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# Earnouts in mergers and acquisitions: a systematic literature review of a contingent payment mechanism

Niklas Dahlen<sup>1</sup>

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## Abstract

Defining the deal value in mergers and acquisitions is inherently complex and often constitutes an inflection point for the parties involved. By paying part of the deal value at a later stage according to predefined goals, earnouts are intended to alleviate information asymmetries and help bridge valuation differences. Despite their wide application in practice, research on earnouts remains fragmented. This study presents the first systematic literature review of earnouts, mapping the scattered research landscape by analyzing 64 papers published between 1970 and 2023. The review categorizes the body of earnout research into three distinct streams: the motives for employing earnouts, their implications, and the nuances of their contractual arrangements. Based on this synthesis, research gaps are identified that present a comprehensive road map for future research. This study enables investors to employ earnouts more successfully and guides scholars to pursue further earnout research based on its holistic overview.

**Keywords** Earnout · Mergers and acquisitions · Contingent payments · Performance commitment · Contingent claims · Information asymmetries · Systematic literature review

**JEL Classification** G34 · G32 · G13 · D82

## 1 Introduction

The M&A market reached a new all-time high of almost 58,000 transactions globally in 2022, indicating strong growth in recent years (Institute for Mergers Acquisitions and Alliances 2023a). Although this new record illustrates the significance of M&A in the corporate world, it does not reflect the complexities facing the parties involved, which often result in the termination of planned M&A

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deals (Bauer and Matzler 2014). Both the applied valuation techniques and the underlying assumptions can result in diverging perceptions of acquirer and seller on the fair value (Koller et al. 2010). To bridge potential valuation differences, parties can leverage the contingent structure of earnouts, which Bruner (2001) defines as “[...] an arrangement under which a portion of the purchase price in an acquisition is contingent on the achievement of financial or other performance targets after the deal closes” (Bruner 2001, p.1). Besides its use to “bridge a valuation gap,” a recent survey of investors shows that earnouts are used to protect acquirers from overpayment, reduce information asymmetries, and increase the takeover premium (Dahlen et al. 2024).

The economic relevance of earnouts is underlined by their already widespread and increasing use in transactions, their repeated use in large acquisitions, and the challenges involved in closing transactions, to which the high proportion of terminated deals attests. Studies focused on the North American market estimate that, during the 1990s, 4% of transactions included earnouts (Datar et al. 2001; Kohers and Ang 2000); this share increased to 15% before the financial crisis (Bates et al. 2018). Similarly, the presence of earnouts in Europe is estimated at 26% in 2021, up from 19% during 2010–2020 (CMS 2022). Because current studies focus on public transactions, the true extent of earnout usage is likely greater, which is significant in that earnouts are particularly effective at reducing information asymmetries in private transactions.<sup>1</sup> The increasing application of earnouts is likely to pertain due to the volatile market conditions and parties’ desire to protect against potential overpayment. Another indicator of earnouts’ importance is the pattern of large transactions being made across differing industries, such as BHP’s sale of its Australian coal mines in 2021 through a transaction with a total volume of 1.1 \$bn and up to 150 \$m in earnout. Finally, 8–12% of M&A deals are terminated each year, destroying the potential for value creation as well (Institute for Mergers Acquisitions and Alliances 2023b; S&P Global 2023). Although numerous potential reasons to terminate a given transaction exist,<sup>2</sup> a volatile economic environment likely impedes the forecast of future cashflows and thus affects the derived valuation (e.g., Dang et al. 2022). Again, earnouts may prove valuable as an instrument to bridge valuation gaps because they protect the acquirer from overpayment while assuring the target of a fair valuation.

Earnouts are by no means new elements of mergers and acquisitions; however, by the turn of the millennium, they had been studied only by Kohers and Ang (2000) and Datar et al. (2001).<sup>3</sup> Similarly, although multiple systematic literature reviews in

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<sup>1</sup> A similarly high earnout share was reported in a Germany-focused survey of finance professionals. More than half of the respondents stated that they use earnouts in more than half of their transactions (Dahlen et al. 2024).

<sup>2</sup> Please see Heath and Mitchell (2023) for an extensive discussion of the risks in the pre-closing stages of M&A transactions.

<sup>3</sup> Despite of their long history, earnouts are often confused with other valuation adjustment mechanisms; hence, I derive a delimitation from similar instruments, which can be found in the appendix. In the remainder of this paper, I focus on earnouts and performance commitments as post-closing contingent payments that are linked to financial or non-financial targets. To illustrate the structure, the appendix includes an example of a recent earnout agreement.

Finance and M&A have been published recently, none have considered acquisition structure in general or, more specifically, value adjustment mechanisms in transactions. Furthermore, in a recent bibliometric analysis, Cumming et al. (2023) called for research into the mechanisms used to reduce information asymmetry, such as earnouts. The lack of a holistic view of earnouts is reflected in the dispersed research landscape within this field.

In this study, I aim to synthesize the latest findings on earnouts by answering the following three research questions: (1) *How has research on earnouts evolved over time?*, (2) *What are the key research themes, and how can they be synthesized?* and (3) *What are the potential avenues for future research on earnouts?* Using a seven-step filtering strategy, I identify 64 papers and categorize them into three research streams based on open and axial coding. I thereby systematically discuss the drivers of earnout use, implications for targets and acquirers, and how earnouts are structured. Based on this holistic and granular analysis, I infer three main findings for investors and scholars. First, scholars have studied the determinants of earnout use across more than 70 variables: Robust results have been reported for listing status and the industry of the target, whereas more ambiguous results are reported for acquirer and transaction determinants, including the role of cross-border deals. Second, earnout deals yield superior (short-term) abnormal returns, adding an important element to the vast but ambiguous research stream of capital market reactions to M&A. Similarly, although the takeover premium increases with the use of earnouts, the capital market does not penalize the inflated price. Third, I highlight the need for additional research regarding the structure of earnouts. While scholars agree that advanced valuation techniques such as option pricing are adequate, only limited research has been directed toward this. Similarly, key contractual elements such as the chosen performance metric, have received only limited scholarly attention. This paper is structured as follows: Sect. 2 details the review methodology and the identified research streams. Section 3 focuses on the development of earnout research and leads to the discussion of the three research streams in Sects. 4–6. Finally, Sect. 7 presents a comprehensive overview of future research avenues, followed by the conclusion of this work in Sect. 8.

## 2 Scope and research methodology

Systematic literature reviews have been applied in various disciplines and are thus not a new approach. In this paper, I follow the research methodology that Webster and Watson (2002), Tranfield et al. (2003), and Booth et al. (2021) employed in their seminal work and enrich it with ideas derived from other fields, such as those presented by Levy and Ellis (2006) and Zupic and Čater (2015). In addition, I consider the approaches that Baker et al. (2021) and Baker et al. (2020) employed, as they have conducted literature reviews of two leading finance journals. Although the individual approaches of these sources differ slightly, they are alike in that their first steps focus on selecting relevant databases, defining the applied keywords, executing the search and, ultimately, screening and making final selections of relevant articles (Tranfield et al. 2003; Booth et al. 2021; Webster and Watson 2002; Watson and

Webster 2020; Levy and Ellis 2006; Kraus et al. 2022; Fisch and Block 2018). Reproducibility and objectivity are key prerequisites for meaningful systematic literature reviews; therefore, I summarize the detailed seven-step process in Table 1 and describe it in the next section (Briner and Denyer 2012; Fink 2019).

Because research is dispersed within the field of finance in general, and on the subject of earnouts in particular, I followed Vom Brocke et al. (2015) and searched three distinct databases: Business Source Complete (EBSCO), Scopus, and Web of Science (WoS). These databases were selected based on other finance-related literature reviews, such as those by Baker et al. (2020) (who used Scopus), Cumming et al. (2022) and Müllner (2017) (who used Web of Science), and Ego (2022) (who used EBSCO). In addition, I employed Google Scholar in a later stage to ensure that all relevant articles were included (Webster and Watson 2002; Wolfswinkel et al. 2013). The definition of keywords followed an iterative process proposed by Rowley and Slack (2004). Initial keywords include “contingent payment,” “earnout,” and “contingent consideration” and were refined throughout the review process. This iterative process ensured that not only variations of the word “earnout” were included but also adjacent terms, such as “deferred payment.” At various stages during the definition of the keywords, I discussed them with my fellow doctoral students, as well as senior researchers in our department. I also shared the final selection with private equity investors to confirm its completeness and adequacy. The final list of applied keywords and combinations is reported in the appendix. The keywords are defined in both English and German to account for potential German articles, as I hypothesized that earnouts are often used in Europe, including in Germany (CMS 2022). Using the defined keywords across the selected databases yielded 798 entries among the studies published until mid-January 2024. First, I deleted all duplicates among the databases, reducing the sample by 274 to a total of 524. Second, I filtered out all papers that were not ranked; for the rankings, I included the classification of “Verband der Hochschullehrerinnen und Hochschullehrer für Betriebswirtschaft e.V” (VHB) (2022) and the Chartered Association of Business Schools (ABS) (2022), with lower bounds of ‘D’ and ‘1,’ respectively.<sup>4</sup> This restriction aligns with those used in other systematic literature reviews (such as Bouncken et al. 2015). This excluded non-ranked papers, book chapters, other working papers, and non-ranked conference proceedings, and it reduced the sample by 251, yielding a total of 273 articles. Subsequently, I performed a qualitative review of the article titles, abstracts, and keywords to ensure that the papers focused on earnouts. This step reduced the selection by 203 and mostly eliminated articles that included the keyword “method of payment” but were not focused on earnouts. The 70 remaining articles qualified for full-text screening, which reduced the sample number to 51. The key reason for excluding articles at this stage was their focus on topics other than earnouts according to my narrow definition. To ensure that no relevant studies were omitted due to these strict criteria, I applied forward and backward searches by scanning the references of the selected papers and the contributing authors’ work (Webster and Watson 2002). This yielded another 10 papers, which were checked for their eligibility

<sup>4</sup> To improve uniformity, I only show one journal ranking in the overviews. If a paper is ranked in both overviews and has different rankings, I report the higher of the two.

