Specialization and Performance in Private Equity: Evidence from the Hotel Industry*

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Abstract

We show that PE sector specialists outperform generalists at every stage of the investment life cycle. Using granular data for thousands of U.S. hotels over the last two decades, we document that specialist PEs exert a greater positive influence on more margins of hotel operations, earn higher net cash flows over the holding period, and achieve larger capital gains upon exit than their generalist peers backing *ex ante* equivalent assets. Our results provide novel evidence on the heterogeneity of PE investment strategies and associated performance outcomes.

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1 Introduction

A rapidly growing share of private equity (PE) investments is managed by sector-specialist firms (Singh, 2022). Yet, little is known about the performance outcomes those firms achieve. Several studies show that mutual fund managers with a specific sector focus make better capital allocation choices (e.g., Kacperczyk et al., 2005). Those findings are consistent with the model of Van Nieuwerburgh and Veldkamp (2009), where investors specialize in asset types for which they have initial information advantages. Recent work points to mutual fund managers' prior industry exposure, experience, and expertise as important sources of such advantages (Kostovetsky and Ratushny, 2016; Cici et al., 2018; Schumacher, 2018).

We cannot extrapolate from the existing findings on the sector specialization of mutual fund managers to PE. First, the mutual funds research on this question typically exploits differences in concentration between diversified funds. Moreover, even specialized mutual *funds* are often associated with generalist *firms*. In the PE sector, there is a strong bifurcation between large generalist firms and small specialist firms (and their associated funds). This bifurcation matters because large generalist PE firms may be able to attract better fund managers than small specialist firms (Hochberg and Westerfield, 2010). Second, unlike mutual fund managers, PE investors do not only select assets and allocate capital, but they also get involved in the strategic management and the operations of their target firms. Critically, the corporate finance perspective on the value of specialized managers is ambiguous. CEOs with more industry expertise are better negotiators (Custódio and Metzger, 2013), but they innovate less (Custódio et al., 2019). The demand for general managerial skills in the labor market for corporate executives increasingly exceeds that for more specialized knowledge (Custódio et al., 2013; Frydman, 2019). However, industry-specific skills and experience remain important in the market for private companies' CEOs (Gompers et al., 2022).

We study whether specialist PE firms outperform generalists—and other, non-PE players—on their investments in the same sector. Our empirical setting is the U.S. hotel industry. Generalist PEs that are active in the market for hotels should not simply be considered as large collections-of-specialists. First, it is rare that generalist *firms* acquire hotels through specialist *funds*. Second, lead partners on hotel deals at generalist funds often have less of an industry focus—and industry experience—than those working at specialist funds. Industry expertise may be important because

active hotel investments are associated with sector-specific value-add strategies (cf. Section 2). A comparison of generalist to specialist investors in the hotel market should thus be informative of the performance implications of (endogenous) specialization in PE more broadly.[1]

Our chosen setting offers also offers several distinct advantages from an empirical perspective. First, acquiring a hotel involves buying the real property that houses the hotel operations. Real estate transactions are typically a matter of public record, and we can thus observe the identities of investors in this market, as well as the prices at which they transact. Second, hotel operators commonly participate in asset-level performance benchmarking programs. Because of the level of detail covered in those surveys, we can study the changes effected by PE investors in their target firms over all individual components of the P&L. Third and last, a number of supplementary data sources are available for the hotel industry, such as data on capital expenditures, customer satisfaction, and property tax assessments. Those data sets allow us to test additional hypotheses related to the impact of PE ownership on a variety of outcomes for investors and other stakeholders.

We employ two main data sources in our analyses. First, we obtain a data set of hotel deals completed in the U.S. between 2001 and 2019 from Real Capital Analytics (RCA), the leading provider of commercial real estate transaction information. Importantly, RCA identifies investors by name and classifies them into granular investor types, allowing us to distinguish between PE and non-PE hotel buyers. We further manually classify all PE funds in our sample as either specialists or generalists, depending on the information those funds provide about their investment sector focus. Second, we use hotel operating data from the consulting company CBRE Hotels, which runs the most long-standing and comprehensive annual hotel operating performance survey in the U.S. CBRE collects detailed accounting data on hotel operating performance following a harmonized reporting system (the Uniform System of Accounts for the Lodging Industry, USALI). Under USALI norms, hotels submit itemized data on all revenues and expenses associated with their business operations, allowing us to observe in detail the growth and efficiency of those operations, as well as the net cash flows to hotel owners. We merge the RCA and CBRE records to create a novel data set that integrates asset-level transactions and ownership information with annual hotel operating performance data.

[1] We do not model how funds or firms choose their level of specialization, but our observations are consistent with industry expertise generating sector-specific knowledge that makes managing a specialist fund more attractive or realistic. Hochberg and Westerfield (2010) and Brown et al. (2022) discuss the trade-off between a generalist vs. specialist focus, but in doing so assume that every prospective fund manager possesses—or can instantly acquire—some specialized human capital.

The central identification challenge in our analyses is the endogeneity of PE investment choices. For instance, PE investors may select underperforming hotels to engineer an operating turn-around and stoke firm growth (Cohn et al., 2020). Following the accepted practice in recent PE research (see, e.g., Bernstein and Sheen, 2016; Biesinger et al., 2020; Cohn et al., 2021), we address this endogeneity issue by adopting a matched difference-in-differences approach. Specifically, we pair subject hotels (those eventually acquired by PE investors) with control hotels (those that do not receive PE funding) based on *ex ante* observable characteristics, namely, hotel location, type, chain scale, and size. We find hardly any differences in the operating performance of the hotels in the two comparison groups prior to the time when PE investors acquire their subject hotels. This result should mitigate concerns about the impact of endogenous matching between PE investors and hotels on our results.

We then employ difference-in-differences estimations to assess the operating performance of PE-owned subject hotels against that of characteristics-matched control hotels backed by other investor types. Our estimates indicate that a key driver of hotel revenue growth, namely, the average daily rate, increases under specialist but not generalist PE ownership. However, we do not find any significant effects of PE ownership on occupancy, revenues per available room, or total hotel revenues.

Moving down the P&L, we show that PE-owned hotels experience a significant and lasting improvement in departmental profit margins.[2] The estimated effect is substantially larger for specialist PE investors. Moreover, ownership by PE specialists—but not generalists—is associated with significantly higher gross operating profits and net income margins. The latter effect is largely driven by a reduction in fixed charges under specialist PE ownership.

Exploiting the granularity of our accounting data, we dig deeper into the channels through which specialist PE firms influence hotel performance. We show that the improvement in departmental profits is due to a reduction in labor costs, notably in the rooms department. We also present evidence of other cost savings under specialist PE ownership, mainly in terms of maintenance costs, management fees, and property tax payments. Finally, we observe an increase in rent expenses, coupled with a decrease in interest payments, amortization, and depreciation expenses. Those results point to the implementation of sale-and-lease-back arrangements. Overall, our findings align with expert interview evidence on specialist hotel investors' asset management strategies.

[2]Departmental profits are defined as revenues from rooms, food and beverage, and other operating departments, minus the variable costs incurred in running those departments. See Appendix Table A.1 for details.

Next, we assess the capital gains earned by PE and non-PE owners on their hotel real estate investments. On average, PE investors' total capital gains exceed those of their non-PE counterparts by more than 11%, despite similar average holding periods. However, the capital gains of PE generalists in the hotel industry become statistically indistinguishable from those realized by non-PE investors once we control for investment timing and location choices. By contrast, PE specialists continue to earn economically and statistically significantly higher capital gains than their generalist counterparts, even after controlling for investment timing and location choices. These results are consistent with the improvements in hotel operating performance we document in the first part of our analysis.

Our main results are robust to a number of alternative specifications. For example, when we split up the set of generalist PE firms by real estate focus, we find that industry-specialist PEs outperform both generalist groups. We also show that the higher capital gains realized by specialist PEs are unlikely to be explained by higher capital expenditures or by PE investors matching with specific counter-party types. Finally, we find similar evidence of long-term value creation when replacing transaction prices by property tax data, which suggests that specialist PEs are not simply engaging in some form of price arbitrage. This finding also implies that the effect of PE investment on property tax revenues is nuanced: while tax appeals by PEs may depress revenues in the short run, their stewardship of the underlying real estate can increase those same revenues in the long run.

We extend our baseline results in two main ways. First, we measure the impact of PE ownership on an important group of non-financial stakeholders for hotels, namely, their guests. We collect data on customer experience ratings from Tripadvisor. For PE specialists, we find a *negative* effect on guest satisfaction in terms of service quality. Our findings imply that the cost-cutting measures implemented by PE specialists in their hotels may compromise the quality of their guests' experiences. However, the drop in the average rating is mainly driven by changes in the highest scores in the distribution, i.e., from perfect scores to scores that are lower but still very good. This suggests that PE firms navigate subtle trade-offs between customer satisfaction and return maximization.

Second, our analysis has focused on unlevered returns when comparing cash flows and capital gains of PE investors to those of their non-PE peers. In a final exercise, we test whether PE investors obtain more attractive asset-level financing conditions than do other investor types. We find that, holding constant broad credit market conditions, generalist—but not specialist—PE investors borrow at lower interest rates than do non-PE hotel buyers.

In sum, our results are consistent with industry specialists successfully pursuing hands-on asset management approaches, and generalists focusing on asset management strategies that transfer easily across investment settings (e.g., market timing, financial engineering). We want to stress that our findings do not imply that specialized funds necessarily deliver higher returns to their investors, in particular in risk-adjusted terms. Apart from their access to cheap financing, generalist firms also have the advantage of diversification (Brown et al., 2022), and might be able to reallocate capital to better-performing industries when investment opportunities in the hotel market shrink (Stein, 1997).

1.1 Related Literature

Our paper adds to several strands of the PE literature. First, we show that specialization is a key driver of the economic effects of PE ownership on target firms and the resulting investment performance. Thus, this paper advances our understanding of the drivers of variation in PE investment outcomes. Some existing work has focused on external factors, such as the economic conditions at the time of the PE investment (Davis et al., 2019) and the competitive environment faced by PE investors (Ljungqvist and Richardson, 2003). Several characteristics of PE funds have also attracted attention, including their scale (Lopez-de Silanes et al., 2015) and access to public capital markets (Gao et al., 2021). However, little research has studied sector specialization, despite it being a key defining attribute of the funds in the PE industry. Given the link between specialization and industry-specific human capital that this paper highlights, probably most closely related to our work are the findings in Acharya et al. (2013) and Bernstein and Sheen (2016). Those studies show that deal partners' operating and industry experience is correlated with operating improvements. A paper parallel to ours by Brown et al. (2022) shows that funds with a higher industry or geographic concentration are associated with higher returns, but does not study the underlying investments. Their findings are in line with earlier results by Gompers et al. (2009) for venture capital (VC).

Second, several studies have linked heterogeneity in PE/VC investment strategies to investor and target firm characteristics (Kaplan and Stromberg, 2009; Gompers et al., 2016, 2020; Biesinger et al., 2020). We contribute to this literature by showing that sector focus is an important determinant of PE funds' investment strategies. Methodologically, we also relate to a recent wave of papers that analyze the ways in which PE investors impact the operations of their target firms (e.g., Bernstein and Sheen, 2016; Cohn et al., 2021; Bellon, 2020; Biesinger et al., 2020; Gupta et al., 2021; Ewens

et al., 2021; Gao et al., 2021), often focusing on one particular industry. An attractive feature of our specific empirical setting is that we can observe a relatively wide set of performance outcomes.

Third, and last, we relate to a growing literature on the effects of the entry of PE—and institutional investors more broadly—in residential real estate markets. Gurun et al. (2022) and LaPoint (2022) consider the impact on neighborhood quality and gentrification. A particular interest of recent work has been property taxes. Austin (2022) and Xiao (2022) show that PE investors are disproportionately likely to appeal property tax assessments. Our findings are largely consistent with this concurrent work on housing in that we find a negative short-run impact on property taxes paid, but we also present evidence suggestive of positive longer-term effects through (specialist) PE investors' superior value creation.

We proceed as follows. Section 2 gives more information on the differences between generalist and specialist PE firms as hotel buyers, and on the ways in which active hotel investors can add value. We present details on our main data sources and sample selection in Section 3. We discuss our empirical results on hotel operating performance under PE ownership in Section 4, and those on capital gains in Section 5. Section 6 summarizes robustness checks for our main findings. Section 7 provides additional analysis related to the impact on hotel customers and to deal financing. Section 8 discusses the implications of our findings and concludes.

2 Empirical Setting

In this section, we review salient features of the institutional environment of hotel investment, with a focus on PE investors. First, we characterize the differences between generalist and specialist PE firms as hotel buyers. Second, to gain a deeper understanding of the value-add strategies hotel investors commonly implement—and of the role of operating expertise as a driver of success in those strategies—we interviewed a range of industry experts. Those experts included the CEO of a specialist hotel PE investment firm, the chief investment officer of another specialist hotel PE investment firm, the CFO of a hotel REIT, an industry veteran from a global leading hotel operator, and an academic expert on hospitality investment.

2.1 *Specialist vs. Generalist PE Firms as Hotel Investors*

Different types of investors are active in the market for hotels: owner-operators, REITs, high-net-worth individuals and family offices, and institutional investors like PE firms, among others. Within the PE buyer population, specialist hospitality real estate firms—frequently founded by industry veterans—co-exist with PE firms that have a broader focus (different property types, or more asset classes than just real estate). In this paper, we consider all such firms "generalists."[3]

Generalist *firms*, especially the largest ones, could still invest in hotels through specialized *funds*. However, that investment structure seems to be rare. The transactions database we employ our empirical analyses does not provide any information about buyers and sellers beyond their names. Thus, we search the alternative investments database PitchBook for the funds that are associated with the hotel acquisitions by the PE firms in our sample over the 2001-2019 period.[4] For specialist firms like Noble Investment Group and RockBridge Capital—the two specialist PEs with the largest numbers of hotel acquisitions in our sample—the funds carry names like Noble Hospitality Fund and RockBridge Hospitality Fund. By contrast, for the largest buyers among the generalists, Blackstone and Starwood Capital, hotels are most frequently acquired through general buyout funds (e.g., Blackstone Capital Partners, Blackstone Tactical Opportunities Fund) or real estate funds (e.g., Blackstone Highline Property Co-Investment Partners, Starwood Opportunity Fund).

What about the *partners* in the individual deals? We search PitchBook for information on the lead partners in the hotel deals completed by the PE firms in our sample. When limiting ourselves to lead partners involved in at least five deals (across employers and industries), we identify 21 individuals, ten of whom have worked for specialist firms. The lead partners at specialist firms on average completed 96% of their deals in the hospitality and leisure industry (broadly defined), while for lead partners on hotel deals at generalist firms the corresponding fraction is only 48%. The bios of lead partners at specialized PEs also frequently highlight hospitality industry experience. Partners at specialized PEs thus appear to have more industry-specific human capital than those at generalist firms.

[3] Actively managing a hotel investment means operating a business, which is very different from managing other popular types of commercial real estate such as offices or multi-family properties. In robustness checks in Section 6, we split up generalist PEs in those that are focused on real estate versus those that are not.

[4] The coverage of property transactions in databases like PitchBook is many times smaller than in real estate databases like Real Capital Analytics, which is why we use the latter in our main analyses.

In sum, in our setting, generalist PE investors should not simply be considered as collections-of-industry-specialists.

2.2 Specialist "Operators" vs. Generalist "Allocators"?

According to hotel investment specialists, industry experience and, relatedly, operating expertise are key to success. The specialist CEO we interviewed puts it as follows: "There's only a handful of us that are specialists in real estate PE in the hospitality sector. I think those that I would characterize as being the very best have an operating background, and understand what it's like to actually be in a hotel. How do you think about revenue and stacking different kinds of customers? It's a 365 days a year business, 24 hours a day, and every customer is unique and different. [...] So the best leaders I have found as investors have been those that have as a part of their background an experience of being in the field and being an operator." The same CEO also thought that this focus on being an "operator", and not simply a capital allocator, is a main differentiating factor between generalists and specialists: "There's a real difference between the generalists and those that are specialists. We call this the difference between being an operator and an allocator. [...] We'll focus on bringing our tools, our resources *as an operator*, and being able to reconstitute a revenue stream, profitability matrix, make them more efficient, make them more profitable, and then we'll sell them to an institutional marketplace. And so I think the difference between specialists and non-specialists is really how we think about that execution, which is where we have a natural competitive advantage." Our interviewee did not think that specialists were looking at different markets ("I don't know that we view the world very differently in terms of growth markets."), but added that the relatively small scale of many specialists allowed them to be "laser-focused" on individual assets. They also added that they are more conservative in terms of leverage and financial engineering than generalists. "For us it's really about buying the best real estate on the best street corner in a market that we want to be in, and then taking full advantage of that operationally."

2.3 Operating Value-Add Strategies

Synthesizing the responses across the interviews we conducted with industry experts, we were able to distinguish three sets of operating value-add strategies employed by specialist hotel investors.

First, the asset management strategies of hotel investment specialists target key drivers of operating performance, with a focus on improving efficiency and maximizing bottom-line cash flows. Common adjustments to existing operations include reductions in labor costs by introducing tools for more efficient staffing and scheduling, improvements in revenue management through targeted sales and marketing efforts, and the replacement of the incumbent management companies. Rationalizing labor resources is often paired with updating technology used in legacy hotels that owners were reluctant to spend on, including social media management and modernizing IT systems.

Common asset management strategies by hotel PE investors also include paring back unprofitable activities and unnecessary expenses incurred by previous owners. For instance, small owner-operators often host unprofitable events simply because they are the locally-owned hotel in town. As another example, "light-touch" housekeeping may replace daily service. More generally, it is often unprofitable to incur the costs required to achieve perfect scores and top rankings on travel rating platforms. From a profit-maximizing standpoint, hoteliers' net cash flows are often better served by aiming for slightly lower levels of guest satisfaction.

