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ORIGINAL ARTICLE

How do leveraged buyouts affect industry peers? Analysis of the information and the competition channels

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Abstract

Our paper provides a contribution to the literature on peer effects in leveraged buyouts and delivers an explanation for the seemingly contradicting findings in the existing literature. We find that the average peer announcement CAR amounts to −1.98%. A buyout may reveal private information about peer value and can also change in the competition within the buyout target industry. Our identification strategy to examine the information and competition channels relies on two quasi-natural experiments, which generate exogenous variation in the information and competition environments. In addition, we analyze various mechanisms within these two channels by considering the cross-section of peer CARs and by running additional tests. Our results support the revaluation and the competitive pressure hypotheses.

KEYWORDS

competition channel, event study, information channel, leveraged buyout, peers

JEL CLASSIFICATION

G14, G23

1 | INTRODUCTION

Since the 1990s, there has been a surge in the leveraged buyouts (LBOs) by private equity investors, with a minor setback during the 2008 financial crisis, followed by a fast recovery afterward. According to industry data provider Preqin, the aggregate private equity (PE) deal volume has increased from 5.8 billion in 1995 to 98.6 billion in 2020. Several academic studies have recently pointed out the increasing importance of PE in the US economy (e.g., Chemmanur et al., 2020; Stulz, 2020). This increasing importance raises the question of how PE investments affect the economy and the LBOs' peer companies in particular. Peer effects have been addressed for strategic acquisitions in detail, but surprisingly little is known about the peer effects in LBOs. Because LBOs differ in several aspects from strategic acquisitions, the LBO peer effects deserve a separate analysis. Moreover, examining the peer effects in detail is worthwhile because the existing findings are partly contradictory. So far, the literature has found that acquisitions may influence peer value positively or negatively.

This paper contributes to our understanding of LBO peer effects by analyzing the channels and mechanisms through which LBOs may affect their target industry peers. First, we want to examine if LBOs affect peer value positively or negatively. Second, we want to understand whether the effect propagates through the information channel, the competition channel, or both as these two channels are not mutually exclusive.

The decision of a PE investor to buy a specific company reveals PE investors' private information about the company, which may lead other market participants to reconsider the valuation of publicly listed peers. PE investors are

sophisticated and repeat investors that have special expertise in selection (e.g., Cressy et al., 2007) and value adding (e.g., Gompers et al., 2016). Their goal is to maximize returns, while strategic acquisitions may be driven by a variety of other motives, such as empire building (Jensen, 1986; Masulis et al., 2007). We would thus expect that PE deals provide, on average, more value-relevant information than deals of strategic investors.

However, from the peers' perspective, should an LBO be considered as bad news that causes a decrease in peer value or as good news that positively affects peer value? The answer is not straightforward. The fact that well-informed value-maximizing investors prefer a particular company over comparable peer companies could be viewed by less informed market participants as negative new information about these peer companies. More specifically, the LBO would reveal that peers are overvalued relatively to the target, which would lead to a decrease in peer value. Derrien et al. (2023) find support for this revaluation hypothesis for peers to private targets in horizontal acquisitions. Conversely, if market participants believe that an LBO manifests PE investors' optimism regarding future industry prospects or results from an industry-wide rather than target-specific undervaluation, peer stocks would show a positive reaction. Slovin et al.'s (1991) results support this positive future industry prospects hypothesis within a sample of going private acquisitions. Harford et al. (2019) argue that companies time management buyouts and freezeouts to exploit industry-wide undervaluation, which should lead—if investors are aware of it—to a positive peer reaction. In addition, Harford et al. (2016) argue that an LBO may trigger follow-on acquisitions in the target industry. Under this acquisition probability hypothesis, market participants realize that peers may become future targets and peer valuations increase (Song & Walkling, 2000). To sum up, under the revaluation hypothesis (Derrien et al., 2023), we assume a negative reaction. Contrary to this, under the positive future industry prospects (Slovin et al., 1991), industry undervaluation (Harford et al., 2019), and acquisition probability (Harford et al., 2016; Song & Walkling, 2000) hypotheses, the expected reaction is positive.

Private equity investors do not only provide value-relevant information about the industries in which they invest, they may also change the competition within those industries. Similarly, as in the case of the information channel, the effects through the competition channel can work in both directions and the literature on strategic acquisitions in this field shows mixed results. One literature strand points out that mergers create operating efficiencies for the merged companies, which may exert pressure on their peers and cause a decrease in peer values and their operating performances (e.g., Bernile & Lyandres, 2019). For PE acquisitions, Hsu et al. (2011) provide support for this conjecture in a sample of US private and public buyouts. Nevertheless, if market participants expect that peers will adapt to this new situation and take efficiency-improving measures, for example, because they face an increased probability of a takeover, their stock returns and operating performances could increase (e.g., Servaes & Tamayo, 2014). A recent paper demonstrates positive long-term developments in the operating performance for peer firms to US going private buyouts (Feng & Rao, 2022). Another reason why mergers could positively affect peer value is that they increase collusive behavior in the output and input markets, thus resulting in monopoly and monopsony rents as the seminal papers of Eckbo (1983) and Eckbo and Wier (1985) point out. Besides studies that argue for a positive or a negative competition effect, a recent study by Derrien et al. (2023) concludes that the peer effect in strategic acquisitions propagates solely through the information channel and not through the competition channel.

We argue that the competition channel in LBOs differs from that in strategic acquisitions in at least three aspects. First, the potentially positive effect of strategic acquisitions on their peer values through the competition channel, which results from reducing the number of players in the industry through horizontal mergers between acquirers and targets (Eckbo, 1983; Eckbo & Wier, 1985), is not relevant for typical LBO deals.

Second, PE investors are repeat acquirers that focus primarily on selection, restructuring, and value-adding processes (e.g., Gompers et al., 2016; Hege et al., 2012) while strategic acquirers often execute only one or a few acquisitions and those acquisitions may be driven by various motives, not only value maximization. Therefore, we would expect an intensified competitive pressure after LBOs, but not necessarily after strategic acquisitions.

The third specific feature of buyouts compared to strategic acquisitions is that PE investors typically increase the leverage in their target companies, which might lead to a reduction in the financial flexibility of these companies. This lower flexibility of buyout targets may mitigate competitive pressure and, thus, have a positive effect on industry peers (Chevalier, 1995a, 1995b; Phillips, 1995). Under the reduced flexibility hypothesis, peer valuations and operating performance should improve.

If LBO announcements signal private information or provide news about competition changes, we should observe a peer reaction around the announcement date. We, therefore, start our analysis by examining the direction and magnitude of the average LBO announcement effect on peer-cumulative abnormal returns (CARs). To this end, we employ an event study for a sample of 12,751 peer stock price reactions on 1221 LBO announcements of US public and private targets from 1996 to 2017.

As to the information channel, we argue that if there is a lower amount of information on an individual peer, then the new information, which a buyout provides, should be more value-relevant and the reaction more distinct. Prior studies argue that analysts generate meaningful information for market participants (Chan & Chan, 2014; Lee & So, 2017). As more analysts provide more information (e.g., Kelly & Ljungqvist, 2012; Li et al., 2019), a straightforward way to account for the amount of available information on a peer would be using the number of analysts that follow this peer. However, this approach might suffer from an endogeneity problem. One source of such endogeneity could arise because highly opaque companies have a higher demand for analyst coverage. Therefore, a higher analyst coverage might be associated with a lower and not a higher amount of information about a peer. To identify whether the peer effect propagates through the information channel, we rely on the variation in analyst coverage generated by the exogenous decreases in individual peer stock coverage due to broker closures (Kelly & Ljungqvist, 2012), mergers (Hong & Kacperczyk, 2010), or both (Derrien & Kecskés, 2013).

Regarding the competition channel, we argue that if a buyout increases the competitive pressure on peers, the effect should be more substantial in industries where peers already face high competition levels (e.g., Harford et al., 2016; Kovenock & Phillips, 1997). We offer three reasons for this argument. First, in highly competitive industries, the scope for peer efficiency improvements is limited because companies already operate close to their efficiency levels. Second, companies in highly competitive industries face higher costs of debt (Valta, 2012), which makes adaptations more costly. Third, Gaspar and Massa (2006) and Abdoh and Varela (2017) argue that a higher competition level is associated with riskier cash flows and more volatile stock returns.

When examining the competition channel, we may face an omitted variable bias as the competition level and the buyout activity in an industry might be affected by a third variable, such as product substitutability. In addition, reverse causality may be an issue because buyouts can influence the competition level. We, therefore, employ an identification strategy that exploits the variation generated by multiple exogenous shocks to industry competition. Our quasi-natural experiment relies on import tariff cuts in different industries at different time points, which increase competition within the affected industry (e.g., Frésard, 2010; Frésard & Valta, 2015). In the context of private equity, import tariff cuts have been used as an exogenous shock to competition by Cumming et al. (2022) who examine the effect of product market competition on venture capital staging.

Our results show that the average peer CAR for a 21-day event window around the LBO announcement is −1.98%. This value corresponds to an aggregate loss in peer market capitalization of USD 389.1 billion over the sample period. We observe more negative peer CARs after an exogenous decrease in peer analyst coverage. This finding lends support to the conclusion that, on average, unexpected LBO announcements reveal new and negative information on peer value and is consistent with the revaluation hypothesis. In line with the competitive pressure hypothesis, we find stronger negative peer reactions to buyout announcements after an exogenous increase in industry competition. We vary the sample restrictions and event study setting and alternate our model specifications. However, the main findings do not change. They are also robust to outliers. Our tests support the revaluation and the competitive pressure hypotheses. The cross-sectional analysis of our peer firms reveals that they exhibit significant heterogeneity in reactions. We perform various additional tests to link the heterogeneous reactions to our alternative hypotheses.

