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Decomposing value gains – The case of the best leveraged buy-out ever

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A R T I C L E I N F O

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A B S T R A C T

The story of Blackstone and Hilton is a defining moment of the private equity industry. This story involves a high stakes leveraged buyout, layoffs, allegations of corporate espionage, the revival of an iconic brand, a $14 billion capital gain, the largest ever in private equity, and the emergence of the largest private market firm. Moreover, this success occurred with a highly-leveraged and cyclical business going through the worst financial crisis since 1933. Somebody deserves a trophy; but who? The answer might be surprising and shows both the difficulty and pertinence of carefully decomposing the sources of value creation in Leveraged Buy-Outs.

1. Hilton Hotels pre-LBO (1919–2007)

Conrad Hilton bought his first hotel, The Mobley, in Texas in 1919 using his own savings and loans from local banks. The Great Depression of 1929 brought Hilton close to bankruptcy. Post-crisis, Hilton recovered and expanded by borrowing and reinvesting profits. By 1947, Hilton had hotels across the US, was a household name, and became the first hotel group to list on the New York Stock Exchange. Hilton was also the first hotel in the world to have televisions in guest bedrooms (in 1947, Roosevelt Hilton in New York) and introduced the Piña Colada cocktail at the Caribe Hilton in Puerto Rico in 1954.

Hilton was led by its founding family until 1996, when Stephen Bollenbach, formerly at Walt Disney, took the lead. By then, Hilton had become the seventh largest hotel group in the world with 147,500 rooms. Joining the merger and acquisition (M&A) wave of the late 1990s, Bollenbach expanded Hilton through a series of transactions. Most notably, he spun off the firm's gaming arm (Park Place Entertainment), merged Hilton with Bally Entertainment Corporation via a stock swap valued at $2bn, and acquired Promus for $4bn. Most deals were financed by public debt. In 2006, Hilton bought back its international operations (Hilton International) for $5.7bn, of which $5.5bn was funded by additional debt.[1] In 2007, Hilton reduced its debt by $1bn through asset sales (*e.g.,* Scandic hotels) resulting in a market capitalization of $13bn, total debt of $5.7bn and cash of $0.5bn in June 2007, the sum of which ($18.2bn) was Hilton's enterprise value (EV). As a result of these acquisitions, Hilton added 350,000 rooms between 1995 and 2007 under various hotel brands including DoubleTree, Embassy Suites, and Hampton Inn (Table 1 – Panel A).

In June 2006, Hilton was the fourth largest hotel group by room count, having increased its ranking from the seventh largest hotel group in 1995. The difference between Hilton's and Marriott's (the third largest hotel group) rooms under management had shrunk

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[1] In 1964, Hilton was split in two, with Hilton Hotels banned from operating outside of the North America and the London-listed Hilton International Group focusing on growth outside the U.S. As a result of the re-merger the intellectual property and family brand rights were consolidated in one entity:see http://media.corporate-ir.net/media_files/irol/88/88577/release122905.pdf

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Table 1
Largest Hotel Groups.

Panel A: World Largest Hotel Groups by Room Numbers, 1995 vs 2007.

Rank	Rank	Group	Country	Hotels		Rooms		Growth in Rooms	
2007	1995			2007	1995	2007	1995	Change	%
1	2	InterContinental	GB	3741	1925	556,246	356,800	199,446	55.9%
2	1	Wyndham	US	6473	4208	543,234	413,891	129,343	31.3%
3	6	Marriott	US	2776	874	502,089	184,995	317,094	171.4%
4	7	Hilton	US	2901	388	497,738	147,457	350,281	237.5%
5	5	Accor	FRA	4121	2265	486,512	256,607	229,905	89.6%
6	3	Choice	US	5316	3358	429,401	293,706	135,695	46.2%
7	4	Best Western	US	4164	3409	315,401	280,144	35,257	12.6%
8	8	Starwood	US	871	425	265,598	132,477	133,121	100.5%

Panel B: Largest US publicly listed Hotel Groups, June 2007

	Share Price	Market Cap	Total Debt	Enterprise Value	LTM EBITDA	EV/EBITDA
Marriott	42.77	16,706	2284	19,000	1379	13.8×
Starwood	67.07	14,427	2606	16,874	1180	14.3×
Wyndham	36.26	6610	3132	9568	837	11.4×
Choice	39.52	2613	184	2762	177	15.6×
Hilton	33.47	13,045	7471	20,479	1680	12.2×

USD millions, except share price. Source: MKG Consulting Database. Capital IQ, WRDS.

from over 20% in 1995 to less than 1% by 2006. At the time, Hilton's senior management and board were frustrated that Hilton's stock traded at a lower EBITDA multiple than those of other companies in the hospitality and lodging industry (Table 1 – Panel B). They routinely discussed strategies to change this.[2] In 2006, as the number of private equity transactions increased significantly, Bollenbach was approached by a private equity firm who indicated an interest in a possible acquisition at $30 per share. Bollenbach said he would not be interested in pursuing a transaction at that price, and informed UBS of this indication of interest. UBS regularly acted as a financial advisor to Hilton, having just advised on the acquisition of Hilton International by Hilton (which was only covering the US prior to this).

On August 2, 2006, Bollenbach, together with a representative of UBS, met with Jonathan Gray. Gray had joined the then newly formed real estate private equity group at Blackstone in 1992. Gray had actively contributed to making Blackstone's Real Estate Group its biggest and most profitable division, and was promoted to co-Head of the Real Estate Group in 2005.[3] Bollenbach and Gray knew each other as Blackstone had proposed to partner with Hilton in its acquisition of Hilton International. At their 2006 meeting, Gray discussed Blackstone's interest in an acquisition of Hilton or a significant portion of its real estate assets.

Over the next six weeks, Bollenbach had further conversations with representatives of UBS and Blackstone regarding a potential transaction at a price in the high $30s per share. In September 2006, Hilton's board held an offsite retreat at which it studied expectations of future cash flows. Management presented an internal valuation that suggested Hilton's value should be approximately $42 per share. The board decided not to seek other potential acquirers because putting the company up for sale posed a risk of distracting management and could adversely affect business relationships with franchisees, operators, and suppliers.

On September 25, 2006, Hilton entered into a confidentiality agreement with Blackstone to share information regarding its businesses. The agreement contained a two-year "standstill" provision which prevented Blackstone from disclosing any confidential information without Hilton's consent. Over the next two weeks, Blackstone conducted due diligence, after which Gray declared that he could not increase Blackstone's offer price. On October 4, 2006, in accordance with the confidentiality agreement, Hilton requested that Blackstone destroy all the information it had previously received from Hilton.

Between October 4, 2006, and May 15, 2007, Blackstone periodically restated its continued interest in a possible transaction with Hilton to representatives of UBS, but no new proposal was made. On May 15, 2007, Gray communicated that Blackstone could now offer a price in excess of $40 per share, and Bollenbach rejected this proposal. On May 23, 2007, at the board meeting, Bollenbach confirmed that he would not participate in any transaction with Blackstone, and that no other member of the management had held any discussions with Blackstone regarding participation in any transaction or future employment. Members of management understood that they were not authorized to engage in any such discussion. Based on that confirmation, as well as his interactions with Blackstone to date and his firm endorsement of the board's view, the board determined that Bollenbach, with the assistance of UBS,

[2] A possible explanation was that Hilton had a relatively high proportion of owned and leased business real estate compared to its peers. Multiples are normally the highest for the managed and franchised segment, and lowest for timeshare.