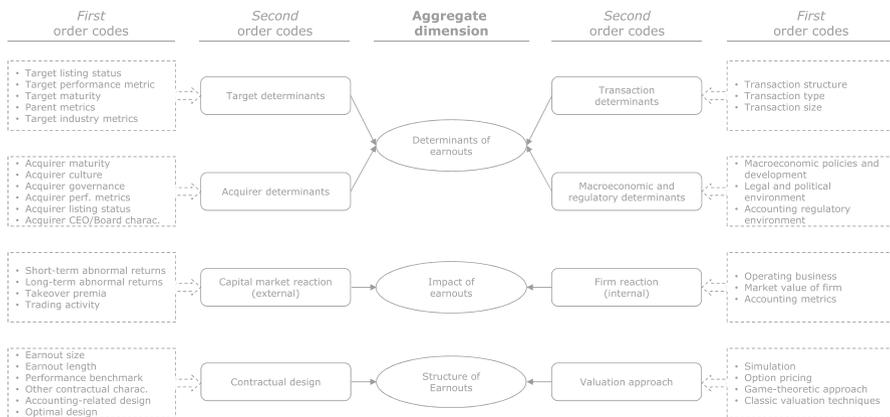
**Table 1** Applied filtering strategy—This table presents the filtering strategy and the number of papers at different stages in the process

Filtering steps	Databases			Sub-totals	Diff
	EBSCO	Scopus	WOS		
Step 1: Initial results from search	268	368	162	798	
Step 2: Elimination of duplicates		164	110	524	(− 274)
Step 3: Elimination of articles below a certain ranking	80	140	31	273	(− 251)
Step 4: Elimination based on abstract and keyword screening	135	51	17	70	(− 203)
Step 5: Elimination based on full-text screening	12	7	0	51	(− 19)
Step 6: Addition based on backward and forward searches				10	+ 10
Step 7: Addition of conference papers				3	+ 3
Totals	41	6	4	13	64

“Other” includes the results of backward/forward searches using the cited references of the identified papers. Furthermore, relevant finance conferences were scanned and Google Scholar was used as an additional sanity check

in terms of ranking and qualitative fit. In addition, I ran a Google Scholar search to ensure that I had included all relevant papers. Comparing those search results to the three databases, as well as the forward and backward search results, yielded no additional publications. Finally, to ensure that the latest research was included and to mitigate potential publication bias, I followed the recommendation of Webster and Watson (2002) to review high-quality conferences as well. To do this, I limited my search to selected conferences from 2019 to 2023, as I assumed that high-quality work presented before 2019 had already been published. Those conferences included the EFMA Annual Meeting, AfA Annual Meeting, FMA Annual Meeting, Realoptions Meeting, EFA Annual Meeting, MFA Annual Meeting, WFA Annual Meeting, and NFA Annual Meeting, and they were selected based on their fit to the subfield of M&A, as well as whether they were linked to a ranked journal (for example, the AfA is associated with the *Journal of Finance*, which is ranked 4 (ABS) and A+ (VHB) Keele et al. 2007). As a result, my final selection consisted of 64 papers. I did not restrict the search to “finance” disciplines; this ensured that any potential contributions from the economics and accounting fields or other social sciences were included. I also left the publication timeframe unrestricted to allow for inclusion of all relevant papers.

To analyze the retrieved studies, I followed Webster and Watson (2002) and derived a concept matrix across the articles. Given the fragmented research landscape on earnouts, this inductive approach was useful in uncovering patterns and structure the research field. Furthermore, I incorporated ideas from Wolfswinkel et al. (2013) and Gioia et al. (2013), who further operationalized concept-centric approaches based on grounded theory (Strauss and Corbin 1990; Glaser and Strauss 2017). According to this theory, Wolfswinkel et al. (2013) proposed reading through



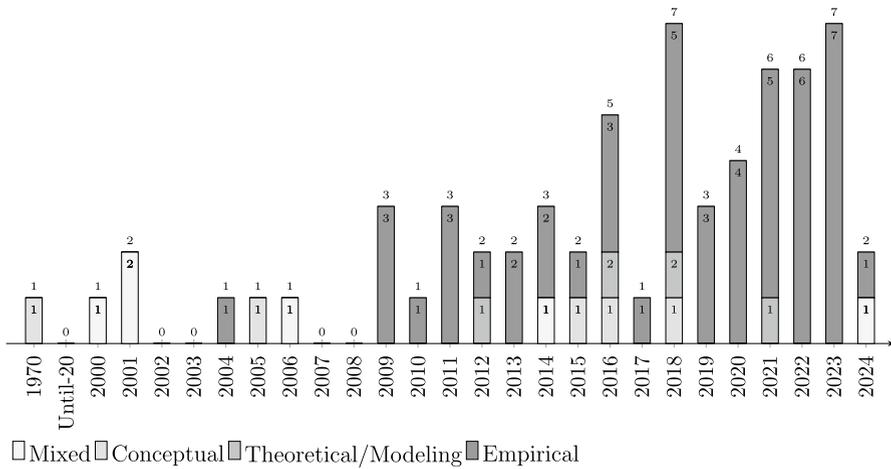
**Fig. 1** Overview of the coding process

each of the selected papers for a literature review to highlight relevant information. For the iterative process of identifying potential patterns, I used open, axial, and selective coding to derive my final framework. During open coding, I identified 35 first-order concepts, including “acquirer governance” or “short-term abnormal returns.” Then, to further cluster the results and identify links between the concepts, I derived eight second-order groups, including “acquirer determinants” and “capital market reactions.” In the final step, I applied selective coding to further aggregate the dimensions. To do so, I adopted the perspective of a user of earnout contracts and developed questions such as “What macroeconomic environment supports the use of earnouts?”, “How will the market react to an earnout deal?”, and “Which earnout structure supports the respective objectives?” This allowed me to derive the three final concepts, which are the determinants of earnout use, the implications of earnouts, and earnout structure, which I will refer to collectively in this paper as “research streams.” The coding process and results are shown in Fig. 1.

### 3 Evolution of research streams and key characteristics

Research on earnouts has burgeoned in recent years, starting in the early 2010s. Figure 2 illustrates the publication pattern, showing that 67% of all earnout papers have been published in the last 10 years. This is surprising, given that both Kohers and Ang (2000) and Datar et al. (2001) published their pioneering work in the early 2000s, but ultimately, neither of these works sparked a wave of research into earnouts. Still, the increasing application of earnout is mirrored in the growing scholarly interest.<sup>5</sup>

<sup>5</sup> According to the initial studies, which include data from the 1990s, earnouts have been used in 4% of transactions (e.g., Datar et al. 2001; Kohers and Ang 2000; Ragozzino and Reuer 2009) Bates et al. (2018) report a spike in earnout use in the 2010s, up to 15% of transactions. In addition, in studies that



**Fig. 2** Development of earnout publications: 64 papers in total, based on the filtering strategy described above. The stacked bars illustrate the different research methodologies applied

Similarly, earnout research is not equally distributed, but has two concentrations according to the research methodology and geographic focus. First, in terms of research methodology, 77% of the identified papers on earnouts use empirical methods, whereas only 9% use mixed methods. Second, research in this field is largely focused on North America and China, which account for 27% and 25% of the total publications, respectively. Research focusing on Europe, conversely, accounts for only seven papers (11%) in this field. The largest research stream, in terms of publications, addresses the economic implications of employing earnouts and comprises 45 publications (46%). The next-largest research stream investigates the determinants of earnouts and potential drivers, encompasses 34 publications (35%). These studies mostly apply empirical research strategies and are generally published in highly ranked journals. The final research stream contains work on earnout structure and comprises 19 publications (19%).

In summary, research into earnouts has spiked in recent years, primarily in the form of empirical studies focused on both the North American and Chinese markets. I categorized research on earnouts into three research streams, two of which draw most of the existing scholarly interest. Although several groups of researchers are driving research in their sub-fields, no dominant research group has appeared. Therefore, it appears likely that several essential aspects of earnouts have not yet received sufficient scholarly attention.

Footnote 5 (continued)

accommodate a longer timeframe, such as Barbopoulos and Danbolt (2021), earnout use totaled 16%. Viarengo et al. (2018) show that the use of earnouts varies widely depending on the country. In their sample, 27% of transactions in the UK involved earnouts, whereas only 7% of transactions in Germany involved an earnout.

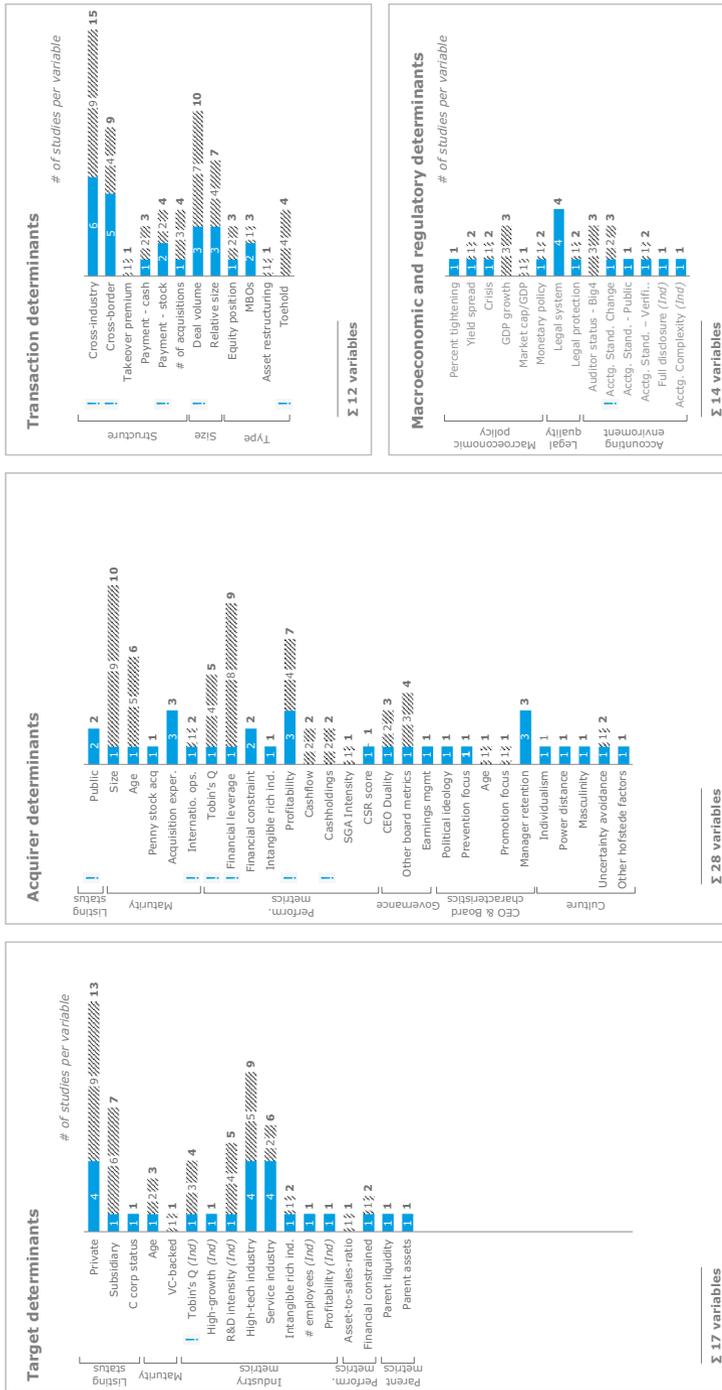
## 4 Research stream 1: determinants of earnout use

The influential contributions by Kohers and Ang (2000) and Datar et al. (2001) form the foundation of most subsequent studies on earnouts. Both foundational studies derived their hypotheses from the idea that mergers and acquisitions are prone to information asymmetries that affect acquirers' and targets' price expectations and result in diverging valuations. Accordingly, Kohers and Ang (2000) hypothesize that acquisitions occurring in environments with high information asymmetry are more likely to use earnouts. Since Kohers and Ang (2000) and Datar et al. (2001) published their work, other authors have identified multiple sources for information asymmetries and operationalized them in their studies. I have identified 34 studies that belong to this research stream, of which 28<sup>6</sup> employ empirical tests utilizing the set of 71 variables shown in Fig. 3 to assess the likelihood of using earnouts. The determinants can be grouped into four categories: (1) target determinants, (2) acquirer determinants, (3) transaction determinants, and (4) macroeconomic and regulatory determinants. The degree to which these determinants have been studied varies significantly, from the listing status of the target (which was reviewed in 13 papers, including Datar et al. (2001)) to a single study on penny-stock acquirers (Liu et al. 2023a). In addition, some of the findings are ambiguous, with 14 determinants debated in different studies. In the next section, I will discuss the four categories of determinants and highlight the research findings as well as ambiguous results.