This study provides two main contributions to the literature on the peer effects in acquisitions. We first help to connect the seemingly contradicting findings from the literature on peer effects in acquisitions. Prior studies on strategic acquisitions and buyouts argue that peer effects come through the information or competition channels, but they typically relate their results to only one channel. In both channels, the results are mixed and the direction of the effect remains a puzzle. Some studies show a positive effect, while other studies demonstrate a negative one. One literature strand focuses on the information channel (e.g., Derrien et al., 2023; Slovin et al., 1991), while another strand considers the competition channel (Chevalier, 1995b; Feng & Rao, 2022; Hsu et al., 2011). Slovin et al. (1991), Chevalier (1995b), and Feng and Rao (2022) identify a positive peer effect, whereas Hsu et al. (2011) provide evidence of a negative effect. We combine the information and competition channel in one paper. Our results suggest that the average effect at the peer level is negative and propagates through both channels, but we demonstrate significant heterogeneity in peer reactions. This explains why different studies, which have used different samples, have come to different conclusions regarding the channel and the direction of the peer effect. One example of a heterogenous peer reaction to LBOs is the target listing status (as Derrien et al. (2023) show for M&As). To sum up, we add to a better understanding of the mechanisms through which peer effects propagate in the information and competition channels.

Our second contribution to the literature on the peer effects in acquisitions is the LBO focus, while most studies deal with strategic acquisitions, which may have different effects. As for the information channel, LBOs might provide more precise information about target (and peer) values than strategic acquisitions because of PE investors' superior selection

ability and focus on value creation (Cressy et al., 2007; Dittmar et al., 2012). As for the competition channel, buyouts may lead to a more severe increase in competitive pressure because PE investors focus on operating improvements in their target companies, while strategic acquisitions may be driven by empire building and entrenchment (Jensen, 1986; Masulis et al., 2007), hubris (Roll, 1986), or overconfidence (Malmendier & Tate, 2008). In addition, as repeated investors, PE investors possess superior expertise in selection, restructuring, and value adding, and may facilitate companies' access to debt (e.g., Boucly et al., 2011; Gorbenko & Malenko, 2014; Hege et al., 2012; Ivashina & Kovner, 2011). Moreover, horizontal acquisitions, but not LBOs, may reduce the competitive pressure by decreasing the number of players in the industry (Eckbo, 1983; Eckbo & Wier, 1985).

We also contribute to the buyout literature. Several studies deal with the operating performance of buyout targets, while the peer effects of LBOs have been hitherto explored to a lower extent. The empirical evidence regarding buyout targets is largely positive[1].

The emerging literature on peer effects typically focuses on industry operating performance (Aldatmaz & Brown, 2020; Bernstein et al., 2017) or post-LBO industry dynamics (Harford et al., 2016). Our study differs in two respects from these studies. Rather than focusing on the long-term effects, which might be affected by other events and developments, we consider the immediate effects around the buyout announcement date. Additionally, our analysis is at the level of individual peers, not the aggregate industry level, which makes it possible to obtain new insights on how individual peer characteristics drive the heterogeneity in peer reactions.

The remainder of this paper is organized as follows. In Section 2, we discuss how LBOs affect target peers through the information and competition channels. Section 3 describes the dataset and Section 4 presents the event study. Section 5 identifies the effects of the information and competition channels. In Section 6, we analyze the cross-sectional variation of CARs and how it relates to the variation in deal, peer, and industry characteristics. Sections 7 and 8 examine the various hypotheses related to the mechanisms of the two channels. Finally, in Section 9, we conclude and discuss potential future research questions.

2 | THE INFORMATION AND COMPETITION CHANNELS: EFFECTS AND MECHANISMS

2.1 | The information channel

Private equity investors are sophisticated repeat players in the acquisition market, typically possessing private information (Dittmar et al., 2012). Their information advantage over other market participants results from their industry-specific experience and know-how in selecting high-quality targets, as well as from the deal-specific knowledge coming from due diligence processes (e.g., Cressy et al., 2007). PE investors may select a particular company for various reasons. One of these reasons may be an attractive valuation. In this case, when a PE investor decides in favor of the target company and against similar peer companies, market participants may interpret this choice as new information about peer overvaluation. Consequently, they revise their peer valuations downward and we observe negative peer CARs. We refer to this argument as the revaluation hypothesis. To test this hypothesis, we decompose the market-to-book (M/B) ratio into peer valuation error (sum of the peer-specific error and time-series industry error) and growth component, as suggested by Rhodes-Kropf et al. (2005).[2] We relate the peer reaction to these components and expect peers with a higher valuation error to experience a stronger price correction.

The peer valuation error will likely be more severe when peer valuation uncertainty increases. With larger valuation uncertainty, the new information that a buyout reveals should be more value-relevant. To proxy for peer valuation uncertainty, we include the number of analysts that follow a peer, their forecast error, and the dispersion in their forecasts. For the first variable, we also employ a quasi-natural experiment that generates a random decrease in analyst coverage. A higher number of analysts should be associated with a lower valuation uncertainty because more analysts generate more value-relevant information. Additionally, a more precise forecast, reflected by a lower forecast error and a lower dispersion of analyst opinions, should also be associated with a lower valuation uncertainty. To sum up, for higher and more precise analyst coverage, the new information reveals that the LBO announcement is less value-relevant, and, therefore, we expect a weaker peer reaction.

Market participants may view a buyout that is isolated in time as new information about a superior position of this target among its peers. However, as more buyouts take place in a particular industry, the scope for additional price corrections decreases. In addition, market participants may start to view them as a part of an industry-wide

development and as a sign of positive industry prospects. Consequently, they would re-evaluate their expectations about the industry potential upward, and we would observe positive peer CARs. Due to their superior selection ability, know-how, and experience, PE investors might detect undervalued industries and industries with high growth potential. Slovin et al. (1991) support this positive industry prospects hypothesis for going private transactions in the 1980s. Harford et al. (2019) show that insiders time management buyouts and freezeouts by choosing periods with low industry valuations and promising future growth prospects. They demonstrate that industry peer portfolios are associated with monthly alphas of approximately 1% during the 12-month period following those deals. In the cross-sectional analysis, we address this issue by comparing isolated and early buyouts to follow-on buyouts in an industry. More specifically, we examine whether we observe an initial negative peer reaction that reverses, resulting in positive peer CARs when follow-on buyouts are announced.

Another reason for a positive peer reaction could be the increased likelihood that they become future acquisition targets (Harford et al., 2016; Song & Walkling, 2000). If market participants can identify which peers are more likely to become future acquisition candidates after a buyout announcement in their industry, then these peers would react more positively to this announcement than their similar counterparts. We test this acquisition probability hypothesis by examining the CARs of those peers that become future targets and comparing it to the CARs of other peers.

2.2 | The competition channel

Private equity investors may select a particular company not only because it is—in their eyes—undervalued, but also because it offers potential for efficiency gains or corporate governance improvements. Gompers et al. (2016) argue that PE investors tend to focus on value maximization. Hereby, they target poorly performing companies because they have expertise in restructuring (Gorbenko & Malenko, 2014). Additionally, they tend to improve the target's access to debt (Boucly et al., 2011; Demiroglu & James, 2010; Ivashina & Kovner, 2011). Brown et al. (2009) show that LBO targets strengthen their bargaining positions with suppliers after an LBO transaction. Hege et al. (2012) demonstrate that PE investors have the specific ability to add value to their targets. Vast literature shows that PE investors manage to enhance efficiency and improve corporate governance in their target companies (e.g., Acharya et al., 2013; Boucly et al., 2011; Guo et al., 2011). We thus expect that PE investors will increase target companies' efficiency and, as a result, the competitive pressure on peers will increase after an LBO in the industry (Bharath et al., 2014; Harford et al., 2016; Kovenock & Phillips, 1997). Hsu et al. (2011) argue that peers are negatively affected by an increase in competitive pressure after an LBO in their industry; they demonstrate that their operating performance deteriorates.

As a response to the increase in competitive pressure in the industry, peers may try to increase their efficiency. Moreover, peers can benefit from positive spillovers (Aldatmaz & Brown, 2020; Feng & Rao, 2022). Shahrur (2005), who focuses on horizontal acquisitions, argues that peers aim to improve their performances by mimicking the actions of targets. Through these efficiency improvements, peers try to reduce the probability of a takeover or liquidation (Servaes & Tamayo, 2014) and to mitigate competitive pressure (Feng & Rao, 2022). These steps can involve operational, strategic, or governance changes (Harford et al., 2016). If the benefits of these improvements exceed their costs, peers may benefit rather than suffer from the increased competitive pressure.

Moreover, the competitive positions of peers can improve because PE investors impose a high leverage burden on their targets. This burden may reduce the financial flexibility of the buyout target. In turn, the competition level in the industry decreases and peers benefit. Chevalier (1995b) supports the reduced flexibility hypothesis by showing that, for supermarket chains, LBOs are associated with an increase in the market values of local peers. To analyze the competitive pressure, improved efficiency, and reduced flexibility hypotheses, we consider the changes in peer operating performances after a buyout in their industry.

Furthermore, we expect the magnitude of the effects passed through the competition channel differs, depending on the flexibility of the peers to react to the changes in the competition environment. More profitable and efficient peers tend to be more flexible and thus, they are better able to adapt to changes in the competition environment. We rely on two measures that reflect how profitably and efficiently a peer operates, the operating margin and turnover ratio (e.g., Ang et al., 2000). Specifically, if a peer realizes a high operating margin, it succeeds in generating revenue at a low variable cost, while a high turnover ratio indicates that an individual peer uses its assets efficiently to realize revenue (Chhaochharia et al., 2017). If the LBO intensifies competition, we expect peers with higher operating margins and higher turnover ratios to cope better with its increase. Alternatively, if the LBO puts pressure on the buyout targets, we assume their peers can better exploit this window of opportunity.