[3] Blackstone's real estate business had grown its assets under management significantly, from approximately $3bn as of December 31, 2001 to $17.7bn as of March 1, 2007, representing an annual growth of 41%. Within real estate, Blackstone has been one of the most active players in the hotel industry in the United States and Europe. Hence, Hilton might not be considered as a standalone operational asset, unlike other private equity targets, but rather as a source of potential synergies with other businesses Blackstone controls.

should continue to lead negotiations with Blackstone regarding a potential transaction.

On May 30, 2007, as the stock was trading at $34.46 per share, Blackstone offered $42 per share and a low termination fee. The offer was rejected, and Blackstone reverted with a new proposal of $45 per share, this time including a right to match a superior proposal from a third party and a termination fee equal to 2.75% of the equity value. The offer was rejected again.

Part of the problem was price expectations. In the mid-2000s, hotels, including the operating side, became part of real estate portfolios and the collateralized mortgage backed securities (CMBS) market enabled hotels to borrow for less than they used to.[4] To illustrate, in 2007, an analyst from the Susquehanna Financial Group argued that "hotels appear cheap relative to other real estate asset classes … investors see hotels as a risk-adjusted 'bargain' relative to other asset classes, such as office buildings, malls, and apartments."[5] Prices followed expectations, and hotel stock prices rose faster than the index over the period 2003–2007 (Fig. 2).

On June 7, 2007, the board discussed Blackstone's offer and Hilton's value both on a standalone basis and from a prospective acquirer's point of view. The board also discussed how, notwithstanding previous actions (increasing the number of managed and franchised hotels, the acquisition of Hilton International and the sale of some owned and leased hotel properties), Hilton's stock had always traded at a lower EBITDA multiple compared to the company's peers.

On June 24, 2007, Gray offered $47.50 per share and indicated that the acquisition costs had increased due to worsening conditions in credit markets. Gray also noted that the stock price had decreased to $34.72 per share. Bollenbach confirmed his willingness to recommend the transaction to the board, subject to a possible increase of $0.50 per share if credit market conditions improved. Gray also stated Blackstone's ability to complete due diligence in a short period of time and to execute a definitive agreement within two weeks. Blackstone delivered a due diligence request list on that same day.

Meanwhile, Gray was pitching his investment committee to put in $5.5bn in cash —the biggest private equity check ever written. On top of that, he would need to arrange for a $20.5bn debt package, enabling a bid of $26bn (to buy-out both debt and equity). Offering of a 40% premium, although not unusual, was high. Two publicly listed hotels had just been taken private: Fairmont (January 2006; by Colony Capital) and Wyndham (June 2005; by Blackstone), at premia of 28% and 19%, respectively. Another comparable transaction, Harrah's Entertainment (sponsored by TPG), went for a 36% premium.

UBS was required to give an opinion on the price and stated that it viewed $47.5 as the fair price for Hilton in connection to an LBO. In addition, UBS showed it could not find another possible buyer – probably due to the size of Hilton. Hilton agreed to pay Blackstone a $560mn breakup fee if it backed out of the deal.

On July 3, 2007, Hilton board members agreed that the Blackstone's offer of $47.50 per share was a compelling price and that Blackstone was in the best position of possible purchasers to pay the highest price due to synergies with its existing lodging assets. Blackstone also had a proven track record of completing large acquisitions on agreed terms. The Hilton board decided not to contact any other potential acquirer as it raised the risk of losing Blackstone's offer, could force Hilton to pay the breakup fee, and a longer drawn-out process would disrupt the company's business. Following the approval of the merger by the board, the parties signed the merger agreement and publicly announced it the next day: July 4th.

2. Going private: The value-add playbook

2.1. Blackstone appoints the CEO, using its network

On July 4, 2007, Blackstone approached Christopher Nassetta, the Chairman and Chief Executive of Host Hotels & Resorts to be the new CEO of Hilton. Nassetta was a known restructuring expert with a track record of fixing broken companies. Jonathan Gray and Christopher Nassetta were former business associates who became friends. Nassetta, who was happy at Host, ended up accepting the role, and hired other executives, such as Kevin Jacobs, who had worked with him at Host.

2.2. Blackstone appoints a new board, reduces its size, and requires exclusivity

The size of the Hilton board was reduced from eleven members to seven. All pre-acquisition directors were replaced. All but two board members (Nasetta and Steenland) were now Blackstone employees, but with some diversity of experience, which meant that the board benefitted from the expertise of those junior-enough to have been directly involved in the transaction modelling and those senior-enough to have seen it all. Prior to the acquisition, board members had two other board positions on average. They held board positions in companies such as Harrah's Entertainment, Time Warner, US Airways Group, Credit Suisse First Boston, and Coca-Cola. By contrast, most directors now were serving exclusively on Hilton's board.[6]

2.3. Blackstone levers up Hilton significantly and relatively cheaply via a holding company

Bear Stearns, then a prominent investment bank, formed a syndicate with other banks (Bank of America, Goldman Sachs, and Morgan Stanley), and together they provided a $20.8bn bridge loan to a newly formed company (BH Hotels LLC). Once Hilton's

[4] A CMBS is a fixed-income investment products backed by commercial property mortgages.

[5] http://uk.mobile.reuters.com/article/mergersNews/idUKN0534875320070706

[6] Douglas Steenland and John Schreiber held other commercial board appointments. Other directors had roles in industry, educational, or charitable organisations but nothing that would be expected to divert attention from Hilton.

Table 2
Hilton LBO Estimated Capital Structure.

$, million	Principal	Term	Spread over 5.07% LIBOR	EBITDA Multiple
Enterprise value	26,500			15.9
Equity	5700			3.6
Senior Mortgage Notes - Tranche A	3600	6 years	0.80%	2.2
Senior Mortgage Notes - Tranche B	2000	6 years	1.20%	1.2
Senior Mortgage Notes - Tranche C	2000	6 years	1.60%	1.2
Mortgage notes / second lien	1000	6 years	2.40%	0.6
Secured mezzanine loans I	8300	7 years	3.14%	5.2
Secured mezzanine loans II	1800	8 years	4.25%	1.1
Secured mezzanine loans III	2100	9 years	5.25%	1.3
Total Acquisition Debt	20,800		2.71%	11.5

Estimated with publicly available sources. Blackstone did not provide details of the debt package.

shareholders approved the deal, BH Hotels LLC bought out Hilton's shareholders ($19.4bn), de-listed Hilton from the stock exchange, bought back Hilton's corporate bonds, and repaid Hilton's private debt (total debt of $7.1bn). Then, the bridge loan was to be refinanced with (a) a record breaking $8.6bn of senior secured debt issued via a CMBS[7]; and (b) $12.2bn of mezzanine debt.

The post-LBO debt structure is shown in Table 2. Note that the $20.8bn debt package is more than the value given by the public markets to the whole of Hilton pre-LBO. Whereas the 78.5% Debt to Enterprise Value ratio was typical of buyout transactions conducted in 2005–2007, the ratio of Debt to EBITDA was exceptionally high at 12.5× (2006) EBITDA. To compare, the largest LBO ever – that of TXU by KKR and TPG in February 2007 – had a similar leverage (81.5%) but a debt to EBITDA multiple of 6.6×.