### 4.1 Target determinants

Scholars have investigated a total of 17 variables across five subgroups related to target determinants. Among the 17 variables examined, the listing status has been the focus of most studies (13 of 28 studies), consistently yielding findings that support the hypothesis that earnout deals occur more often in the acquisition of private targets due to the greater information asymmetry in these situations. Similarly, seven studies have found support for the hypothesis that earnout deals are more likely among subsidiaries (e.g., Kohers and Ang 2000; Datar et al. 2001). In addition to the listing status, the R&D intensity of the target industry has received significant attention from scholars. The results suggest that earnouts are more likely in sectors with high R&D intensity and growth momentum (e.g., Datar et al. 2001; Cadman et al. 2014; Bates et al. 2018). After Kohers and Ang (2000) proffered their initial hypotheses, several authors investigated whether earnout deals are more likely when the target is operating in high-tech, service, or other intangible-rich industries. This assumption has been supported, and the results have been replicated across various geographies and time frames (e.g., Datar et al. 2001; Kohli and Mann 2013; Principe and Viarengo 2022; Ewelt-Knauer et al. 2011). Scholars have paid relatively little attention to other target characteristics, with only one or two publications per determinant. In analyzing the financial aspects of the target, Jansen

<sup>6</sup> Other studies that do not employ an empirical approach include Erel (2018), Patschureck et al. (2015), Caselli et al. (2006), Reuer (2005), Bruner (2001) and Dahlen et al. (2024).



**Fig. 3** Overview of tested earnout determinants. The graph highlights the number of tested variables across the different categories. The bar stacks are separated to account for primary and secondary variables. Primary variables are variables that are central to a given study (e.g., forming part of a hypothesis or an extensive discussion). Ambiguous results are marked to the left of the respective bar

(2020) observes a negative relationship between the asset-to-sales ratio and earnout use, as well as insignificant results for the target's profitability. Bates et al. (2018) demonstrate a positive relationship between the parent's liquidity and earnout use, while Ragozzino and Reuer (2009) show that younger targets are more likely to use earnouts.

Authors in the field hypothesize that earnouts are more likely in sectors abounding with intangible-asset-rich companies with high market value compared to book value. However, whereas Cadman et al. (2014) and Jansen (2020) find a positive relationship between the Tobin's Q of the target's industry and earnout use, Bates et al. (2018) observe the opposite relationship.

To conclude, earnout deals are more likely when the target is a private company or operates in an R&D-intensive or intangible-asset-rich industry. The results regarding other target characteristics are somewhat fragmented.

## 4.2 Acquirer determinants

An even higher number of 28 variables are studied relating to acquirer determinants many of which are similar to those analyzed for target determinants. These studies yield more ambiguous results, especially regarding the acquirer's financial leverage, profitability, listing status, international experience, and Tobin's Q, which will be discussed later. The most studied variable is the acquirer's size, measured in terms of market value or total assets. In line with researchers' predictions, larger acquirers refrain from using earnouts because unsuccessful transactions do not pose an existential risk to them (e.g., Kohers and Ang 2000; Barbopoulos and Sudarsanam 2012; Adra et al. 2020). A similar pattern of more experienced acquirers using fewer earnouts is observed and operationalized with the variables of acquirers' age and acquisition experience (e.g., Reuer et al. 2004; Barbopoulos and Sudarsanam 2012; Tao et al. 2022).<sup>7</sup> However, focusing on penny-stock acquirers (stocks with share prices below \$ 5), Liu et al. (2023a) find no relationship to earnout use. A single study focuses on the acquirer's cultural background, using Hofstede's framework (Ewelt-Knauer et al. 2021); they find that acquirers from countries characterized by high individualism, high masculinity, high uncertainty avoidance, and low power distance are more likely to apply earnouts (Ewelt-Knauer et al. 2021). Kohers and Ang (2000) hypothesize that earnouts can also be used to retain the management team after an acquisition, preserving important human capital and offering appropriate incentives. Surprisingly, this idea was tested by only three studies, all of which find support for the idea but apply very different methodologies, thereby precluding generalization.<sup>8</sup> The other three studies that focus on the top

<sup>7</sup> In addition, Gada et al. (2021) interacts the acquisition experience with the prevention focus of the CEO and finds supporting evidence.

<sup>8</sup> Using a small sample, Kohers and Ang (2000) show that target management is more likely to remain with a firm when the earnout is paid out. Cadman et al. (2014) assume that if an acquirer wants to retain target management, they implement lower thresholds for reaching the maximum earnout payment (Cadman et al. 2014). Barbopoulos et al. (2016) identify yet another indicator for the advantages of manager retention by showing that retention positively affects the acquirer's abnormal returns (Barbopoulos et al. 2016).

management team and governance study personal traits, ideologies, and behavior. In the first study, Elnahas and Kim (2017) find that Republican CEOs are less likely than Democratic CEOs to employ earnouts because they avoid settings with high information asymmetry. In the second study, Gada et al. (2021) show that more risk-averse CEOs (measured by their prevention focus) are more prone to using earnouts to mitigate risks. Focusing on the Chinese market, Song et al. (2023) show that managers are more likely to adopt performance commitments when (a) their compensation has a limited company performance component and (b) blockholders are about to sell shares and inflate stock prices. Given the scarcity of studies in this field, these results cannot be generalized, but they do offer initial information and a foundation for further research into the relevance of the personal characteristics of CEOs and management teams. Few scholars have investigated variables capturing the acquirer's governance. Bi (2021) and Wu et al. (2021), who both chose Chinese samples, find no significant effects across several variables such as CEO duality and board size. Similarly, using a North American sample, Prencipe and Viarengo (2022) find no significant effects for governance variables other than earnings management proxies, which make earnout use less likely.<sup>9</sup>

As stated above, multiple studies have produced ambiguous results, particularly concerning the acquirer's financial leverage and constraints. By analyzing multiple variables related to the acquirer's financials, Bates et al. (2018) conclude that earnouts are a source of financing for financially constrained acquirers. They also affirm that acquirers with no credit rating, no dividend payout, and high financial leverage are more inclined to use earnouts. The results of Bates et al. (2018) are supported by a recent study of Danbolt et al. (2023) using alternative measures for financial constraint.<sup>10</sup> However, multiple sources dispute these findings (e.g., Bi 2021; Ragozzino and Reuer 2009).<sup>11</sup> Like the target's characteristics, the relationship between acquirers' Tobin's Q and earnout use remains ambiguous (e.g., Barbopoulos and Sudarsanam 2012; Ewelt-Knauer et al. 2021). The profitability of the acquirer, which is analyzed in five papers, attracts more attention than that of the target, but these studies yield ambiguous results depending on geographic scope, reporting a negative relationship in China but a positive relationship in the US (Allee et al. 2011; Hou et al. 2015; Tao et al. 2022; Bi 2021). Although multiple studies suggest that earnouts are more often used in the acquisition of private targets, relatively little attention has been paid to the acquirer's listing status. Jansen (2020) and Allee et al. (2011) find that public buyers are more likely to utilize earnouts. Finally, the international experience of acquirers engaged in cross-border deals engenders debate. Whereas Reuer et al. (2004) find a negative relationship between

<sup>9</sup> Prencipe and Viarengo (2022) hypothesize that the likelihood of using an earnout agreement is related to the bidder's trustworthiness. They show that the acquirer's earnings management negatively affects the likelihood of using an earnout.

<sup>10</sup> Danbolt et al. (2023) use two indices, HP1 and HP2, developed by Hadlock and Pierce (2010); interestingly, they also find that earnouts are more likely to be used when the target is financially constrained (Danbolt et al. 2023).

<sup>11</sup> Erel (2018) questions whether Bates et al. (2018) selected the proper measures for financial constraint and claims that acquisition and financing decisions are not made independently of each other. Therefore, additional tests should be conducted.

foreign sales intensity and earnout likelihood, Kohli and Mann (2013) report the opposite relationship in a study focusing on the Indian market.

To summarize, acquirers are more likely to use earnouts when they require additional protection from risks involved in the transactions (e.g., when they are relatively young) and when they lack prior acquisition experience. In addition, it remains unclear whether earnouts are used as financing tools for financially constrained buyers.

### 4.3 Transaction determinants

In addition to acquirer and target characteristics, the specific characteristics of the deal have also received significant scholarly attention, with 12 distinct variables (shown in Fig. 3). However, only seven of these 12 variables yield unambiguous results; these include the number of acquisitions, size of the equity position, management buyouts (MBOs), and cash as a payment method. The size of the equity position is the only variable with a positive relationship to earnout use, meaning that a higher equity position increases the likelihood of earnout use (e.g. Reuer et al. 2004). Earnout use is negatively affected by the maturity of the M&A market, as predicted, highlighting its primary role in addressing information asymmetries (e.g., Datar et al. 2001; Allee and Wangerin 2018). The same theoretical idea appears in MBOs. Because the information asymmetries for the current management in such situations are relatively low, Datar et al. (2001), Ewelt-Knauer et al. (2011), and Ewelt-Knauer et al. (2021) show that earnouts are less likely to be used in those transactions. Finally, earnouts are less common in cash deals (Wu et al. 2021; Bates et al. 2018).

In addition to the unambiguous results described above, five deal characteristics yield contradictory findings: cross-industry deals, cross-border deals, stock as payment, absolute transaction size, and toehold transactions. Most of the studies that address cross-industry deals support the hypothesis that earnouts are more likely to be used in such deals (e.g., Kohers and Ang 2000; Datar et al. 2001; Ragozzino and Reuer 2009), although some studies report insignificant or negative coefficients (Allee et al. 2011; Ewelt-Knauer et al. 2011). The findings for cross-border transactions are even less uniform. Datar et al. (2001) assume that the likelihood of earnouts in cross-border transactions is higher given the higher uncertainty involved, but their results suggest the opposite effect; they conjecture that this is because foreign targets may not accept earnouts and tend to comply with foreign acquirers' accounting standards (Datar et al. 2001). (Their findings are consistent with Barbopoulos and Sudarsanam (2012), who analyze a sample of UK companies.) Viarengo et al. (2018) find opposite results in analyzing a global sample, as do Ewelt-Knauer et al. (2011), Ewelt-Knauer et al. (2021) in analyzing a set of European firms; similar inconsistencies occur regarding transaction size. Studies focused on the North American market typically find a positive relationship with earnout likelihood (e.g., Kohers and Ang 2000; Barbopoulos and Sudarsanam 2012; Adra et al. 2020), whereas studies focused on the European market find the opposite (e.g., Ewelt-Knauer et al. 2011, 2021). Several authors have examined the link

between payment method and earnout use, reporting a positive correlation between earnout use and cash payments but inconclusive results regarding stock payments (Bates et al. 2018; Wu et al. 2021).<sup>12</sup> Finally, studies exploring the relationship between pre-acquisition minority shares and earnout use yield ambiguous results as well (Prencipe and Viarengo 2022; Li et al. 2019; Bates et al. 2018).