3 | DATA ON LBOs AND THEIR INDUSTRY PEERS

Our event dataset includes the US leveraged buyouts announced between January 1996 and December 2017. We start with all transactions from Thomson Mergers & Acquisition Database via Thomson Reuters Eikon labeled as LBOs or going private transactions, in which the acquirer is interested in taking the majority of the target company. As targets, we exclude the financial (i.e., SIC codes 6000-6999) and utility industries (i.e., SIC codes 4000-4999; e.g., Fama & French, 2002). We only select those deals in which the acquirer is a PE investor, we focus on transactions with acquirers from the financial industry (SIC codes 6000-6999) and exclude non-PE investors by relying on acquirer business descriptions, deal descriptions, and acquirer types from Thomson Reuters Eikon, as well as acquirer firm types from Capital IQ.

For each LBO target, we define the peers as all companies that have common shares (CRSP share codes 10 and 11) traded at the NYSE, NASDAQ, or Amex for the same three-digit SIC code (Grennan, 2019; Leary & Roberts, 2014). We obtain stock market data and industry classification codes for peers from the Center for Research in Security Prices (CRSP). Company fundamentals are from Compustat and Thomson Reuters Datastream. To examine the post-LBO peer operating performance, we collect company fundamentals up the last quarter of 2019. We are aware of the possibility that firms in the same three-digit SIC industry may have a supplier–customer relationship. We address this issue in Section 7.2. If peers face multiple LBOs within a short period of time in their industry, the effects of follow-on LBOs can be influenced by the effects of first-time LBO. Therefore, we impose a restriction of at least 180 trading days between two LBOs affecting the same peer, or otherwise we exclude the latter LBO. The flip side of this restriction is that we lose observations and may ignore potentially positive industry-wide information that could be reflected in follow-on buyouts. In Section 8.1 we moderate this restriction. Furthermore, we ensure that other LBOs in the same industry do not take place within the event window because they could bias the abnormal returns. We also exclude peers that are subject to the acquisition of assets (>50%), mergers, or acquisition of majority interest within the event window. In unreported regressions, we exclude the peers that are affected by other corporate events. The results are robust to this alternative sample. Finally, we remove peers if they do not have closing prices for at least 60 days in the estimation window and on each day within the event window.

As a result, we end up with an event dataset of 1221 LBOs and 12,751 peer observations. Figure 1 shows the distribution of the sample across industries. The majority (57%) of our peers comes from the manufacturing industry (SIC codes between 2000 and 3999).

4 | PEER ABNORMAL RETURNS

For each LBO, we estimate peers' CARs around the LBO announcement date to examine whether new information leads market participants to reassess peer valuation. Our main specifications employ the event study with the market model and the S&P500 index as market portfolio and an estimation window of 180 trading days (from −218 to −39). We use adjusted closing stock prices from the CRSP. All results are robust when using the CRSP value-weighted market index as an alternative proxy for the market portfolio. Moreover, the results remain stable when we opt for shorter or longer estimation windows (120 and 250 days). Figure 2 shows the average peer CAR around the LBO announcement. In addition to the market model, we display the results for the three-factor Fama–French (FF) model and the four-factor Carhart (C)

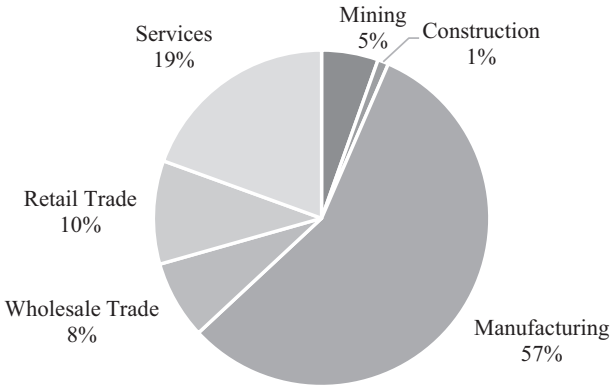
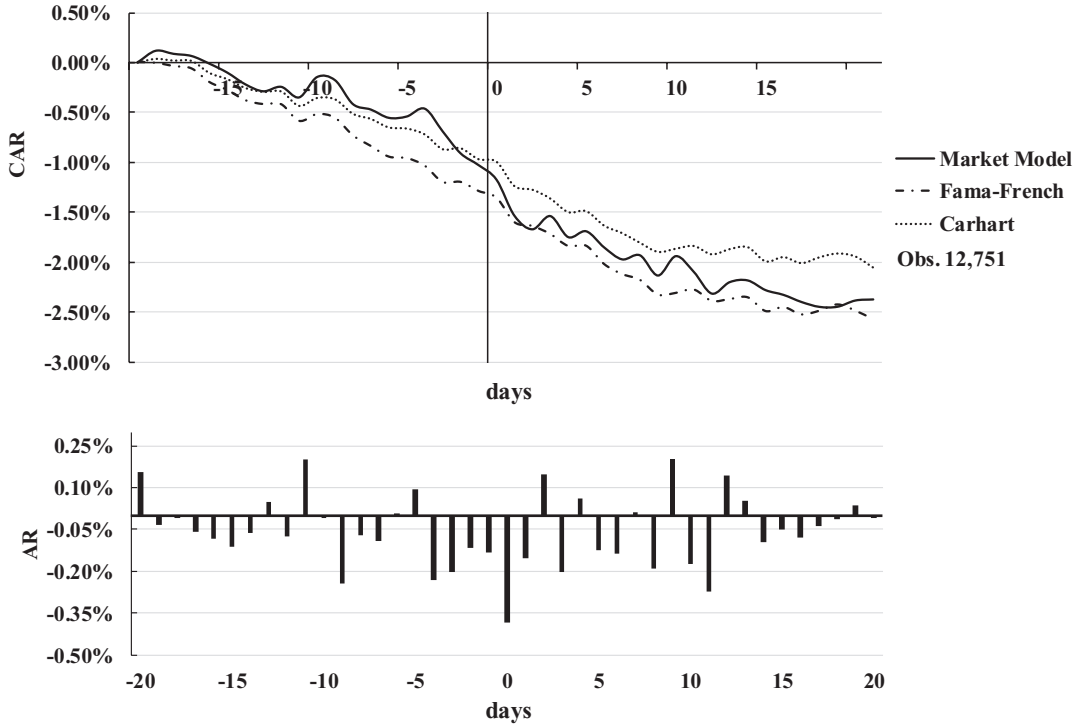


FIGURE 1 Peers to the leveraged buyouts between January 1996 and December 2017, by industry. This figure shows the distribution of the 12,571 peer observations by industry (classification according to the SIC division structure).



Event window	CAR MM (%)	CAR FF (%)	CAR C (%)
3-days	-0.70***	-0.42**	-0.38*
	(-3.47)	(-2.17)	(-1.66)
21-days	-1.98***	-1.82***	-1.52***
	(-3.80)	(-3.60)	(-3.73)
41-days	-2.38***	-2.58***	-2.05***
	(-3.47)	(-4.61)	(-3.74)

FIGURE 2 Peer CAR and AR around the buyout announcement date. This figure depicts the mean peer cumulative abnormal return (CAR)/abnormal return (AR) around the buyout announcement date (day 0). We estimate the CAR/AR using the market model with the S&P500 (MM), the three-factor Fama–French (FF) model and the four-factor Carhart (C) model within an estimation window of 180 days [−218; −39]. The values are winsorized at the 1% level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. ARs related to FF- and C-models are presented in Figure A1 in the Online Appendix.

model. In all models, we observe a negative effect from around 10 days before to around 10 days after the announcement date. For our analysis, we thus employ a 21-day event window. To test our CARs for statistical significance, we use the adjusted Boehmer, Musumeci, and Poulsen (BMP) test-statistic proposed by Kolari and Pynnönen (2010) that accounts for cross-correlation and autocorrelation. The mean CAR[−10, +10] is highly statistically and economically significant in all three models. It amounts to −1.98% in the market model, which results in an aggregated market capitalization loss of USD 389.1 billion.[3] We see a statistically significant reaction directly around the event date: the mean three-day CAR amounts to −0.70% in the market model and the largest reaction occurs at Day 0. For a longer event window of 41 days, the mean CAR is −2.38%. The CARs (and other continuous variables) are winsorized at the 1% level to reduce the effects of outliers. Non-winsorized mean CAR[−10, +10] is −1.95%.

While studies on event companies typically focus on shorter event windows, research that considers peer reactions often relies on longer event windows and identifies small effects immediately around the event. This second-order effect may incorporate the announcement of an event more slowly than the first-order one. For example, Hsu et al. (2011) focus on event windows of 11 and 26 days (the corresponding CARs are −0.37% and −1.40%, respectively). Although the LBO effect tends to incorporate slowly, Figure 2 shows that the peer reaction is the strongest on the day of the LBO announcement (−0.38%).

To verify whether we measure abnormal returns and not load on an omitted asset pricing factor, we run a placebo test by conducting event studies around non-event dates. We consider peer CARs 1 year before and 1 year after the actual buyout. In both cases, we find an average CAR[−10, +10] that does not differ significantly from zero (−0.21% with a t-statistic of −1.06% and −0.05% with a t-statistic of −0.30). These results make us confident that our approach captures the peer abnormal returns of the target LBO announcements. As another robustness check, we run all regressions for a

peer sample from which we exclude penny stocks to ensure our results are not driven by these stocks. Similar to Chiang et al. (2017), we define penny stocks as those companies that have a stock price below USD 2 in more than 50% of the days within the event window. The mean CAR[−10, +10] is similar (−2.03%), as are the results for all regressions. Therefore, we conclude that our findings are not affected by penny stocks.

Our approach relies on the assumption that the LBO announcement is exogenous information to the market participants. However, it is possible that market participants anticipate that an LBO deal in a particular industry could take place. In this case, several companies may be viewed as potential LBO targets prior to the LBO announcement. As a consequence, these companies may experience pre-announcement price run-ups. Once the LBO announcement occurs, a price correction takes place for peers, that is, those firms that were not ultimately acquired. In other words, the observed negative peer reaction could simply be a price correction of a prior run-up. We indeed observe such run-ups, but their magnitude is relatively small compared with the peer CARs around the announcement. For example, in the period between Day −99 and −39, the average run-up amounts to 0.35% and is only marginally significant (t-statistics of 1.65). Moreover, all our results are robust toward including the run-up variable as an additional regressor.