For additional context, following the acquisition of Hilton International, in 2006, the credit rating agency Moody's downgraded Hilton's public debt to 'junk' status, citing a high lease-adjusted debt-to-EV ratio as the reason for the downgrade. Total Debt had reached $6.5bn while EBITDA was at $1.7bn (3.6×). Per the industry standard, Moody's capitalized rent at 8×. As a result, estimated pro-forma lease-adjusted total debt to EBITDAR was 5.5×. The post LBO capital structure implied a debt-to-EBITDA ratio more than twice as high *before* lease adjustment.

Not only was the value of Hilton's debt high with a relatively low yield (less than 8%), but this debt was 'cov-lite', i.e., did not have maintenance covenants (e.g. the debt to EBITDA ratio cannot rise above a certain number). Thus, the only circumstances in which creditors could intervene in the business was if there was an incurrence event (e.g., capital raising). Some commentators were concerned that cov-lite lending would induce greater losses in a downturn by preventing creditors from taking early actions. On the other hand, cov-lite lending may avert financial distress by preventing creditors from renegotiating loan terms in times of financial difficulties. For example, creditors often accelerate interest payments following a technical default, which takes cash out of the business and limit managers' ability to trade their way out of distress. Hence, cov-lite lending trades fewer minor defaults for a greater risk that by the time creditors can intervene it may be too late to protect their investment.[8]

2.4. *Blackstone sets steep incentives for senior management*

Blackstone offered members of the Hilton senior management team a compensation package consisting of a i) relatively small base salary, and ii) a cash bonus and an equity award, both conditional on service and performance. The first equity award provided the executives the right to share in 2.75% of the equity value of Hilton up to a $8.4bn equity valuation. Above $8.4bn, company executives were eligible for a further equity award (the value of these equity grants is not specified in filings).[9]

2.5. *Cost cutting: Relocate headquarters and downsize workforce*

Nassetta decided to relocate the headquarters from Beverly Hills. The Los Angeles location created logistical challenges with time zone issues and traffic delays and imposed high costs of living on staff (the Los Angeles housing market was one of the most expensive in the country). Instead, the Hilton headquarters moved to northern Virginia, just outside of Washington DC. This created potential agglomeration benefits with the existing hospitality infrastructure (Marriott, Host, and Choice all had their headquarters in the region). The new location also generated natural attrition: only one fifth of the 500 or so employees at the headquarters remained following the relocation. Of the most senior 100 managers, about a third stayed.

[7] Blackstone had just sold $6.9bn of CMBS to finance its $39bn purchase of Equity Office Properties Trust (February 2006). That was the second-largest CMBS issue next to a $7.9bn deal from Wachovia Securities in March 2007. Hence, $8.4bn was very large and many market participants on the buy-side saw it as particularly risky because, unlike other CMBS, it contained a good portion of non-real estate collateral from the hotel chain, such as timeshare and franchise assets.

[8] An additional arguments in favour of cov-lite is that it is a welcome simplification of loan documentation, fully justified as the banks would hedge their risk by transferring exposure to the loan in the CDO market. It was also pointed out at the time that cov-lite loans operated in a very similar way to bonds (they too were cov-lite).

[9] Details on these equity awards can be found in the 2013 Hilton 10 K.

In addition, each region had its own set of operational teams, including information technology, legal, finance and human resources, which were managed independently of the Beverly Hills head office. Even within the head office, operations were duplicated. Teams with similar functions were siloed from each other. For example, sales and marketing for the Hilton Honors loyalty programme and the Family of Brands were managed by separate teams, with each occupying a different floor of the head office.[10] Nassetta integrated teams and reduced duplication of roles, thereby downsizing the workforce to only essential roles. Hilton overhead and property-level cost savings might have added up to $400mn.

2.6. The CEO inspects the company and introduces a performance-based culture

After taking over Hilton in October 2007, Nassetta spent his first 90 days travelling around Hilton hotels and offices. He spoke to employees of all levels from management to service and housekeeping, and hosted town-hall meetings to answer staff questions. He concluded that executives wanted a quiet life with little hard work or change and that Hilton did not have a culture of innovation.[11] To remedy this, he required every corporate manager to participate in an immersion programme in which they spent three days in a customer-facing role (housekeeping, front desk, etc) and introduced a company-wide system for employee performance evaluation.

2.7. New marketing and strategy: Better use of the brand and switch to asset-light strategy

Hotels and resorts can be owned and managed in five different ways: privately owned and operated; timeshared; leased; managed; and franchised.[12] Historically, Hilton combined hotel operations and property holding within the same company. Yet hotel groups were increasingly using asset-light strategies to grow their brands through management or franchise agreements rather than direct hotel ownership.[13] Marriott was the first hotel group to pursue an asset-light strategy in 1992 by separating its real estate business from its hotel management business. Marriott also offered a good example of how to use both the core brand and associated brands such as Courtyard. In 2006, Starwood also embarked on an asset light strategy by selling the ownership of several hotels (*i.e.* the real estate). Expanding Hilton globally also appeared to be a reasonably safe bet given its global brand recognition; Marriott International and Starwood were already benefiting from the same strategy.

3. The holding period

3.1. Year 2008 – The day of reckoning has already arrived?

Before the Hilton transaction was announced, financial markets were already showing early signs of distress. On June 28, 2007, *The Financial Times* reported that '[c]ompanies are pulling financing deals across the globe, in one of the clearest signs yet that investors' worries about rising interest rates and US subprime mortgages could be infecting other areas of the credit world and driving up the cost of corporate borrowing (…) something will end in tears.'[14]

On 16 March 2008, Bear Stearns (the lead bank on the Hilton transaction) collapsed. The Hilton CMBS was still not issued, hence the banks still held that debt.[15] The New York Fed provided a bail-out loan and arranged for JP Morgan to buy Bear Stearns. JP Morgan agreed to the purchase but insisted that the New York Fed take $29bn of unwanted assets off Bear Stearns' books, of which $4bn was Hilton debt.

On 24 March 2008, the *Financial Times* ran an article explaining that since the Hilton deal 'not a single private equity deal has been hatched above $4bn, … significant bankruptcies in private equity portfolios are a certainty, as is the next round of bad press that will accompany them. … Not only are new deals scarce, a number of agreed deals that had not yet closed have hit the rocks, spawning recriminations and litigation.… In recent weeks, both Moody's and Standard & Poor's have issued reports identifying an increasing number of debtors at risk of default. Not surprisingly, many of those companies are private equity-backed. S&P's list includes more than 50 worrisome private equity portfolio companies.'[16]

The hotel industry was particularly affected by the 2008 crisis because of its heavy reliance on corporate travel, wages, and

[10] Also, the timeshare arm operated as a separate business and was fully integrated into Hilton.

[11] https://www.washingtonpost.com/business/capitalbusiness/christopher-nassetta-the-man-who-turned-around-hilton/2014/07/03/43071478-fd5a-11e3-932c-0a55b81f48ce_story.html

[12] In timeshared resorts, many customers own a share of the same property with the right to use it for a fixed length of time (typically a week) and one hotel operator manages the property. Leased hotels are privately owned by a different company than the one who is operating the hotel and renting the property. In a managed hotel the owner signs an agreement with a third party to run its hotel operations and receives a fraction of the operating profit. Franchised operations pay royalties to operate a hotel using a brand (e.g. DoubleTree by Hilton).