Briefly, multiple authors have studied deal characteristics, such as cross-border transactions, but the persistence of ambiguous results indicates the need for additional research into many of the variables discussed above. The existing results do support the theoretical framework's assumption that earnouts act as a risk-mitigation tool. Transactions in which the parties bear lower risks (such as deals in mature markets or MBOs) are less likely to include earnouts.

#### 4.4 Macroeconomic and regulatory determinants

The 14 variables affecting earnout use in the last category can be grouped into three subcategories: (1) macroeconomic policies and development, (2) legal and political quality, and (3) the accounting regulatory environment. Although multiple studies include macroeconomic parameters, only two focus primarily on the interrelation of macroeconomics indicators and earnout use. In the first study, Bates et al. (2018) show that indicators relating to strained economic situations are positively associated with the use of earnouts (e.g., they are proxied by a tightening corporate credit market). In the second, focusing on the effect of monetary policy on earnout use, Adra et al. (2020) find support for their hypothesis that increasing interest rates and deferral from the long-term interest rate decrease earnout use because targets prefer to be paid out at the time of the transaction rather than in the future.<sup>13</sup>

Kohers and Ang (2000) again pioneered the second subcategory, hypothesizing that earnouts are more likely in acquisitions in which the parties are governed by a legal system originating from the US. This assumption was confirmed by several studies focusing on the US and UK markets (Reuer et al. 2004; Ewelt-Knauer et al. 2011). Furthermore, Viarengo et al. (2018) assume a positive relationship between enforcement quality and earnout use. They operationalize legal protection using several indices, such as the anti-self-dealing index, and find supporting evidence that earnouts are more likely to be used in settings that permit legal enforcement (Viarengo et al. 2018). The final subcategory focuses on the effects of the changed accounting standard (SFAS 141 (R)) and the overall regulatory environment (Allee et al. 2011; Allee and Wangerin 2018). SFAS 141(R) requires a fair value accounting of earnouts at the time of acquisition. Allee et al. (2011) initially found that public acquirers are less likely to use earnouts post-SFAS 141(R), attributing that change to the requirement to report predictable earnings (Allee et al. 2011). Expanding on this, Allee and Wangerin (2018) hypothesized that earnouts entail measurement and implementation risks; their results suggest that earnouts are more likely if the

<sup>12</sup> Bates et al. (2018), Wu et al. (2021) find a negative effect while Prencipe and Viarengo (2022), Viarengo et al. (2018), Wu et al. (2021) find a positive one.

<sup>13</sup> Other studies, such as Viarengo et al. (2018), include GDP measures as control variables but do not develop hypotheses around these variables.

acquirer uses a Big Four auditor in the period after SFAS 141 (R) implementation (Allee and Wangerin 2018).<sup>14</sup> These findings contrast with those reported by Jansen (2020), who posits that earnouts are less prevalent in industries characterized by stringent Conflict of interest standards, because their risk-mitigating features are less important in that context.

In summary, motivated by the idea that earnouts are a risk-mitigation tool, scholars have identified several conditions that make earnout use more likely. These include transactions involving a private target or a subsidiary that operates in an intangible-rich industry. Older and larger acquirers are less likely to use earnouts because they require less protection against the potential adverse effects of a transaction. Manager retention appears to be an important motive for applying earnouts, but it remains one of many variables that would benefit from additional studies to verify the existing hypotheses. The findings discussed are mirrored in a recent survey of finance professionals by Dahlen et al. (2024), which highlights that earnouts are used in settings of high information asymmetry, such as with unlisted and growth targets.

## 5 Research stream 2: implications of earnouts

Within this research stream, I categorized 45 studies (38 empirical or with empirical parts)<sup>15</sup> into two groups: the capital market's external reaction and firms' internal response to earnout deals. I also identify five external and two internal implication subcategories in the studies shown in Table 2. Table 2 highlights that most authors focus on short-term and long-term abnormal returns, which feature in 22 and 10 studies, respectively, followed by the effect on takeover premium. Several authors who focus on the Chinese market study the effects of earnouts on accounting measures, including earnings management and goodwill impairment. The implications of earnouts for the operating business receive relatively little attention and are addressed primarily through their effects on manager retention. I will discuss the subcategories in detail in the following sections.

### 5.1 Capital market reaction (external)

#### 5.1.1 Short-term abnormal returns

The effect of acquisitions on shareholder wealth is a central theme in research into corporate finances, as a recent overview of the field by Cumming et al. (2023) shows. Despite numerous studies on the capital market reaction to acquisitions and

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<sup>14</sup> The authors believe this occurs because the new accounting standard requires detailed quality checks, including the verification of the source data, which in turn increases the necessary quality of the reported financials (Allee and Wangerin 2018).

<sup>15</sup> The studies not shown in Table 2 do not employ an empirical test to study the implications of earnouts and include Reum and Steele (1970), Bruner (2001), Patschreck et al. (2015), Erel (2018), Dahlen et al. (2024), Caselli et al. (2006), and Reuer (2005).

**Table 2** Overview of research stream 2—Implications of earnouts—This table lists the relevant studies and the identified implications

Author	Capital market reaction (internal)				Firm reaction (external)				Timelines
	Short-term AR	Long-term AR	Takeover premia	Market value of firm	Trading activity	Accounting metrics	Operating business	Geo scope	
Kohers and Ang (2000)	✓	✓	✓				✓	Global	1984–1996
Mantecon (2009)	✓							Global	1985–2005
Officer et al. (2009)	✓							North America	1995–2004
Lukas and Heilmann (2010)	✓							Europe (GER)	1999–2007
Allee et al. (2011)	✓				✓			North America	2007–2010
Barbopoulos and Sudarsanam (2012)	✓	✓						Europe (UK)	1986–2008
Quinn (2013)						✓		US	2006–2009
Kohli and Mann (2013)	✓							India	1997–2008
Kohli (2015)					✓			India	1997–2008
Cadman et al. (2014)		✓				✓		North America	2006–2011
Lukas and Heilmann (2014)	✓							Europe (GER)	2000–2013
Hou et al. (2015)						✓		China	2005–2008
Barbopoulos et al. (2016)	✓	✓					✓	North America	1986–2009
Elnahas and Kim (2017)		✓						North America	1984–2014
Barbopoulos and Adra (2016)	✓		✓					Europe (UK)	1996–2010
Barbopoulos et al. (2018)	✓							US/EU/ AUS	1992–2012
Barbopoulos et al. (2018)	✓							North America	1986–2013
Allee and Wangerin (2018)	✓							North America	2007–2010
Bates et al. (2018)			✓					North America	1988–2014
Song et al. (2019)	✓	✓			✓			China	2011–2016
Li et al. (2019)					✓			China	2008–2017

**Table 2** (continued)

Author	Capital market reaction (internal)					Firm reaction (external)			
	Short-term AR	Long-term AR	Takeover premia	Market value of firm	Trading activity	Accounting metrics	Operating business	Geo scope	Timelines
Chan et al. (2019)		✓			✓	✓		China	2008–2015
Alexakis and Barbopoulos (2020)	✓					✓		US	1980–2016
Yuan et al. (2020)						✓		China	2008–2016
Barbopoulos and Danbolt (2021)	✓					✓		US/EU	1986–2016
Wu et al. (2021)	✓		✓	✓		✓		China	2007–2019
Bi (2021)	✓	✓	✓				✓	China	2009–2014
Monaco et al. (2022)					✓			North America	1986–2014
Qin and Liu (2022)	✓	✓	✓					China	2011–2015
He and Chen (2022)		✓					✓	China	2007–2018
Tao et al. (2022)	✓		✓			✓		China	2011–2019
Zhou et al. (2023)					✓			China	2013–2021
Liu et al. (2023)						✓		China	2008–2018
Xie (2023)	✓					✓		China	1992–2013
Song et al. (2023)	✓	✓			✓		✓	North America	2014–2021
Danbolt et al. (2023)			✓					Europe	2005–2020
Liu et al. (2023)				✓				China	2011–2016
Fan et al. (2024)					✓			China	2008–2019
Total studies	22	10	9	2	9	9	6		

“AR” stands for “abnormal returns”

drivers of acquirer's abnormal returns, the results remain ambiguous.<sup>16</sup> Several studies continue to indicate a neutral or negative reaction in capital markets (e.g. Franks and Harris 1989; Jensen and Ruback 1983). It is all the more surprising, therefore, that earnout deals appear to repeatedly generate a positive capital market reaction across different methodologies, periods, and geographies (e.g. Kohers and Ang 2000; Alexakis and Barbopoulos 2020; Song et al. 2019). Whereas studies focused on the Anglo-Saxon region show a relatively similar performance of 1.5 to -2.5%, studies focused on the Indian and Chinese markets yield higher and more heterogeneous results, ranging from 0 to -13.5%.

Most studies rely on the market model approach pioneered by Brown and Warner (1985) to calculate abnormal returns. Moreover, the majority measure within the three- to five-day window surrounding the announcement date. Although early studies did not apply a matching approach to build comparable control groups, this is common practice in recent publications to generate more robust results (e.g., Barbopoulos and Danbolt 2021).<sup>17</sup> In addition, a research group led by Leonidas Barbopoulos dominates the field, accounting for seven of the 22 existing studies. Next, I discuss the key findings and disparities of the short-term abnormal return studies alongside the dimensions of target, deal, and acquirer characteristics, as well as legal and accounting factors.

*Target characteristics:* Similar to those in the first research stream, scholars in this stream investigate the effect of the listing status and target industry (e.g., Kohers and Ang 2000). They hypothesize that earnouts reduce information asymmetries and, therefore, should be perceived more positively for private targets and intangible-asset-rich industries (such as high-tech and service industries). Various studies support this hypothesis, spanning multiple geographies and periods (e.g., Kohers and Ang 2000; Barbopoulos and Sudarsanam 2012; Tao et al. 2022). In addition, scholars have tested the R&D/revenue ratio and the volatility of stock returns in the industry under the same hypothesis mentioned above (Lukas and Heimann 2014, 2010): Again, they report a positive relationship with abnormal returns, but the results cannot be generalized due to the limited number of studies investigating these two variables.