We perform two additional tests to support our conclusion that LBO announcements have a negative effect on peer stock market valuations (see Online Appendices A and B in detail). First, we use an exogenous shock to short sales to analyze whether the negative effect is more pronounced when short sales are removed. Specifically, we argue that, if stock market participants are restricted in taking short positions in declining markets, the downward pressure on stock prices could be reduced (Boehmer & Wu, 2013). In line with our expectations, we find that LBO announcements result in a more negative reaction when short-sale restrictions are removed. Second, we examine peer CARs around the LBO outcome date, and we find them to be negative for completed LBOs. Conversely, when the original event is reversed and the LBO canceled, peer CARs are positive.

On average, we find a negative peer reaction. Our first aim is to understand whether this negative reaction is a combination of the negative effects coming through the information and competition channels or whether these effects work in the opposite directions, but the negative effect dominates the positive one. Our second aim is to understand the drivers behind peer reactions.

5 | INFORMATION AND COMPETITION CHANNEL

To examine whether the peer stock price reaction propagates through the information or the competition channel, we rely on two quasi-natural experiments.[4]

5.1 | Information channel

If LBO announcements reveal information about peer value, we expect a stronger announcement effect for peer stocks that suffer from higher valuation uncertainty. In this section, we test whether an exogenous increase in the valuation uncertainty of a peer stock caused by a random decrease in analyst coverage results in a stronger peer reaction when an LBO is announced in the industry. We rely on the exogeneous shock in peer analyst coverage because otherwise an increase in peer analyst coverage could be the consequence of a higher demand for information due to an increase in the company opaqueness.

To obtain the names of brokers and number of analysts covering individual peer stocks for each event date, we consider the Institutional Brokers Estimates System (IBES). For each peer stock, we track whether it is affected by an exogenous reduction in analyst coverage due to broker closures or mergers (Derrien & Kecskés, 2013). We exploit multiple sources to retrieve the information on these broker events. Specifically, we use data from Derrien and Kecskés (2013) on broker mergers and closures, which end in 2008. Then, we further employ Capital IQ and press releases using Lexis-Nexis. To verify these events, we check whether the Financial Industry Regulatory Authority (FINRA) recorded a termination notice. From FINRA, we also obtain information about the brokers expelled from capital market operations. Our analysis considers only the brokers regulated by FINRA for two reasons. First, we want to ensure that we only include brokers and do not mix them with other financial intermediaries, such as asset management companies labeled as brokers or the brokerage firms in Capital IQ. Second, the information about unregistered brokers is often incomplete.

Kelly and Ljungqvist (2012) argue that a random decrease in the number of analysts covering a particular stock (due to mergers or closures) increases valuation uncertainty. Before we start with the main analysis, we test this argument on

our dataset. To this end, we compute the change in the mean analyst forecast error and forecast dispersion for the peers belonging to the treated group (TreatedAN = 1) and compare it to the change within the control group (TreatedAN = 0) around the broker event. The treated group consists of peers subject to a decrease in the number of analysts covering the stock due to broker closures or mergers. For the main analysis in this section, we consider the period between the 12-month period after the broker event (Post = 1) and the 12-month period prior to the broker event (Post = 0). Table 1 shows that the mean forecast error within the treated group increases by 71.43% and the dispersion by 43.33% after the broker event. These increases are statistically significant. The changes in the control group are 2.94% and 7.34%, respectively, and statistically insignificant. Additionally, the differences between the treated and control groups are insignificant pre-treatment and highly statistically significant post-treatment. We conclude that a random decrease in peer analyst coverage is associated with an increase in peer valuation uncertainty.

We present the results from the main analysis using CAR[−10, +10] as dependent variable in Table 2. In all regressions, we double-cluster standard errors at the peer-year level and we employ peer and year-fixed effects. In column (1), we additionally include only the variable of interest, which is interaction term TreatedANxPost.[5] We find that the treated peers show a more negative reaction after the decrease in analyst coverage than peers that do not suffer from this decrease. This effect is highly statistically significant. The magnitude amounts to −6.68 percentage points, being more than three times larger as the mean announcement effect in the sample. In column (2), we control for the variables related to peer, deal, and industry characteristics. The coefficient on the interaction term drops slightly but remains highly statistically and economically significant. We test our results using alternative time periods for the broker closures and mergers. In columns (3)–(4), resp. (5)–(6), we consider broker events that occurred during one and a half and 2 years prior to the LBO announcement, respectively. The coefficient drops for these longer periods, but it remains highly statistically and economically significant.

We conclude that an exogenous decrease in the availability of information about a peer stock caused by an exogenous reduction in analyst coverage leads to more negative peer abnormal returns. The magnitude varies between −3.55 and −6.68 percentage points. This finding suggests that LBOs reveal new and negative information about peer value supporting the revaluation hypothesis.

5.2 | Competition channel

We argue that with a stronger existing competition within an industry, peers will be hurt more by its further increase (e.g., Harford et al., 2016; Kovenock & Phillips, 1997) because the scope for their efficiency improvements is limited and adaptations tend to be more costly due to higher cost of debt (Valta, 2012), riskier cash flows and more volatile stock returns (Abdoh & Varela, 2017; Gaspar & Massa, 2006). To capture the variation in competition levels across industries, our identification strategy relies on exogenous shocks to the competition levels caused by import tariff cuts. We observe multiple shocks, as different industries experience tariff cuts at different time points. An import tariff cut in an industry leads to an increase in the competition within that industry because the prices of foreign products decrease (Frésard, 2010;

TABLE 1 Analyst forecast error and dispersion.

	Forecast error				Dispersion			
	Pre	Post	Difference	*p*-Value (pre vs. post)	Pre	Post	Difference	*p*-Value (pre vs. post)
Treated AN = 1	0.028	0.048	0.020 (71.43%)	.022***	0.120	0.172	0.052 (43.33%)	.028***
Treated AN = 0	0.034	0.035	0.001 (2.94%)	.375	0.109	0.117	0.008 (7.34%)	.140
Difference	−0.006	0.013			0.011	0.055		
p-Value (Treated AN = 1 vs. Treated AN = 0)	.874	.068***			.266	.007***		

Note: This table shows the mean analyst *forecast error* (absolute difference between the mean earnings per share forecast and the realized earnings per share, scaled by the stock price at the end of the estimation window) and analyst forecast *dispersion* (standard deviation of analyst forecasts) for the peers that are subject to a decrease in analyst coverage due to a broker closure or merger (*TreatedAN = 1*) and for the control group (*TreatedAN = 0*). *Post* indicates the 12-month period after the broker event and *Pre* indicates the 12-month period prior to the broker event. Differences are calculated between the pre and post values for each group, as well as between the treated and control groups for each period. *p*-Value refers to the *t*-test for the comparison of the respective means (pre vs. post, treated vs. control). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 2 Information channel.

	12 months		18 months		24 months	
	(1)	(2)	(3)	(4)	(5)	(6)
TreatedANxPost	−6.68***	−5.20**	−4.21***	−4.12***	−3.56***	−3.55***
	(−3.48)	(−2.56)	(−3.57)	(−3.45)	(−3.10)	(−2.94)
Controls	No	Yes	No	Yes	No	Yes
Peer FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2671	2377	3605	3182	4055	3585
R^2	.53	.56	.49	.53	.46	.50
F-value	12.14	15.28	12.74	19.87	9.63	16.57
p-Value	.00***	.00***	.00***	.00***	.01***	.00***

Note: This table depicts the results of the fixed effects regressions with dependent variable peer *CAR[−10, +10]*, which is the peer cumulative abnormal return within the 21-day event window around the buyout announcement date. We winsorize *CAR[−10, +10]* at the 1% level. Variable *TreatedANxPost* is the interaction between the two binary variables. *TreatedAN* equals 1 if the peer experiences a decrease in analyst coverage due to broker closures or mergers. *Post* indicates whether this decrease took place in the 12 (columns (1)–(2)), 18 (columns (3)–(4)), or 24 months preceding the buyout announcement (columns (5)–(6)). We employ the same control variables as in Table 5. All regressions include a constant. The sample covers only peers for which we have at least one observation prior to the broker event and at least one observation after the event. Standard errors are double-clustered at the peer-year level, *t*-values are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 3 Competition channel.

	TC 2		TC 2.5		TC 3	
	(1)	(2)	(3)	(4)	(5)	(6)
TreatedTCxPost	−5.63***	−6.80***	−5.48***	−6.60***	−4.37**	−4.93**
	(−3.90)	(−3.04)	(−3.78)	(−2.97)	(−2.58)	(−2.26)
Controls	No	Yes	No	Yes	No	Yes
Peer FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1266	1145	1279	1157	1323	1199
R^2	.58	.62	.58	.62	.58	.61
F-value	15.19	4.77	14.27	5.15	6.64	4.28
p-Value	.00***	.00***	.00***	.00***	.02**	.01***

Note: This table shows the results of the fixed effects regressions with dependent variable peer *CAR[−10, +10]*, which is the peer cumulative abnormal return within the 21-day event window around the buyout announcement date. We winsorize *CAR[−10, +10]* at the 1% level. Variable *TreatedTCxPost* is the interaction between the two binary variables. *TreatedTC* equals 1 if a peer is from an industry that experiences a tariff cut at least twice (columns (1)–(2)), two and half (columns (3)–(4)), or three times (columns (5)–(6)) as large as its industry median change. *Post* indicates whether a tariff cut took place in the year preceding the buyout. We employ the same control variables as in Table 5. All regressions include a constant. The sample covers only peers for which we have at least one observation prior to the tariff-cut event and at least one observation after the event. Standard errors are double-clustered at the peer-year level, *t*-values are reported between parentheses. *** and ** indicate statistical significance at the 1% and 5% levels, respectively.