[13] Such strategies are asset-light because you do not own the underlying asset. A hotel is a combination of two businesses with distinct risk characteristics: the operation of rooms and the ownership of the property. The latter falls in the core real estate category: it is relatively low risk and offers a low-maintenance income stream. The former may fit the opportunistic real estate category, or may not even be classified as real estate, as hotel owners and operators earn cash flows that are as risky as those of any other corporation.

[14] https://www.ft.com/content/52e1893c-24db-11dc-bf47-000b5df10621

[15] The mezzanine loans were eventually sold to a mix of alternative lenders and hedge funds, including Goldman Sachs' fund, Archon Capital, CW Capital, and Centerbridge.

[16] https://www.ft.com/content/f72d31da-f9a6-11dc-9b7c-000077b07658

discretionary consumer spending. Occupancy rates and room rates are highly sensitive to business cycles with conferences and tourism, two procyclical activities, affecting the demand for hotel rooms. Blackstone wrote down its equity investment in Hilton (via its fund BCP V) by 51% from $1.5bn to $742mn at the end of 2008.[17] Other hotel groups were also in distress. At the end of 2008, Starwood's and Marriott's stock prices were down more than 66% from their June 2007 prices; see Fig. 2.[18] Blackstone's own stock price was below $7, a 77% decrease from its IPO price of $31 (June 2007).

3.2. Years 2009–2010 – Negotiating and doubling up

In April 2009, Starwood filed suit against Hilton accusing it of using stolen documents to develop its luxury hotel chain, Denizen. Starwood alleged that two former executives, Ross Klein and Amar Lalvani, had stolen more than 10,000 confidential documents from the chain when they moved to Hilton. According to Starwood's claim, these documents contained trade secrets, including a step-by-step guide to creating a luxury concept that had been used in developing Starwood's W brand. Starwood claimed there were striking similarities between its W brand and Hilton's Denizen, with Klein even admitting that Denizen was "cut from the same cloth as W in many respects."[19] It was suggested that 44 Hilton executives, including Nassetta himself, may have been personally involved or aware of and condoned the use of the documents.[20]

Hilton was facing external pressures beyond the lawsuit. In 2009, a record number of lodging companies filed for bankruptcy protection. For example, on 15 June 2009, Extended Stay America, which had been acquired from Blackstone the year before for $8bn (with 92% debt financing including $4.1bn of securitized first mortgages and $3.3bn of mezzanine loans) filed for bankruptcy.

Hilton's EBITDA in 2009 was about half of what had been projected at the time of the deal. However, Hilton's debt had two features that gave Blackstone room to negotiate. First, Hilton's debt was cov-lite, so Hilton's below-forecast performance was not causing default. Second, all the loans had a maturity date of 2013, so there was not a risk of immediate default. In addition, the Fed decreased its interest rate significantly, pushing down the 1-month LIBOR rate to 0.33%.

Although Hilton was not in default, there were potential costs associated with financial distress. Customers, suppliers, and franchisees all may be unwilling to pre-book or trade with Hilton if they worry that Hilton may go bankrupt. Lack of consumer and supplier confidence risked creating a spiral of low demand and low earnings. Gray obviously knew this concept: 'At the time, there were a lot of concerns about leverage. Third-party hotel owners of potential Hilton properties and employees were apprehensive.' Nassetta sat by himself at the Park Lane Hilton in London in August 2009, with the bankers and Blackstone on the line: 'I went through the rationale. I said we're all in this together and, if we don't take steps to ensure our future, the risks of material damage to the business are significant.' There was a dead silence at the end of the talk.[21]

Over the next eight months, Hilton and Blackstone negotiated with the lenders and an agreement was reached in April 2010. The restructuring included the repurchase of $1.8bn of secured mezzanine debt against a $819mn equity investment from Blackstone's Capital Partners fund, which represent a 54% discount from par value.[22] A noticeable seller was the New York Fed that exchanged $320mn of debt for $180mn of cash and better terms on the remaining $3.6bn of Hilton debt it still held. In addition, $2.2bn of junior mezzanine debt was converted into preferred equity (including junior debt belonging to Abu Dhabi's and Singapore's sovereign wealth funds).[23] In total, the restructure reduced outstanding debt by $3.5bn to $16.9bn, and Blackstone gave creditors 13% of Hilton's equity. Blackstone wrote down the value of its remaining equity stake in Hilton by 70%. The weighted-average interest rate was about 4% *p.a.* (about half of the 2007 rate).

Hilton settled Starwood's case in December 2010. As part of the settlement, Hilton was forced to cease development of any luxury boutique hotel concept for a further two years, Hilton was banned from hiring any Starwood employees for its luxury brands group for two years and was forced to pay $75 million in reparation.[24]

3.3. Year 2011 – The resurrection

By the start of 2011, hotel performance had rebounded sharply. Hilton had also benefitted from its shift to the management and

[17] According to confidential documents obtained by Reuters: https://www.reuters.com/article/us-blackstone-idUSTRE56K4EG20090721

[18] At the end of 2007, Starwood, Marriot, and Choice had net debt to enterprise value ratio of 29%, 17%, and 10%, resp.

[19] https://www.theguardian.com/business/2009/apr/17/industrial-espionage-hotel-industry-lawsuit

[20] Case was settled in December 2010. As part of the settlement, Hilton had to cease development of any luxury boutique hotel concept for two years, Hilton was banned from hiring any Starwood employees for its luxury brands group for two years, and paid $75mn in reparation. Hilton finally launched its luxury concept, Canopy by Hilton, in 2014. https://www.reuters.com/article/starwood-hilton-idUSN1518265820100115; https://www.theguardian.com/business/2010/dec/23/hilton-starwood-denizen-industrial-espionage

[21] https://www.washingtonpost.com/business/capitalbusiness/christopher-nassetta-the-man-who-turned-around-hilton/2014/07/03/43071478-fd5a-11e3-932c-0a55b81f48ce_story.html

[22] Among the other lenders rumored to have sold its mezzanine loans at a discount was the German bank Hypo Real Estate Holding AG, which was highly distressed. Note also that Blackstone raised a large fund in 2007, and this money needed to be spent by 2012. As not many deals were being executed, Blackstone was under pressure to find a home for this cash.

[23] http://www.thestreet.com/story/12137755/1/singapore-bets-on-blackstones-hilton-ipo-after-2010-debt-restructuring.html. After Hilton's IPO, GIC owned roughly 5% of Hilton's outstanding stock.

[24] https://www.theguardian.com/business/2010/dec/23/hilton-starwood-denizen-industrial-espionagehttps://www.latimes.com/archives/la-xpm-2010-dec-24-la-fi-1224-hilton-starwood-20101224-story.html

franchise segment. During recessionary periods, the fee-based management and franchise model provides a consistent income to hotel chains and is less costly to expand than the owned and leased model. This may explain why Hilton continued its expansion throughout the Great Recession. For example, in 2009 alone, in the middle of the financial crisis, Hilton added 302 new hotels to its portfolio, the second highest increase in the company's 91-year history.

An initial public offering (IPO) had always been the only realistic exit route for Blackstone. For an IPO to happen, however, two ingredients were necessary. First, the company's EBITDA and its recent growth needs to be strong. Second, the IPO market needs to be liquid. In 2011, Hilton's EBITDA showed growth, but two hotel companies had sought IPOs that year with tepid results. Summit Hotel Properties, with 68 hotels, saw its stock quickly trading lower than the IPO price. On May 10, 2011, RLJ Lodging Trust, owner of 140 hotels, priced its IPO below its anticipated range.