*Deal characteristics:* This second group of drivers has garnered significant scholarly attention, resulting in many divergent findings for cross-border and cross-industry transactions, transaction size, earnout ratio, the role of financial advisors, the payment method, and earnout length. In one early study, Mantecon (2009) explores the most effective transaction structures for cross-border acquisitions and finds that joint ventures, rather than earnouts, yield superior gains.<sup>18</sup> Similarly, Barbopoulos and Sudarsanam (2012) and Barbopoulos et al. (2016) find no evidence

<sup>16</sup> The value creation or destruction that results from deals has been extensively explored in many studies. The studied variables include the inter alia listing status of the target (e.g., Draper and Paudyal 2006; Faccio et al. 2006), successful vs. unsuccessful acquisitions (e.g., Jensen and Ruback 1983), the payment method (e.g., Faccio and Masulis 2005; Travlos 1987), investor sentiment (Danbolt et al. 2015), and the acquirer's industry (Kiyamaz and Baker 2008).

<sup>17</sup> I have analyzed all studies in an Excel file that lists the approach, tested drivers, and results (significant increase, significant decrease, or insignificant effect on AR). It is available upon request.

<sup>18</sup> They do find positive abnormal returns for domestic acquisitions involving earnouts (Mantecon 2009).

of superior abnormal returns for cross-border acquisitions involving earnout deals in studies that extend the geographic scope to UK acquirers.<sup>19</sup> Those findings oppose those of a later study by Barbopoulos et al. (2018), who observe superior abnormal returns in cross-border deals when the acquirer lacks prior experience of international acquisitions.<sup>20</sup> Finally, Barbopoulos et al. (2018) also report superior abnormal returns from earnout deals when the payment is made in stock rather than cash. Similarly, the effects of cross-industry deals yield ambiguous results. Whereas Kohers and Ang (2000) observe a positive market reaction, Tao et al. (2022) find the opposite from a sample of Chinese firms.<sup>21</sup> Only three papers have studied the effects of earnout length and transaction size, and these report contradictory or insignificant results. Lukas and Heimann (2010) and Lukas and Heimann (2014) find a negative relationship between earnout length and performance in a European sample, but Barbopoulos et al. (2016) report insignificant effects in the US market. A similar pattern can be observed for transaction size. In the early 2010s, studies in the European and Indian markets failed to find a significant relationship between deal value and abnormal returns, but a later study focusing on the US reports a significant negative relationship (Barbopoulos and Danbolt 2021). A research group led by Leonidas Barbopoulos has published a series of papers analyzing the role of the earnout ratio; they report a positive relationship between earnout ratio and abnormal returns (Barbopoulos and Sudarsanam 2012; Barbopoulos et al. 2016). This was further illustrated by Barbopoulos and Danbolt (2021), who identified a curvilinear relationship between earnout ratio and abnormal returns that peaked at 30% of the total deal value.<sup>22</sup> Using a small, hand-collected sample, Kohers and Ang (2000) examine the effect of the actual earnout payout on abnormal returns: They reveal that although the capital market can differentiate no payout from a payout by assigning higher abnormal returns, it cannot distinguish between partial and full payouts (Kohers and Ang 2000). Finally, a single study investigates the role of financial advisors in earnout deals and finds support for the hypothesis that the involvement of high-quality financial advisors in earnout deals significantly increases abnormal returns (Barbopoulos and Danbolt 2021).

*Acquirer characteristics:* In addition to the above deal characteristics, scholars have also analyzed the effects of different acquirer traits, including their age (e.g., Kohli and Mann 2013), size (e.g., Barbopoulos and Danbolt 2021), sigma (Alexakis and Barbopoulos 2020), leverage (Lukas and Heimann 2010), and financial performance (Bi 2021). Overall, these findings are less ambiguous than those

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<sup>19</sup> Barbopoulos and Sudarsanam (2012) observe that earnout-financed deals slightly outperform cross-border deals, measured by median (0.52% for earnout deals vs. 0.44% for non-earnout deals), but this advantage vanishes when measured by mean (0.86% for earnout deals vs. 1.09% for non-earnout deals).

<sup>20</sup> They hypothesize that the higher abnormal returns reflect the increased uncertainty for acquirers with no international experience, which is mitigated by earnouts.

<sup>21</sup> In addition, Barbopoulos and Danbolt (2021) and Allee and Wangerin (2018) report insignificant effects.

<sup>22</sup> In the same study, Barbopoulos and Danbolt (2021) produce the surprising result that non-earnout deals outperform earnout deals (1.74% for non-earnout deals vs. 1.57% for earnout deals). The underlying reason for this is that transactions settled with stocks yield an abnormal return of 2.55% citebarbopoulos2021real.

regarding deal characteristics. Several scholars report a positive relationship between acquirer age and abnormal returns (e.g., Kohli and Mann 2013; Barbopoulos and Danbolt 2021), and a negative relationship between acquirer size, measured as market value, and abnormal returns. Bates et al. (2018) hypothesize that earnouts provide a means to finance deals and find support for their argument that earnout deals with high-leverage acquirers yield higher abnormal returns. Similarly, in a study focusing on the Chinese market, Bi (2021) demonstrates a positive relationship between acquirers' poor financial performance and the positive abnormal returns of earnout deals (Barbopoulos and Danbolt 2021; Lukas and Heimann 2010). To further dissect the drivers of earnout wealth gains, Alexakis and Barbopoulos (2020) show that although most earnout deals are announced by acquirers with high stock volatility (high sigma), only earnout deals involving acquirers with a low sigma generate higher abnormal returns than non-earnout deals. They argue that earnout deals are often used by relatively small acquirers with a higher sigma, revealing further information about how the M&A process can negatively affect abnormal returns (Alexakis and Barbopoulos 2020).

*Legal and accounting factors:* Similar to the increased likelihood of earnouts in contexts of high enforcement quality and political stability, Barbopoulos et al. (2018) report that these factors also positively influence abnormal returns. In the same vein, Lukas and Heimann (2010) and Lukas and Heimann (2014) show that higher abnormal returns are attained in transactions that occur across similar legal systems. Finally, Allee and Wangerin (2018) investigate the effect of the accounting standard change by measuring its interaction with various factors, such as listing status. They report insignificant effects for the period before the accounting standard change and significant effects for the post-SFAS 141(R) period, which other studies confirm.

In summary, the studies discussed support the hypothesis that earnout deals yield significant positive abnormal returns. Nonetheless, the drivers of these returns are complex and often interlinked.

### 5.1.2 Long-term abnormal returns

Shifting from the short-term analysis of the period surrounding the announcement to a longer-term perspective of months and years, researchers have delved into how earnout deals affect the long-term performance of M&A deals. Surprisingly, this field has received less scholarly attention, producing only 10 articles (Table 2). In the study of long-term abnormal returns, most studies employ either the buy-and-hold abnormal return (BHAR) method pioneered by Barber and Lyon (1997) or the calendar time portfolio regression (CTPR). Although recent studies have probed factors such as payment method (Loughran and Vijh 1997) and transaction type (Rau and Vermaelen 1998) as drivers of long-term abnormal returns, their results remain inconclusive, as Mitchell and Stafford (2000) emphasize with their findings of inconsistent long-term abnormal returns despite using two approaches.

Of the 10 studies investigating earnout deals' long-term performance, most use the BHAR method, with a recent shift in focus from North America to China.<sup>23</sup> Typically, these studies assess effects within one to three years, like Barbopoulos and Adra (2016), and they often pair long-term and short-term performance measurements.

The most extensive studies for the Anglo-Saxon countries come from Barbopoulos and Sudarsanam (2012) and Barbopoulos et al. (2016), which indicate superior long-term performance of earnout deals, with the former combining BHAR and CTPR methods for robust assessment. In the same study, they also show that both the earnout length and the relative earnout value are negatively related to the long-term abnormal returns of UK bidders (Barbopoulos and Sudarsanam 2012). Furthermore, Barbopoulos et al. (2016) note that positive returns are linked to management retention in their study focusing on the financial industry. However, although Barbopoulos and Sudarsanam (2012) initially observed that these returns vanish after a year, Barbopoulos et al. (2016) later reported a sustained positive impact over three years. Moving beyond Barbopoulos's research, Elnahas et al. (2016) redirected the analysis from acquirer performance to the effects on targets: Surprisingly, they found that targets experience negative long-term abnormal returns after the initial year. The significantly positive long-term returns are not replicated in studies on the Chinese market. In general, neither significantly positive or negative abnormal returns occur in that market, suggesting that the short-term effects are not reversed in the long run (Song et al. 2019; Bi 2021; Qin and Liu 2022; He and Chen 2022). A recent study by Song et al. (2023) is the first to isolate a significant negative long-term effect, which they rationalize as an increased misvaluation of stock after the performance commitment period has ended. Song et al. (2019) investigate the effects of two variables: the effects of a regulatory change in the Chinese capital market and the moral hazard of top management; they find that both negatively affect long-term abnormal returns (Song et al. 2019). Qin and Liu (2022) complement this finding by identifying a U-shaped relationship between earnout size and long-term performance.

To summarize, the findings regarding long-term abnormal returns remain fragmented and require additional investigation. The initial studies indicate a positive long-term effect from earnout deals in the Anglo-Saxon market, but the results for the Chinese market are less clear. Moreover, compared to the results of the research into short-term abnormal returns, the drivers of long-term abnormal returns remain largely unknown.

### 5.1.3 Takeover premia

Like those of abnormal returns, the drivers of takeover premia are a key research topic in the field of M&A. Mueller and Sirower (2003) identify four theoretical causes: (1) the expected synergies of the takeover (e.g., Slusky and Caves 1991), (2) executives' hubris (e.g., Roll 1977), (3) CEOs' self-interest, and (4) the expectation

<sup>23</sup> Seven of the 10 studies use the BHAR approach. Barbopoulos and Sudarsanam (2012) combine both approaches. He and Chen (2022) use changes in return on assets) to measure the long-term effects.

that a change of leadership will be beneficial. Again, many studies analyze the market perception of takeover premia in general (e.g., Alexandridis et al. 2013; Eckbo 2009), but the results remain mixed. Compared to the relatively high interest in earnouts' effect on abnormal returns, their effect on takeover premia has received scant attention, with only nine studies to date. Notably, five of these focus on the Chinese market, leaving research outside that market fragmented. Similarly, there is no dominant approach to measuring takeover premia. The most extensive study linking takeover premia with earnouts was conducted by Barbopoulos and Adra (2016), who hypothesize that an increased takeover premium is paid as compensation for: (a) shared post-merger risk, (b) advice from the target management, or (c) forgone (other) business opportunities. Interestingly, while they find that earnout deals include higher premia, this does not diminish abnormal returns, implying that earnouts offset the negative market perception that is typically associated with higher premia in non-earnout transactions. In a recent study, Danbolt et al. (2023) present the counterintuitive finding that financially constrained acquirers pay higher takeover premia.<sup>24</sup> In contrast, Officer (2007) finds that transactions involving private targets usually generate a takeover discount. On top of this, he identifies two drivers of takeover premia. Both earnout length and the earnout value relative to the total deal value are positively linked to takeover premia. This relationship holds because targets demand compensation for the higher risks involved with a longer earnout period and higher overall deal value.<sup>25</sup> Other studies largely support the previously mentioned finding: takeover premiums are higher in earnout deals, yet the market responds positively to them (e.g., Tao et al. 2022; Bates et al. 2018).