Frésard & Valta, 2015). We rely on an exogeneous increase in industry competition instead of a pure competition measure because buyouts may be linked to the competition level either through a direct effect or a third variable.

Our binary treatment variable TreatedTC equals one if the negative change in the tariff rate is at least twice (alternatively two and a half or three times) its industry median change and if it is not followed by equivalently large increases in tariff rates over the two subsequent years. We impose these restrictions because we only want to include tariff cuts that are large enough and not reversed after a short period (e.g., Frésard, 2010). Following Frésard (2010) and Frésard and Valta (2015), we compute the tariff rate for an industry-year as duties collected (ad valorem tariff) divided by the value of imports (free-on-board value). We obtain these data from Schott (2008) and Schott's webpage. We transform the product-level import data from HS codes into SIC codes by applying the concordance table developed by Pierce and Schott (2012).

Table 3 shows the results of six specifications with the dependent variable CAR[−10, +10]. In all regressions, we include peer and year-fixed effects and cluster the standard errors by peer and year. Our main specifications in columns

(1)–(2) consider the tariff rate changes that are "twice or larger." In column (1), we additionally include only the variable of interest, namely, interaction term TreatedTCxPost. Post indicates whether a tariff cut took place in the year preceding the buyout. We find that peers facing an increase in competitive pressure are affected more by a buyout announcement than those that do not suffer from this increase. The coefficient on the interaction term is highly statistically significant, amounting to −5.63 percentage points. We add controls related to peer, deal, and industry characteristics in column (2). We then test our results with two alternative tariff-cut thresholds in columns (3)–(6). The results remain highly statistically significant, and their magnitudes are comparable.[6]

Overall, the results in this section show that, after an exogenous increase in competition, peers exhibit more negative abnormal returns around buyout announcements. The magnitude varies between −4.37 and −6.80 percentage points. These findings support the competitive pressure hypothesis.

6 | CROSS-SECTIONAL DIFFERENCES IN PEER CARs

6.1 | Descriptive statistics

Our results suggest that, on average, peers exhibit a negative reaction to a buyout announcement in their industry and this reaction is driven by peer revaluation (information channel) and increase in competitive pressure in the industry (competition channel). To gain a deeper understanding of the drivers behind peer reactions, this section examines peer, target, and industry characteristics and how they relate to the cross-sectional differences in peer CARs. We provide the results in Table 4. Detailed definitions and the sources of all variables are in Appendix 1.

To examine the information channel, we compare the mean and median CARs between peers with higher and lower levels of valuation uncertainty. To this end, we first split the peer sample into two subsamples, with high or low number of analysts (above or below/equal the median). Peers tracked by a below-median number of analysts exhibit more negative cumulative abnormal returns (mean CAR: −2.26% vs. −1.40%; median CAR: −1.28% vs. −0.69%). The differences between the mean CARs, as well as between the median CARs, are highly statistically significant. Next, we split the sample by the medians of the analyst forecast error and of the forecast dispersion. The results show that less precise forecasts are associated with significantly stronger negative reactions. Peer stocks also show a more negative reaction when market sentiment is high. To sum up, we find a more negative CAR[−10, +10] in environments in which uncertainty is higher, that is, where information is more value-relevant. Finally, peers with higher relative valuations (higher M/B ratios) have more negative reactions. A high M/B ratio can be a sign of company overvaluation but may also reflect the high growth potential of the company. Therefore, we follow Rhodes-Kropf et al. (2005) and decompose the M/B ratio into peer valuation error (sum of the peer-specific error and time-series industry error) and growth component. The results show that the valuation error has a positive mean and median value, suggesting that peers tend to be above their implied sector valuation multiples and long-run average values. The sample split supports the view that higher valuation error is associated with a more negative abnormal reaction. Overall, these findings support the revaluation hypothesis.

To deal with the competition channel, we split the sample into subsamples using the median of the respective competition variables. Peers with an above-median operating margin realize a mean CAR[−10, +10] of −1.11%, compared with −2.72% for peers with a below-median operating margin (the medians for the two subsamples are −0.53% and −1.73%). For the turnover ratio, the mean CAR[−10, +10] amounts to −0.59% for above-median peers and −3.40% for below-median peers; the medians are −0.43% and −1.79%, respectively. The differences between the means (medians) are highly statistically significant. Finally, we control for the overall competition level by the Herfindahl index.[7] We find a negative mean and median CAR[−10, +10] in the below-median-Herfindahl index subsample (−4.12% and −2.51%), while the mean and median CAR[−10, +10] in the above-median subsample are not statistically different from 0. These results support the competitive pressure hypothesis, as more flexible peers and those exposed to a lower competition level exhibit a smaller decrease in CAR[−10, +10].

Finally, we include variables relevant in both channels. The first variable is a binary variable private that reflects the buyout target listing status. In our sample, 85.66% of the LBO targets are private companies. Derrien et al. (2023) argue that peer reactions depend on the target listing status. If an investor decides to acquire a private (not public) target, market participants interpret it as new information that public targets, in general, are overvalued and revise their valuations downward. Consistently with the revaluation hypothesis, we should observe negative peer abnormal returns when a deal with a private target is announced. If an investor selects a publicly listed firm instead, the market

TABLE 4 Descriptive statistics.

Variable	Mean (%)	Median (%)	SD	Mean CAR if variable high (%)	Mean CAR if variable low (%)	*p*-Value diff.	Median CAR if var. high (%)	Median CAR if var. low (%)	*p*-Value diff.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
No analysts	6.43	4.00	6.87	−1.40***	−2.26***	.00***	−0.69***	−1.28***	.01***
Forecast error	0.05	0.01	0.08	−1.96***	−0.92***	.00***	−1.21***	−0.39***	.00***
Dispersion	0.13	0.07	0.15	−1.68***	−0.78***	.00***	−0.81***	−0.24*	.05**
Sentiment	0.20	0.03	0.75	−2.91***	−1.06***	.00***	−1.40***	−0.80***	.00***
M/B ratio	3.51	2.27	4.81	−4.40***	0.41**	.00***	−2.47***	−0.46	.00***
Peer-specific error	0.00	−0.03	0.78	−3.66***	−0.24***	.00***	−1.92***	−0.21	.00***
Industry error	0.09	0.09	0.28	−4.09***	−0.19***	.00***	−2.47***	−0.21	.00***
Valuation error	0.08	0.05	0.79	−4.32***	0.42*	.00***	−2.34***	0.48***	.00***
Growth component	0.77	0.76	0.02	−3.63***	−0.27***	.00***	−2.39***	−0.21*	.00***
Operating margin	−0.55	0.10	3.55	−1.11***	−2.72***	.00***	−0.53***	−1.73***	.00***
Turnover ratio	0.29	0.25	0.21	−0.59***	−3.40***	.00***	−0.43***	−1.79***	.00***
Herfindahl index	0.18	0.13	0.14	0.04	−4.12***	.00***	−0.10	−2.51***	.00***
Private	85.66	100.00	–	−2.37***	0.30	.00***	−1.16***	−0.24	.00***
High-tech	33.43	0.00	–	−5.66***	−0.14	.00***	−3.76***	−0.21*	.00***
Market cap	2.54	0.39	7.35	−2.09***	−1.88***	.74	−0.99***	−1.11***	.72

Note: This table depicts the means (2), medians (3), and standard deviations (4) for our main variables. All variable definitions are presented in Appendix 1. In column (5), the table shows the mean *CAR[−10, +10]* if the particular variable is "high," which means "the variable is above its median" (for continuous variables) or "equals 1" (for binary variables). Column (6) shows the mean *CAR[−10, +10]* if the particular variable is "low," which means "the variable is below its median" (for continuous variables) or "equals 0" (for binary variables). *CAR[−10, +10]* is the peer cumulative abnormal return within the 21-day event window around the buyout announcement date. Column (7) gives the *p*-Value of the *t*-test for the equality of the mean *CAR[−10, +10]* in columns (5) and (6). Columns (8), (9), and (10) parallel columns (5), (6), and (7) for median CARs instead of mean CARs (we employ the Wilcoxon test instead of the *t*-test). We winsorize all continuous variables at the 1% level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

participants revise their valuations of public peers upward, which results in positive peer abnormal returns. The study by Derrien et al. (2023) could be the missing part of the puzzle that connects the seemingly contradicting findings of Slovin et al. (1991), Harford et al. (2019) and Feng and Rao (2022) on the one hand and Hsu et al. (2011) on the other hand. The first three studies that only focus on public deals, find a positive effect of buyout events on peers, while Hsu et al. (2011), who use an LBO sample with a majority of private transactions, have negative peer CARs on average. The listing status of the target firm may also influence the competition channel, but the direction of the effect is ambiguous. On the one hand, we can expect a stronger effect on the competition resulting from public buyouts rather than private ones because the former are larger on average (Harford et al., 2016) and more similar to their public peers.[8] On the other hand, the buyouts of private targets could lead to a stronger change in the competitive nature of an industry because private-to-private LBOs outperform public-to-private LBOs (Boucly et al., 2011; Cohn et al., 2022). In addition, Gao et al. (2018) claim that private firms' patents are rather exploratory and broader in scope, while public firms' patents are rather exploitative. Therefore, deals with private targets can cause heavier innovation pressure on peers than deals with public targets. Consistent with the private-to-private outperformance and higher innovation pressure explanations, as well as the revaluation hypothesis, we observe negative peer effects when the LBO target is a private company (mean: −2.37%, median: −1.16%), while for public targets, the mean and median CAR[−10, +10] are not statistically different from 0.

Next, we consider the peer high-tech status. As high-tech companies are subject to higher valuation uncertainty (e.g., Aboody & Lev, 2000), new information, which reduces this uncertainty, should have a stronger value relevance. The direction of the effect through the competition channel is ambiguous. On the one hand, we could expect a positive effect because high-tech companies have larger knowledge capital and can thus adapt more easily to intensified competition (Hsu et al., 2011). On the other hand, intensified competition increases the risk for high-tech companies because it raises the probability of losing the innovation race (Gu, 2016). The investors in these companies require a higher risk premium, which leads to a drop in stock prices. Consistent with the innovation race and valuation uncertainty explanations, we find a statistically significant and negative CAR[−10, +10] in high-tech industries (mean: −5.66%, median: −3.76%). For our last variable, peer market capitalization, we do not find any statistically significant difference.