Lastly, hotel PE investors look beyond the operations of a hotel for efficiency improvements. One key example is the introduction of an "OpCo/PropCo" structure (a form of sale-and-lease-back) to ring-fence asset-specific liabilities and convert operating cash flows into passive rental income. Further, hotel PE investors actively seek to manage insurance fees (by shopping for coverage at the best rates) and property tax liabilities (by challenging local tax assessments).

The asset management strategies outlined above will serve as a guide when analyzing the results of our empirical analysis of the effects of PE ownership.

3 Main Data Sources and Sample Selection

3.1 Hotel Transactions Data

We obtain deal-level data on hotel transactions from Real Capital Analytics (RCA), the leading provider of commercial real estate transactions information. We start with all hotel transactions in the RCA database over the 2001–2019 period. The data include single and portfolio transactions as well as entity-level deals (e.g., acquisitions of hotel owner-operator companies).[5] We exclude

[5]We focus on the cash flows and capital gains associated with the ownership and operation of hotel real estate assets. Investments in hotel owner-operator companies may generate additional cash flows, e.g., franchising fees.

transactions of minority interests, partial leaseholds, and other non-standard conveyance types; taken together, the excluded records represent less than 10% of the transactions data.

In total, our data set includes 26,878 individual hotel transactions for 17,097 different properties. Each portfolio transaction represents multiple observations. Furthermore, individual hotels may occur in the data set more than once if they are traded multiple times during the sample period. To account for joint venture deals, each transaction in the RCA database is linked to up to four different buyers and sellers. RCA has its own classification of buyer and seller types; private equity (PE) investors are labeled "equity funds."

The RCA hotel transactions data include 219 unique PE investors. For each of those investors, we hand-collect data on their investment sector focus to classify them as "specialists" versus "generalists." Specifically, we search the PE firms' websites for information on the types of assets they invest in. We classify as specialist investors those PE firms that only invest in the hospitality sector. Generalists are thus firms that do not only invest in hotels, but also in other types of real estate assets (e.g., office, multifamily, or retail), and/or other asset classes beyond real estate (e.g., leveraged buy-outs of operating companies in industry sectors beyond hospitality). Our classification indicates that 17 out of the 219 PE funds in the RCA data set (8%) are specialist investors and that the remainder are generalist investors. For instance, hospitality specialist PE investors in our sample include the Chartres Lodging Group, HEI Hospitality, and Noble Investment Group. By contrast, PE generalists encompass familiar investor names, such as, Apollo Global Real Estate, Blackstone, and the Carlyle Group.

Table 1 presents cross-sectional characteristics of the PE investors included in our sample, broken down by PE sector specialization. Notably, PE specialists and generalists on average acquired their first hotels at approximately the same time during our study period (in 2007 and 2010, respectively). The total numbers of properties acquired by the average PE specialists and generalists in our sample are also comparable across the two investor types (27 and 23, respectively)—and so are their total acquisition volumes ($0.92 billion and $0.86 billion, respectively). By contrast, PE generalists on average focus their investments more in specific geographical markets and hotel brands, as indicated by the higher average levels of market and brand concentration (as measured by a Herfindahl-Hirschman index) for those investors in comparison to their specialist counterparts.

[Insert Table 1 about here.]

In sum, the descriptive statistics presented here suggest that there is little difference in average sector experience and acquisition scale between PE specialists and generalists, but PE generalists are more concentrated geographically as well as by hotel brand.

3.2 Descriptive Statistics on Hotel Transactions Data

Table 2 presents frequency statistics on the hotel transactions completed by all investor types in our sample (PE and non-PE). Panel A shows that transactions of single hotels represent the most frequent transaction type in our sample (70%), followed by portfolio transactions (21%), and entity-level deals (9%). In Panel B, we list the top-10 most frequently observed cities and hotel brands in our data set. The statistics reported indicate that hotel transactions occur across a broad range of locations and comprise independent hotels as well as businesses associated with a diverse set of brands.

[Insert Table 2 about here.]

The left column of Panel C shows the top-10 buyer types, using the RCA classification and terminology, based on the first-mentioned (lead) buyer for each transaction. It also shows the number of hotel purchases for each buyer type. The statistics reported indicate that owner-operators account for the majority of transactions (64%). PE acquisitions account for 15% of the sample, which makes PE the second most important buyer type, behind "developer-owner-operator," and before REITs. The center and right columns of Panel C show the top-10 PE buyers and non-PE buyers, again based on the lead buyer for each transaction. The statistics presented show that Blackstone is the most important PE buyer, representing 5% of the total number of transactions. The composition of non-PE buyers is more dispersed, with the top non-PE buyer (Apple REIT, which specializes in upscale hotels) accounting for only 1% of transactions. In Panel D of Table 2, we show the distribution of hotel transactions over the presence of a PE buyer and/or a PE seller. Here, we expand the definition of PE buyers and sellers to include all transactions where a PE investor was identified as one of the investors recorded for each transaction in the RCA data (not just the lead investor). By this metric, PE buyers (sellers) were involved in 16% (10%) of the transactions in our sample. Based on the same expanded definition of PE buyers and sellers, Panel E of Table 2 shows that specialist PE investors acted as buyers (sellers) in 478 (358) hotel transactions. Given 6,799 hotel transactions involving PE investors in total (cf. Panel D), specialist PE investors account for 12% of those transactions.

Figure 1 depicts the total annual U.S. hotel acquisitions (in terms of dollar volume and number of properties) over the 2001–2019 period, based on the RCA transactions data. The total volume of hotel acquisitions in our sample amounts to $537 billion, $161 billion of which is accounted for by PE investors and $376 by non-PE investors. Within PE investors, $17 billion of acquisitions were completed by PE specialists and $144 billion by PE generalists.

[Insert Figure 1 about here.]

Panel A of Figure 1 provides a breakdown of annual acquisition volumes with a PE buyer versus those with no PE buyer. The figure shows that both PE and non-PE investors were active buyers of hotel assets in the period leading up to the global financial crisis. However, non-PE acquisition volumes have increased beyond pre-crisis levels in the latter part of the sample period, whilst PE acquisition volumes have remained below their pre-crisis heights. Panel B shows that the numbers of hotels acquired and the volume of acquisitions completed by specialist PE buyers peaked sooner than did those of generalist PE buyers in the run-up to the global financial crisis. PE generalists resumed their hotel investment activity post-crisis with a new peak in 2015 (albeit well below pre-crisis levels), whereas PE specialist investment activity remained muted.

Table 3 presents descriptive statistics on the hotels covered in the RCA transactions data. Panel A shows that hotels acquired by PE buyers have a higher average price per room and a lower average cap rate than those whose acquisitions do not involve PE buyers ($138,410 compared to $99,920, and 7.9% compared to 8.6%, respectively). PE buyers are also more likely to complete portfolio transactions. Further, hotels acquired by PE investors are on average larger, slightly younger, they are more likely to be located in the central business district (CBD), and more likely to be full-service businesses.

In Panel B of Table 3, we provide descriptive statistics for hotels acquired by PE investors, focusing on specialist versus generalist PE investors. The table shows that specialist PE buyers on average acquire hotels at higher prices per room and at slightly lower cap rates than do their generalist counterparts ($160,740 versus $133,490 and 7.7% versus 7.9%, respectively). PE specialists are less likely to complete portfolio transactions than are PE generalists. Hotels acquired by specialist PE investors are, on average, larger, more likely to be located in the CBD, and more likely to have

full-service operations. This is consistent with specialists selecting hotels that are in prime locations and for which achieving operating efficiency may require more expertise (cf. Section 2).

[Insert Table 3 about here.]

3.3 Hotel Operating Performance Data

We collect accounting data on hotel operations from CBRE Hotels. CBRE gathers those data annually, based on a voluntary survey inviting participating hotels to submit their operating performance information in return for access to industry benchmarking reports. According to information provided by CBRE, their survey covers about 7,000 hotels (15% of the hotels in the U.S.). The survey is focused on institutional-grade, investable hotel assets; that is, those occupying the mid-market and higher chain scales, that are chain-affiliated (branded), and that operate under professional ownership and management companies.

The structure of the CBRE survey follows the industry-standard Uniform System of Accounts for the Lodging Industry (USALI), which facilitates comparisons across hotels.[6] The CBRE survey includes hundreds of variables, covering general information about the hotel (e.g., location, price segment, management, and ownership), top-line performance indicators (e.g., average daily rate and occupancy), aggregate measures of bottom-line hotel profitability, and granular data on revenues and costs across all hotel "departments" (e.g., rooms, food and beverage, and conference facilities).

We obtain data on two sub-samples of hotels from CBRE. First, we gather operating performance data for the period 2000–2018 for all hotels with a PE buyer or seller in the RCA database. We focus on those hotels for which CBRE has at least one year of accounting data in the two years before any PE transactions and at least one year of accounting data in the two years after such transactions (the "subject group"). This sample contains almost 17,000 observations for 1,274 distinct hotels (representing 1,839 individual hotel transactions).[7] Second, we construct a set of comparable hotels by matching transacted hotels in the subject group to peer businesses outside that group (the "control group").

[6] Appendix A presents the USALI model of hotel profit and loss statements, as adopted in the CBRE survey. Based on this model, Appendix B presents the composition of hotel "departmental" revenues, departmental and "undistributed" (that is, operating overhead) expenses, and non-operating expenses as well as fixed charges for our sample hotels.

[7] Our sample includes 6,799 individual hotel transactions involving a PE investor in the RCA data. We thus have operating performance data relating to 27% of all PE transactions.

We construct the group of control hotels based on *ex ante* observable hotel characteristics. We choose those characteristics to capture, to the greatest extent possible, the revenue drivers and cost structures of the sample hotels. Specifically, we select control hotels to match the subject hotels based on hotel location (ZIP code), product type (e.g., airport, conference, and resort hotels), quality category (e.g., economy, upscale, and luxury hotels), and business size (room count). Accounting for product type and quality category, location is the key driver of hotel revenues (e.g., between two upscale airport hotels, the one located closer to the airport typically commands higher room rates and achieves higher occupancy rates). Further, hotel product types and quality categories dictate the types of amenities and services that hotels need to offer (e.g., a luxury resort hotel needs to offer high-quality restaurant and spa services that are irrelevant for an economy extended stay hotel). Those amenities and services, in turn, determine the complexity of hotel operations and required staff levels, which are key drivers of hotel cost structures. Hotel size is an important modulating factor in this regard, due to economies of scale in hotel operations (e.g., in terms of procurement, general and administrative costs, and IT expenses).

The control group constructed using the criteria described above contains data for 1,310 hotels.[8] As we will outline more formally in Section 3.5, this strategy of using tightly defined control groups based on *ex ante* observable target firm attributes serves to address concerns around selection bias and the endogeneity of PE investment choices. With an appropriate set of matching characteristics, the performance outcomes of matched sample and control hotels should be comparable absent any treatment (i.e., PE investment). We compare key descriptive statistics on the performance outcomes of our subject and control hotels in the next section.

3.4 Descriptive Statistics on Hotel Operating Performance Data

Table 4 presents descriptive statistics for the CBRE data set. The data in Panel A show that subject and control hotels achieve similar average daily rates, occupancy, and revenues per available room. The average expense (profit) ratios across the subject and control hotels suggest that the hotels in the two groups experience comparable levels of operating efficiency. The statistics reported in Panel B indicate that, among PE-owned hotels, those under specialist PE ownership also achieve comparable

[8] If the same subject hotel is involved in a PE transaction more than once, it can exceptionally be matched to different control hotels, depending on the availability of data.

average daily rates, occupancy, and revenues per available room compared to those under generalist PE ownership. Further, the average expense (profit) ratios across hotels owned by specialist and generalist PE investors are quantitatively similar. In sum, Table 4 suggests no economically significant differences in key observable operating performance metrics across the subject and control hotels, or across subject hotels owned by specialist versus generalist PE investors.[9]

[Insert Table 4 about here.]

3.5 Identification Strategy

The key challenge to identifying the causal effects of PE ownership on hotel performance outcomes is that the matching of PE investors to their target firms is non-random. For instance, PE investors may select underperforming firms to engineer an operating turnaround (Cohn et al., 2020). If that was the case, then any evidence we provide for a positive effect of PE ownership on hotel operating performance may be driven by those investors' asset selection strategies, rather than their superior management skills.

We address this identification issue by matching subject hotels (those eventually acquired by PE investors) to control hotels (those backed by other, non-PE investors) based on *ex ante* observable characteristics. The underlying goal of this matching procedure is to couple each subject hotel with another hotel that likely had similar (unobservable) future growth expectations at the time of the PE acquisition. As outlined earlier in this section, we match hotels based on their location, hotel type, chain scale, and hotel size. In Appendix C, we show that the resulting matched sets of subject and control hotels display comparable performance outcomes (that are moreover are moving in parallel) leading up to the PE investors' acquisitions of their target hotel. This finding gives us some comfort that any post-acquisition changes in the operating performance of subject hotels are the product of PE-specific asset management strategies.

[9]This operating performance comparison is unconditional and includes all observations of subject and control hotels (and all observations of the hotels owned by specialist versus generalist PE investors), regardless of the timing of observations relative to any PE investments.

4 Hotel Operating Performance under Private Equity Ownership

In this section, we assess the effects of generalist and specialist PE ownership on hotel operating performance. We further document the channels through which PE ownership affects these hotels' performance outcomes.

4.1 The Effects of PE Ownership on Hotel Operating Performance

We formalize the analysis of hotel operating performance under PE ownership using a difference-in-differences strategy across the subject hotels and their characteristics-matched control hotels around the time of PE investments in the subject hotels. Our specification is similar to that employed in, for example, Biesinger et al. (2020). In contrast to the econometric model in that study, however, our set-up additionally accounts for different types of PE investors (namely, generalist and specialist PE investors). Specifically, we estimate regressions of the following form:

$$y_{i,t} = \alpha + \beta PE_i^{Gen} \times Post_{i,t}^{Gen} + \gamma PE_i^{Spec} \times Post_{i,t}^{Spec} + \delta Post_{i,t}^{Gen} + \eta Post_{i,t}^{Spec} + \phi_i + \theta_{l,t} + \epsilon_{i,t} \quad (1)$$

where $y_{i,t}$ is an operating performance outcome for hotel i in year t. PE_i^{Gen} (PE_i^{Spec}) is an indicator that takes the value of one for the hotels in the subject group acquired by generalist (specialist) PE investors, and zero for the hotels in the control group. $Post_{i,t}^{Gen}$ ($Post_{i,t}^{Spec}$) equals one starting with the year in which a generalist (specialist) PE acquires a given subject hotel and zero before then. For the control hotels, these variables equal one starting with the year in which PE investors first acquire their matched subject hotels and zero before then. The main coefficients of interest are β and γ. These coefficients are identified, respectively, from the interaction terms between the indicators separating the subject and control hotels and from the indicators separating the pre-PE periods from the post-PE periods. ϕ_i are hotel fixed effects, which subsume the main effects of the PE_i^{Gen} and PE_i^{Spec} indicators. $\theta_{l,t}$ are region l $\times$ year t fixed effects.[10] $\epsilon_{i,t}$ denotes the residuals. Standard errors are clustered by hotel brand.

[10] In the RCA transactions data, the geographical regions of the U.S. include Mid-Atlantic, Midwest, Northeast, Southeast, Southwest, and West.

We estimate Eq. (1) on the operating performance data from the five years leading up to and the five years following the year when PE first invests in a given subject hotel. Table 5 presents the results. We also report F-statistics from tests of the equality between the coefficients of interest, β and γ.

[Insert Table 5 about here.]

Panel A shows the estimation results for total revenues and top-line performance metrics (average daily rates, occupancy, and revenues per available room) across the subject and control hotels. For PE generalists, the regression results reported indicate that PE ownership has no significant impact on hotel top-line performance. For PE specialists, we observe an increase in average room rates. However, this does not translate to statistically significantly higher revenues per available room, also because there is no positive effect on occupancy.

We report the regression results from estimating the difference-in-differences model in Eq. (1) for the four key hotel expense ratios included in the CBRE survey in Panel B. The estimation results show a statistically significant impact of both generalist and particularly specialist PE ownership on departmental expenses (see column 1). The unconditional mean of the departmental expense ratio is 0.30 (0.32) for hotels owned by generalist (specialist) PE investors (cf. Table 4). The coefficient estimate of –0.008 (–0.021) for the interaction term between PE_i^{Gen} and $Post_{i,t}^{Gen}$ (PE_i^{Spec} and $Post_{i,t}^{Spec}$) implies that departmental expenses decline by approximately 3% (almost 7%) relative to their unconditional means under generalist (specialist) PE ownership. These improvements in operating efficiency can have a significant impact on the bottom line, as departmental expenses represent nearly 50% of total hotel expenses. By contrast, the estimation results suggest that generalist PE ownership is associated with (numerically, but not statistically) slightly higher undistributed, non-operating, and fixed expenses. While specialist PE investors incur significantly higher non-operating expenses, they experience significantly lower fixed expenses (see columns 3 and 4, respectively). The findings discussed here suggest that specialist PE owners have larger effects on hotels' operations.

Panel C of Table 5 presents the final set of regression results on the impact of PE ownership on hotel operating performance. These estimation results focus on hotel profit ratios. Consistent with our earlier finding that PE ownership is associated with a significant decline in departmental expense ratios, the estimates reported in column 1 of Panel C show that subject hotels experience superior departmental profit ratios under PE ownership compared to their characteristics-matched

control hotels. The descriptive statistics in Table 4 indicate that the mean departmental profit ratio for hotels owned by generalist (specialist) PE investors is 0.70 (0.68). Therefore, while the impact of generalist (specialist) PE ownership on the departmental profit ratios of the subject hotels is statistically significant, it is small in economic terms, representing a relative improvement of about 1% (3%) over the corresponding unconditional mean departmental profit ratios. The estimates reported in columns 2 through 4 of Table Panel C show that gross operating profit, EBITDA, and net income are statistically indistinguishable between generalist PE-owned subject and control hotels. In other words, the relative operating performance advantage of generalist PE subject hotels over their characteristics-matched peers stemming from superior departmental profits does not carry through to any of the subsequent profit ratios.[11] However, hotels owned by specialist PE investors experience not only higher departmental profit ratios, but also higher operating profit margins and significantly higher net income margins. Recall that PE specialist-owned hotels experience substantially lower departmental expense ratios—those are responsible for boosting departmental profits. Significantly lower fixed expenses in specialist PE-owned hotels drive the increase in net income margins. Those additional cost savings achieved by specialist PE investors increase their bottom-line profits compared to those earned by their generalist counterparts.