## 5.2 Firm reaction (internal)

### 5.2.1 Accounting metrics

Despite the positive capital market reaction discussed in the previous section, the effects of earnout deals are not solely positive. While earnouts' negative effects have received relatively little scholarly attention, researchers hypothesize that the contingent structure of earnouts incentivizes the management team to conduct earnings management.<sup>26</sup> Similarly, earnouts may trigger post-acquisition goodwill impairments. Among the five studies that focus on earnings management, four target the Chinese market and one examines the US market (Liu et al. 2023; Elnahas et al. 2016; Tao et al. 2022; Wu et al. 2021; Chan et al. 2019). These studies test the hypothesis that management teams perform earnings management when they are at risk of failing to reach pre-defined targets. In a recent study by Dahlen et al. (2024), 60% of investors perceive earnings management as important or very important,

<sup>24</sup> They argue that financially constrained acquirers will request a higher earnout ratio, while the target shareholders will want to be compensated for the risk and the additional delay (Danbolt et al. 2023).

<sup>25</sup> A 10% increase in relative earnout size leads to a 6.45% increase in takeover premium. A one-month extension of the earnout period leads to 0.6% higher takeover premium (Barbopoulos and Adra 2016).

<sup>26</sup> In a specific setting (restructuring), Liu et al. (2023) find that executives adjust item classification to meet performance commitments.

highlighting their awareness of its associated risks. Wu et al. (2021) and Yuan et al. (2020) also report a connection between performance commitments to an increased likelihood of goodwill impairment. Cadman et al. (2014) investigate accounting reform in the US and hypothesize that goodwill impairments are negatively related to fair-value adjustments, which are required due to the accounting standard change that accommodates material changes during the earnout period (Cadman et al. 2014).

### 5.2.2 Operating business

Surprisingly, only a few authors have studied the effect of earnouts on the operating business. They focus on: (a) the development of operating performance, (b) synergy effects, or (c) management retention. Bi (2021) finds that earnouts significantly boost the post-acquisition performance (measured as return on assets) of acquirers with poor prior performance. Although scholars have often analyzed synergies in mergers and acquisitions, which are a key concern for practitioners, only He and Chen (2022) have focused on earnouts in this context; they find a significantly positive relationship that follows a U-shaped pattern depending on the earnout size. Finally, management retention is often discussed in practice but receives only limited attention from scholars. Kohers and Ang (2000) propose that earnouts are used as incentives to retain managers, but beyond this hypothesis, they make no attempt to measure the potential effect of earnouts. To the best of my knowledge, only two studies attempt to measure this effect. First, Cadman et al. (2014) find support for their hypothesis that earnout fair value meets the maximum possible earnout payout when the parties attempt to retain managers. Second, both Xie (2023) and Barbopoulos et al. (2016) show that when earnout deals are capable of retaining managers (or founders), they yield higher abnormal returns during the announcement period. That is, the market more favorably perceives deals that are likely to retain target managers (Barbopoulos et al. 2016).

Overall, earnout deals yield positive short-term and long-term abnormal returns (e.g., Barbopoulos and Sudarsanam 2012; Barbopoulos et al. 2018), increase takeover premia (e.g., Kohers and Ang 2000; Barbopoulos and Adra 2016; Tao et al. 2022), generate higher returns when target management is retained (e.g., Kohers and Ang 2000; Barbopoulos and Adra 2016), and trigger negative behaviors in the Chinese market, including earnings management that impairs goodwill (e.g., Hou et al. 2015; Tao et al. 2022).

## 6 Research stream 3: earnout structure

The third and final research stream is about half the size of the previous two, with just 19 studies. It explores the earnout structure and the driving factors behind earnouts, specifically addressing valuation approaches and contractual design.

## 6.1 Valuation approach

Battaaz et al. (2021) and Ragozzino et al. (2016) highlight the inchoate nature of this research sub-stream and its need for deeper investigation. Unlike the previous streams, which generally apply empirical methods, research in this sub-stream predominantly adopts a theoretical or model-based approach. This methodological dominance is explained by scholars' consensus that earnouts have option-like features and should, therefore, be valued with option pricing methods (e.g., Ragozzino and Reuer 2009; Caselli et al. 2006). The early contributions by Bruner (2001) and Caselli et al. (2006), which are primarily descriptive, outline the most important features of earnouts. Both apply a Monte Carlo simulation to a case study, generating many potential paths of future payoffs, which are then aggregated to arrive at an expected scenario. The model-theoretic work beyond Monte Carlo simulations began in 2012 with Lukas et al. (2012), who sought to determine optimal investment timing and earnout ratio: They developed a model based on the central assumption that cashflows follow a geometric Brownian motion, incorporating initial sunk costs and potential synergies from the transaction. Their model also included an incentive structure that promotes cooperation between the acquirer and the target, enhancing the likelihood of meeting performance benchmarks. Lukas et al. (2012) find that higher uncertainty in target cashflows and longer earnout periods increase earnouts, as well as that deal closures are delayed in situations of volatile cashflows, long earnout periods, or high transaction costs. The first paper to focus on the valuation of earnouts assumes a setting in which a venture capital investor has the opportunity to invest in a growing start-up (Tavares-Gärtner et al. 2018); although they also assume that the cashflows follow a geometric Brownian motion, the setting is different from that used in Lukas et al. (2012). In particular, Tavares-Gärtner et al. (2018) derive a taxonomy for different earnouts along the dimensions of due date (at term vs. at hit) and amount paid (fixed vs. variable). By modeling the different earnouts, they show that the optimal investment timing is independent from the earnout structure and, moreover, they show that when optimally designed, fixed earnouts induced at term and at hit have the same value. Similarly, variable earnouts have the same value as fixed earnouts multiplied by a factor that accounts for the underlying process assumed for cashflow development. Thus, they suggest that the earnout design should be selected according to factors that are not included in the setting, such as risk preferences (Tavares-Gärtner et al. 2018). Battaaz et al. (2021) adopt yet another approach and derive a model that incorporates two risk factors omitted from previous models: default risk and litigation risk. To do so, they model not only the target's cashflow generation but also the development of the acquirer's leverage and cashflow. Battaaz et al. (2021) assess litigation risk through two functions: the mistrust function (which addresses the target's concern about the acquirer's potential manipulation of financial reports) and the litigation function (which estimates the granted share of the earnout in case of a court ruling). As expected, both sources of risk reduce the initial earnout payment and thus reduce the attractiveness of earnouts in cases of high default and litigation risks (Battaaz et al. 2021). Interestingly, the survey by Dahlen et al. (2024) shows that professionals appear to resort to simple valuation techniques.

## 6.2 Contractual design

The research landscape regarding the contractual design of earnouts is similarly fragmented and encompasses contract parameters that include the determinants of earnout size, earnout length, and the applied performance benchmark. I identified 13 studies in this field, nine of which employ an empirical approach.<sup>27</sup> The relatively limited scholarly work in this field is surprising, given Nobel laureates Oliver Hart and Bengt Holmström's pioneering work in the field of contract theory (e.g., Hart and Holmström 1987; Hart 2001; Kaplan and Strömberg 2008). Interestingly, unlike other research streams, this field lacks studies on the Chinese market, with most of the research employing Tobit or logit models to explore design choices. The studies cover four contract parameters for earnouts: (relative) earnout size and payment, earnout length, performance benchmarks, and equity classification (e.g., Cain et al. 2011; Barbopoulos and Adra 2016).

### 6.2.1 Earnout size

The most studied earnout parameter is earnout size, which is usually measured as the ratio of earnout size to total deal volume. Early studies by Kohers and Ang (2000) and Cain et al. (2011) argue that relative earnout size increases with information asymmetry. They find support for this hypothesis and identify several drivers, including private targets, targets operating in intangible-rich industries (such as service and high-tech industries), deal value, and the volatility of the industry return (Kohers and Ang 2000; Cain et al. 2011). Danbolt et al. (2023) add a new perspective by finding that the more financially constrained an acquirer or target, the higher the earnout ratio. In addition, two other drivers of earnout size have been investigated by scholars: the effect of the accounting standard change and the enforcement quality (Allee et al. 2011; Allee and Wangerin 2018; Barbopoulos and Danbolt 2021; Viarengo et al. 2018). Barbopoulos and Danbolt (2021) find that the earnout ratio increased from 32 to 34% in the post-SFAS 141(R) period, which they believe reflects the reduced likelihood of manipulation and increased transparency. Allee and Wangerin (2018) find no evidence of an increase in relative earnout size after the accounting standard change, but do report an increase when a high-quality auditor is involved: They assume that the involvement of a "Big Four" auditor reduces the verification and monitoring costs, so acquirers use larger earnouts. However, the effect remains unclear, as indicated by the fact that Allee et al. (2011) find a reduced relative earnout size in the post-SFAS 141 period.

Closely related to earnout size, Kohers and Ang (2000) and Barbopoulos and Adra (2016) report contradictory results from analyzing the initial payment in earnout deals. Whereas Kohers and Ang (2000) find that the initial payments of earnout deals are larger than the full payments of non-earnout deals, Barbopoulos and Adra (2016) find significantly smaller initial payments in earnout deals. Barbopoulos and Adra (2016) attribute this variability to differences in datasets

<sup>27</sup> Other, more conceptual or descriptive studies that are not listed in the overview include Patschurck et al. (2015), Choi (2016), Reum and Steele (1970), and Bruner (2001).

and methodologies; whereas they employ a matching approach (propensity score matching) to create a comparable control group, Kohers and Ang (2000) do not. Overall, these results indicate that acquirers are aware of the potential adverse effects of setting an excessively high initial payment.

### 6.2.2 Earnout length

To the best of my knowledge, there is only one empirical study that focuses on the drivers of earnout length. Cain et al. (2011) encountered mixed results in testing their theoretical predictions. While they confirm that a higher R&D ratio in the target industry correlates with extended earnout periods, Cain et al. (2011) find contrasting outcomes for two other uncertainty variables. Contrary to the anticipated positive relationship between the standard deviation of daily returns and Tobin's Q with earnout length, their analysis indicated an inverse effect (Cain et al. 2011). In addition, a game-theoretic model constructed by Lukas et al. (2012) shows that an increase in earnout length decreases the initial payment while increasing both the earnout premium and earnout ratio. However, they do not test the drivers of the earnout length, focusing instead on a theoretical model instead of an empirical test (Lukas et al. 2012).