6.2 | Multivariate analysis

In the next step, we regress peer CAR[−10, +10] on the variables discussed in the previous section. The results are shown in Table 5. Column (1) suggests, in line with the revaluation hypothesis, that the mean CAR increases by 1.80 percentage points when the number of analysts increases by one standard deviation from the median value.

In column (2), we run a regression with industry fixed effects to control for time-invariant industry-specific characteristics that may be correlated with our regressors and with abnormal returns. We apply year-fixed effects in column (3) to control for changing market conditions over time. In column (4), we include both fixed effect types. In column (5), we add deal fixed effects to account for potential deal-specific characteristics, such as deal size, that we cannot control for. The coefficient on the number of analysts is highly statistically and economically significant in other specifications too.

Columns (6) and (7) repeat the regression in column (4) with alternative proxies for information availability. We employ a binary variable for high- or low-analyst forecast error (above or below the median) and a binary variable for high- or low-forecast dispersion. For low-forecast precision, the CARs are more negative, which is in line with the revaluation hypothesis.

To relate peer CARs directly to the measures of peer valuation, we use the decomposed M/B measures, that is, the deviations from valuations implied by sector valuation multiples (peer-specific error), the deviations of short-run multiples from their long-run average values (time-series industry error), and the long-run value to book, which reflects the growth potential of a company. The coefficients on the two valuation error components are highly statistically significant and negative for all specifications. These findings suggest that a higher deviation in peer valuation is associated with more negative peer CARs, as predicted by the revaluation hypothesis.

We find a positive relationship between CARs and the turnover ratio, consistently with the competitive pressure hypothesis. A one standard deviation increase in the turnover ratio is associated with an increase in CAR of 0.87 percentage points in column (1). The remaining columns show effects that are similar in terms of the economic and statistical significance.

TABLE 5 Cross-sectional regressions of peer cumulative abnormal returns.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LN (1 + No analysts)	1.05***	0.78**	0.97**	0.70*	0.96**		
	(3.12)	(2.26)	(2.80)	(1.97)	(2.55)		
Forecast error *d*						−1.38***	
						(−3.16)	
Dispersion *d*							−1.28***
							(−3.17)
Sentiment	−0.25	0.02	−1.66	−1.91		−2.23	−2.53**
	(−0.25)	(0.01)	(−1.21)	(−1.57)		(−1.68)	(−2.24)
Peer-specific error	−3.18***	−3.04***	−3.21***	−3.00***	−3.03***	−2.90***	−2.59***
	(−6.97)	(−7.04)	(−6.72)	(−7.15)	(−8.88)	(−7.18)	(−5.82)
Industry error	−4.99***	−5.78***	−7.64***	−7.99***	−3.06**	−8.27***	−7.99***
	(−3.02)	(−4.43)	(−3.40)	(−4.25)	(−2.14)	(−4.34)	(−4.22)
Growth component	1.19	−3.94	0.34	−4.29	−1.00	−6.53***	−7.23***
	(0.47)	(−1.55)	(0.14)	(−1.65)	(−0.40)	(−3.27)	(−3.64)
Operating margin	0.24*	0.18	0.22*	0.18	0.18	0.11	0.08
	(1.79)	(1.58)	(1.78)	(1.59)	(1.67)	(0.93)	(0.65)
Turnover ratio	4.15**	4.25**	4.00**	4.07**	4.00***	4.06**	3.90**
	(2.21)	(2.42)	(2.17)	(2.24)	(2.93)	(2.27)	(2.53)
Herfindahl index	3.13	4.21*	2.63	2.00		1.84	2.10
	(1.55)	(1.81)	(1.36)	(0.81)		(0.74)	(0.85)
Private	−2.85**	−3.01**	−2.25*	−2.81**		−3.01***	−3.09***
	(−2.45)	(−2.75)	(−2.07)	(−2.75)		(−2.87)	(−3.04)
High-tech	−2.85**		−2.75*				
	(−2.15)		(−2.02)				
Market cap	0.07*	0.07	0.08**	0.08	0.09*	0.08*	0.08*
	(2.08)	(1.55)	(2.11)	(1.64)	(1.86)	(1.77)	(1.82)
Deal FE	No	No	No	No	Yes	No	No
Industry FE	No	Yes	No	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes	Yes	Yes
Obs.	11,239	11,239	11,239	11,239	11,082	11,633	10,388
R^2	.06	.08	.08	.11	.27	.11	.10
F-value	18.44	23.34	16.47	24.80	36.09	37.36	25.05
p-Value	.00***	.00***	.00***	.00***	.00***	.00***	.00***

Note: This table displays results of the multivariate regressions for dependent variable *CAR[−10, +10]*, which is the peer cumulative abnormal return within the 21-day event window around the buyout announcement date. Variable definitions are presented in Appendix 1. All regressions include a constant. Standard errors are double-clustered at the peer-year level, and *t*-values are reported between parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Additionally, we observe that the peer CAR is more negative when the LBO target is a private company. Moreover, CARs are more negative for peers in high-tech rather than in low-tech industries.

Finally, it would be interesting to examine how competition and information effects vary with characteristics of LBO investors, for example, if we observe stronger effects for deals by more reputable and larger investors. Unfortunately, data coverage on investor characteristics in private deals is limited.[9]

7 | REVALUATION AND COMPETITIVE PRESSURE HYPOTHESES: FURTHER EVIDENCE

7.1 | Revaluation hypothesis

Hitherto, our results suggest that the revaluation (information channel) and the competitive pressure mechanisms (competition channel) drive the peer reaction. We delve into the revaluation effect by comparing the valuation error between peers to public vs. private targets at the buyout announcement. Consistently with the revaluation hypothesis and the argumentation by Derrien et al. (2023), the results in Table 6 suggest that a median peer to a private target exhibits a positive valuation error, which a median peer to a public target tends to be correctly valued. For the (small) subsample of public deals, we can also consider the valuation of targets. The median target exhibits a downward valuation error, being consistent with superior PE ability to select cheap targets.

7.2 | Competitive pressure

If peers are hurt by the increased competition, their operating performance should deteriorate. In Table 7, we compare peer operating performances in the eight quarters prior to the LBO announcement to that in the eight quarters after the LBO announcement. We observe a statistically significant decrease in all performance measures (i.e., EBITDA-to-assets ratio, turnover ratio, and operating margin). Furthermore, peers significantly cut their investments (CAPEX-to-assets ratio). They increase their leverage ratios and, consequently, their distress risk (proxied by Altman's *Z*-score) goes up. These results support the view that peers, on average, suffer from an increase in the competitive pressure that buyouts generate rather than

TABLE 6 Valuation of peers and targets.

Variable	Obs.	p10	p25	p50	p75	p90	*p*-Value
Valuation error, all peers	12,274	−0.89	−0.44	0.05	0.57	1.09	.00***
Valuation error, private	10,516	−0.89	−0.44	0.06	0.57	1.10	.00***
Valuation error, public	1758	−0.95	−0.50	0.01	0.53	1.06	.14***
Valuation error, target (public)	94	−1.19	−0.84	−0.43	0.02	0.33	.00***

Note: This table exhibits the valuation error (the sum of the peer-specific valuation error and the time-series industry valuation error) as introduced by Rhodes-Kropf et al. (2005) for peers (all peers, peers to private targets, peers to public targets) and public targets. *** indicates statistical significance of the Wilcoxon test at the 1% level.

TABLE 7 Peer-operating performance.

Period	EBITDA-to-assets ratio	Turnover ratio	Operating margin	CAPX-to-assets ratio	Leverage ratio	*Z*-score
Panel A: Mean						
8 quarters pre-LBO	1.55%	0.30	−0.51	1.66%	21.15%	5.93
8 quarters post-LBO	0.88%	0.28	−0.56	1.44%	21.95%	3.84
Difference	−0.67%	−0.02	−0.05	−0.22%	0.80%	−2.08
p-Value	.00***	.00***	.02**	.00***	.00***	.00***
Panel B: Median						
8 quarters pre-LBO	3.05%	0.26	0.11	0.99%	16.46%	2.51
8 quarters post-LBO	2.74%	0.24	0.10	0.84%	17.13%	2.20
Difference	−0.31%	−0.02	−0.01	−0.15%	0.67%	−0.30
p-Value	.00***	.00***	.00***	.00***	.04**	.00***

Note: This table shows several operating performance measures of peer firms eight quarters before and eight quarters after a buyout in their industry. In Panel A, we report the means of these measures and the post vs. pre differences. *p*-Values refer to the *t*-test for comparison of the respective means. In Panel B, we display the medians and their differences. *p*-Values refer to the Wilcoxon tests for the comparison of the respective medians. All variable definitions are presented in Appendix 1. *** and ** indicate statistical significance at the 1% and 5% levels, respectively.

benefitting from efficiency improvements or a reduced flexibility of the buyout target. The decline in peer operating performance also provides another argument against the positive industry prospects hypothesis under the information channel.

Hitherto, we have assumed that companies within the same three-digit SIC industry are competitors and argued that a buyout affects adversely other companies in this industry by increasing the competitive pressure. However, companies within the same three-digit SIC industry may also be vertically integrated. If our peers are customers rather than the direct competitors of the buyout target, they may improve their bargaining position and, thus, benefit if the competition upstream of the supply chain intensifies. For these companies, we should observe a positive rather than negative competition effect. We address this issue by replicating our main estimations for a sample from which we exclude the industry-years from the top quintile of the vertical integration. In this way, we aim to remove industries for which we expect to find a large number of peers that are not competitors to the buyout target. The procedure is described, and the results presented in Online Appendix S3. When we exclude industry-years from the top quintile of the vertical integration, peer CARs exhibit slightly greater magnitudes than those in the main sample, which is in line with our expectations. The mean CAR[−10, +10] is −2.54%, the mean CAR[−1, +1] is −0.91%, and the mean CAR[−20, +20] reaches −2.95%. The results of both quasi-natural experiments are comparable to our main findings (see Table A2). Furthermore, we find similar results for our variables of interest in the cross-sectional analysis (see Table A3). We conclude that our results are robust to the exclusion of those three-digit SIC industry-years that are under suspicion of being strongly vertically integrated.