4.2 The Channels Through Which Private Equity Influences Hotel Operating Performance

What are the channels through which PE firms—specialist PEs in particular—influence hotel performance? The granularity of our data allows us to dig deeper into some of the key findings from the preceding analysis. Furthermore, our knowledge of investment strategies (cf. Section 2) can act as a lens through which to analyze and make sense of the patterns in the data.

First, we observed that subject hotels owned by generalist and, even more so, specialist PE investors experience a significant improvement in departmental expense ratios, leading to higher departmental profits. Labor expenses are the largest component of hotel departmental expenses, representing nearly 60% of the total. Our interviews confirmed that managing the cost of labor is an important hotel management strategy for active investors. We assess the evidence for the

[11] The regression analyses presented in Table 5 compare the average operating performance outcomes across subject and control hotels across the five years leading up to the acquisitions of the subject hotels by (specialist and generalist) PE investors with the corresponding average operating performance outcomes in the five years following those acquisitions. We also examine year-by-year effects of (specialist and generalist) PE ownership on operating performance outcomes. Those results are reported in Appendix D.

hypothesis that PE investors reduce labor costs in their target hotels by replicating the regression model specified in Eq. (1) for the ratio of departmental labor expenses to total revenue, as well as for the corresponding labor expense ratios in each of the individual operating departments of the sample hotels. Those departments encompass rooms, food and beverage (F&B), and other (e.g., conference center, spa facility). The data for these analyses are obtained as part of the CBRE performance surveys. The results are shown in Panel A of Table 6. The estimates reported in column 1 show that total departmental labor expenses decline significantly for hotels under generalist PE ownership, and even more so under specialist PE ownership. The coefficient estimates in the subsequent columns show that these expense reductions are primarily driven by a decline in labor expenses in the rooms department.

[Insert Table 6 about here.]

Second, the results in subsection 4.1 showed that the gross operating profit of generalist PE-owned hotels is no different from that of their peers, despite the slightly higher departmental profit ratios. To identify the operating overhead expense items driving this finding, we replicate the regression model from Eq. (1) for each of the undistributed expense ratios reported in the CBRE benchmarking survey. Panel B of Table 6 presents the estimation results. The estimates reported in columns 1 and 2 show that A&G and IT expenses, respectively, are statistically indistinguishable between hotels backed by generalist PE funds and those owned by other investor types. In contrast, the results tabulated in column 3 show that generalist PE ownership is associated with significantly higher sales expenses. The estimates in column 4 show a small reduction in maintenance expenses for generalist PE-owned hotels. However, sales expenses represent a significantly larger share of total undistributed expenses than do maintenance costs. Therefore, the small savings realized by generalist PE-backed hotels under the latter expense item cannot offset the higher sales expenses. Specialist PE-owned hotels on the other hand experience significant reductions in A&G and maintenance expenses, and also marginal *increases* in IT expenses, which is consistent with the new owners upgrading hardware and software systems.

Third, to understand why specialist (but not generalist) PE-owned hotels benefit from substantially improved bottom-line profit ratios in terms of higher net income margins, Panel C and Panel D of Table 6 study non-operating expenses and fixed charges. The results show that generalist

PE ownership has limited effects on non-operating expenses and fixed charges incurred by subject hotels—with one notable exception. The estimates reported in column 1 of Panel C indicate that the subject hotels experience a significant decline in management fees under PE ownership. (In Appendix E, we show that the likelihood of a change in management company goes up significantly after both generalist and specialist PE acquisitions.) Next to a decrease in management fees, hotels owned by specialist PE investors experience lower property tax payments, suggesting that they are successful in appealing their tax bills. We also see that rent expenses go up (column 4 of Panel C), while interest expenses and amortization and depreciation charges go down (columns 1 and 2 of Panel D). Taken together, these findings can be explained by specialist PE owners implementing "OpCo/PropCo" strategies.

In sum, the regression results presented in Table 6 suggest that the superior operating performance of generalist PE-backed hotels over those backed by other, non-PE investors—notably the decline we document in departmental profits, which is driven by lower labor expenses—is offset by increased spending on sales and marketing. This result explains why the subject hotels owned by generalist PE investors fail to improve their bottom line profits relative to the control hotels. Our estimates suggest that specialist PE investors on the other hand achieve further cost savings beyond labor expenses. These additional cost reductions increase the bottom line profits to specialist PE investors in terms of net income margins. Importantly, our results suggest that PE specialists have a larger positive influence on more margins of hotel operating performance than their generalist peers.

5 Private Equity Investors' Capital Gains

In this part of our analysis, we ask whether PE funds realize higher capital gains on their investments than do other investor types. We assess the capital gains earned by PE versus other investor types in the hotel industry by focusing on a sample of repeat-sales transactions from RCA. Those observations are taken from the sub-set of hotel assets for which we observe an acquisition (by PE or other investor types) and the subsequent disposition. As we outline formally below, we compute the total capital gain on a given hotel investment as the difference between the log disposition and preceding log acquisition price (per room). Our repeat-sales sample contains 1,450 observations on capital gains earned by PE investors and 6,670 observations on capital gains earned by investors

other than PE. The unconditional average holding period and average total capital gain in our sample of repeat-sales transactions are 5.0 years and 21.3% for PE investors compared to 5.3 years and 9.9% non-PE investors, respectively.

In Figure 2, we show the distribution of holding periods, and the average (total) capital gains for different holding period intervals, by investor type. The patterns depicted in Panel A show that transactions involving PE re-sellers in general are associated with substantially higher capital gains than are those involving no PE sellers, at least for holding periods of three to eight years. The data presented in Panel B of Figure 2 indicate that specialist PE re-sellers earn significantly higher capital gains than do their generalist counterparts for holding periods longer than one year.

[Insert Figure 2 about here.]

We analyze the sources of the capital gains realized by PE investors in the hotel industry compared to other investor types more formally. Specifically, we assess the relative magnitude of the total capital gains realized by PE versus other hotel investor types by estimating the following regression model:

$$\Delta p_{i,t} = \alpha + \beta PESeller_{i,t}^{Gen} + \gamma PESeller_{i,t}^{Spec} + \delta Controls_{i,t} + \theta_l + \epsilon_{i,t} \tag{2}$$

where $\Delta p_{i,t}$ is the difference between the log price per room in the acquisition of hotel i and the log price per room in the subsequent disposition of hotel i sold in year t. $PESeller_{i,t}^{Gen}$ ($PESeller_{i,t}^{Spec}$) is an indicator that takes the value of one if a generalist (specialist) PE investor is the seller in a given transaction, and zero otherwise. We include the following covariates in Eq. (2), summarized in the term *Controls*: indicator variables that take the value of one if the sale or the acquisition in the repeat transactions pair is a portfolio deal, and zero otherwise; an indicator that takes the value of one if a hotel was sold to an international investor, and zero otherwise; hotel size, measured as the log number of rooms; the construction year of the hotel; an indicator for the location type of a hotel that takes the value of one for a CBD location, and zero otherwise; and an indicator for the sub-type of a hotel that takes the value of one for full-service hotels, and zero for limited-service hotels. θ_l are region fixed effects. $\epsilon_{i,t}$ denotes the residuals. Standard errors are clustered by zip

code. We exclude entity-level deals from this analysis to remove any undue influence of large portfolio transactions. Table 7 presents the results.

[Insert Table 7 about here.]

The estimates reported in column 1 show that generalist (specialist) PE sellers achieve statistically and economically significantly higher capital gains (by 11 and 29 percentage points, respectively) on their hotel investments than do other investor types. In column 2, we control for the length of the holding period, which does not materially change the economic magnitude on the coefficients of interest. In column 3, we control for the exact timing of acquisition and disposition, and we see that this explains most of the higher capital gains of generalist PE sellers. The marginal capital gains realized by those sellers are now close to zero and statistically indistinguishable from those realized by non-PE sellers. By contrast, the marginal capital gains to specialist PE investors remain economically and statistically significant in this specification. In column 4, we additionally control for region $\times$ resale year fixed effects, but the magnitude of the generalist and specialist PE effects, respectively, are unchanged. In columns 5 and 6, we repeat the models shown in columns 3 and 4, but replace the region indicators with more granular zip code indicators. The marginal capital gains accrued to generalist PE sellers (relative to those earned by non-PE sellers) are numerically negative in these specifications. The marginal capital gains to specialist investors remain statistically significant and economically large.

The results in Table 7 suggest that the higher unconditional capital gains of generalist PE investors do not reflect increases in their hotels' profit-generating capabilities. Generalist PE investors appear to derive their above-average capital gains from timing the market for hotel assets, and from selecting hotel assets in zip code locations that experience above-average price increases.

By contrast, specialist PE sellers are associated with numerically and statistically significant, positive capital gains between 16% and 29% compared to other, non-PE investor types across the different regression specifications presented in Table 7. These estimation results suggest that specialist PE investors achieve superior capital gains over their competitors even after controlling for the length of the holding period, the timing of their acquisitions and dispositions, as well as their location choices. The superior capital gains earned by specialist PE sellers are consistent with the earlier-documented improvements in hotel operating efficiency and profit margins realized under their ownership.

6 Robustness Checks

In this section, we briefly summarize the results of a number of robustness checks on our main findings. First, to verify that our results are not driven by any single PE, we repeat some of our main regression models on both operating performance and capital gains, but leaving out, in turn, the most-frequently observed generalist PE (i.e., Blackstone) and the three most-frequently observed specialist PEs. The results are reported in Appendix F. The results are similar to those reported in Sections 4.1 and 5.

Second, one may wonder whether it is really necessary to have hotel-industry-specific expertise, or whether it suffices to be a commercial real estate expert. In Appendix G, we split up our pool of generalist PEs in those that have a focus on real estate, and those that have not. We find that, when it comes to departmental profits and net income, real-estate focused generalists do *worse* than other generalist PE firms, implying a larger difference with specialists. In terms of capital gains, hotel-industry specialists appear to outperform real-estate focused generalists and firms without a real estate focus in approximately equal measure.

Third, PE owners may carry out follow-up investments to renovate, expand, or otherwise improve the physical structure of their hotel properties. Maybe this can explain the higher capital gains to PE investors? To examine this conjecture, we link capital expenditure data sourced from construction permits by Dodge Data & Analytics to our data set of subject and control hotels. The results of the ensuing analysis are reported in Appendix H. Overall, we find little evidence of substantial capital expenditures after PE acquisitions; we only see a marginally significant uptick in the probability of "alterations" under specialist PE ownership.

Fourth, prior work highlights heterogeneity in real estate investor preferences, not only over the specific assets they acquire, but also over the types of counterparties with whom they trade (see, e.g., Badarinza et al., 2022; Ghent, 2021). A possible narrative in the PE industry would be that PE investors systematically buy from specific seller types, e.g., private hotel owners, and subsequently sell to different investor types, such as, institutional investors. In Appendix I, we analyze this hypothesis in more detail. While we find somewhat different distributions of counterparties for specialist PE vs. generalist PE vs. non-PE investors, the results of capital gains regressions that control for counterparty types are similar to those reported before.

Fifth and last, there is still the possibility that the capital gains realized by (specialist) PE investors reflect some form of arbitrage profits rather than genuine long-term value creation. We therefore rely on property tax data from ATTOM as an alternative measure of value creation. The results of this analysis is reported in Appendix J. We find qualitatively similar results as in our capital gains regressions: property tax bills and assessed values go up more under specialist PE ownership than under other owner types. Combined with our earlier reported results, these findings suggest that the impact of PE investment on property tax revenues is nuanced. While property tax bills may go down in the short run because of PE investors' appeals, they can go up in the long run if these same investors are successful in creating value.

7 Extensions

In this section, we extend our baseline analysis in two ways. First, we look at the impact of PE ownership on customer satisfaction. Second, we compare the cost of financing of PE firms to that of non-PE acquirers.

7.1 Impact on Guest Satisfaction

An emerging literature focuses on the effects of PE ownership on target firms' non-financial stakeholders, including consumers and patients (Eaton et al., 2019; Gandhi et al., 2020a,b; Gupta et al., 2021; Fracassi et al., 2020; Gao et al., 2021), local residents (Bellon, 2020; Ewens et al., 2021) and employees (Cohn et al., 2021; Fang et al., 2021; Lambert et al., 2021). To measure the impact on customers in our setting, we consider guest satisfaction data. We merge our hotel operating performance and ownership data with information on guest experience ratings from Tripadvisor.[12] On this platform, hotel guests can leave scores on a scale from one through five to rate several aspects of their stay at a given hotel; namely, overall satisfaction, service, cleanliness, and sleep quality. We estimate the marginal effects of PE ownership on the ratings for the subject hotels relative to those for the control hotels using a specification analogous to that in Eq. (1). We summarize the results in Table 8.

[12]Tripadvisor collects guest experience ratings from individual stays for thousands of hotels in the U.S. We collapse the scores recorded in each review for a given hotel and a given date of stay to the hotel-year level by taking the simple means of the scores provided in each rating category. We match those scores to our hotel operating performance and ownership data by hotel name and zip code. We are able to match guest experience scores to 2,406 hotels or 93% of the 2,584 subject and control hotels in our sample.

[Insert Table 8 about here.]

The coefficient estimates tabulated in columns 1 through 4 of Table 8 show that the mean guest review scores received by the subject hotels under generalist PE ownership are statistically indistinguishable from those received by their characteristics-matched control hotels owned by other investor types. By contrast, the coefficients for PE specialists are all negative. In particular, the estimates in column 2 show that guest ratings of service quality decline by a numerically and statistically significant margin for specialist-PE owned hotels. Our findings imply that the cost-cutting measures implemented by specialist PE investors (cf. Section 4.2) may compromise the quality of their guests' experiences.

We dig deeper into these findings using graphical analyses, shown in Figure 3. First, we examine the timing of the negative effects of PE ownership on hotel guest experience ratings in detail. Panel A presents annual estimates of the effects of (specialist and generalist) PE ownership on hotel service quality scores. The patterns depicted indicate that specialist PE-owned hotels experience swift, lasting declines in service quality scores, starting with the year in which specialist PE investors take over the target hotels. However, an unconditional before versus after comparison of service quality scores distributions in PE-owned hotels shows a decline in the dispersion of those scores, driven almost exclusively by the highest scores in the distribution (see Panel B). Still, recall that PE-owned hotels experience no significant declines in average daily rates or occupancy (cf. Section 4.1), which might arise as a consequence of lower service quality. These patterns suggest that PE investors reduce service quality only to a point where the benefits in terms of cost savings (and resulting higher profit margins) still outweigh the costs of such measures in terms of poorer guest experience ratings (and thus, eventually, lower revenues). In other words, the results presented here imply that PE investors navigate subtle trade-offs between customer satisfaction and their financial objectives—consistent with the interview evidence summarized in Section 2.

[Insert Figure 3 about here.]

7.2 Cost of Financing

Thus far, our analyses of PE investments in the hotel industry covered unlevered returns. However, Ivashina and Kovner (2011), Axelson et al. (2013), and Haque (2021) highlight the importance of lever-

age choices in PE investments. The RCA transactions records also include information on the mortgages used to finance hotel acquisitions, including the interest rate, the term of the mortgage contract (log number of months), the debt service coverage ratio (DSCR), and the loan-to-value (LTV) ratio at underwriting. We test whether PE investors enjoy different financing conditions than do other investor types by estimating the following regression model for the hotel acquisitions in our sample:

$$y_{i,t} = \alpha + \beta PEBuyer_{i,t}^{Gen} + \gamma PEBuyer_{i,t}^{Spec} + \delta PriceRoom_{i,t} + \eta_i + \phi_m + \theta_{l,t} + \epsilon_{i,t} \quad (3)$$

where $y_{i,t}$ denotes a given mortgage characteristic (interest rate, term, DSCR, or LTV). $PEBuyer_{i,t}^{Gen}$ ($PEBuyer_{i,t}^{Spec}$) is an indicator variable that takes the value of one if hotel i at time t is bought by a generalist (specialist) PE buyer, and zero otherwise. η_i are hotel fixed effects. ϕ_m are lender fixed effects. $\theta_{l,t}$ are region $l \times$ year t fixed effects. $\epsilon_{i,t}$ denotes the residuals. Standard errors are clustered by zip code.

We summarize the regression results in Table 9. We find that the financing conditions faced by specialist PE buyers are statistically indistinguishable and economically similar to those experienced by other non-PE investor types. By contrast, generalist PE buyers pay 30 basis points lower interest rates on the mortgage contracts used to finance their hotel acquisitions than do non-PE investor types (see column 1). The lower interest rates negotiated by generalist PE borrowers appears to be (at least partly) reflected in significantly higher debt service coverage ratios at underwriting (see column 3). The estimates reported in column 2 show that debt maturities are slightly shorter for mortgage contracts taken out by generalist PE borrowers.

[Insert Table 9 about here.]

In sum, we find some evidence that generalist PE investors are able to access cheaper debt capital to finance their hotel investments than do other investor types. By contrast, specialist PE investors do not appear to enjoy the same access to attractively priced debt as do their generalist peers.

8 Conclusion

We study the PE industry's investments in the U.S. hotel sector over the past two decades. For our analyses, we create a novel data set covering the entire life-cycle of asset-level investments from

acquisition, to operations, long-term asset management measures, and the eventual dispositions. We augment this data set with hand-collected information to classify PE investors in the hotel industry into sector specialists and generalists. We then combine matching methods with a difference-in-differences approach to assess the relative operating performance of PE-owned hotels versus that of characteristics-matched control hotels backed by other investor types. Our results show that hotels owned by specialist PE investors experience improvements in operating efficiency and significantly higher bottom-line profits. We also find evidence that the asset management measures implemented by specialist PEs improve hotels' valuations in the long run.

