in 35 of the 49 questions addressing the assumptions used in valuations. In some cases, the association was relevant to more than one group of characteristics in the sample. Fourteen questions had strong associations for financial advisors or consulting firms, which was the main reason for more uniform behavior.

The highlights include the following: representatives of financial advisors or consulting firms primarily use discounted cash flow as their benchmark and relative valuation as secondary corroboration; they use the EMBI+ to identify the country risk premium; they use the mean (median) beta of comparable companies with a monthly benchmark; they use an average of more than 10 years to calculate the market risk premium; they use the publication of a study conducted by Ibbotson/Duff & Phelps as a reference for the size premium; they consider the mid-term convention; they use the rolling WACC; in perpetuity, they use the reference that CAPEX will be equal to depreciation, resulting in net CAPEX equal to zero and a growth rate g limited to the long-term inflation projection, without the representativeness of the perpetual period impacting the growth rate g; they make projections in nominal terms; and, for depreciation, they use a rate compatible with each of the elements that make up the fixed assets of the company being valued.

This practice contrasts with strategic investors' concern about the representativeness of the perpetual period in company value, which may prompt them to adjust the growth rate g. Additionally, their response regarding the size premium suggests that it is not applicable, indicating that they typically do not consider it alongside the traditional CAPM model.

Using Brazilian market parameters to define the market risk premium is strongly associated with strategic investors. Strategic investors usually do not perpetuate tax benefits. They consider the acquirer's specific synergies, and the acquired company's operating results are paramount in pricing, even if the buying company has considerably different results. They prefer to make projections in real terms.

Experience showed a significant set of strong correlations. Professionals with less than five years of experience indicated that they use a combination of the firm's and shareholders' cash flows, use the base date price to define the risk-free rate, use an annual reference to calculate beta, use the benchmark index to define the market risk premium as a market proxy, and calculate perpetuity based on free operating cash flow for the last period and a growth rate g limited to the long-term inflation projection. They can adjust the growth rate g based on the representativeness of the perpetual period in relation to the company's value.

On the other hand, professionals with between five and ten years of experience are strongly associated with considering the individual characteristics of a company when projecting its expense structure. They do not use industry or comparable company margins as a reference. Rather, they use the inflation curve for nominal projections and consider the historical average financial cycle when projecting operating accounts.

Professionals with 10 to 15 years of experience are strongly associated with using market proxies. They use the local index of the company indicated as comparable in the beta calculation, apply a specific premium based on technical/scientific references, consider the marginal tax rate, use a fixed cost of capital for the entire projection, and indicate that the representativeness of the perpetuity moment in relation to the total value of the company does not impact the definition of the perpetual growth rate g. This diverges from the correspondence identified for professionals with less than five years of experience.

Professionals with over 15 years of experience typically ensure consistency between the revenue growth represented by the company's business plan and the economic sector bases, and they do not perpetuate the effects of tax benefits.

Finally, the position held in the company does not signal different strong associations in relation to the practice. However, professionals in positions below the management level are usually associated with considering the benchmark index used to define the market risk premium as a market proxy and using fixed capital costs throughout the projection.

Managers' responses are strongly linked to using the company's debt-to-equity ratio at book value, considering beneficial synergy effects, considering the inflation curve in nominal projections, and using an average depreciation rate based on the fixed assets of the company being valued.

Professionals in C-level positions or partners, on the other hand, are strongly associated with using securities with maturities not directly related to the explicit projection period when defining the risk-free rate in projections that do not consider perpetuity. For third-party capital, they use the rate obtained in the most recent contract. They consider a growth rate g that is higher than the long-term inflation projection. They prefer to make projections in Brazilian reais. They also use industry or comparable company margins as a benchmark for expense projections.

## 5. DISCUSSION

Although the questionnaire was administered at a specific point in time, the findings are not dated. The practice is the result of the agent's understanding developed during their valuation work. This understanding is based on technical knowledge and professional experience and tends to endure over time. The sample profile presented in Table 1 confirms that these are mostly professionals with at least five years of experience at the manager level or higher. For these professionals, behavior that has been consolidated and matured over time is expected.

The findings corroborate Koller et al.'s (2022) perception of a preference for the discounted cash flow method among agents but indicate its use in combination with relative valuation, in line with Bancel and Mittoo's (2014) findings. However, Brotherson et al. (2014) pointed out that the discounted cash flow method would not be used for early-stage companies. Furthermore, Pinto et al. (2019) revealed a preference for relative valuation.

However, the findings from this research suggest divergences and distinct practices regarding many of the assumptions underlying valuations for merger and acquisition purposes, despite greater uniformity in the behavior of financial advisors and consulting firms.

Brotherson et al. (2014) found significant alignment among the 11 respondents from US investment banks included in their study. However, Bancel and Mittoo (2014) highlighted significant discrepancies in the methods used to calculate the discount rate and project future cash flows. Additionally, Pinto et al. (2019) identified notable differences related to geographical factors and employer type.

As pointed out by Fernández and Bilan (2013), the possibility of errors in the valuation process must be considered. This aspect raises doubts about the rationality of the agents involved and prompts questions about which cognitive biases may influence transactions, as Pereiro (2016) indicated.

In this context, it is important to note that minimum revenue and/or EBITDA levels are relevant in identifying target companies, according to the respondents. This suggests that above certain revenue and/or EBITDA levels, these companies become potential targets and are treated equally in the process. If this interpretation is valid, it may be misaligned with the practice of constructing the cost of capital, particularly with regard to the use of the size premium. As long as the company meets the required levels, there is no reason to treat it differently, even though size is considered a risk factor by buyers.