3.4. *Year 2013 – Cashing In*

Perhaps due to supportive monetary policy, by mid-2013, the U.S. housing market, equity indices, and IPO activity gathered steam. The S&P 500 was back to October 2007 levels. 112 IPOs went through in the first three quarters of 2013, representing a 48% increase from the same period in 2012; 38 of these 112 were PE-backed and 22 of these 112 were in real estate (real estate IPOs raised $4.2bn or 12% of total IPO volume). One of these IPOs was Extended Stay America from Blackstone, Centerbridge Partners and Paulson & Company. The stock-market seemed ready to welcome back Hilton – as long as the growth numbers were right.

From 2007 to 2013, Hilton added 1182 hotels to its portfolio, representing 172,748 rooms, of which 29% were located overseas. The total operation included 4155 hotels, resorts and timeshare properties comprising 686,790 rooms in 92 countries and territories, making Hilton the largest global hotel group.

Hilton's cornerstone for growth was to expand its global footprint, especially by expanding its mid-class brands (including DoubleTree, Hilton Garden Inn and Hampton Inn) outside the United States. Rooms under construction outside the U.S. increased from less than 15% to nearly 80% between 2006 and 2013. Hilton opened 1200 hotels worldwide in seven years, in 16 new countries (Hilton increased its countries of operation from 76 to 92), and international rooms increased by 50% to 149,000 in 2013. In Europe, Hilton's mid-class segment grew from 9 hotels to 215 hotels and in Greater China from 6 hotels to 171 hotels (open or in the pipeline).

Hilton's focus on management and franchise growth enabled it to expand its portfolio with limited or no direct capital investment. Its management and franchise segment increased its number of rooms by 40% from 2007 to 2013; this accounted for over 98% of Hilton's overall room growth. In 2013, all but one of the 1069 hotels in Hilton's development pipeline were designated for management or franchise. The management and franchise segment consisted of 4000 properties with 625,000 rooms (92% of all rooms), generating high margins and long-term recurring cash flow with virtually no capital investment. As Nassetta said: 'Our category-killer brands are attracting capital from all over the world, and it is their capital we are growing with, not ours.'[25] EBITDA for the management and franchise segment grew by more than 25% from 2007 to 2013, contributing to over half of the total earnings (Table 3, Panel B).

The timeshare business was also seen as a growth asset, again enabling expansion without capital investment from Hilton. For instance, in 2013, 50% of its sales of timeshare intervals were developed by third parties versus 0% in 2009. Annual timeshare EBITDA increased by 47% between 2010 and 2013 (Table 3, Panel B).

Hilton's results from its owned-hotel business segment were not as impressive. Despite the $1.8bn investment in its owned-hotel portfolio, the adjusted EBITDA of its owned and leased portfolio for 2012 was still below 2008 levels. While no significant real estate was sold, the number of leased hotels was reduced by more than half and the number of joint venture hotels, where Hilton owned a minority interest, increased significantly. By 2013, the owned-hotel business consisted of 155 owned or leased hotels with 60,000 rooms.

On December 11, 2013, Hilton raised $2.4bn in its IPO, selling 118mn shares for $20 each. The IPO was the second largest in the U.S. in 2013. The IPO gave Hilton a total equity value of $19.7bn, 40% higher than the market capitalization of Marriott or Starwood. Net debt was $14bn, giving it an enterprise value of about $34bn. The IPO's success was reflected in executive compensation. Hilton executives collectively earned $465mn from the equity compensation schemes at the IPO. Nassetta alone owned 7.75 million shares of Hilton at IPO, valued at $155 million.

In September 2014, Bloomberg published a story that called the Hilton LBO '*the best leveraged buyout ever*'. Bloomberg wrote in glowing terms about the smart management and extraordinary growth. Blackstone continued to have a controlling stake in Hilton. Blackstone reduced its stake in Hilton over the course of five years. On May 18, 2018, Blackstone sold its last stake. The total capital gain was $14bn; the highest ever in PE. Hilton was now the second-largest hotel group in the world, and Blackstone the largest PE firm (Table 4).[26]

4. Measuring value created

We discuss two approaches to analyze the sources of value creation in private equity and thereby explore how outsiders may assess Blackstone's performance. First, private equity cash flows may be matched to equivalent investments in public equity. This "Matryoshka doll" approach to valuation starts with the broadest benchmark (American stock-market) before narrowing it down to the

[25] https://skift.com/2013/12/03/hilton-ceo-says-hotel-chain-was-totally-dysfunctional-before-blackstone/

[26] https://www.forbes.com/sites/halahtouryalai/2018/06/06/worlds-biggest-hotels-2018/

Table 3
Financial performance of Hilton and peer companies.

Panel A.

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Revenue													
Hilton													
That year	8675				8068	8783	9276	9735	10,502	11,272	11,663	9140	8906
Previous year	8333					8068	8783	9276	9735	10,502	11,272	7382	8131
YoY Growth	4.1%					8.9%	5.6%	4.9%	7.9%	7.3%	3.5%	23.8%	9.5%
Marriott													
That year	12,160	12,990	12,879	10,908	11,691	12,317	11,814	12,784	13,796	14,486	17,072	22,894	20,758
Previous year	11,550	11,995	12,990	12,879	10,908	11,691	12,317	11,814	12,784	13,796	14,486	17,072	20,452
YoY Growth	5.3%	8.3%	−0.9%	−15.3%	7.2%	5.4%	−4.1%	8.2%	7.9%	5.0%	17.9%	34.1%	1.5%
Starwood													
That year	5979	6153	5907	4712	5071	5624	6321	6115	5983	5763			
Previous year	5977	5979	6153	5754	4696	5071	5624	6321	6115	5983			
YoY Growth	0.0%	2.9%	−4.0%	−18.1%	8.0%	10.9%	12.4%	−3.3%	−2.2%	−3.7%			
EBITDA													
Hilton													
That year	1670				1564	1753	1956	2210	2508	2879	2975	1965	2101
Previous year	1067					1564	1753	1956	2210	2550	2879	1543	1909
YoY Growth	56.5%					12.1%	11.6%	13.0%	13.5%	12.9%	3.3%	27.3%	10.0%
Marriott													
That year	1268	1372	1010	705	1043	992	1146	1325	1524	1718	1998	3010	2888
Previous year	861	1268	1372	1010	898	885	992	1217	1325	1524	1547	1998	3010
YoY Growth	47.3%	8.2%	−26.4%	−30.2%	16.1%	12.1%	15.5%	8.9%	15.0%	12.7%	29.2%	50.7%	−4.1%
Starwood													
That year	1143	1168	1040	678	774	931	1118	1158	1122	1054			
Previous year	1242	1143	1168	1040		774	931	1118	1158	1122			
YoY Growth	−8.0%	2.2%	−11.0%	−34.8%	14.2%	20.3%	20.1%	3.6%	−3.1%	−6.1%			

Panel B: Components of Adjusted EBITDA for Hilton

	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Management and Franchise	968	1095	1180	1271	1468	1691	1786
Ownership	688	725	793	926	999	1064	1029
Timeshare	171	207	252	297	334	352	381
Corporate and other	−263	−274	−269	−284	−293	−228	−221
Total	1564	1753	1956	2210	2508	2879	2975