Our results are consistent with industry specialists using their operating expertise to pursue relatively hands-on asset management approaches—and also being successful in the *execution* of their strategies, which has recently been documented to be key to achieving high returns (Biesinger et al., 2020). Generalists appear to focus more on asset selection, market timing, and financial engineering, which are arguably asset management skills that can be transferred more easily across investment settings. Thus, there is significant heterogeneity in the investment strategies adopted by different types of investors under "the PE model," with distinct approaches to asset management shaping relative investment performance outcomes. Yet, our results do not imply that end investors are necessarily better off investing in specialized PE funds or firms, in particular in risk-adjusted terms. We find that, at least in our setting, generalist PE firms have access to cheaper financing. They also have the advantage of diversification (Brown et al., 2022), and might be able to reallocate capital to better-performing industries when investment opportunities in the hotel market shrink (Stein, 1997).

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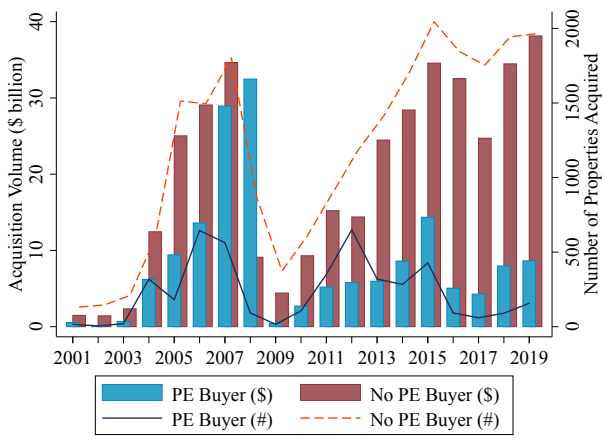
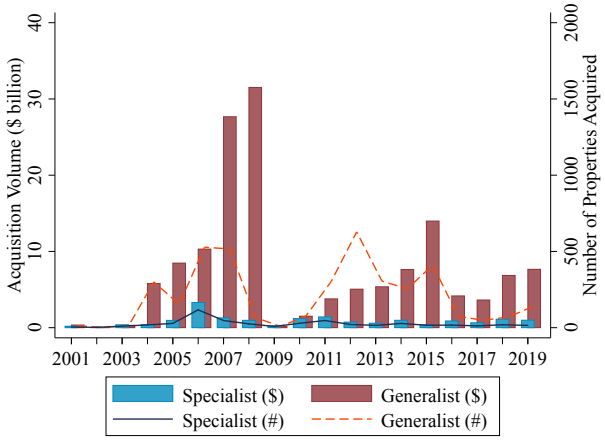
Figure 1. Hotel Acquisition Volumes by Investor Type

This figure depicts aggregate annual U.S. hotel acquisition volumes (in terms of US$ billion and numbers of properties) over the 2001–2019 period. Panel A provides a breakdown between the acquisitions with a PE buyer versus those without a PE buyer. Panel B focuses on PE acquisitions only and provides a breakdown between the acquisitions with specialist PE buyers versus those with generalist PE buyers. The hotel transactions data used to produce this figure are from RCA.



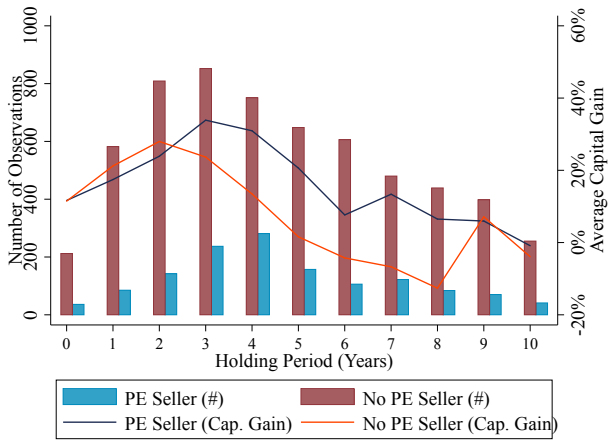
(A) PE Investors versus No PE Investors



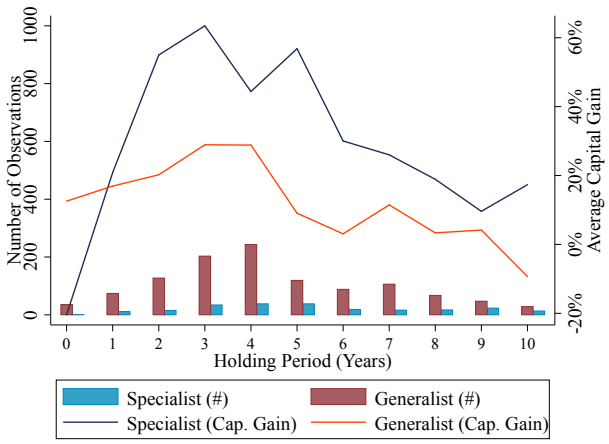
(B) PE Specialists versus PE Generalists

Figure 2. Breakdown of Holding Periods and Capital Gains by Investor Type

This figure depicts the distribution of holding periods (in years) and average capital gains by holding period in the hotel industry over the 2001–2019 period. Panel A presents data on the resales with a PE seller versus those without a PE seller. Panel B presents data on resales with PE sellers, comparing those with specialist versus generalist PE sellers. The hotel transactions data used to produce this figure are from RCA.



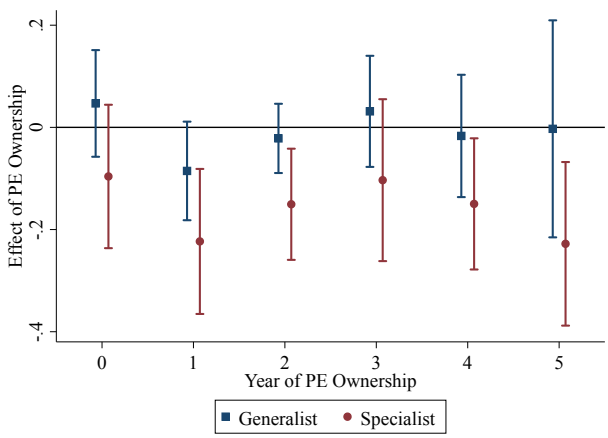
(A) PE Investors versus No PE Investors



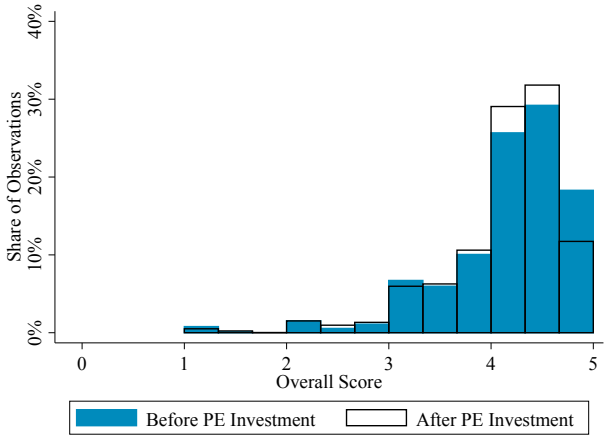
(B) PE Specialists versus PE Generalists

Figure 3. Hotel Guest Experience Ratings under PE Ownership

This figure depicts details on the effects of PE ownership on hotel guest experience ratings, notably, on scores for service quality. Panel A presents annual coefficient estimates of the effects of PE specialist and generalist ownership on those scores, starting with the year of (specialist and generalist) acquisitions of their target hotels through year five of PE ownership of those hotels. The annual coefficient estimates on specialist and generalist PE ownership are derived from Eq. (D.1). Panel B presents overlaid histograms of the unconditional distributions of hotel service quality scores for the subject hotels before versus after PE investors acquire those hotels. The data on service quality scores are from Tripadvisor. The data on hotel ownership (and the timing of PE investments) are from RCA.



(A) Annual Effects on Service Scores



(B) Distribution of Service Scores

Table 1. Characteristics of PE Investors

This table presents cross-sectional descriptive statistics for specialist and generalist PE investors that acquired hotel properties in the U.S. over the 2001–2019 period, based on data from RCA. Year of First Acquisition is the year in which a given PE investor acquired their first hotel in our sample, as per the RCA transactions data. # Properties Acquired is the total number of properties acquired by a given PE investor in our sample over the study period. Acquisition Volume is the total volume of hotel acquisitions completed by a given PE investor in our sample over the study period in $ billion. Market Concentration (Brand Concentration) is a Herfindahl-Hirschman index of investment concentration computed by acquisition volumes over the different geographical markets (hotel brands, respectively) across which a given PE investor has acquired hotel properties over the sample period. The geographical market areas used in computing the variable Market Concentration are denoted "metro areas" in the RCA data. The hotel brands used in computing Brand Concentration are denoted "franchises" in the RCA data.

	PE Specialist			PE Generalist		
	N	Mean	SD	N	Mean	SD
Year of First Acquisition	17	2007	6	168	2010	5
# Properties Acquired	17	27	39	168	23	119
Acquisition Volume	17	0.92	1.07	168	0.86	3.92
Market Concentration	17	0.35	0.33	168	0.63	0.36
Brand Concentration	17	0.38	0.33	168	0.66	0.34

Table 2. Composition of Hotel Transactions Database

This table presents frequency statistics on hotel transactions in the U.S. over the 2001–2009 period, based on data from RCA. Panel A shows the distribution of hotel transactions by transaction type. Panel B shows a ranking of the top-10 investment destinations and hotel brands involved in the sample transactions. Panel C presents a ranking of the top-10 buyer types, as well as individual PE buyers and non-PE buyers. Panel D shows the distribution of transactions involving PE versus no PE buyers and sellers. Panel E shows the number of hotel transactions involving specialist PE firms as buyers and sellers, respectively.

Panel A. Distribution over Transaction Types

	N
Single	18,790
Portfolio	5,638
Entity-Level	2,450
Total	26,878

Panel B. Top-10 Cities and Hotel Brands

City	N	Brand	N
Houston	360	<Independent hotel>	4,945
New York	323	Hampton Inn & Suites	1,078
Orlando	286	Courtyard by Marriott	968
San Antonio	246	Holiday Inn Express	960
Miami Beach	239	Residence Inn by Marriott	891
San Francisco	236	Motel 6	767
Phoenix	221	Holiday Inn	748
Las Vegas	208	Fairfield Inn by Marriott	744
San Diego	206	Quality Inn	726
Los Angeles	202	Comfort Inn	712

Panel C. Top-10 Buyer Types and Buyers

Buyer Type	N	PE Buyer	N	Non-PE Buyer	N
Developer/Owner/Operator	17,131	Blackstone	1,381	N/A	589
Equity Fund	4,027	Starwood Capital	513	Apple REIT	309
REIT	1,538	Goldman Sachs	404	China Life	195
Non Traded REIT	899	JER Partners	151	AccorInvest	170
Investment Manager	875	RLJ Development	147	Ashford Hospitality Trust	149
<unknown>	506	Five Mile Capital	119	Colony Capital (REIT)	149
REOC	446	Apollo Global RE	93	Hospitality Investors Trust	148
Insurance	244	Noble Investment Group	87	Kimco	135
Corporate	219	Dune RE Partners LP	77	AHIP REIT	129
High Net Worth	206	Cerberus	72	InvenTrust	126

Panel D. Presence of PE Buyer or Seller

	PE Seller	No PE Seller
PE Buyer	384	4,007
No PE Buyer	2,408	20,079

Panel E. Presence of PE Specialist Investors

	Buyer	Seller
PE Specialist	478	358

Table 3. Descriptive Statistics Transactions Data

This table presents descriptive statistics on hotel transactions in the U.S. over the 2001–2009 period, based on data from RCA. Panel A presents descriptive statistics on the hotel transactions involving PE buyers versus those involving no PE buyers. Panel B presents descriptive statistics on the PE hotel transactions involving PE specialists versus those involving PE generalists. The descriptive statistics cover the following variables: acquisition price (in $m.) and the price per room (in $th.); the cap rate (in %); an indicator that takes the value of one if a hotel was acquired as part of a portfolio transaction; an indicator that takes the value of one if the hotel was acquired by an international buyer; the number of rooms; the year built; and indicators that take the value of one if a hotel occupies a central business district (CBD) location and, respectively, if it is a full-service establishment (rather than a limited-service establishment). Statistical significance from differences-in-means tests across hotel investor groups is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Panel A. PE Buyers versus No PE Buyers

	PE Buyer			No PE Buyer			Difference in
	N	Mean	Median	N	Mean	Median	Means
Price ($m.)	2,630	33.42	13.07	21,798	15.50	5.55	17.92***
Price per Room ($th.)	2,630	138.41	100.05	21,748	99.92	64.75	38.49***
Cap Rate (%)	353	7.89	7.95	2,865	8.63	8.69	-0.74***
Portfolio Transaction	2,630	0.63	1	21,798	0.18	0	0.45***
International Buyer	2,630	0.04	0	21,798	0.06	0	-0.02***
Rooms	2,630	200.92	132	21,748	131.86	104	69.06***
Year Built	2,482	1984.63	1991	21,296	1983.10	1988	1.53***
CBD	2,630	0.16	0	21,796	0.09	0	0.07***
Full Service	2,630	0.43	0	21,798	0.29	0	0.14***

Panel B. PE Specialists versus PE Generalists

	PE Specialist			PE Generalist			Difference in
	N	Mean	Median	N	Mean	Median	Means
Price ($m.)	475	34.31	20.20	2,155	33.22	12.00	1.09
Price per Room ($th.)	475	160.74	124.56	2,155	133.49	93.91	27.25***
Cap Rate (%)	125	7.75	8.01	228	7.96	7.92	-0.21
Portfolio Transaction	475	0.46	0	2,155	0.66	1	-0.20***
International Buyer	475	0.02	0	2,155	0.04	0	-0.02**
Rooms	475	214.38	162	2,155	197.96	128	16.42
Year Built	468	1984.69	1995	2,014	1984.61	1990	0.08
CBD	475	0.21	0	2,155	0.15	0	0.06***
Full Service	475	0.62	1	2,155	0.39	0	0.23***

Table 4. Descriptive Statistics Performance Data

This table presents descriptive statistics on the operating performance of U.S. hotels over the 2000–2018 period, based on data from CBRE. Panel A presents descriptive statistics on hotel performance measures across subject and control hotels. Panel B presents descriptive statistics on hotel performance measures across subject hotels owned by PE specialists versus those owned by PE generalists. Performance measures include the average daily rate, occupancy, and revenue per available room (the product of average daily rate and occupancy). Expense ratios include departmental, undistributed, non-operating, and fixed expenses. Profit ratios encompass departmental profit, gross operating profit, EBITDA, and net income. Expense and profit ratios are scaled by total hotel revenues. Continuous variables are winsorized at the 1^{st} and 99^{th} percentiles.

Panel A. Subject Hotels versus Control Hotels

	Subject Hotels			Control Hotels		
	N	Mean	Median	N	Mean	Median
Average Daily Rate	16,951	119.92	106.83	15,232	130.06	113.92
Occupancy	16,951	0.71	0.72	15,232	0.71	0.72
Revenue per Available Room	16951	86.15	76.02	15,232	92.37	81.61
Departmental Expense Ratio	16,951	0.31	0.29	15,232	0.31	0.29
Undistributed Expense Ratio	16,951	0.28	0.28	15,232	0.27	0.27
Non-Operating Expense Ratio	16,951	0.13	0.09	15,232	0.12	0.09
Fixed Expense Ratio	16,951	0.09	0.00	15,232	0.08	0.00
Departmental Margin	16,951	0.69	0.71	15,232	0.69	0.71
GOP Margin	16,951	0.42	0.42	15,232	0.41	0.42
EBITDA Margin	16,951	0.29	0.31	15,232	0.29	0.31
Net Income Margin	16,951	0.20	0.22	15,232	0.21	0.23

Panel B. PE Specialists versus PE Generalists

	PE Specialist			PE Generalist		
	N	Mean	Median	N	Mean	Median
Average Daily Rate	1,666	127.20	116.41	12,251	112.81	101.57
Occupancy	1,666	0.71	0.73	12,251	0.71	0.71
Revenue per Available Room	1666	91.65	83.85	12,251	80.61	72.26
Departmental Expense Ratio	1,666	0.32	0.30	12,251	0.30	0.28
Undistributed Expense Ratio	1,666	0.28	0.28	12,251	0.28	0.28
Non-Operating Expense Ratio	1,666	0.15	0.11	12,251	0.13	0.09
Fixed Expense Ratio	1,666	0.07	0.00	12,251	0.09	0.03
Departmental Margin	1,666	0.68	0.70	12,251	0.70	0.72
GOP Margin	1,666	0.40	0.41	12,251	0.42	0.43
EBITDA Margin	1,666	0.25	0.28	12,251	0.30	0.31
Net Income Margin	1,666	0.18	0.20	12,251	0.20	0.23

Table 5. Hotel Operating Performance under Private Equity Ownership

This table reports output from Eq. (1). The dependent variables are top-line performance measures in Panel A, expense ratios in Panel B, and profit ratios in Panel C. PE_i^{Gen} (PE_i^{Spec}) is an indicator that takes the value of one for the hotels acquired by generalist (specialist) PE investors and zero for the hotels in the control group. $Post_{i,t}^{Gen}$ ($Post_{i,t}^{Spec}$) is an indicator that takes the value of one starting with the year in which a generalist (specialist) PE investor first acquires a subject hotel and zero before then. For control hotels, these variables equal one starting with the year in which a PE investor first acquires the matched subject hotel and zero before then. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on the interaction terms reported in the table. All regressions are estimated over the 2000–2018 period. Standard errors are clustered by hotel brand. Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Panel A. Top-Line Performance Measures

	Log Revenue (1)	Log ADR (2)	Occupancy (3)	Log RevPAR (4)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	-0.003	0.006	-0.004	0.001
	(0.011)	(0.007)	(0.003)	(0.009)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	0.005	0.028**	-0.002	0.024
	(0.020)	(0.014)	(0.007)	(0.018)
Post Dummies	Yes	Yes	Yes	Yes
Hotel Fixed Effects	Yes	Yes	Yes	Yes
Region × Year Fixed Effects	Yes	Yes	Yes	Yes
F-statistic	0.16	2.20	0.06	1.39
Observations	16,369	16,369	16,369	16,369
R-squared	0.99	0.97	0.74	0.95