The appraisers indicate that they consider synergies, including those specific to the acquirer, in the valuation process to price the transaction, as identified by Brotherson et al. (2014). These responses suggest that appraisers are willing to share the value that could be obtained exclusively by the acquiring company with the seller. Meanwhile, strategic investors also demonstrate a strong association with the response signaling the primacy of the acquired company's results in the valuation process. Thus, it is possible that transaction prices exceed the fair value of a company when operating conditions are considered.

Although it is not the majority position, it is relevant to note that 15% of the appraisers indicate that the assumptions can be revised to align the valuation result with multiples perceived through relative valuation or analysis of comparable company multiples. As Serra and Wickert (2021) point out, this percentage may be influenced by the herd effect. However, this response aligns with the notion that most rely on discounted cash flow and use relative valuation or multiple analysis primarily to corroborate the identified value – a practice commonly associated with financial advisors and consulting firm members.

Interestingly, although the majority indicated the CAPM model for identifying the cost of equity, the basic assumptions of the classical conception were not unanimously selected. The definition of the rate of return by investors shows diverse behavior among appraisers, especially with regard to the definition of the maturity of the securities and the average term used as a reference in its measurement. Nevertheless, it is evident that the parameters generally align with the behavior of the US market, with some adjustments to the reality of the Brazilian market. Reference to a Brazilian market rate for the risk-free rate was associated with professionals who had between 10 and 15 years of experience, as well as for the market risk premium for strategic investors.

Beta calculations are mostly performed using data from the stock exchange where the company is listed as a proxy for market return without necessarily comparing it to the market return used to measure the market premium. In this sense, the length of experience signaled different associations in the responses. Additionally, beta is calculated based on a specific selection of comparable companies, suggesting an increase in subjectivity when defining the premise. This finding is consistent with the results of Bancel and Mittoo (2014), particularly among financial advisors and consulting firms. This raises the question of whether all agents use the same selection of comparable companies.

Since additional premiums are often considered based on the CAPM model, it is reasonable to assume that the cost of capital, a critical component of the valuation process, may have a range of values with significant discrepancies between appraisers. This is reinforced by the fact that additional premiums are supported by appraisers' private knowledge, which is derived from their familiarity with the company and the market. However, a strong association with the response "not applicable" was identified among strategic investors when asked about the premise used to identify the size premium. This can be interpreted as an indication that strategic investors do not usually use this additional premium. Including additional premiums signals a change from Cunha et al.'s (2018) findings for Brazil. They examined reports on public tender offers between 2005 and 2009 and discovered that situations in which premiums other than Brazil risk were included were rare. The result, however, is similar to that of Brotherson et al. (2014) and Bancel and Mittoo (2014), in which the majority of respondents included the size premium.

Similarly, the assumptions related to cash flow construction are not homogeneous either, as evidenced by the variety of conditions represented in the responses. Nevertheless, cash flows are generally projected in nominal terms, considering an inflation curve over the projection period. Some appraisers consider perpetuating tax benefits despite the Brazilian institutional scenario and political and economic instability. The perpetual period is calculated using the Gordon model based on cash flow growth at a constant rate.

Some divergent behaviors were identified, especially among financial advisors, members of consulting firms, and strategic investors. Financial advisors and consulting firm members tend to use a fixed cost of capital in all projections, whereas strategic investors use the rolling WACC technique. A second aspect relates to the representativeness of the perpetual period in relation to the company total. Strategic investors can adjust the growth rate according to representativeness. However, financial advisors and members of consulting firms claim that representativeness does not impact the perpetual period growth rate g.

## 6. CONCLUDING REMARKS

Valuing companies is challenging, especially in emerging markets (Pereiro, 2006). This complexity stems from the need to make assumptions about the future prospects of the companies being valued (Damodaran, 2024; Fernández, 2007; Kaplan & Ruback, 1994; Koller et al., 2022; Luzio, 2014; Serra & Wickert, 2021).

This article focuses on the debate about valuation practices geared toward mergers and acquisitions in Brazil, an emerging market. The article is based on structured interviews, which Duarte (2004) argues are an important method for identifying practices. The interviews are similar to the proposals of Brotherson et al. (2014), Bancel and Mittoo (2014), and Pinto et al. (2019). However, this study differs in scope, questionnaire specifics, and sample definition. The sample was not restricted to a specific niche, and the study focuses on Brazilian market practice. The evidence obtained suggests a path to rationality among agents, indicating that this behavior is widely adopted by investors.

As the respondents are mostly experienced professionals with at least five years of valuation experience and a managerial position, the research findings are expected to endure over time. However, the results do not allow us to conclude that a common practice exists, which contrasts with the findings of Brotherson et al. (2014) and is in line with the studies by Bancel and Mittoo (2014) and Pinto et al. (2019). While financial advisors and consultants exhibit greater similarity, the absence of dominant behavior raises questions about the rationality of the agents involved and prompts inquiry into which cognitive biases may influence transactions. This is a topic that could be explored in future studies.

Some of the evidence obtained warrants further investigation. For instance, the relevance of using the size premium, the possibility of transaction prices exceeding the company's fair value when limited to its operating conditions, and the potential for methodological and/or mathematical errors are all relevant topics for further investigation.

Additionally, different definitions of the underlying valuation assumptions can lead to significant variation in the values obtained during the valuation process. These impacts may also warrant further study.

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## DATA AVAILABILITY STATEMENT

Datasets related to this article will be available upon request to the corresponding author.