### 6.2.3 Performance benchmark

The final contract parameter investigated is the chosen performance benchmark; only Cain et al. (2011) and Lukas et al. (2012) focus on this aspect of earnout design. In addition to showing that sales-based performance measures are the preferred option in high-uncertainty settings, Cain et al. (2011) also find that non-financial metrics are more likely to be used between parties in the same industry and when the industry has a high Tobin's Q (Cain et al. 2011). In their game-theoretic study, Lukas et al. (2012) demonstrate that an increase in the performance benchmarks increases the initial payment and decreases both the earnout premium and the earnout ratio. Additionally, Allee et al. (2011) find support for their hypothesis that acquirers who must report predictable earnings are more likely to structure earnouts in such a way that they can be classified as equity; this avoids placing acquirers at risk of fair-value adjustments.

In summary, although the research in this area is somewhat fragmented, it suggests that earnouts mitigate adverse selection and moral hazard effects. However, further studies are needed to deepen our understanding of these mechanisms, explore additional earnout parameters, and expand the geographic scope of the existing research.

## 7 Future research

Despite the expanding practical applications of earnouts and growing scholarly interest in that topic, research on earnouts is still developing and contains many understudied areas. Therefore, to systematically derive a holistic picture for future research, I scanned all 64 identified papers to determine whether an extension based on the existing literature or advancement into adjacent fields would be warranted.<sup>28</sup> This yielded a list of 59 questions, which I condensed into a set of key questions according to the research streams shown in Tables 3, 4, and 5.<sup>29</sup> In the following, I outline the road map for future research within the identified research streams.

### 7.1 Determinants of earnout use

Although the first research stream is the most developed, I have identified several areas that have received limited scholarly attention to date. First, future research should dissect acquirers' characteristics to identify more granular drivers. Scholars should differentiate between different types of acquirers (e.g., private equity vs. corporate, or family firms vs. others) because these different types adopt different market approaches and therefore may have different motives for applying earnouts. Second, although listing status has been the focus of many papers (e.g., Kohers and Ang 2000; Barbopoulos and Sudarsanam 2012), the underlying ownership structure of both acquirer and target remains largely overlooked. Research in this field may bridge the gap to other areas of corporate governance research and offer managerial implications for investors' strategy selection depending on the ownership structure. Third, the prevalence of "serial" earnout acquirers, and whether their motives differ from those of other acquirers, has not yet been investigated. This topic could be operationalized by including an earnout acquisition experience variable in tests. The findings in this field, rather than being limited to the rationales of applying earnouts, could yield new insights into the success and design of transactions conducted by "serial" acquirers. Fourth, at the intersection of psychology and finance, scholars have investigated the characteristics of companies' CEOs and management teams, including overconfidence (Ferris et al. 2013), gender (Levi et al. 2014), and industry experience (Custódio and Metzger 2013). These research interests have only partly spilled over into the subject of earnouts through Gada et al. (2021), offering multiple opportunities to uncover additional drivers of earnout use. Finally, whereas much research has been conducted regarding deal and firm characteristics, the moderating role of the economic situation has generally been ignored. Because earnouts are used to mitigate information asymmetries and uncertainties, researchers should account for different economic cycles and determine whether different patterns of earnout use reflect the economic situation.

<sup>28</sup> "Extensions" are indicated by (a) needed extensions of existing papers, (b) ambiguous results that require clarification, and (c) predefined future research in existing papers. "White spots" are indicated by either (a) practice or investors, (b) other finance theories, or (c) non-finance theories.

<sup>29</sup> A detailed overview of the 59 questions is available upon request.

**Table 3** Overview of research questions relating to *research stream 1—Determinants of earnout use*

Research direction	Research question	Motivation and contribution
<i>White spots</i>		
#1 Acquirer categorization	Do motives for using earnouts differ by acquirer type (e.g., strategic vs. financial)?	Current research disregards acquirer types; add'l motives may be uncovered (e.g., Chiarella and Ostinelli 2020)
#2 Ownership structure	Is the corporate control/governance of the acquirer and target affecting earnout use?	Current research is focused solely on public acquirers due to data availability. Findings may yield more granular motives and correlation with other factors
#3 Serial acquisition	Are the majority of earnouts applied by the same acquirers (serial acquirers)?	Serial acquirers are investigated in M&A irrespective of earnouts (e.g. Morillon 2021). Earnouts are potentially used only by a small group of serial acquirers
#4 Characteristics of mgmt team	Is earnout use correlated to the top-management team (personal traits or the constitution of key governance bodies)?	Current research is focused on discrete elements, such as prevention focus, but add'l motives are likely (e.g., narcissism)
#5 Economic situation	What is the relationship between the (macro-)economic environment (e.g., interest rate level) and earnout use?	Research in the field remains dispersed. Fluctuating earnout use may be partly explained by the overall economic situation
<i>Extensions</i>		
#1 Target and Acquirer financials	What is the relationship between financial metrics and earnout use (e.g., Tobin's Q)?	Clarification of ambiguous results in previous research
#2 Financing of acquisition	Are earnouts used to finance transactions?	Clarification of studies incl. Bates et al. (2018) and Danbolt et al. (2023)
#3 Management retention	Are earnouts actively applied to retain management/key human resources?	Extension of initial findings by, e.g., Kohers and Ang (2000)

**Table 4** Overview of research questions related to *research stream 2—Implications of earnouts*

Research direction	Research question	Motivation and contribution
<i>White spots</i>		
#1 Costs of earnouts	What are the negative effects of earnouts and what are their implications?	Current research is limited and scholars such as Erel (2018) note the need for a comprehensive assessment of costs and benefits, which can help to both reveal the implications and improve the selection criteria
#2 Post-merger performance	How do earnouts affect (long-term) post-merger performance?	Current research is focused on short-term capital market reaction; long-term benefits (or costs) of earnouts remain largely overlooked. Shedding light on this can help investors with their decision to apply earnouts
#3 Implications for targets	What are the effects of earnout acquisition on targets (e.g., the retention of human resources, R&D)?	Current research is focused on the retention of top mgmt only, whereas other effects on the target firm are unexplored. Add'l findings can help the parties to improve their valuation by accounting for factors that are currently not included in their assessment
<i>Extensions</i>		
#1 Takeover premia	What is the effect of earnouts on takeover premia? Are there earnout-specific drivers?	Initial research indicates the mediating role of earnouts regarding the capital market reaction to high takeover premia, but other effects are largely overlooked (e.g., final deal value incl. realized earnout)
#2 Long-term capital market reaction	Do earnout deals outperform non-earnout deals in the long run?	Initial positive results are met with contradictory findings in the Chinese market; additional studies are required for clarification
#3 Choice of payment method	Are earnouts perceived as a payment method (like stocks)?	Several studies compare earnouts to other payment methods, but whether they are actually perceived similarly to cash or stocks by management remains unclear

**Table 5** Overview of research questions relating to *research stream 3—Earnout structure*

Research direction	Research question	Motivation and contribution
<i>White spots</i>		
#1 Earnout structure	How are the key earnout components related (e.g., earnout length, performance benchmarks, size)?	There are few studies on earnout length, perf. benchmarks, and size, but their relationship has not been studied. Addtl research may help to efficiently structure earnouts
#2 The role of third parties	How do third parties (investment advisors and lawyers) affect earnout design choices?	There are no earnout studies in this field. Still, M&A research suggests that third-parties affect transaction design choices
#3 Real option models	Can real options frameworks be used for earnout valuation?	Initial option pricing models have been developed, but no explicit real option model exists, which might be beneficial for earnout valuation (Trigeorgis 1996)
<i>Extensions</i>		
#1 Extension of models	How can existing valuation models be updated to allow for different asset dynamics and earnout structure (e.g., multistage earnouts)?	Only a few valuation approaches exist, which would benefit from extensions, e.g., to allow for different earnout structures
#2 Equity classification	Are earnouts classified as equity? What is the effect of doing so?	An initial study by Allee and Wangerin (2018) investigates earnout classification. Addtl research is needed to understand the magnitude and effect of this classification
#3 Extension and update	Do the results of previous studies regarding earnout size, length, and performance benchmarks hold across geographic areas?	The seminal work by Datar et al. (2001) is more than 20 years old and is focused on the US—an update and extension is needed

In addition to addressing these “white spots,” future research should also address the contradictory results reported in the existing literature, including the effects of Tobin’s  $Q$  and financial leverage. Moreover, whether earnouts serve as a financing tool for acquirers remains unclear, as shown by the ongoing debate between Bates et al. (2018) and Erel (2018). Likewise, although early studies, such as Kohers and Ang (2000), refer to the retention of target management as an earnout rationale, minimal research has been conducted in this area recently. Therefore, the question of whether earnouts offer the required incentives to retain managers must be addressed by applying other methodologies to an extended data sample encompassing a greater period and geographic area.

## 7.2 Implications of earnouts

The second research stream has received significant attention, but the scholarly interest in this area is skewed towards short-term abnormal returns, leaving ample opportunities for future research. The “white spots” in this area revolve around the cost of earnouts, post-merger performance, and the effect of earnouts on the target.

First, the costs of earnouts have been inadequately addressed by the existing research and require additional attention. Although authors hypothesize that earnouts do not come without a cost (Allee and Wangerin 2018), no research has attempted either a classification of the costs involved or a quantification of the respective costs. Therefore, theoretical, empirical, and qualitative research should be conducted to create transparency regarding the net benefits of earnout use (Erel 2018; Datar et al. 2001; Reuer et al. 2004). Researchers could begin by measuring the share of earnout deals negotiated in court due to legal disputes (Battauz et al. 2021). In addition, researchers mention the verification and monitoring costs for earnout transactions but have not quantified them (Allee and Wangerin 2018).

Second, research into post-merger performance should be extended beyond the analysis of short-term abnormal returns to include market perception and actual firm performance. Alternative measures of post-merger performance could include accounting-related measures, such as return on equity (Das and Kapil 2012). Advances in this field not only offer theoretical contributions, but also equip investors with an improved decision-making foundation. Similarly, little scholarly attention has been paid to the actual payout of earnouts. While Kohers and Ang (2000) investigate the effect on short-term abnormal returns, no subsequent studies have followed up on their work. Additional analyses might show how many earnouts are not paid out, the underlying drivers of this phenomenon, and the resulting effects. This goes hand-in-hand with investigating whether targets engage in (long-term) value-destroying behavior (e.g., decreasing R&D spending). Although several Chinese studies focus on goodwill impairment and earnings management (e.g., Tao et al. 2022; Chan et al. 2019; Yuan et al. 2020), extensions toward both alternative measures and additional geographic areas are needed. As is the case for the first research stream, the second research stream would also benefit from investigating the effect of the target’s and acquirer’s ownership structures, as well as the type of acquirer (e.g., private equity). The results may reveal a mediating effect of ownership structure and post-merger performance.

The third “white spot” is the effect of earnouts on the target itself. Beyond the analysis of takeover premia (e.g., Barbopoulos and Adra 2016), no studies investigate earnouts’ effect on targets. These research gaps may reflect limited data availability and the difficulty of measuring the performance of a merged firm. However, analyses might include the retention of crucial personnel, the achievement of significant milestones (e.g., patents), or revenue development (e.g., in the form of a business unit in the merged firm).