Panel B. Expense Ratios

	Departmental (1)	Undistributed (2)	Non-Operating (3)	Fixed (4)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	-0.008**	0.007	0.005	0.017
	(0.003)	(0.005)	(0.007)	(0.011)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	-0.021***	-0.003	0.052**	-0.083***
	(0.006)	(0.007)	(0.020)	(0.025)
Post Dummies	Yes	Yes	Yes	Yes
Hotel Fixed Effects	Yes	Yes	Yes	Yes
Region × Year Fixed Effects	Yes	Yes	Yes	Yes
F-statistic	3.97*	1.34	4.50**	13.65***
Observations	16,369	16,369	16,369	16,369
R-squared	0.90	0.79	0.52	0.72

Table 5. Continued

Panel C. Profit Ratios

	Departmental (1)	GOP (2)	EBITDA (3)	NI (4)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	0.008**	0.000	-0.002	-0.017
	(0.003)	(0.006)	(0.010)	(0.018)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	0.021***	0.024**	-0.028	0.054**
	(0.006)	(0.010)	(0.023)	(0.025)
Post Dummies	Yes	Yes	Yes	Yes
Hotel Fixed Effects	Yes	Yes	Yes	Yes
Region × Year Fixed Effects	Yes	Yes	Yes	Yes
F-statistic	3.97*	4.87**	1.09	5.27**
Observations	16,369	16,369	16,369	16,369
R-squared	0.90	0.83	0.65	0.64

Table 6. Drivers of Changes in Hotel Operating Performance under Private Equity Ownership

This table reports output from Eq. (1). The dependent variables are labor expense ratios by hotel department in Panel A, undistributed expense ratios in Panel B, non-operating expense ratios in Panel C, and fixed charges in Panel D. PE_i^{Gen} (PE_i^{Spec}) is an indicator that takes the value of one for the hotels acquired by generalist (specialist) PE investors and zero for the hotels in the control group. $Post_{i,t}^{Gen}$ ($Post_{i,t}^{Spec}$) is an indicator that takes the value of one starting with the year in which a generalist (specialist) PE investor first acquires a subject hotel and zero before then. For control hotels, these variables equal one starting with the year in which a PE investor first acquires the matched subject hotel and zero before then. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on the interaction terms reported in the table. All regressions are estimated over the 2000–2018 period. Standard errors are clustered by hotel brand. Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Panel A. Labor Expenses

	Total (1)	Rooms (2)	F&B (3)	Other (4)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	-0.003	-0.003	0.000	0.000
	(0.002)	(0.002)	(0.001)	(0.000)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	-0.016***	-0.012***	-0.004	0.000
	(0.005)	(0.004)	(0.003)	(0.001)
Post Dummies	Yes	Yes	Yes	Yes
Hotel Fixed Effects	Yes	Yes	Yes	Yes
Region × Year Fixed Effects	Yes	Yes	Yes	Yes
F-statistic	5.87**	5.20**	0.98	0.03
Observations	15,230	15,230	15,230	15,230
R-squared	0.88	0.83	0.97	0.80

Panel B. Undistributed Expenses

	A&G (1)	IT (2)	Sales (3)	Maint. (4)	Util. (5)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	0.001	0.000	0.008**	-0.002**	0.000
	(0.002)	(0.000)	(0.004)	(0.001)	(0.001)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	-0.005*	0.002*	0.004	-0.004***	0.000
	(0.003)	(0.001)	(0.005)	(0.001)	(0.001)
Post Dummies	Yes	Yes	Yes	Yes	Yes
Hotel Fixed Effects	Yes	Yes	Yes	Yes	Yes
Region × Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
F-statistic	4.18**	3.57*	0.38	2.00	0.03
Observations	16,369	16,369	16,369	16,369	16,369
R-squared	0.67	0.67	0.87	0.71	0.83

Table 6. Continued

Panel C. Non-Operating Expenses

	Mgt. Fee (1)	Prop. Tax (2)	Insur. (3)	Rent (4)	Other (5)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	-0.004***	-0.001	-0.001*	0.003	0.003
	(0.001)	(0.001)	(0.001)	(0.007)	(0.002)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	-0.009***	-0.010**	0.000	0.075***	-0.003***
	(0.003)	(0.004)	(0.001)	(0.025)	(0.001)
Post Dummies	Yes	Yes	Yes	Yes	Yes
Hotel Fixed Effects	Yes	Yes	Yes	Yes	Yes
Region × Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
F-statistic	2.80	4.13**	0.32	8.31***	9.30***
Observations	16,369	16,369	16,369	16,369	16,369
R-squared	0.75	0.70	0.72	0.55	0.41

Panel D. Fixed Charges

	Interest (1)	Amort. & Dep. (2)	Inc. Tax (3)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	0.009***	0.010	0.000**
	(0.004)	(0.008)	(0.000)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	-0.033**	-0.050***	0.000
	(0.013)	(0.017)	(0.000)
Post Dummies	Yes	Yes	Yes
Hotel Fixed Effects	Yes	Yes	Yes
Region × Year Fixed Effects	Yes	Yes	Yes
F-statistic	10.28***	12.41***	0.50
Observations	16,369	16,369	16,369
R-squared	0.72	0.75	0.37

Table 7. Drivers of Private Equity Capital Gains

This table reports output from Eq. (2), estimated over the repeat-sales transactions in our sample. The dependent variable is capital gains, measured as the difference between the log acquisition price per room and the subsequent log disposition price per room for a given hotel. $PESeller_{i,t}^{Gen}$ ($PE\ Seller_{i,t}^{Spec}$) is an indicator that takes the value of one if the seller in a given transaction is a generalist (specialist) PE investor, and zero otherwise. The regressions include the following control variables: *Portfolio Sale* is an indicator that takes the value of one if a hotel was sold in a portfolio deal; *Prior Portfolio Sale* is an indicator that takes the value of one if the hotel was acquired in a portfolio deal; *International Buyer* is an indicator that takes the value of one if the buyer in the repeat sale is an international investor; *Rooms* is the log number of rooms of the hotel traded in a given transaction. *Year Built* is a hotel's construction year; *CBD* is an indicator that takes the value of one if a given hotel is located in the central business district of its local market, and zero otherwise; *Full-Service* is an indicator that takes the value of one if a given hotel is a full-service hotel, and zero otherwise (if it is a limited-service hotel). Fixed effects for the length of the holding period (in years) in a given repeat-sales transaction, different location-level fixed effects (namely, region and zip code), and their interaction terms with the transaction years are included as indicated. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on $PESeller_{i,t}^{Gen}$ and $PESeller_{i,t}^{Spec}$ reported in the table. All regressions are estimated over the 2001–2019 period. Standard errors are clustered by zip code. Statistical significance is indicated as follows: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

	(1)	(2)	(3)	(4)	(5)	(6)
$PESeller^{Gen}$	0.107***	0.084***	0.015	0.024	-0.035	-0.062
	(0.021)	(0.021)	(0.021)	(0.021)	(0.028)	(0.053)
$PESeller^{Spec}$	0.287***	0.297***	0.231***	0.225***	0.239***	0.159*
	(0.035)	(0.034)	(0.034)	(0.034)	(0.043)	(0.087)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Holding Period FE	No	Yes	No	No	No	No
Holding Period × Year FE	No	No	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	No	No	No
Region × Year FE	No	No	No	Yes	No	No
Zip FE	No	No	No	No	Yes	No
Zip × Year FE	No	No	No	No	No	Yes
F-statistic	24.15***	34.29***	35.04***	31.67***	36.74***	5.43**
Observations	8,059	8,059	8,056	8,053	6,800	2,423
R-squared	0.04	0.08	0.27	0.30	0.46	0.68

Table 8. Guest Satisfaction under Private Equity Ownership

This table reports output from Eq. (1). The dependent variables are hotels' overall guest satisfaction scores in column 1, guest satisfaction scores for service quality in column 2, and the corresponding scores for cleanliness and sleep quality in columns 3 and 4, respectively. PE_i^{Gen} (PE_i^{Spec}) is an indicator that takes the value of one for the hotels acquired by generalist (specialist) PE investors and zero for the hotels in the control group. $Post_{i,t}^{Gen}$ ($Post_{i,t}^{Spec}$) is an indicator that takes the value of one starting with the year in which a generalist (specialist) PE investor first acquires a subject hotel and zero before then. For control hotels, these variables equal one starting with the year in which a PE investor first acquires the matched subject hotel and zero before then. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on the interaction terms reported in the table. All regressions are estimated over the 2000–2018 period. Standard errors are clustered by hotel brand. Statistical significance is indicated as follows: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

	Overall (1)	Service (2)	Cleanliness (3)	Sleep Quality (4)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	0.019	-0.013	0.019	0.032
	(0.027)	(0.028)	(0.026)	(0.029)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	-0.072	-0.162***	-0.036	-0.042
	(0.065)	(0.059)	(0.089)	(0.114)
Post Dummies	Yes	Yes	Yes	Yes
Hotel Fixed Effects	Yes	Yes	Yes	Yes
Region × Year Fixed Effects	Yes	Yes	Yes	Yes
F-statistic	2.02	5.55**	0.40	0.36
Observations	11,907	11,788	11,768	8,504
R-squared	0.50	0.45	0.48	0.44

Table 9. Private Equity Acquisition Financing

This table reports output from Eq. (3). The dependent variable is the hotel mortgage interest rate in column (1), the loan term (log number of months) in column (2), the debt-service coverage ratio (DSCR, computed as the annual hotel EBITDA divided by total debt service) in column (3), and the loan-to-value ratio (LTV) at underwriting in column (4). $PEBuyer_{i,t}^{Gen}$ ($PEBuyer_{i,t}^{Spec}$) is an indicator that takes the value of one if the borrower in a given financing transaction was a generalist (specialist) PE investor, and zero otherwise. Hotel fixed effects, lender fixed effects, and region $\times$ year fixed effects are included as indicated. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on $PEBuyer_{i,t}^{Gen}$ and $PEBuyer_{i,t}^{Spec}$ reported in the table. All regressions are estimated over the 2001–2019 period. Standard errors are clustered by zip code. Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

	Interest Rate (1)	Loan Term (2)	DSCR (3)	LTV (4)
$PEBuyer_{i,t}^{Gen}$	-0.003***	-0.096***	0.338***	0.003
	(0.000)	(0.026)	(0.057)	(0.006)
$PEBuyer_{i,t}^{Spec}$	0.000	0.075	-0.033	-0.014
	(0.001)	(0.072)	(0.092)	(0.013)
Hotel Fixed Effects	Yes	Yes	Yes	Yes
Lender Fixed Effects	Yes	Yes	Yes	Yes
Region $\times$ Year Fixed Effects	Yes	Yes	Yes	Yes
F-statistic	18.52***	4.84**	11.18***	1.15
Observations	3,881	7,932	4,764	6,041
R-squared	0.92	0.82	0.85	0.76

Appendix A Hotel Accounting under USALI

Table A.1. Summary Hotel Profit and Loss Statement Following USALI

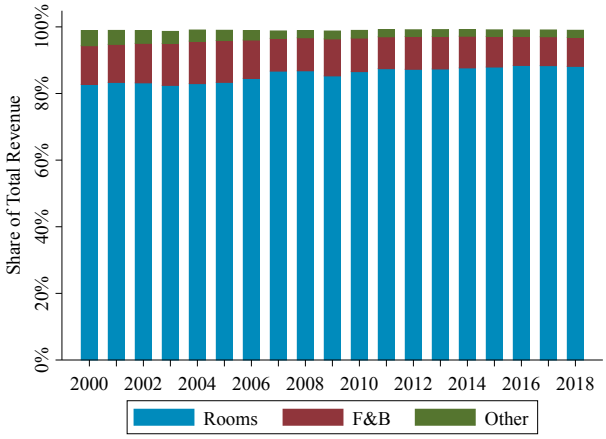
This table presents the structure of a typical hotel profit and loss statement following the Uniform System of Accounts for the Lodging Industry (USALI). The column on the left shows the individual revenue and expense items in the different hotel operating departments, the overhead expenses associated with the operation of the hotel that cannot be assigned to any of the individual operating departments (undistributed expenses), the expenses associated with the ownership of the real estate (non-operating expenses), and the expenses associated with financing and taxation of the hotel (fixed charges). The column on the right shows the calculation of key hotel profit measures by subtracting the various expense components from total hotel revenues (total departmental income).

	Rooms Revenue		
+	Food & Beverage Revenue		
+	Other Operating Revenue		
			Total Departmental Revenues
	Rooms Expense		
+	Food & Beverage Expense		
+	Other Operating Expense		
		−	Total Departmental Expenses
		=	**Total Departmental Income**
	A&G Expense		
+	IT Expense		
+	Marketing Expense		
+	Maintenance Expense		
+	Utility Expense		
		−	Total Undistributed Expenses
		=	**Gross Operating Profit**
	Management Fee		
+	Property Tax		
+	Insurance		
+	Rent Expense		
+	Other Non-Operating Expenses		
		−	Total Non-Operating Expenses
		=	**EBITDA**
	Interest Expense		
+	Amortization & Depreciation		
+	Income Taxes		
		−	Total Fixed Charges
		=	**Net Income**

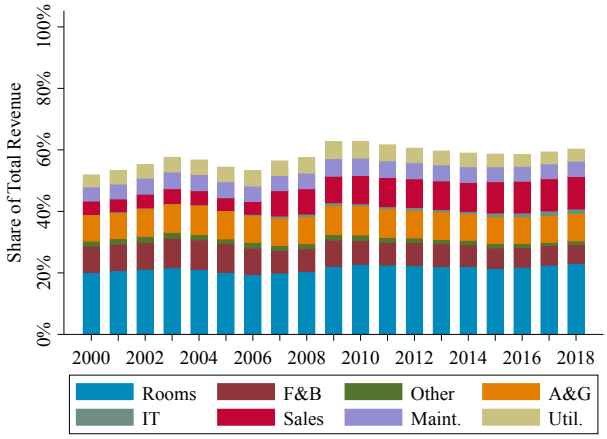
Appendix B Key Hotel Revenue and Expense Ratios under USALI

Figure B.1. Breakdown of Hotel Revenues and Expenses

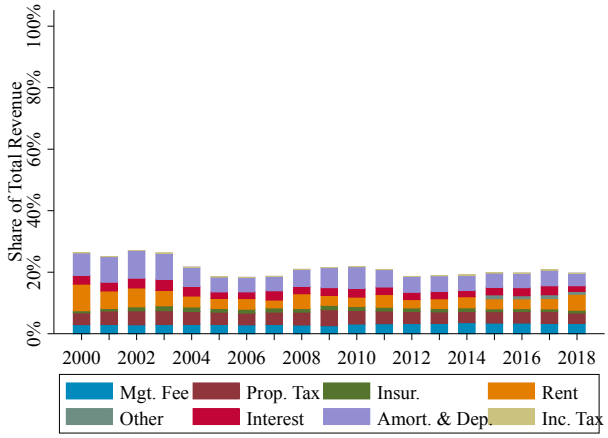
This figure depicts the annual decomposition of hotel revenues and expenses over the 2000–2018 period in terms of departmental revenues (Panel A), departmental and undistributed expenses (Panel B), and non-operating expenses and fixed charges (Panel C). All annual revenue and expense items shown are scaled by contemporaneous hotel total revenues. The hotel performance data used to produce this figure are from CBRE.



(A) Departmental Revenues



(B) Departmental and Undistributed Expenses



(C) Non-Operating Expenses and Fixed Charges

Appendix C Hotel Performance Leading Up To Private Equity Investment

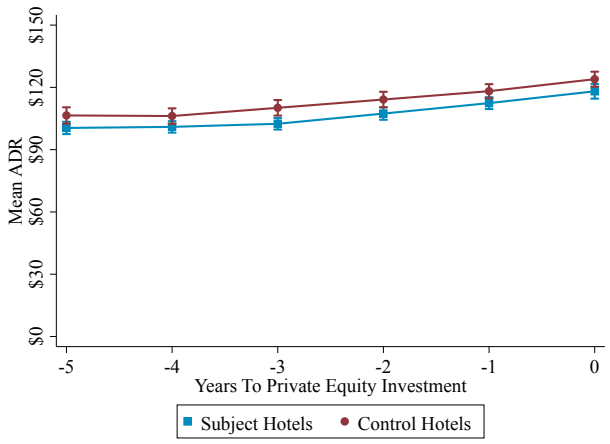
Panels A through C of Figure C.1 show the annual average daily rate, occupancy, and revenue per available room, respectively, across subject and control hotels in event time. Event time for both types of hotels is measured relative to the year in which a PE investor acquired a given subject hotel. The time-series patterns depicted indicate parallel trends in the evolution of those top-line performance measures across the subject and control hotels in the period leading up to the acquisitions of the subject hotels by PE. The overlap in the 90% confidence intervals included in the time-series plots indicates that the levels of those variables leading up to the year of a PE acquisition are statistically indistinguishable across the subject and control hotels in most of the years included in those comparisons.

Panels D through G present yearly means of the ratios of departmental expenses, undistributed expenses, non-operating expenses, and fixed charges to total revenues, respectively. The figures show that there are no statistically or economically significant differences in the expense ratios across subject and control hotels in the five years leading up to PE acquisitions of the subject hotels.

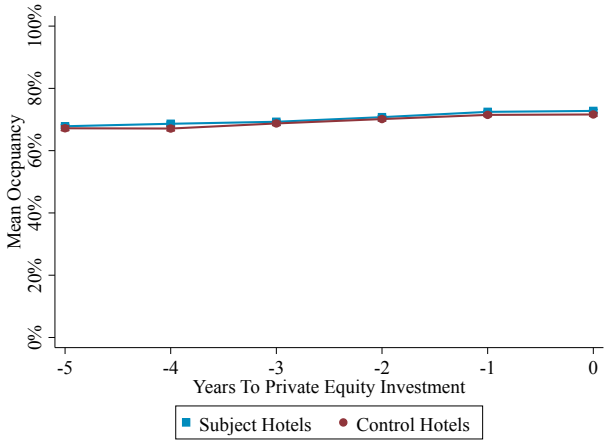
Panels H through K show annual average hotel profit measures (departmental, gross operating profit, EBITDA, and net income), each scaled by total hotel revenues, across subject and control hotels in event time. Reflecting the patterns observed in the expense ratios depicted in Panels D through G, all profit ratios included in this comparison are statistically and economically similar across subject and control hotels in the five years leading up to PE investments.