8 | POSITIVE INDUSTRY PROSPECTS AND ACQUISITION PROBABILITY HYPOTHESES

8.1 | Positive industry prospects hypothesis

In our sample, we have not found any evidence of positive industry prospects hypothesis. This section compares the reactions to early and late buyouts in an industry. An isolated buyout may reveal new information about valuation on which the peer stock prices react. However, when further buyouts in the same industry follow, market participants may start to view the follow-on buyout announcements as a sign of positive industry prospects. Consequently, the initial negative peer reaction could reverse, resulting in positive peer CARs when follow-on buyouts are announced.

To examine the reaction to early (and isolated) versus late buyouts, we use an alternative sample. In the main event study, we imposed a restriction of at least 180 trading days between two LBOs affecting the same peer to mitigate the potential effect of confounding events. The disadvantage of this approach is that we exclude those close follow-on buyouts for which we would observe a positive effect under the positive industry prospects hypothesis. Consequently, when we remove these cases from the sample, the peer CARs could be biased downward. To address this issue, we reduce the time between the two events from 180 to 80 days and allow multiple events within an event window. The mean CAR[−10, +10] in this sample is smaller than that in the main sample (−0.72%), yet still statistically significant. The same applies to CARs for the shorter and longer event windows. The mean CAR[−1, +1] is −0.21% and the mean CAR[−20, +20] −0.99%.

We show the results of our quasi-natural experiment for the information channel and this extended sample in Table 8. We first replicate the first two regressions from Table 2 (we show the results from the remaining four regressions in Table A4 in Online Appendix S4). If early buyouts exhibit a negative reaction and late ones exhibit a positive reaction, the average effect might be statistically insignificant. We indeed find that the (negative) information effect disappears when we include buyouts that take place closer to another buyout in the industry. Table A5 in Online Appendix S4 demonstrates the results for the competition channel within this sample. The competition effect remains largely unaffected.

To better understand the disappearing information effect, we differentiate between earlier and later buyouts in an industry. In columns (3) and (4), we include a count variable sequence (for the first, second, third, etc. buyout in the industry), as we are interested in the triple interaction term of this variable with the original interaction term. The coefficient on the triple interaction term is positive, while the coefficient on the double interaction term is negative. Both are statistically significant.

8.2 | Acquisition probability hypothesis

If a buyout reveals private information about expected future industry prospects, it is likely that more buyouts will follow in that industry (Harford et al., 2016). If market participants realize that some peers likely become targets in future

TABLE 8 Positive industry prospects.

	(1)	(2)	(3)	(4)
TreatedANxPost	−0.23	−0.09	−7.72*	−8.35**
	(−0.27)	(−0.10)	(−2.03)	(−2.43)
SequencexTreatedANxPost			3.56**	3.93**
			(2.17)	(2.62)
Sequence			2.99	2.91
			(1.08)	(1.12)
SequencexTreatedAN			−1.59**	−1.15*
			(−2.44)	(−1.94)
SequencexPost			0.37	0.18
			(1.45)	(0.67)
Controls	No	Yes	No	Yes
Peer FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Obs.	16,517	14,851	16,517	14,851
R^2	.27	.28	.27	.29
F-value	0.07	6.37	3.74	12.11
p-Value	.79	.00***	.01**	.00***

Note: This table depicts the results of the fixed effects regressions with dependent variable peer *CAR[−10, +10]*, which is the peer cumulative abnormal return within the 21-day event window around the buyout announcement date, for an alternative sample that reduces the time between two buyout events from 180 to 80 days and allows multiple events within the event window. We winsorize *CAR[−10, +10]* at the 1% level. We employ the same control variables as in Table 5. All regressions include a constant. The sample covers only peers for which we have at least one observation prior to the broker event and at least one observation after the event. *TreatedANxPost* is the interaction between the two binary variables. *TreatedAN* equals 1 if the peer experienced a decrease in analyst coverage due to broker closures or mergers. *Post* indicates whether this decrease took place in the 12 months preceding the buyout announcement date. *Sequence* refers to the (log) ordering of buyouts in the corresponding three-digit SIC industry. Standard errors are double-clustered at the peer-year level, and *t*-values are reported between parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

buyouts, their valuations will increase (Song & Walkling, 2000). To test the acquisition probability hypothesis in our sample, we compare the mean CARs between peers that will become future acquisition targets in the next year with those of other peers. We observe a statistically significant difference (−0.98% vs. −2.12%). In addition to this univariate comparison, in Table 9, we replicate all regressions from Table 5 with an additional binary variable future target. Its coefficient is highly statistically significant and positive. For the peers that become targets, the CAR, which amounts to −1.98% on average, is less negative by a magnitude between 0.99 and 1.36 percentage points. These results suggest that market participants may anticipate follow-on acquisitions to some extent.

9 | DISCUSSION, LIMITATIONS, AND CONCLUSIONS

This study demonstrates that, on average, leveraged buyouts lead to negative announcement returns for peers in buyout target industries. We attribute our findings to private information about peer value and to news about changes in the competition that an unexpected buyout announcement reveals. So far, the literature has established that private equity investors improve the performance of their target companies. Our results suggest that they also tend to contribute to the improved information efficiency of stock markets by reducing errors in peer valuation. Additionally, they may induce industry restructuring through the intensification of competitive pressure.

Moreover, we demonstrate that peers exhibit significant heterogeneity in reactions, which explains why different studies, which have used different samples, have come to different conclusions in terms of the channel and the direction of the peer effect. One important determinant of the peer reaction is the target status. Therefore, it is not surprising that prior studies that focus on public deals (such as Feng & Rao, 2022; Harford et al., 2019 or Slovin et al., 1991) find an opposite direction of the effect than studies dealing with the entire population of deals, which is dominated by private targets (e.g., Hsu et al., 2011).

TABLE 9 Follow-on acquisitions.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Future target	0.99**	1.10***	0.94**	1.05***	1.17***	1.36***	1.12**
	(2.73)	(2.92)	(2.62)	(2.88)	(3.66)	(3.57)	(2.52)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deal FE	No	No	No	No	Yes	No	No
Industry FE	No	Yes	No	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes	Yes	Yes
Obs.	11,239	11,239	11,239	11,239	11,082	11,633	10,388
R^2	.06	.08	.08	.11	.27	.12	.11
F-value	19.75	23.42	16.46	24.65	40.07	36.68	22.50
p-Value	.00***	.00***	.00***	.00***	.00***	.00***	.00***

Note: This table displays the results of the multivariate regressions with dependent variable *CAR[−10, +10]*, which is the peer cumulative abnormal return within the 21-day event window around the buyout announcement date. The main variable of interest is *Future target*, a binary variable that equals 1 if the peer firm became a target in a strategic or financial acquisition in the year after the buyout announcement date, and 0 otherwise. We employ as control variables the same variables as in Table 5. All regressions include a constant. Standard errors are double-clustered at the peer-year level, *t*-values are reported between parentheses. *** and ** indicate statistical significance at the 1% and 5% levels, respectively.

In addition, we demonstrate that the negative effect tends to be driven by buyouts isolated in time or by early buyouts in an industry, which might explain why studies on an aggregate level, which focus on the industry-wide volume of the buyout activity, find rather a positive than a negative effect. For example, Bernstein et al. (2017) find faster growth in productivity and employment in industries associated with leveraged buyouts. More fine-grained research is needed to fully understand the short- and long-term implications of leveraged buyouts and the processes they launch in the peer companies and the target industries. Below, we discuss possible further research ideas.

Overall, it would be helpful to observe which type of actions the peers take and what their outcomes are, for example, in terms of changes in market shares. A related issue is the effect on common ownership in the competition channel (for recent surveys on common ownership and its effects, see, e.g., Schmalz, 2018, 2021). If large investors own stakes in more companies within the same industry, the incentives for those companies to compete get reduced. In our setting, future research could examine two effects. The first relates to the common ownership of targets and peers by the same PE investor. Another potential avenue would be to analyze whether the competition effect gets smaller when peers share a common owner.

Another interesting topic would be to examine how peer effects depend on ties and networks between the investor, the target, and its peers. Regarding the information channel, stronger ties and networks may improve the transmission of information. Fuchs et al. (2021) show that educational ties play a role in private equity. Connections may matter in the competition channel as well. Stronger connections may lead to a decrease in the competitive pressure. For example, Brinster and Tykvová (2021) demonstrate that ties between private equity investors facilitate the formation of strategic alliances among portfolio companies.

Moreover, the peer effect may depend on the geographical location and the industry of the investor, the target, and its peers. Besides the information and competition environments, which we focus on in this paper, industries and countries differ in many other relevant aspects, which may influence the way how peer effects propagate. Several studies consider the role of institutional and cultural characteristics in private market investments (e.g., Cao et al., 2015; Tykvová, 2018). In addition, domestic and cross-border deals are different (see, e.g., Aizenman & Kendall, 2012; Schertler & Tykvová, 2011). Only a few studies focus on differences in peer effects in different countries and their potential drivers. Aldatmaz and Brown (2020) find that only peers in moderately innovative countries benefit from attempts to improve their efficiency after a buyout. In highly innovative countries such as the US, which our study focuses on, peers already tend to operate close to top-efficient levels and, thus, have only limited space for further improvements. In line with this reasoning, studies using global samples (e.g., Aldatmaz & Brown, 2020; Bernstein et al., 2017) come to different conclusions than studies that focus on the United States (e.g., Hsu et al., 2011). We invite research that helps in understanding the different mechanisms and processes initiated through buyouts in different industries and countries as well as in domestic vs. cross-border deals.