In million of USD. YoY stands for 'year on year'. All revenue figures are from the 10 K (SEC form), either directly or by incorporation from the Annual Stockholder Report, except for Hilton for years 2010, 2011 and 2012, which are taken from their SEC S1 form. In 2006 Hilton also shows a pro forma revenue number for that year and the year prior and these are the two numbers we report for that year. Both EBITDA and revenue figures for a given year reported in the 10 K may differ from one year to the next due to different adjustments. Hence, the EBITDA (revenue) reported for year t does not always equal the previous year's EBITDA (revenue) reported in t + 1 (e.g., Marriott reports revenue of 12,160 m in 2006, yet in 2007 the previous year's revenue is 11,995 m). We have reported data exactly as it appears in the source to illustrate the potential challenges to constructing even basic performance metrics (e.g., growth) using public data. Both EBITDA and adjusted EBITDA is reported in the 10 K of Hilton from 2010 to 2018 and in the 10 K of Marriott from 2010 to 2015; we report the adjusted EBITDA for these years. Capital IQ uses a formula and inputs from GAAP income statement measures to create a time-series of EBITDA figures and thus reports a different set of numbers compared to the 10 K. When EBITDA is not available in SEC filings, it is taken from Capital IQ (years 2006 for Hilton, 2006–2009 and 2016–2018 for Marriott and 2006–2015 for Starwood). Note that Marriott computes its revenue differently: it includes cost reimbursements which are costs incurred on behalf of the managed, franchised, and licensed properties, with no added mark-up; these costs are deducted as reimbursed expenses in operating costs so have little impact on EBITDA.

Table 4
Largest Private Equity firms in the World.

	Before GFC (2008)	During GFC (2011)	Post GFC (2015)	Latest (2019)
1	The Carlyle Group	TPG Capital	The Carlyle Group	**The Blackstone Group**
2	Goldman Sachs	Goldman Sachs	TPG Capital	The Carlyle Group
3	TPG Capital	The Carlyle Group	Kohlberg Kravis Roberts	Kohlberg Kravis Roberts
4	Kohlberg Kravis Roberts	Kohlberg Kravis Roberts	**The Blackstone Group**	CVC Capital Partners
5	CVC Capital Partners	**The Blackstone Group**	Apollo Global M.	Warburg Pincus
6	Apollo Global M.	Apollo Global M.	CVC Capital Partners	Bain Capital
7	Bain Capital	Bain Capital	EnCap Investments	EQT
8	Permira	CVC Capital Partners	Advent International	Thoma Bravo
9	Apax Partners	First Reserve	Warburg Pincus	Apollo Global M.
10	**The Blackstone Group**	Hellman and Friedman	Bain Capital	Neuberger Berman

Source: Private Equity International magazine. Ranked by amount of capital raised over previous five years.

Table 5
Cash Flows from Hilton.

Panel A: Gross Cash Flows		Panel B: Simplified Gross Cash Flows	
(end of)	Cash Flows	(end of)	Cash Flows
Jun-07	−5700	Jun-07	−5700
Apr-10	−819	Apr-10	−819
Jun-14	2271	Nov-14	7580
Nov-14	2536	Jun-17	12,692
May-15	2674		
Nov-16	1285		
Mar-17	6469		
Jun-17	1818		
Sep-17	184		
Nov-17	1078		
Dec-17	460		
Feb-18	10		
May-18	1374		
Aug-18	14		
MOM	3.1×		
IRR	14%		
PME	1.7×		

All values are in $ million.

Table 6
Decomposition of Value-Add.

		(1) Cash Flow into BX funds	(2) Cash flows *from* debtholders	(3) Cash flows *from* the FED	(4) Cash flows *from* Limited Partners
Absolute value	0%	13,753	2640	2169	3519
Flat hurdle	8%	3566	2106	1450	1897
Equity Valuation	US stock-market	4779	3033	2022	2391
Target Choice	Marriott stock	1781	2997	2277	2144
Leverage	Leveraged Marriott	−570	3206	2251	1983

This table presents the NPV (in millions of USD) of five cash flow streams using five different discount rates. The cash flow streams are: 1) the gross of fees cash flows shown in Table 5, ii) a single cash flow from the 2010 debt renegotiation, 3) the savings that came from the reduction in interest rates, 4) the fees paid by fund investors. The different discount rates are: 0%, 8%, the US stock index, the Marriott stock, and a long-short Marriott portfolio (Leveraged Marriott).

single closest comparable (Leveraged Marriott stock). We show how to estimate both the contribution of leverage and the cost of fees within this approach. Second, value creation may be estimated using a financial model. This approach is useful for assessing the value added by earnings growth and change in capital structure. Although it is probably the one that appears most natural (insofar as it is consistent with LBO valuation techniques), it has serious and often overlooked limitations.

4.1. An NPV based approach: Basic principles

The key input for the NPV approach is the gross-of-fees cash flows from a given portfolio company.[27] The cash flows of Hilton Hotels are shown in Table 5. Total capital invested is \$6.5bn and total capital distributed is \$20.2bn, resulting in a total gain to Blackstone funds of \$13.8bn. Thus, the gross multiple of money (MOM) on the Hilton transaction is 3.1×, with an internal rate of return (IRR) of 14%. Investment performance can also be compared to a public benchmark using the Public Market Equivalent (PME), with a PME greater than one indicating that the investment outperformed the benchmark. The Hilton investment outperformed the US stock-market (CRSP value-weighted index) with a PME of 1.72. That is, an investment of \$1 in Hilton earned \$0.72 more than an investor would have received from investing in the stock market.

To quantify the gains from different sources, we use NPV, and start with the capital gain attributable to the overall appreciation in equity value. As shown in Table 6, the NPV discounted with a zero discount rate is \$13.8bn, whereas the NPV discounted using the stock market index is \$4.8bn. The difference is \$9bn, from which we conclude that two thirds of the capital gain can be explained by stock market appreciation.

Similarly, we can compute the gain that comes from choosing a given industry by taking as a discount rate the return of, in this case, a US Hospitality Exchange Traded Fund. If we believe that not all companies in this industry are comparable to Hilton due to, say, size differences, one could choose a subset of stocks that are more pertinent.

The performance of a closely related public company can be used as a benchmark to measure how much of the capital gain came from target selection (rather than what has been done to improve its profits). We use Marriott stock as such a benchmark for Hilton. Table 3 shows that Hilton and Marriott were very close in terms of number of rooms, earnings, and revenues pre-acquisition. In addition, their stock returns had a 78% correlation in the 2001–2006 period (and 82% in the years following Hilton's IPO (2014–2018)). Marriott's stock return can therefore be used as a proxy for the raise in valuations of similar-size, similar-industry stocks. The NPV using Marriott as a benchmark is \$1.8bn, which implies that as much as 87% of the gross capital gain from the Hilton transaction can be explained by rising valuations of similar companies.

An implicit assumption in the above analysis is that Hilton strategy did not affect Marriott's performance. If it did, taking Marriott as a benchmark is too high a hurdle. Marriott's stock price seems to have reacted to the announcement of the Hilton LBO and it could be pertinent to take this reaction into account.