Figure C.1. Hotel Performance Leading Up To Private Equity Investment

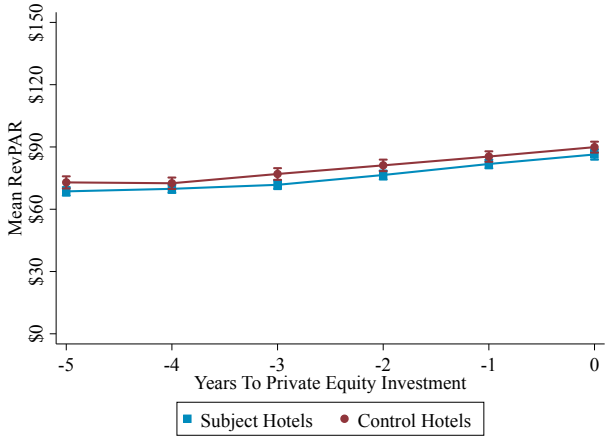
This figure depicts the annual mean performance measures for the subject hotels and their characteristics-matched control hotels in the five years leading up to PE investments in the subject hotels. Panels A through C show top-line performance measures (ADR, Occupancy, and RevPAR). Panels D through G show expense ratios (departmental, undistributed, non-operating expenses, and fixed charges, each scaled by total hotel revenues). Panels H through K show profit ratios (departmental, gross operating profit, EBITDA, and net income, each scaled by total hotel revenues). The annual time-series of each of these performance measures are shown in event time, where year 0 represents the year in which a given subject hotel received PE funding. The time-series of the performance data for the characteristics-matched control hotels assigned to each of the subject hotels are measured on the same timeline, reaching from five years prior to the PE investment in a given subject hotel to the year of that investment. The hotel performance data used to produce this figure are from CBRE.



(A) Average Daily Rate

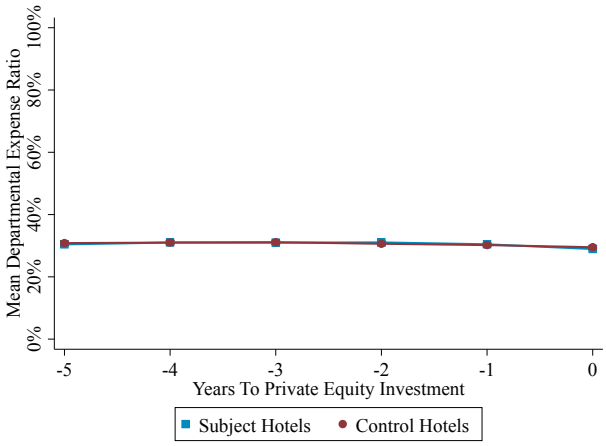


(B) Occupancy

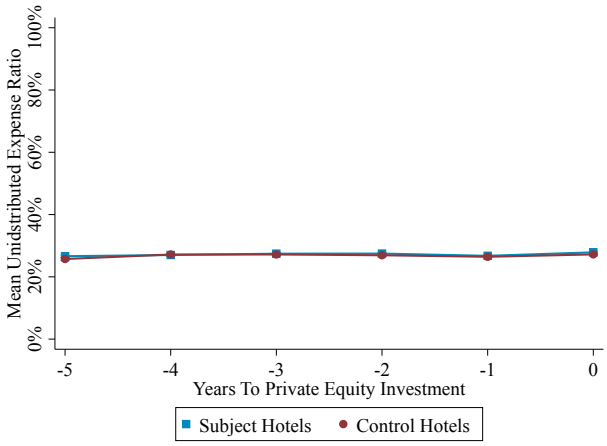


(C) RevPAR

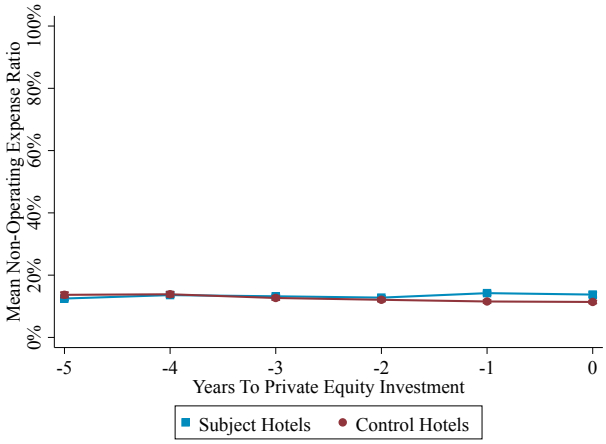
Figure C.1. Continued



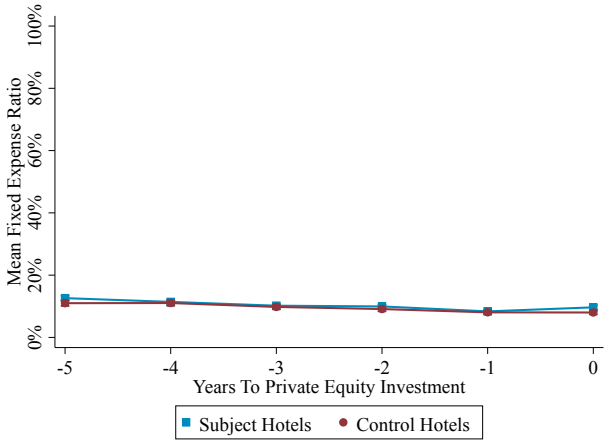
(D) Departmental Expenses



(E) Undistributed Expenses

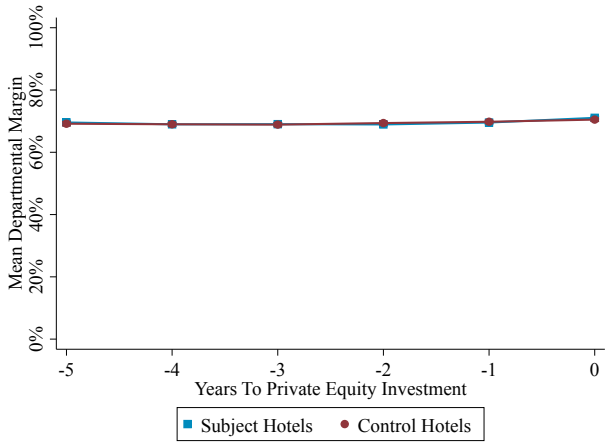


(F) Non-Operating Expenses

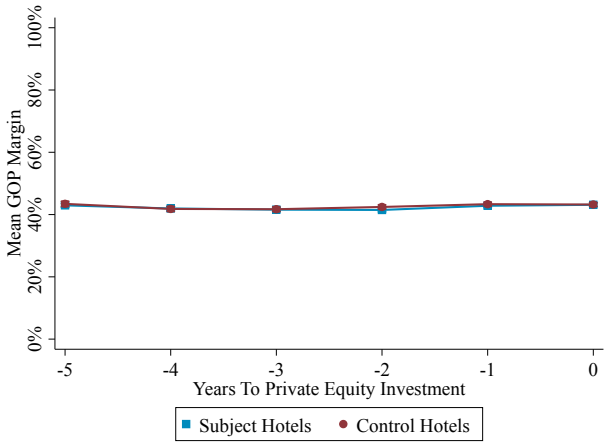


(G) Fixed Charges

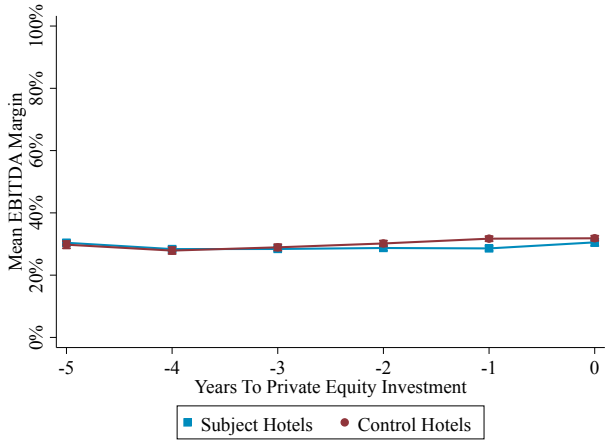
Figure C.1. Continued



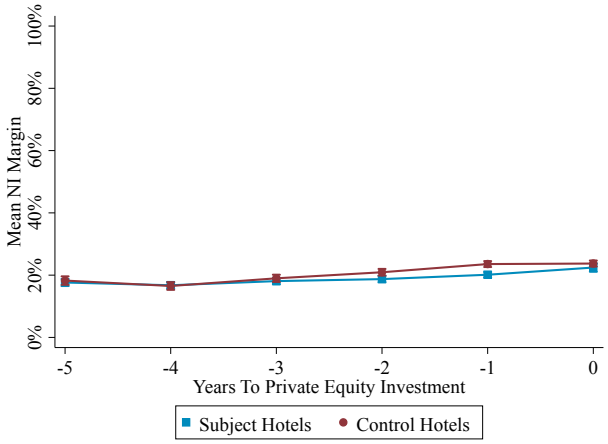
(H) Departmental Profit



(I) Gross Operating Profit



(J) EBITDA



(K) Net Income

Appendix D Effects of Private Equity Ownership on Hotel Performance by Year

The evidence presented in Section 4 shows some improvements in hotel operating performance following specialist PE investments, and more limited improvements following generalist PE investments. However, it is possible that (generalist) PE investors implement gradual changes to hotel operations during the course of their holding period, the benefits of which affect performance slowly over time. To investigate this possibility, we estimate the following regression specification:

$$y_{i,t} = \alpha + \sum_{k=0}^{K} \beta_k PE_i^{Gen} \times Post_{i,t}^{Gen,k} + \sum_{k=0}^{K} \gamma_k PE_i^{Spec} \times Post_{i,t}^{Spec,k} + \sum_{k=0}^{K} \delta Post_{i,t}^{Gen,k} + \sum_{k=0}^{K} \eta Post_{i,t}^{Spec,k} + \phi_i + \theta_{l,t} + \epsilon_{i,t} \tag{D.1}$$

where β_k (γ_k) denotes the coefficient of interest on the interaction term between PE_i^{Gen} (PE_i^{Spec}), an indicator that takes the value of one for hotels in the subject group acquired by generalist (specialist) PE investors, and the generalist (specialist) PE investment indicator $Post_{i,t}^{Gen,k}$ ($Post_{i,t}^{Spec,k}$) in year $k = 0, 1, ..., 5$. We estimate Eq. (D.1) for the five years leading up to and the five years following generalist (specialist) PE investments in their subject hotels. The specification in Eq. (D.1) thus allows us to identify the impact of generalist (specialist) PE investments on hotel performance measures in the year a given subject hotel received generalist (specialist) PE funding ($k = 0$) and in each of the subsequent five years ($k = 1, 2, ..., 5$) by comparison to the performance outcomes achieved on average over the five years prior to that hotel receiving PE funding. The values of $Post_{i,t}^{Gen,k}$ ($Post_{i,t}^{Spec,k}$) for the control hotels are again determined by the timing of PE investments in the characteristics-matched subject hotels. The remaining variables and notation are as in Eq. (1).

We summarize the results of estimating Eq. (D.1) for the sample hotels graphically. Figures D.1 through D.3 depict the annual coefficient estimates for β^k and γ^k, which measure the year-specific impacts of generalist (specialist) PE investments on hotel performance measures from the year of PE investment (denoted as year 0) up to five years following that initial investment.

[Insert Figures D.1, D.2, and D.3 about here.]

Figure D.1 presents the results for hotel top-line performance measures. The graphs show that the annual effects of specialist and generalist PE ownership on ADR, occupancy and RevPAR are statistically insignificant and economically small in all years of PE ownership. These results confirm the patterns we document in Section 4 of the paper.

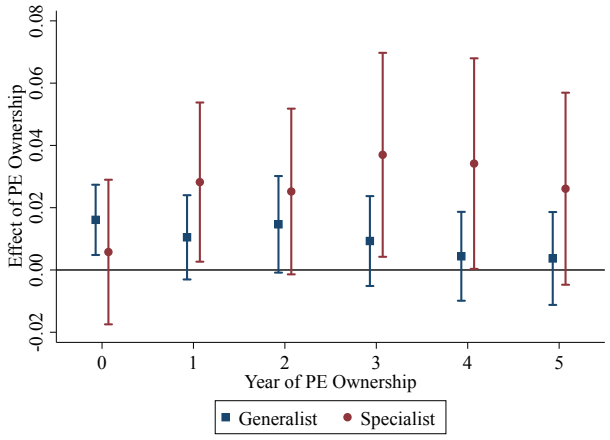
In Figure D.2, we summarize the estimation results from Eq. (D.1) for hotel expense ratios. Panel A shows that the positive impact of specialist PE ownership on departmental expense ratios is gradual and increasing over time, starting in year one of their ownership. By contrast, the effect of generalist PE ownership is smaller and starts to matter later (from year two of their ownership). Panels B and C of Figure D.2 depict the annual impacts of generalist and specialist PE investments on hotel undistributed expenses and non-operating expenses. The figures show some volatility in the annual effects of PE ownership on those measures of hotel operating efficiency but, consistent with the evidence presented in Section 4, few systematic patterns or statistically significant effects emerge. Panel D shows a distinctive difference between the fixed expense ratios of specialist and generalist PE-owned hotels. The former experience lower fixed expenses starting from the year these businesses receive PE backing. This initial effect persists through the five years of PE ownership included in this analysis. By contrast, the fixed expenses for hotels under generalist PE ownership are nearly indistinguishable from those experienced by hotels with non-PE owners.

Figure D.3 replicates the graphical depiction of the regression results from Eq. (D.1) for hotel profit ratios. Panel A shows the resulting immediate and persistent increase in departmental profit ratios starting from year one of specialist PE ownership in the subject hotels. This result is consistent with our earlier finding that specialist PE ownership has a swift and lasting positive effect on departmental expenses. Panel B of Figure D.3 again suggests that specialist PE-owned hotels continue to benefit from this lead over non-PE owner hotels and achieve increasingly higher gross operating profit margins compared to hotels owned by non-PE investors. Panel C (EBITDA) confirms our earlier finding that PE ownership is of limited consequence for EBITDA margins. However, Panel D (net income) shows an increasingly positive effect of specialist PE ownership on bottom-line profit ratios over time.

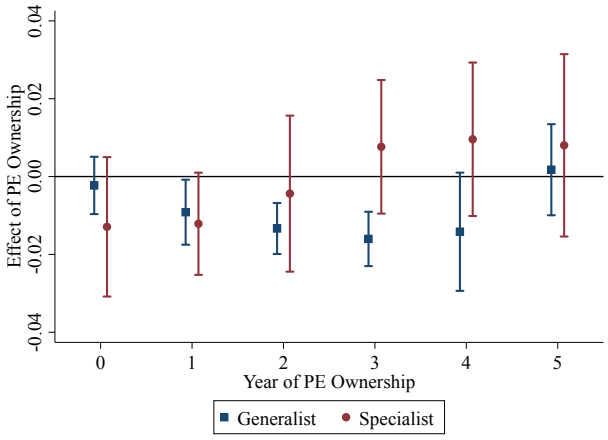
In sum, the results reported in Figures D.1, D.2, and D.3 corroborate the central inference of our analysis that specialist PE-owned hotels experience significant improvements in operating efficiency and profitability over time.

Figure D.1. Timing Effects of Private Equity Investment on Top-Line Performance

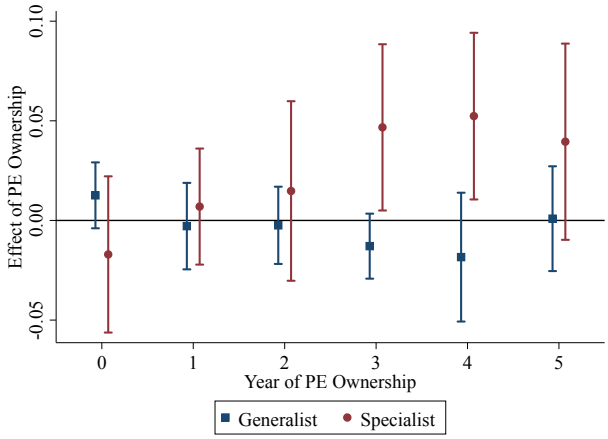
This figure depicts the annual marginal effects of specialist and generalist PE ownership on the top-line performance of the subject hotels relative to their characteristic-matched control hotels, with 90% confidence intervals drawn around the point estimates. Panel (A) shows the effects on the natural logarithm of the annual average daily rate (ADR). Panel (B) shows the effects on the annual average occupancy rate. Panel (C) shows the effects on the natural logarithm of the annual average revenue per available room (RevPAR, computed as ADR × occupancy). The annual marginal effects shown are derived from the regression specification in Eq. (D.1), estimated over the five years leading up to and the five years following PE investments in the subject hotels. Thus, each estimated marginal effect captures the impact of specialist and generalist PE investments on hotel performance in a given year of PE ownership, compared to the average performance in the five years leading up to the PE investments in the subject hotels. The time-series of the performance data for the characteristic-matched control hotels assigned to each of the subject hotels are measured on the same timeline, defined by the PE investments in the subject hotels. The data used to produce this figure are from CBRE and RCA, respectively.