While we consider the peer reaction at the deal announcement date, another interesting avenue of research could be to examine whether peers react to rumors about private equity acquisitions. While evidence from M&A transactions shows that target firms respond abnormally to rumors (e.g., Andres et al., 2023), rumors about buyouts and, in particular, their potential effect on peers remain an underresearched area. Finally, our results contribute to a better understanding how leveraged buyouts affect industry peers, but this research can be extended to other corporate events as well. Our approach, which uses quasi-natural experiments to determine whether peer effects propagate through the information or competition channels, can be applied, for example, to examine how management buyouts, initial public offerings, or strategic alliances between companies affect industry peers.

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ENDNOTES

[1] For instance, Boucly et al. (2011), Guo et al. (2011), and Acharya et al. (2013) conclude that target companies increase operating efficiency, improve corporate governance, and implement changes in their capital structure after an LBO. Other examples are Kaplan (1989), Lehn and Poulsen (1989), Smith (1990), Lerner et al. (2011), Harford and Kolasinski (2014), or Bernstein and Sheen (2016). Excellent reviews of literature include Metrick and Yasuda (2011) or Eckbo and Thorburn (2013).

[2] The existence of the peer valuation error is in line with rational models in which the PE investor owns private information that is not part of investors' information set at time t (e.g., Rhodes-Kropf & Viswanathan, 2004).

[3] The sum of changes in market capitalization for all 12,751 individual peers. For each peer, we multiply the 21-day CAR by the corresponding peer market capitalization (on Day −10, based on 2017 USD).

[4] Our setting resembles a difference-in-differences estimation, but—in contrast to a standard setting—we do not observe a set of control and treated firms over a certain period of time prior and after the treatment. Rather, each individual peer "observation" emerges when there is a buyout in the peer industry.

[5] The individual components of the interaction term are absorbed by the fixed effects (TreatedAN is included in the peer fixed effects, Post is spanned by the year-fixed effects).

[6] Frésard (2010) and Frésard and Valta (2015) use compiled import tariff data from Feenstra (1996) and Feenstra et al. (2002), which include manufacturing industries only. We obtain comparable results when we focus on a subsample of deals in the manufacturing industries (which represent the majority of deals in our dataset).

[7] The Herfindahl index constructed from Compustat does not consider private companies. Alternatively, the US Census provides a measure that also includes private companies. We use the Herfindahl index because the US Census measure has two main disadvantages: it is only available for manufacturing industries and it is updated only every 5 years. Frésard and Valta (2015) find similar results for both measures.

[8] Unfortunately, we cannot consider the effects of deal value directly. This variable is missing for the majority of buyout deals in our sample, due to its low coverage in Thomson Reuters Eikon in particular for private deals (e.g., Netter et al., 2011). For the subsample of deals where we have transaction values, we show that the peer reaction is stronger if peer size is similar to the target size (see Online Appendix S5, Table A6). To control for deal value effects, we run regressions with deal fixed effects. Moreover, in unreported regressions, we add the average size of a deal in the industry to proxy for deal value. This variable has a negative and statistically significant coefficient, which suggests that the negative effect is more pronounced in industries with larger deals. Other results remain qualitatively unchanged.

[9] In untabulated estimations, we add the number of deals for a particular PE investor in a given year to our regression models and test how it is related to peer firm reactions. This variable is a proxy for the current activity of each investor. We observe a stronger negative reaction by peers that face more active PE funds.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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APPENDIX 1

Variable definitions

Variable name	Description	Sources
Individual peer variables		
CAPX-to-assets ratio	Ratio of capital expenditures to total assets. Calculated based on quarterly data	Compustat, Datastream
CAR[−10, +10]	Peer cumulative abnormal return for a 21-day event window around the buyout announcement date. The CARs are calculated within an event study by using a market model with an estimation window of 180 days (from −219 to −39) and S&P500 as the benchmark portfolio	Eikon, CRSP
Dispersion	Analyst forecast dispersion. Calculated as the standard deviation of peer's analyst 12-month EPS forecasts	IBES, Eikon
Dispersion d	Analyst forecast dispersion dummy. A binary variable that equals 1 if the peer forecast dispersion is above the annual median or missing, and 0 otherwise	IBES, Eikon
EBITDA-to-assets ratio	Ratio of EBITDA-to-total assets. Calculated based on quarterly data	Compustat, Datastream
Forecast error	Analyst forecast error. Calculated as the absolute difference between the mean analyst 12-month EPS forecast and the realized EPS, scaled by the stock price at the end of the 12-month period	IBES, Eikon, Chaney et al. (1999), Hong and Kubik (2003)
Forecast d	Analyst forecast error dummy. A binary that equals 1 if peer forecast error is above the annual median or missing, and 0 otherwise	IBES, Eikon, Chaney et al. (1999), Hong and Kubik (2003)
Future bankruptcy	Bankruptcy status. A binary variable that equals 1 if the peer firm went bankrupt in the 5 years following the buyout announcement date, and 0 otherwise	Compustat

Variable name	Description	Sources
Future target	Follow-on acquisition status. A binary variable that equals 1 if the peer firm became a target in a strategic or a financial acquisition in the year after the buyout announcement date, and 0 otherwise	Eikon
High-tech	High-tech status. A binary variable that equals 1 if the peer belongs to the high-tech industry, and 0 otherwise	Kile and Phillips (2009)
Leverage ratio	Total debt over total assets. Calculated from quarterly data	Compustat, Datastream
Long-run value to book (Growth component)	Long-run value to book. It is the component of the market-to-book ratio attributable to the difference between valuations implied by long-run multiples and current book values	CRSP, Compustat, Datastream, Rhodes-Kropf et al. (2005)
M/B ratio	Market-to-book ratio of equity. Calculated based on quarterly data as equity market capitalization over book equity	Compustat, Datastream
Market cap	Equity market capitalization in billion USD at the end of the estimation window. Calculated as the share price times the number of shares outstanding at the end of the estimation window (39 trading days before the buyout announcement date)	CRSP
No analysts	Number of analysts that track the peer company. Calculated based on quarterly data	IBES, Eikon
Operating margin	Operating margin. Calculated based on quarterly data as the operating income to sales ratio	Compustat, Datastream
Peer-specific error	Peer-specific error. It is the component of the market-to-book ratio that results from peer-specific deviations from the valuations implied by industry valuation multiples.	CRSP, Compustat, Datastream, Rhodes-Kropf et al. (2005)
Turnover ratio	Turnover ratio. Calculated based on quarterly data as sales over total assets	Compustat, Datastream
Valuation error	Valuation error. Calculated as the sum of peer-specific error and time-series industry error and represents the deviation of peer's market value from its implied fundamental value	CRSP, Compustat, Datastream, Rhodes-Kropf et al. (2005)
Z-score	*Z*-score. Calculated from quarterly data as 1.2 * (current assets—current liabilities)/total assets + 1.4 * retained earnings/total assets + 3.3 * pretax income/total assets + 0.6 * market capitalization of equity/total liabilities + 0.999 * sales/total assets	Compustat, Datastream, Altman (1968)
Other variables used in the cross-section		
Herfindahl index	Industry Herfindahl–Hirschman Index. Calculated based on quarterly data as the sum of all squared market shares of net sales over all Compustat firms in three-digit SIC industry	Compustat, Datastream
Private	Target company status. A binary variable that equals 1 if the buyout target is privately owned at the announcement date, and 0 otherwise	Eikon, CRSP
Sentiment	Market sentiment index adjusted for business cycles based on Baker and Wurgler (2006)	http://people.stern.nyu.edu/jwurgler/
Industry error	Time-series industry error. It is the component of the market-to-book ratio that results from valuations implied by current industry multiples deviating from the valuations implied by long-run industry multiples.	CRSP, Compustat, Datastream, Rhodes-Kropf et al. (2005)
Variables in quasi-natural experiments		
Sequence	Sequence of the buyouts in the industry. Count variable that refers to the numbering of buyouts in the corresponding three-digit SIC industry	Eikon
TreatedAN	Peer AN status. Binary variable that equals 1 if the peer experienced a reduction in analyst coverage due to a broker closure or merger, and 0 otherwise	IBES, Capital IQ, Derrien and Kecskés (2013), http://www.finra.org/

Variable name	Description	Sources
TreatedANx Post	Interaction of TreatedAN and Post. Post equals 1 if the peer experienced a buyout announcement in the next 12 (alternatively: 18, 24) months following a broker event and zero otherwise. A broker event is a reduction in analyst coverage due to a broker closure or merger. It equals 0 in the year prior to the broker event. The month of the broker event is excluded	IBES, Capital IQ, http://www.finra.org/, Derrien and Kecskés (2013)
TreatedSHO	Peer SHO status. Binary variable that equals one if the peer belongs to the pilot stock group of Regulation SHO. Otherwise it is zero	SEC (2007), https://www.sec.gov/rules/other/34-50104.htm
TreatedSHOx Post	Interaction of TreatedSHO and Post. Post equals 1 for a peer that experienced a buyout between May 2, 2005, and August 6, 2007, and 0 otherwise	SEC (2007), https://www.sec.gov/rules/other/34-50104.htm
TreatedTC	Peer TC status. Binary variable that equals 1 if the peer belongs to a three-digit SIC industry that was affected by a tariff cut. A tariff cut is defined as the negative change in the tariff rate that is at least twice (alternatively: two and a half time, three times) larger than the industry median change. Otherwise, it equals 0	Schott (2008), Pierce and Schott (2012), https://faculty.som.yale.edu/peterschott/international-trade-data/
TreatedTCx Post	Interaction of TreatedTC and Post. Post equals 1 if the peer experienced a buyout announcement in the year that follows a tariff cut, and 0 in the year prior to the tariff cut. The cut year is excluded	Schott (2008), Pierce and Schott (2012), https://faculty.som.yale.edu/peterschott/international-trade-data/