Importantly, Blackstone had to pay a large premium to selling shareholders: \$5.2bn. This premium could reasonably be attributed to selling shareholders asking for a share of future value-add. In other words, if the market correctly valued Hilton pre-LBO, the premium paid represents gains that Blackstone has created but needed to give away in the acquisition. One approach to finding how much value was taken by the pre-LBO shareholders is to treat the premium as a distribution. That is, to assume that Blackstone paid a dividend of \$5.2bn immediately and redo the NPV calculations accordingly.

4.2. Other sources of the gains

4.2.1. Leverage

To assess the impact of leverage, we can use the CAPM, and a Beta estimate proposed in the literature for US LBOs: 1.3 (Ang et al. (2019)). We then compute the returns of a portfolio that is long Marriott and short a bond portfolio.[28] We take bond returns from the CRSP 20-year bond index; they average 6.2% per annum between 2008 and 2018, and find that the average return of this long-short position (Marriott/bond) is 21.1% per annum (compared with Marriott's stock return of 14.2%). As shown in Table 6, the NPV using this long-short portfolio returns is –\$570mn.

This result shows that even with a conservative estimate of both borrowing costs and Beta, a standard risk-adjustment indicates that there was no value-added by the Hilton LBO (versus a risk-adjusted investment in Marriott's equity.) Importantly, this result is before fees charged by Blackstone. Hence, fund investors lost value – but after paying a large premium to selling shareholders – which indicates that selling shareholders absorbed all of Blackstone's potential value-add.[29]

4.2.2. Gains from the capital restructure

We can also quantify the gains from certain specific actions using this methodology. We illustrate this idea using the capital restructure in 2010, a significant event in this transaction.[30] Senior lenders accepted a reduction of their debt outstanding from \$1.8bn to \$0.8bn, a haircut of 54%, and junior lenders accepted the conversion of \$2.1bn of mezzanine debt for 12% of the equity.[31] We can

[27] These cash flows are estimated from public records including SEC filings and media reports.

[28] Note that Marriott's leverage averaged about 18% during the period 2008–2018, whereas that of Hilton was close to 80%.

[29] Example of value-add are savings from cost cutting (e.g., moving headquarter) and debt tax shields

[30] Although Hilton was able to buy back debt at a significant discount to face value, lenders contemporaneously negotiated a higher interest rate on the remaining debt outstanding. Hence, we can only provide an upper estimate using the haircut lenders accepted in the restructuring.

[31] We estimate the 12% using data at IPO. Shares were disclosed as Hilton Global Holdings and Hotels Mezz Debt Private Limited. Lenders owned 115mn, Blackstone owned 750mn, and others (management, co-investors) owned 120mn shares.

estimate the value of the equity by using the valuation Blackstone had given Hilton's equity at the time of restructuring: with a reported 70% loss, a 12% equity stake was worth $230mn.[32] Thus, the combined impact of the restructure was to remove about $2.9bn of debt, for which Blackstone gave up $230mn in equity (net gain of $2.64bn).

We can compute the NPV of this $2.64bn transfer from debtholders to Blackstone funds using our set of discount rates. Results are shown in column (2) of Table 6. With this data, we answer the question: if Blackstone had instead retired this debt at face value, so that no transfer from debtholders occurred, what would the NPV of this transaction have been? To answer, we subtract column (2) from column (1): if Blackstone had acquired this debt for face value in April 2010, the NPV of this transaction would have been $1.7bn (using the market portfolio as the discount rate), −$1.2bn (using Marriott as the discount rate), and -$3.8bn (using leveraged Marriott as the discount rate). These results indicate that the Hilton acquisition would have been significantly loss-making relative to an investment in Marriott if Blackstone had been required to repay debt at par in 2010.

A similar set of calculations could be done for the reduction in interest rates that disproportionately benefited Hilton given its high leverage. In December 2010, debt outstanding was $17bn, and the average interest rate had fallen from 7.78% at LBO to 3.64%.[33] This implies a reduction of $704mn in annual interest payments – or a saving of $2.2bn in interest payments pre-IPO. The NPV of these pre-IPO interest savings are about $2bn irrespective of the discount rate (column (3) in Table 6).[34] We could then subtract these amounts from the NPV shown in column (1) to find the value of Hilton's cash flows had interest rates not fallen.

4.2.3. Was there a difference in the performance of Hilton pre-IPO and post-IPO?

Evaluating the pre versus post IPO performance of Hilton is also feasible within the NPV framework. We calculate the NPV if Blackstone had received a one-off payment of $19.7bn (which is the equity valuation of Hilton at IPO), in December 2013 (IPO date). The answer is that NPV is $7.1bn (using the stock market to discount cash flows), which is higher than the $4.8bn realized NPV. This difference suggests that $2.3bn has been lost by maintaining a stake in Hilton post IPO (compared to selling everything and investing in Marriott). Put differently, Hilton significantly outperformed Marriott (or was overpriced with respect to Marriott) at IPO, and about one third (2.3/7.1) of these gains were lost in the post-IPO period. We can also argue that Blackstone did not time its subsequent exits well; it should have sold as much as possible at the IPO price and right after.[35] On the other hand, we note that Marriott's returns often fell in the month following a Hilton distribution (e.g., December 2014, June 2015, etc.), which could be an indication that Blackstone was selling stakes at hotel valuation peaks. However, it is possible that Blackstone's decision to exit Hilton negatively influenced Marriott's stock prices in subsequent month (i.e., the market interpreted Blackstone's exit as a negative signal for the hotel industry).

4.3. Net of fees performance

The analysis described above decomposes the sources of value creation, but how these gains (or losses) are split between the fund and its investors is also important.

Private equity firms receive i) management fees to compensate for the day-to-day costs of running a fund, and ii) some performance-based compensation (carried interest). The complexity of fee definitions and the discretion in the interpretation of the terms means that even with access to the fund terms and conditions we could not compute exact fees charged. Here, we estimate the fees charged using standard industry terms.

We assume that management fees are 2% of capital invested throughout the life of the investment.[36] At 2% per year from June 2007 to IPO, management fees sum up to $988mn. For simplicity, and to be conservative, we assume that no management fees were charged following the IPO. In non-tabulated results, we find that after we deduct management fees from gross cash flows, the NPV discounted using the market index is $3.7bn and the NPV discounted using Marriott as the benchmark is $485mn. Hence, after including a conservative estimate of management fees alone, Hilton has similar equity returns as Marriott.

Carried interest is paid once the fund has returned sufficient capital. Per standard industry terms, we assume that a return of 8% after management fees is necessary before carried interest can be awarded.[37] This occurred in June 2017. We then assume that Blackstone receives carried interest of 20% of all distributions and that there is a carried interest catch up of 100%. That is, once the

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[32] In mid-2009, citing private documents, Reuters reported that Blackstone Capital Partners V had written down its $1.45 billion stake in Hilton by about one-half, to $742mn. A later media story (September 2014) that had access to Blackstone reported that at one point Blackstone wrote down the value of its stake even further, by 70%.

[33] We use data on level and cost of debt from SEC filings S-1 and 10-K, and assume that Hilton kept its debt at a floating rate (LIBOR plus margin) and did not convert it to a fixed rate at the inception of the LBO.

[34] Post IPO, Hilton reduced its long-term debt from $11.8bn in 2013 to $7.3bn in 2018. We can ignore these savings because interest rates started to rise so the savings from monetary easing were small.