(A) Average Daily Rate



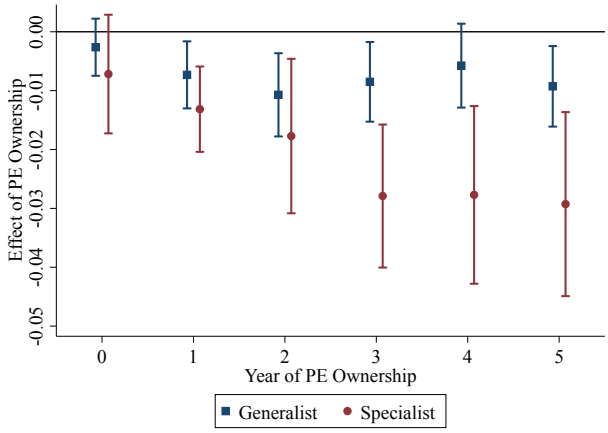
(B) Occupancy



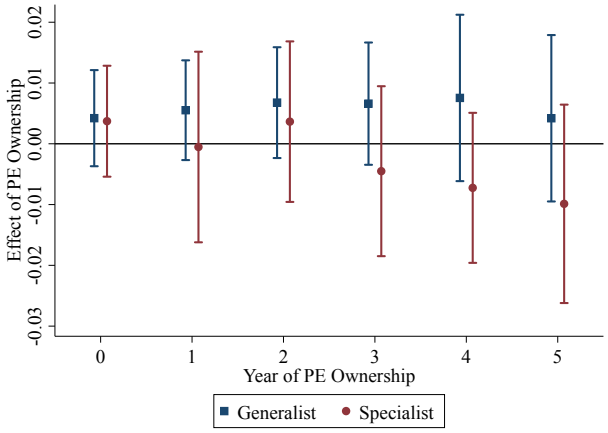
(C) RevPAR

Figure D.2. Timing Effects of Private Equity Investment on Expense Ratios

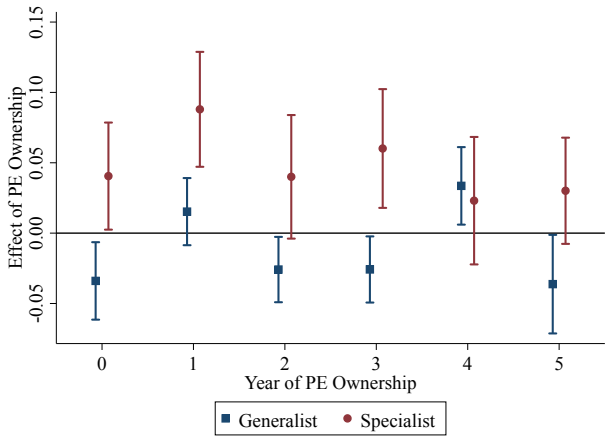
This figure depicts the annual marginal effects of specialist and generalist PE ownership on the expense ratios of the subject hotels relative to their characteristic-matched control hotels, with 90% confidence intervals drawn around the point estimates. Panel (A) shows the effects on the ratio of departmental expenses to total hotel revenues. Panel (B) shows the effects on the ratio of undistributed expenses to total hotel revenues. Panel (C) shows the effects on the ratio of non-operating expenses to total hotel revenues. Panel (D) shows the effects on the ratio of fixed expenses to total hotel revenues. The annual marginal effects shown are derived from the regression specification in Eq. (D.1), estimated over the five years leading up to and the five years following PE investments in the subject hotels. Thus, each estimated marginal effect captures the impact of specialist and generalist PE investments on hotel performance in a given year of PE ownership, compared to the average performance in the five years leading up to the PE investments in the subject hotels. The time-series of the performance data for the characteristic-matched control hotels assigned to each of the subject hotels are measured on the same timeline, defined by the PE investments in the subject hotels. The data used to produce this figure are from CBRE and RCA, respectively.



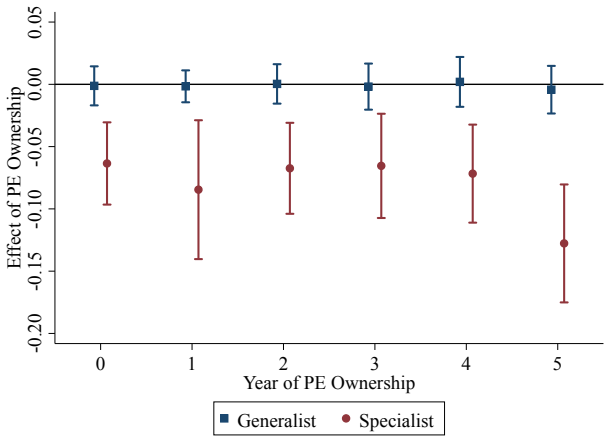
(A) Departmental Expenses



(B) Undistributed Expenses



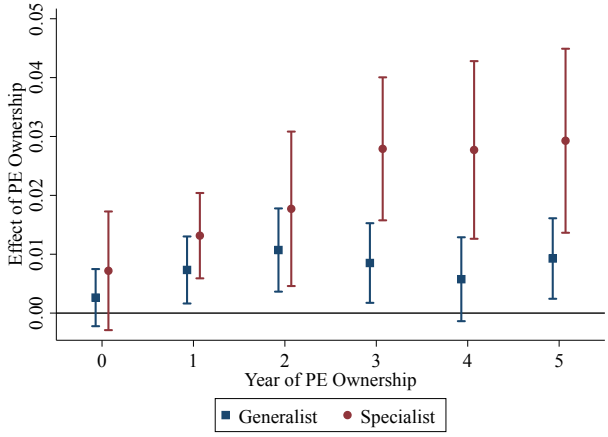
(C) Non-Operating Expenses



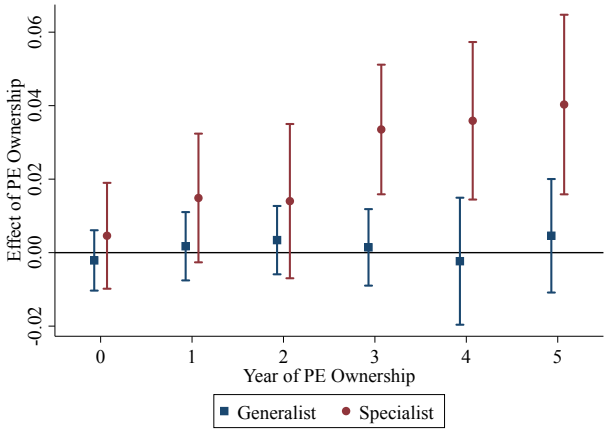
(D) Fixed Expenses

Figure D.3. Timing Effects of Private Equity Investment on Profit Ratios

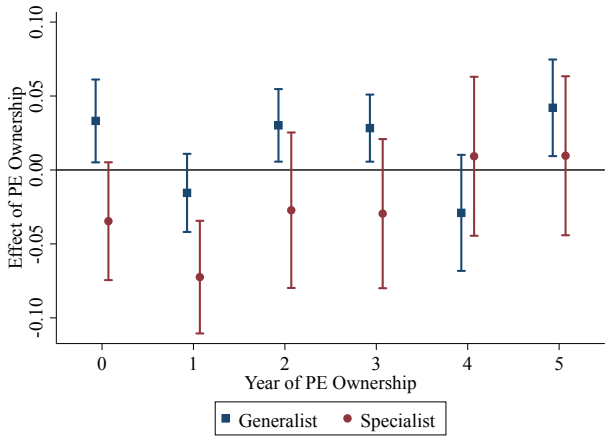
This figure depicts the annual marginal effects of specialist and generalist PE ownership on the profit ratios of the subject hotels relative to their characteristic-matched control hotels, with 90% confidence intervals drawn around the point estimates. Panel (A) shows the effects on the ratio of departmental profits to total hotel revenues. Panel (B) shows the effects on the ratio of gross operating profits to total hotel revenues. Panel (C) shows the effects on the ratio of EBITDA to total hotel revenues. Panel (D) shows the effects on the ratio of net income to total hotel revenues. The annual marginal effects shown are derived from the regression specification in Eq. (D.1), estimated over the five years leading up to and the five years following PE investments in the subject hotels. Thus, each estimated marginal effect captures the impact of specialist and generalist PE investments on hotel performance in a given year of PE ownership, compared to the average performance in the five years leading up to the PE investments in the subject hotels. The time-series of the performance data for the characteristic-matched control hotels assigned to each of the subject hotels are measured on the same timeline, defined by the PE investments in the subject hotels. The data used to produce this figure are from CBRE and RCA, respectively.



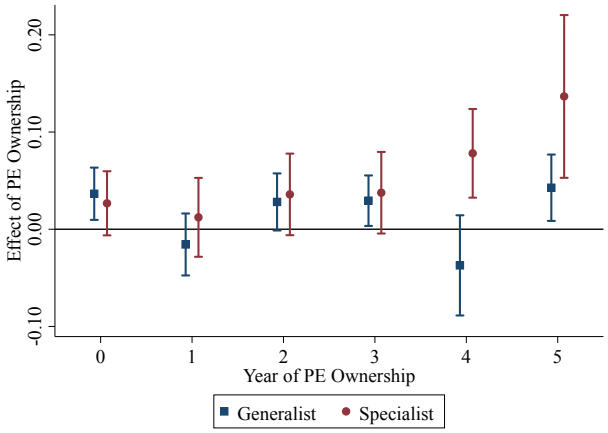
(A) Departmental Profit



(B) Gross Operating Profit



(C) EBITDA



(D) Net Income

Appendix E Replacing the Incumbent Management Company

Hotel investors commonly hire third-party management companies to operate their hotels. Given the resulting separation of ownership and control, one might ask how PE investors influence the operations of their hotels in the first place. Interviews with PE asset management professionals in the hotel industry suggest that replacing the incumbent management company is a popular value-add strategy for hotel investors. Thus, we test whether PE investors are likely to replace the management companies in the hotels they acquire.

We estimate the effects of PE ownership on the likelihood of a hotel experiencing a change in the management company relative to that for the control hotels by repeating our regression model but using as the dependent variable an indicator that takes the value of one if hotel i experienced a change in management company under the current ownership, and zero otherwise. The remaining variables and specification are identical to before. We first estimate this regression as a logit model, omitting the fixed effects listed in Eq. (1). We then replicate the estimation as a linear probability model, using OLS and including all fixed effects from Eq. (1).

Table E.1 presents the results, which indicate that the likelihood of a change in management company goes up substantially after both generalist and specialist PE acquisitions.

Table E.1. Replacing the Incumbent Management Company

This table reports output from Eq. (1). Column (1) presents the estimation results from a Logit model. Column (2) presents the corresponding output from a linear probability model (LPM). Across both columns, the dependent variable is an indicator that takes the value of one if the management company of a hotel changes. PE_i^{Gen} (PE_i^{Spec}) is an indicator that takes the value of one for the hotels acquired by generalist (specialist) PE investors and zero for the hotels in the control group. $Post_{i,t}^{Gen}$ ($Post_{i,t}^{Spec}$) is an indicator that takes the value of one starting with the year in which a generalist (specialist) PE investor first acquires a subject hotel and zero before then. For control hotels, these variables equal one starting with the year in which a PE investor first acquires the matched subject hotel and zero before then. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on the interaction terms reported in the table. All regressions are estimated over the 2000–2018 period. Standard errors are clustered by hotel brand. Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

	Logit (1)	LPM (2)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	0.746***	0.026***
	(0.288)	(0.009)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	0.911***	0.024**
	(0.322)	(0.011)
Post Dummies	Yes	Yes
Hotel Fixed Effects	Yes	Yes
Region × Year Fixed Effects	Yes	Yes
F-statistic	0.15	0.02
Observations	16,378	16,369
R-squared	0.06	0.20

Appendix F Leave-One-Out Regressions

We repeat some key regressions from our baseline analysis, but leaving out in turn the observations related to the most frequently observed generalist PE acquirer (Blackstone) and to the three most frequently observed specialist PE acquirers (RLJ Development, Noble Investment Group, and Thayer Lodging). In each case we also drop the observations related to the relevant matched control properties. Table F.1 repeats the analysis of departmental profit shown in column 1 in Panel C of Table 5. Table F.2 repeats the analysis of capital gains shown in column 5 of Table 7.

Table F.1. Departmental Profit Margins After Removing Large Investors

This table reports output from Eq. (1) after excluding individual large investors from the estimations. The estimations reported in column (1) exclude hotels owned by Blackstone and their matched control properties. The estimations in columns (2), (3), and (4), exclude hotels owned by RLJ Development, Noble Investment Group, and Thayer Lodging, along with their matched control properties, respectively. Across all columns, the dependent variable is hotels' GOP margin. PE_i^{Gen} (PE_i^{Spec}) is an indicator that takes the value of one for the hotels acquired by generalist (specialist) PE investors and zero for the hotels in the control group. $Post_{i,t}^{Gen}$ ($Post_{i,t}^{Spec}$) is an indicator that takes the value of one starting with the year in which a generalist (specialist) PE investor first acquires a subject hotel and zero before then. For control hotels, these variables equal one starting with the year in which a PE investor first acquires the matched subject hotel and zero before then. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on the interaction terms reported in the table. All regressions are estimated over the 2000–2018 period. Standard errors are clustered by hotel brand. Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

	Without Blackstone	Without RLJ Development	Without Noble Investment Group	Without Thayer Lodging
	(1)	(2)	(3)	(4)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	0.006*	0.008**	0.008**	0.008**
	(0.003)	(0.003)	(0.003)	(0.003)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	0.021***	0.025***	0.017***	0.021***
	(0.006)	(0.007)	(0.006)	(0.006)
Post Dummies	Yes	Yes	Yes	Yes
Hotel Fixed Effects	Yes	Yes	Yes	Yes
Region × Year Fixed Effects	Yes	Yes	Yes	Yes
F-statistic	5.28**	4.59**	1.89	4.06*
Observations	14,689	16,221	16,270	16,331
R-squared	0.91	0.91	0.90	0.90

Table F.2. Capital Gains After Removing Large Investors

This table reports output from Eq. (2), estimated over the repeat-sales transactions in our sample after excluding individual large investors from the estimations. The estimations reported in column (1) exclude transactions by Blackstone. The estimations in columns (2), (3), and (4), exclude transactions by RLJ Development, Noble Investment Group, and Thayer Lodging, respectively. Across all columns, the dependent variable is capital gains, measured as the difference between the log acquisition price per room and the subsequent log disposition price per room for a given hotel. $PESeller^{Gen}_{i,t}$ ($PE\ Seller^{Spec}_{i,t}$) is an indicator that takes the value of one if the seller in a given transaction is a generalist (specialist) PE investor, and zero otherwise. The regressions include the following control variables: *Portfolio Sale* is an indicator that takes the value of one if a hotel was sold in a portfolio deal; *Prior Portfolio Sale* is an indicator that takes the value of one if the hotel was acquired in a portfolio deal; *International Buyer* is an indicator that takes the value of one if the buyer in the repeat sale is an international investor; *Rooms* is the log number of rooms of the hotel traded in a given transaction. *Year Built* is a hotel's construction year; *CBD* is an indicator that takes the value of one if a given hotel is located in the central business district of its local market, and zero otherwise; *Full-Service* is an indicator that takes the value of one if a given hotel is a full-service hotel, and zero otherwise (if it is a limited-service hotel). Fixed effects for the length of the holding period (in years) in a given repeat-sales transaction, different location-level fixed effects (namely, region and zip code), and their interaction terms with the transaction years are included as indicated. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on $PESeller^{Gen}_{i,t}$ and $PESeller^{Spec}_{i,t}$ reported in the table. All regressions are estimated over the 2001–2019 period. Standard errors are clustered by hotel brand. Statistical significance is indicated as follows: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

	Without Blackstone	Without RLJ Development	Without Noble Investment Group	Without Thayer Lodging
	(1)	(2)	(3)	(4)
$PESeller^{Gen}$	0.021	-0.036	-0.035	-0.034
	(0.029)	(0.028)	(0.028)	(0.028)
$PESeller^{Spec}$	0.243***	0.261***	0.284***	0.231***
	(0.043)	(0.044)	(0.053)	(0.043)
Control Variables	Yes	Yes	Yes	Yes
Holding Period FE	No	No	No	No
Holding Period × Year FE	Yes	Yes	Yes	Yes
Region FE	No	No	No	No
Region × Year FE	No	No	No	No
Zip FE	Yes	Yes	Yes	Yes
Zip × Year FE	No	No	No	No
F-statistic	23.23***	41.71***	32.66***	34.11***
Observations	6,548	6,779	6,730	6,788
R-squared	0.47	0.46	0.46	0.46

Appendix G RE-focused vs. Other Generalists

We repeat some key regressions from our baseline analysis, but splitting out the population of generalists into those that have a focus on real estate (for which the indicator variable PE_i^{RE} equals one) and those that also invest in other asset classes (for which the indicator variable PE_i^{Gen} equals one like before). Table G.1 repeats the analysis of operating performance shown in Table 5. Table G.2 repeats the analysis of capital gains shown in Table 7.