In addition to exploring “white spots”, valuable insights may be derived from expanding established avenues (such as takeover premia and long-term abnormal returns) to focus on additional mediating factors. Further studies of payment methods (cash vs. stock) (e.g., Barbopoulos et al. 2018) and the retention of target management (e.g., Kohers and Ang 2000) may also hold important information for both researchers and investors.

Finally, the methodology to measure short- and long-term abnormal returns can be extended to increase the robustness of the results. Currently, most models rely on time-series approaches using the market-adjusted model based on Brown and Warner (1985). Additional cross-sectional analyses, such as the Fama–Macbeth regression, may further improve the explanatory power of the analyses. Moreover, the geographic coverage should be extended to produce more generalizable results.

### 7.3 Earnout structure

Although bridging valuation gaps is one of the key functions of earnouts, the valuation of earnouts has gone largely unexplored. Scholars have not yet investigated the contractual design of earnouts, allowing several “white spots” to persist. Earnout length, size, and performance benchmarks have been studied (e.g., Datar et al. 2001), but the interaction of these contract parameters is yet to be discussed. Therefore, future research should investigate both how specific levels of contract parameters are set as well as the interaction between the elements. In particular, future research could determine whether the type of acquirer (e.g., private equity firm vs. corporate firm) changes the earnout design. Variables tested in other research streams (such as the listing status of the target, the industry, and the acquirer’s financial leverage) can serve as additional reference points for future research. Furthermore, the roles of external parties, such as M&A advisors (e.g., investment banks) and lawyers, in determining various parameters have not been addressed and present an additional research avenue. Advances in this area may hold several managerial implications, for the decision process of earnout design remains inadequately studied. Several authors, including Battauz et al. (2021) and Lukas and Heimann (2014), have developed initial valuation models based on option pricing, but whether these models can be effectively applied in reality is unclear. Developing real option models, which might offer alternative valuation approaches, may be an interesting research path (Trigeorgis 1996).

In addition to the “white spots” enumerated above, there are three areas in which extensions are needed. First, a few valuation models exist, but due to the limited number of papers using them, many alternative settings have not been tested. An extension of those models could, for example, account for different earnout structures (e.g., different performance benchmarks), risk factors other than the litigation and default risks, indirect costs (e.g., increased monitoring costs), and the

different risk preferences of the acquirer and the target (Tavares-Gärtner et al. 2018). Furthermore, scholars should strive to empirically test the developed models and derived hypotheses of, e.g., Battauz et al. (2021) and Lukas and Heimann (2014). Second, only one study focuses on the possibility of classifying earnouts as equity (Allee and Wangerin 2018). Given the risk of fair value adjustments to earnouts, acquirers should be highly incentivized to classify them as equity; however, the prevalence and effect of this influence have not yet been studied. Ultimately, the field would benefit from updated research and geographic extensions of the work by Datar et al. (2001), who investigate three earnout parameters.

As data availability partly limits research across all of the discussed research streams, scholars should strive to further collect data on the firm level, which would enable them to refine the existing results by including additional variables, as well as to expand into new areas (e.g., R&D spending).

## 8 Conclusion

M&A is not an everyday business decision; therefore, the parties involved face several uncertainties. The different perspectives and information available to both the acquirer and the target yield varying results regarding the perceived reasonable value of their respective assets. Due to their contingent structure, earnouts offer a mechanism to bridge this valuation gap and partially mitigate the risks that arise from information asymmetries. Earnouts' relevance is reflected not only in the growing number of academic articles about them but also in the proportion of deals that involve earnouts, which has reached 16% (Barbopoulos and Danbolt 2021). By analyzing 64 articles, I examined the evolution of earnout research, structured the scattered research landscape, and derived an agenda for future research.

My analysis reveals a dramatic increase in earnout research, with 67% of publications in the field appearing during the last 10 years. I structured this study according to three research streams: (1) the determinants of earnout use, (2) the implications of earnouts, and (3) earnout structure. Although this review finds further support for the prevailing view that earnouts can be used to reduce the negative effects of information asymmetries, it goes on to identify sub-streams of the three main research areas and highlights ambiguous results in the literature. This detailed overview not only maps the current research landscape but also offers practitioners valuable insights by showing that scholarly interest differs not merely across research streams but also within each stream. To close important research gaps, I have developed a detailed research agenda for work on earnouts: This road map is motivated by scholars' previous work and accounts for learning from other finance literature and practice. To highlight the most promising areas for future research, I also differentiate between "white spots" (areas that have not yet received much attention) and "extensions" (follow-ups to existing research). I conclude that many promising research areas can be exploited by extending the methodological variance in the field and conducting research that incorporates the latest findings from related fields.

## Appendix

### Definition of earnouts

Various adjustment mechanisms can be grouped along the chronological sequence of the M&A process in pre-closing, between signing and closing, and post-closing instruments. Two instruments that are closely related to earnouts are contingent value rights (CVRs) and performance commitments. CVRs protect target shareholders against a decline in the acquirer’s stock and are, therefore, influenced not only by the firm performance but also by the general capital market environment (Chatterjee and Yan 2003). Conversely, performance commitments are similar to earnouts. However, the timing of the compensation differs in these two instruments (see Fig. 4). Whereas earnouts involve an initial payment followed by a deferred payment contingent on achieving a pre-defined target, performance commitments settle the entire payment up front. Compensation is paid out in case the pre-defined targets are not reached. Furthermore, performance commitments are prevalent in the Chinese market, where they have been applied since a market reform in the early 2000s (Tao et al. 2022; Song et al. 2019). I will refrain from discussing seller financing and transactions made in stocks; Jansen (2020) provides a detailed overview of seller financing. Similarly, the literature on stocks as a method of payment is extensive and includes work by Faccio and Masulis (2005).

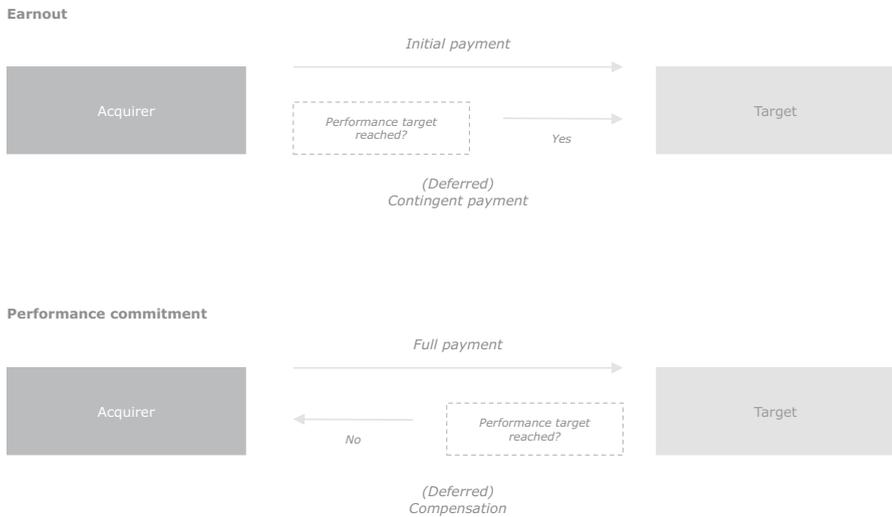
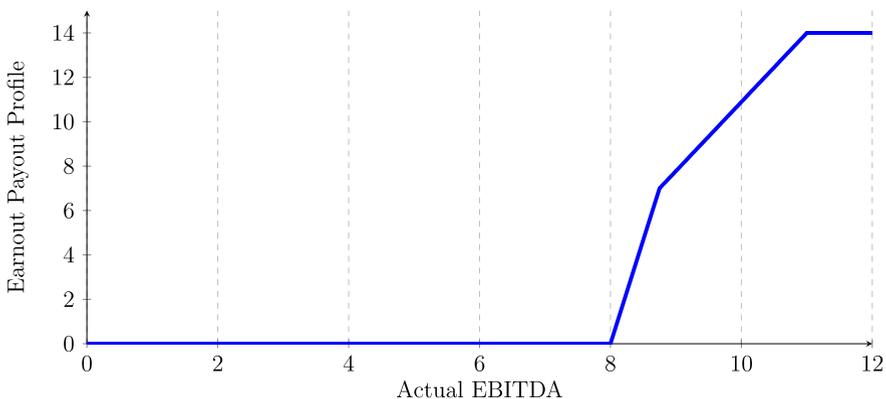


Fig. 4 Comparison of earnouts and performance commitments—own illustration

## Exemplary earnout agreement

Data availability remains one of the largest obstacles to earnout research because companies are not required to specify the defined earnout metrics. I identified one of the few transactions for which public records are available: Graham Corporation's acquisition of Barber Nichols Inc. for \$70 M in 2021. For Graham Corporation, an engineering company focused on pumping systems, the acquisition was substantial; its 2023 revenues were \$157 M (Graham Corporation 2021). The initial press release stated that the companies agreed to an additional earnout payment of up to \$14 M (20% of the initial deal value) based on predefined performance goals (EBITDA in 2024). Below, I present the key characteristics of the publicly available earnout agreement (SEC 2021). The parties agreed on a formula to calculate the earnout payment, which is capped at \$14 M when EBITDA is equal to or greater than \$11 M. Furthermore, to trigger a payment, the target must reach a minimum EBITDA of \$8.75M (see Fig. 5).

- **Measurement timeline and length:** Fiscal Year 2024 (12 Months)
- **Payment range:** \$0–14M
- **Performance benchmark:** EBITDA (exact definition in agreement)
- **Calculation formula:**  $\$7,000,000 + (\text{Actual EBITDA} - \$8,750,000) \times (7.00/2.25)$



**Fig. 5** Exemplary earnout agreement—All values shown in million USD. The figure illustrates the actual EBITDA increase in \$50k steps

## Overview of search string

See Table 6.

**Table 6** Applied search string in the three databases. The results of both search strings are combined in the final sample

Search fields	Search string
Primary search string	
Abstract, Title, Keyword	“Earn-out*” OR “Earnout*” OR “Earnout provision*” OR “Earn-out provision*” OR “Earn-out deal*” OR “Earnout deal*” OR “Earn-out contract*” OR “Earnout contract*” OR “Contingent earn-out*” OR “Contingent earnout*”
Secondary search string	
Abstract, Title, Keyword	“Deferred payment*” OR “Contingent claim*” OR “Contingent payment*” OR “Purchase price adjustment*” OR “Übernahme” OR “Unternehmensübernahme” OR “Performance commitment*” OR “Value adjustment mechanism*” OR “Method of payment” OR “Bedingte Kaufpreis*” AND “M&A” OR “Merger and acquisition*” OR “Merger*” OR “Acquisition*” OR “Takeover*” OR “Earn- out*” OR “Earnout*”

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**Data availability** The dataset of literature contributions, their classifications, and the content generated and analyzed during this study are available from the author on reasonable request.

## Declarations

**Conflict of interest** The author certifies that he has no affiliations with, or involvement in, any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this manuscript.

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