Table G.1. Hotel Profit Ratios under Real Estate-Focused Private Equity Ownership

This table reports output from Eq. (1). The dependent variables are different hotel profit ratios. PE_i^{RE}, PE_i^{Gen}, and PE_i^{Spec} are indicators that take the value of one for hotels acquired by a real-estate focused generalist, another generalist, or a specialist PE investor, respectively, and zero for the hotels in the control group. $Post_{i,t}^{RE}$, $Post_{i,t}^{Gen}$, $Post_{i,t}^{Spec}$ are indicators that take the value of one starting with the year in which a real-estate focused generalist, another generalist, or a specialist PE investor first acquires a subject hotel, and zero before then. For control hotels, these variables equal one starting with the year in which a PE investor first acquires the matched subject hotel and zero before then. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on the interaction terms reported in the table. All regressions are estimated over the 2000–2018 period. Standard errors are clustered by hotel brand. Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

	Departmental (1)	GOP (2)	EBITDA (3)	NI (4)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	0.008**	0.001	0.014	0.012
	(0.003)	(0.006)	(0.010)	(0.014)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	0.021***	0.024**	-0.027	0.057**
	(0.006)	(0.010)	(0.023)	(0.024)
$PE_i^{RE} \times Post_{i,t}^{RE}$	0.008	-0.002	-0.037**	-0.082***
	(0.006)	(0.010)	(0.015)	(0.025)
Post Dummies	Yes	Yes	Yes	Yes
Hotel Fixed Effects	Yes	Yes	Yes	Yes
Region × Year Fixed Effects	Yes	Yes	Yes	Yes
F-statistic Gen-RE	0.01	0.10	8.97***	15.95***
F-statistic Spec-RE	2.41	3.68*	0.16	13.94***
Observations	16,369	16,369	16,369	16,369
R-squared	0.90	0.83	0.66	0.64

Table G.2. Drivers of Real Estate-Focused Private Equity Capital Gains

This table reports output from Eq. (2), estimated over the repeat-sales transactions in our sample. The dependent variable is capital gains, measured as the difference between the log acquisition price per room and the subsequent log disposition price per room for a given hotel. $PESeller_{i,t}^{RE}$, $PESeller_{i,t}^{Gen}$, and $PE\ Seller_{i,t}^{Spec}$ are indicators that take the value of one if the seller in a given transaction is a real-estate focused generalist, another generalist, or a specialist PE investor, respectively, and zero otherwise. The regressions include the following control variables: *Portfolio Sale* is an indicator that takes the value of one if a hotel was sold in a portfolio deal; *Prior Portfolio Sale* is an indicator that takes the value of one if the hotel was acquired in a portfolio deal; *International Buyer* is an indicator that takes the value of one if the buyer in the repeat sale is an international investor; *Rooms* is the log number of rooms of the hotel traded in a given transaction. *Year Built* is a hotel's construction year; *CBD* is an indicator that takes the value of one if a given hotel is located in the central business district of its local market, and zero otherwise; *Full-Service* is an indicator that takes the value of one if a given hotel is a full-service hotel, and zero otherwise (if it is a limited-service hotel). Fixed effects for the length of the holding period (in years) in a given repeat-sales transaction, different location-level fixed effects (namely, region and zip code), and their interaction terms with the transaction years are included as indicated. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on $PESeller_{i,t}^{Gen}$ and $PESeller_{i,t}^{Spec}$ reported in the table. All regressions are estimated over the 2001–2019 period. Standard errors are clustered by hotel brand. Statistical significance is indicated as follows: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

	(1)	(2)	(3)	(4)	(5)	(6)
$PESeller^{Gen}$	0.126***	0.094***	0.007	0.016	-0.053	-0.099
	(0.025)	(0.025)	(0.026)	(0.026)	(0.033)	(0.065)
$PESeller^{Spec}$	0.283***	0.294***	0.229***	0.223***	0.239***	0.156*
	(0.035)	(0.034)	(0.034)	(0.033)	(0.043)	(0.087)
$PESeller^{RE}$	0.059*	0.053*	0.025	0.033	-0.014	-0.045
	(0.031)	(0.031)	(0.031)	(0.030)	(0.039)	(0.078)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Holding Period FE	No	Yes	No	No	No	No
Holding Period × Year FE	No	No	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	No	No	No
Region × Year FE	No	No	No	Yes	No	No
Zip FE	No	No	No	No	Yes	No
Zip × Year FE	No	No	No	No	No	Yes
F-statistic Gen-RE	3.26*	1.20	0.23	0.21***	0.70	0.31
F-statistic Spec-RE	26.63***	30.08***	22.06***	20.48	21.36***	3.37*
Observations	8,059	8,059	8,056	8,053	6,800	2,423
R-squared	0.04	0.08	0.27	0.30	0.46	0.68

Appendix H Capital Expenditures

Follow-up investments to renovate, expand, or otherwise improve the physical substance of a property represent a popular value-add strategy in real estate. We assess the empirical evidence for the likelihood of PE investors, relative to other investor types, to complete such follow-up investments in their hotel properties. To conduct this analysis, we obtain property-level data on hotel capital expenditures from Dodge Data & Analytics.

Dodge Data & Analytics is a project-level database on commercial real estate construction starts across various property types, including hotels. Amongst other attributes, each project record contains information about the property; including its name, property type, and address, and about the construction project; including, the planned start and completion dates, the type of project (addition, alteration, conversion, or new construction), and the value of the project. We match the construction data from Dodge Data & Analytics with the ownership data on our sample hotels by business location. On this basis, we are able to identify at least one type of capital expenditure project carried out for slightly less than 40% of our sample hotels over the study period.

We estimate the likelihood that a subject hotel undergoes a capital expenditure project in a given year under PE ownership using a linear probability model where the dependent variable is an indicator that takes the value of one if hotel i undergoes a capital expenditure project in year t, and zero otherwise. The independent variables are as in Eq. (1). We estimate separate regressions for each type of capital expenditure project included in the Dodge Data & Analytics database: additions, alterations (e.g., remodeling suites into regular guest rooms, or vice versa), conversions, and new construction projects.

Table H.1 presents the regression results. The coefficient estimates reported in columns 1 through 4 show that the subject hotels owned by PE investors are in general no more likely to undergo any capital expenditure projects than are the characteristics-matched control hotels owned by other investor types. We only see in column 2 a marginally significantly increase in the likelihood to undergo alteration projects.

Table H.1. Capital Expenditures under Private Equity Ownership

This table reports output from Eq. (1). The dependent variables in columns (1) through (4) are indicators that each take the value of one if a hotel experiences a specific type of capital expenditures (i.e., additions, alterations, conversions, or new construction). PE_i^{Gen} (PE_i^{Spec}) is an indicator that takes the value of one for the hotels acquired by generalist (specialist) PE investors and zero for the hotels in the control group. $Post_{i,t}^{Gen}$ ($Post_{i,t}^{Spec}$) is an indicator that takes the value of one starting with the year in which a generalist (specialist) PE investor first acquires a subject hotel and zero before then. For control hotels, these variables equal one starting with the year in which a PE investor first acquires the matched subject hotel and zero before then. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on the interaction terms reported in the table. All regressions are estimated over the 2000–2018 period. Standard errors are clustered by hotel brand. Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

	Additions (1)	Alterations (2)	Conversions (3)	New Construction (4)
$PE_i^{Gen} \times Post_{i,t}^{Gen}$	0.001	-0.005	0.001	0.000
	(0.001)	(0.005)	0.000	(0.008)
$PE_i^{Spec} \times Post_{i,t}^{Spec}$	-0.007	0.044*	-0.006	-0.001
	(0.007)	(0.022)	(0.005)	(0.018)
Post Dummies	Yes	Yes	Yes	Yes
Hotel Fixed Effects	Yes	Yes	Yes	Yes
Region × Year Fixed Effects	Yes	Yes	Yes	Yes
F-statistic	1.36	4.76**	1.87	0.00
Observations	11,582	11,582	11,582	11,582
R-squared	0.13	0.12	0.13	0.11

Appendix I The Role of Counterparties

In the RCA data, we observe the identities and investor types of buyers and sellers for the sample transactions included in our analyses. Figure I.1 presents overlaid histograms for the distributions of buyer and seller types with whom PE and non-PE investors (respectively, PE specialist and generalist investors) traded hotel properties over the 2001–2019 period.

[Insert Figure I.1 about here.]

Panel A shows that non-PE investors buy predominantly from private investors (in over 60% of transactions), while PE investors buy from public and private investors (in approximately 40% of transactions each). The data presented in Panel B show that non-PE investors sell primarily to private investors (in nearly 80% of transactions), whereas PE investors sell to private investors (in approximately 60% of transactions) and, to a lesser degree, to institutions (in less than 20% of transactions).

Panel C shows that PE specialists buy mostly from private investors (in over 60% of transactions), whereas PE generalists buy from public and private hotel owners (in approximately 40% of transactions each). By contrast, the patterns depicted in Panel D indicate that PE specialists sell mostly to private investors (in approximately 60% of transactions), while PE generalists sell to private and institutional investors (accounting for approximately 60% and 20% of transactions, respectively).

The analysis presented in Figure I.1 suggests that PE investors may indeed act as intermediaries in the hotel real estate market, transferring investment assets from public owners to private owners, for instance. However, the patterns shown in I.1 also suggest that such trading behaviors are driven by generalist PE investors, whereas PE specialists mostly buy from private investors and sell to private investors. Thus, it is possible that the type of counterparties with whom PE investors trade hotel assets plays a role in determining their capital gains, at least for generalist PE investors.

We formalize the analysis of this conjecture by augmenting the repeat-sales analysis from Eq. (2) with fixed effects capturing the types of sellers from whom PE (specialist and generalist) investors buy and the types of buyers to whom those investors sell. Table I.1 presents the results.

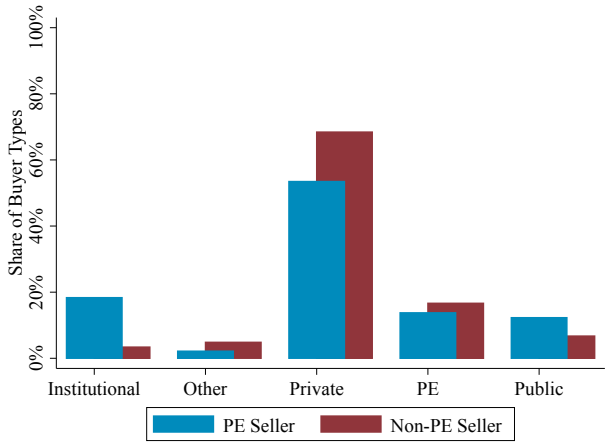
[Insert Table I.1 about here.]

For reference, the estimates presented in column 1 of Table I.1 replicate the results from the corresponding column in Table 7. Those estimates indicate that PE generalists (specialists) earn 11% (28%) higher capital gains than do their non-PE counterparts. The estimates in column 2 show that including fixed effects for the types of investors to whom PE specialists and generalists sell their hotel assets has little effect on the statistical significance or economic magnitude of those relative capital gains. The results reported in column 3 show that the relative capital gains earned by PE specialists are also insensitive to additionally controlling for the types of investors from whom those specialists originally bought their hotel properties. However, the estimated relative capital gains earned by PE generalists over other, non-PE investors drops from 11% (cf. column 1) to 7.3% (column 3).

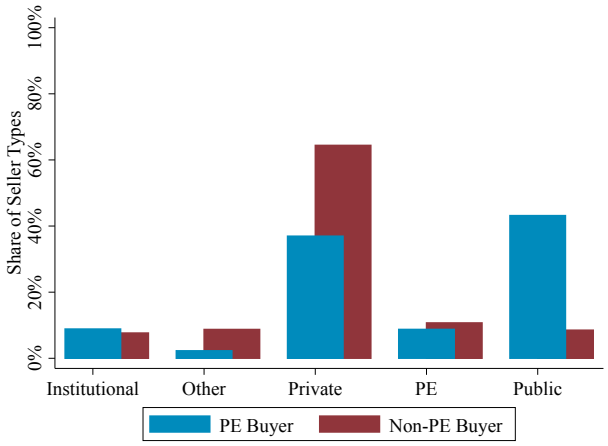
In sum, the results presented here indicate that the types of owners from whom PE (generalist) investors buy their hotel assets play at least a small role in explaining their relative capital gains over non-PE hotel investors. Those findings are consistent with PE investors acting as intermediaries in the hotel real estate capital market, who derive returns from identifying types of hotel owners that under-value their investment assets.

Figure I.1. Distribution of Counterparties by Investor Type

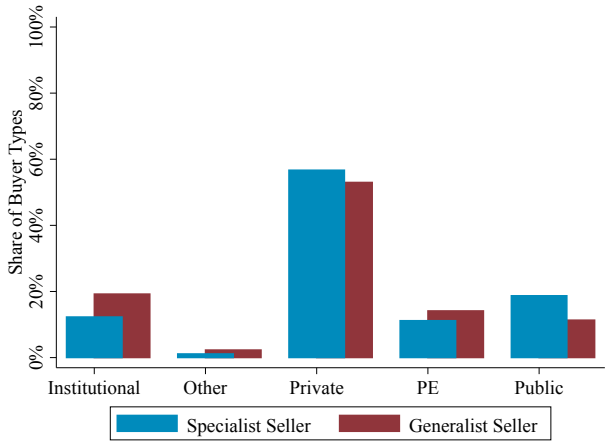
This figure depicts the distribution of counterparties by number of transactions for different investor types in the hotel industry over the 2001–2019 period. Panel A (B) presents the distribution of seller types (buyer types) for PE versus No PE buyers (sellers). Panel C (D) presents the distribution of seller types (buyer types) for specialist PE versus generalist PE buyers (sellers). The hotel transactions data used to produce this figure are from RCA.



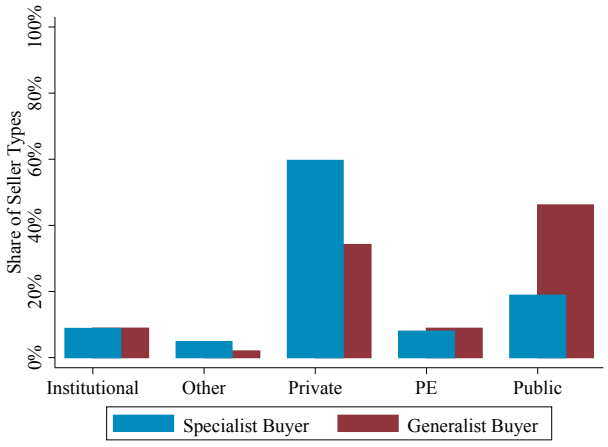
(A) Seller Types PE vs. No-PE



(B) Buyer Types PE vs. No PE



(C) Seller Types PE Specialists vs. PE Generalists



(D) Buyer Types PE Specialists vs. PE Generalists

Table I.1. The Role of Counterparties in Driving Private Equity Capital Gains

This table reports output from Eq. (2), estimated over the repeat-sales transactions in our sample. The dependent variable is capital gains, measured as the difference between the log acquisition price per room and the subsequent log disposition price per room for a given hotel. $PESeller_{i,t}^{Gen}$ ($PE\ Seller_{i,t}^{Spec}$) is an indicator that takes the value of one if the seller in a given transaction is a generalist (specialist) PE investor, and zero otherwise. Column 1 reproduces the estimation results reported in column 1 of Table 7 for reference. Column 2 additionally controls for buyer type fixed effects, capturing the investor type of the buyer in a given repeat-sales transaction. Column 3 additionally controls for original seller type fixed effects, capturing the type of investor from which the seller in a given repeat-sales transaction originally acquired the property. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on $PESeller_{i,t}^{Gen}$ and $PESeller_{i,t}^{Spec}$ reported in the table. All regressions are estimated over the 2001–2019 period. Standard errors are clustered by hotel brand. Statistical significance is indicated as follows: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

	(1)	(2)	(3)
$PESeller^{Gen}$	0.107***	0.103***	0.069***
	(0.021)	(0.021)	(0.021)
$PESeller^{Spec}$	0.287***	0.273***	0.269***
	(0.035)	(0.033)	(0.034)
Control Variables	Yes	Yes	Yes
Buyer Type FE	No	Yes	Yes
Original Seller Type FE	No	No	Yes
Holding Period FE	No	No	No
Holding Period × Year FE	No	No	No
Region FE	Yes	Yes	Yes
Region × Year FE	No	No	No
Zip FE	No	No	No
Zip × Year FE	No	No	No
F-statistic	24.15***	23.04***	30.87***
Observations	8,059	8,059	8,059
R-squared	0.04	0.05	0.08

Appendix J Tax Assessments as Alternative Measure of Market Value

We merge our repeat-sales transactions data with historical property-level tax assessor data from ATTOM, based on properties' addresses. Columns 1 and 2 of Table J.1 then repeat the analysis of capital gains shown in column 4 of Table 7, which has region $\times$ year fixed effects, but with the changes in the tax assessor's valuation and in the property tax bill as dependent variables, respectively. Columns 3 and 4 of Table J.1 mirror column 5 of Table 7, a specification that includes zip code fixed effects. To mitigate concerns that our dependent variables are affected by resale prices, we compute changes in the relevant variables between the year of acquisition and the year *prior to* disposition.

Table J.1. Changes in Property Tax Assessments

This table reports output from Eq. (2), estimated over the repeat-sales transactions, with alternative dependent variables. In columns 1 and 3, the dependent variable is the change in the log assessed value for property tax purposes between the year of acquisition and the year prior to disposition for a given hotel. In columns 2 and 4, the dependent is the change in the log property tax amount between the year of acquisition and the year prior to disposition. $PESeller_{i,t}^{Gen}$ ($PE\ Seller_{i,t}^{Spec}$) is an indicator that takes the value of one if the seller in a given transaction is a generalist (specialist) PE investor, and zero otherwise. The regressions include the following control variables: *Rooms* is the log number of rooms of the hotel traded in a given transaction. *Year Built* is a hotel's construction year; *CBD* is an indicator that takes the value of one if a given hotel is located in the central business district of its local market, and zero otherwise; *Full-Service* is an indicator that takes the value of one if a given hotel is a full-service hotel, and zero otherwise (if it is a limited-service hotel). Fixed effects for the length of the holding period (in years) in a given repeat-sales transaction, different location-level fixed effects (namely, region and zip code), and their interaction terms with the transaction years are included as indicated. F-statistic refers to the results from a hypothesis test for the equality of the coefficients on $PESeller_{i,t}^{Gen}$ and $PESeller_{i,t}^{Spec}$ reported in the table. All regressions are estimated over the 2001–2019 period. Standard errors are clustered by zip code. Statistical significance is indicated as follows: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

	Change in Valuation (1)	Change in Tax (2)	Change in Valuation (3)	Change in Tax (4)
$PESeller_{i,t}^{Gen}$	0.026	0.028	-0.038	-0.007
	(0.029)	(0.026)	(0.035)	(0.033)
$PESeller_{i,t}^{Spec}$	0.111*	0.165**	0.095	0.177**
	(0.063)	(0.065)	(0.076)	(0.087)
Control Variables	Yes	Yes	Yes	Yes
Holding Period × Year FE	Yes	Yes	Yes	Yes
Region × Year FE	Yes	Yes	No	No
Zip FE	No	No	Yes	Yes
F-statistic	1.64	4.24**	2.81*	4.18**
Observations	2,709	2,617	2,045	1,963
R-squared	0.19	0.17	0.49	0.50