[35] It is important to note the limitations of this analysis. Marriott's equity value at the end of 2013 was $14.4 billion so if Blackstone had invested all its returns from the sale of Hilton, it could have bought out Marriott entirely (assuming no price impact). Of course, there would be an immediate price impact if any investor were to start acquiring many shares, and the investor would be required to file a 13D once it obtained a 5% stake (which would identify the investor to market participants). Furthermore, Blackstone had a mandatory lockup period post-IPO in which it could not sell any shares.

[36] This is conservative because fees are charged on the capital committed to the fund, thus started being charged before the transaction was initiated.

[37] Carried interest is charged at the fund level. However, if a fund has surpassed its hurdle rate and the catch-up zone (IRR net of fees needs to be 10%), 20% of each investment capital gain is retained as a carried interest payment.

hurdle is met, Blackstone receives 100% of all distributions payable until it has received 20% of total distributions less capital invested and fees. Thereafter, carried interest is calculated as 20% of each distribution.

In June 2017, carried interest due was $1.9bn (i.e., 20% of the difference between distributions and capital contributions including fees as of that date). In accordance with standard catch-up clauses, Blackstone receives the entire distribution that month and continues to catch up with the subsequent distribution. Once Blackstone achieved a 100% catch up (i.e., 20% of total distributions minus capital contributions), carried interest is equal to 20% of each subsequent distribution. In total, we estimate that Blackstone has received $2.5bn in carried interest.

We can compute the NPV of this $3.5bn transfer from fund investors (Limited Partners) to Blackstone funds using our set of discount rates. Results are shown in column (4) of Table 6. Subtracting column (4) from column (1), we can state that net of fees, the NPV of the Hilton transaction is $2.4bn using the market index to discount cash flows, −$0.3bn using Marriott stock returns, and -$2.6bn using the leverage adjusted Marriott stock returns.

In sum, investors paid $998mn in management fees and $2.53bn in carried interest. This reduces the absolute capital gain available for distribution to Blackstone investors from $13.8bn to about $10bn, which is less than what would have been obtained with an investment in Marriott equity.

4.4. A financial modeling approach

An alternative approach to NPV is to use a financial model from a stylized balance sheet using reported and imputed data. The key inputs to an LBO model are EBITDA, debt, and interest expense.[38] We can modify these inputs to estimate the value added by different components of the private equity deal (e.g., through the organic growth management produced and the choice of capital structure). In this section, we demonstrate how to estimate the capital gain attributable to Hilton's growth rate, the gain attributable to leverage, and the savings from the leverage-induced tax shield within an LBO model (see Table 7 for data relating to these calculations).

First, we estimate how much of Hilton's value add was attributable to EBITDA growth by imposing a matched company's EBITDA growth on Hilton's pre-transaction EBITDA. Here, we compare Hilton's observed exit value to the exit value that Hilton would have obtained had its EBITDA grown at Marriott's growth rate. Hilton's exit EBITDA was $2.1bn, its enterprise value (EV) was $33.6bn, which implies an EV/EBITDA multiple of 16.0, and its equity value was $26.3bn. If we were to simply grow Hilton's 2006 EBITDA at Marriott's implied EBITDA growth rate, Hilton's EBITDA at exit would be $3.8bn, its EV $60.8bn, and its equity value $53.6bn. According to this naïve analysis, Hilton's capital gain was $27bn lower than it would have achieved had its EBITDA grown at the same rate as Marriott's. But this is a specious analysis because it does not consider the impact of inorganic growth on EBITDA.

Both Hilton and Marriott had a series of major investments and divestments over the 2007–2018 period that affected their reported EBITDA. Hilton spun-off Hilton Grand Vacations (HGV) and Park Hotels (Park) which resulted in a fall in EBITDA of 34% in 2017. Similarly, Marriott's EBITDA includes its acquisition of Starwood Hotels in 2016, which caused an increase in EBITDA of 51% in 2017. Fig. 1 illustrates this volatility in EBITDA growth rates around acquisition events by showing unadjusted versus organic EBITDA growth rates for Hilton and Marriott. Using either hotel's EBITDA growth to estimate the capital gain attributable to Hilton's growth without accounting for investments and divestments produces erroneous comparisons. We provide an extensive discussion of this issue in the Appendix.

One way to estimate the impact of an investment (divestment) on EBITDA is to deduct (add) the last known EBITDA of the target (spin-off) to the EBITDA of the new entity. For example, we estimate Marriott's post-merger EBITDA ex-Starwood by deducting Starwood's last available EBITDA from Marriott's EBITDA.[39] Imposing the resulting growth rate on Hilton's 2006 EBITDA, Hilton would have had an EBITDA of $2.4bn at exit, an EV of $38.6bn, and an equity value of $31.4bn. Hence, Hilton achieved an equity value $5.1bn lower (i.e., a negative capital gain) than it would have obtained had it grown at Marriott's organic EBITDA growth rate.

This evaluation is, however, biased downward since we did not adjust Hilton's EBITDA for its 2017 spin-offs. We can estimate Hilton's EBITDA attributable to organic growth using Hilton's reported EBITDA adjusted for these divestments. Using this approach, Hilton's transaction-adjusted EBITDA at exit would be $3.6bn, which implies an EV/EBITDA multiple of 9.4. If Hilton grew at Marriott's organic growth rate but was valued at this lower multiple, Hilton's EV would be $22.7bn and its equity value $15.4bn. This analysis supports the opposite conclusion of Hilton's relative performance: Hilton's EBITDA growth resulted in a capital gain $10.9bn higher than what it would have achieved had it grown at Marriott's rate. Alternatively, if we use both Marriott's growth rate and its EV/EBITDA multiple in 2018, Hilton's EV at exit would have been $30.5bn, and its equity value $23.2bn, which implies a capital gain of $3.1bn attributable to Hilton's earnings growth.

We can similarly estimate the capital gain attributable to Hilton's highly leveraged capital structure within the LBO model. Absent an LBO, Hilton may have maintained a similar capital structure to Marriott. Hence, we estimate the change in capital gain if Blackstone had used Marriott's capital structure. We assume that Blackstone acquired Hilton using only 18.6% debt at an interest rate of 5.05%. Under this revised capital structure, the equity value at exit would have been $28.7bn, with a capital gain of $7.1bn. By contrast, the

[38] Other components of the stylized balance sheet are depreciation, amortization, and capital expenditure. It would be appropriate to rigorously model these components if they were essential components of the value added by the LBO. In this case, we have focussed on the debt restructure and reduction of interest rates as the key elements of value creation.

[39] Starwood's reported EBITDA was decreasing in the last two years prior to the Marriott merger, so it may have continued to follow this trend. However, competitor hotels had increasing EBITDA in the years 2016–2018, so it is not obvious that Starwood's EBITDA would have continued to decline.

Table 7
Hilton LBO Model.

Panel A: Capital Structure at LBO	
Equity	5700
Senior Debt	8600
Junior Debt	12,200
2010 Restructure Equity	819
EBITDA Multiple at Exit	15.99

Panel B: Debt and Interest Schedule

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Long-term Debt	6556	20,800	21,157	21,125	16,995	16,311	15,183	11,751	10,803	9857	10,020	6556	7266
Interest Expense	498	1611	1654	1715	946	643	569	620	618	575	587	351	371

Panel C: LBO Model

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
EBITDA	1670	1807	1330	929	1564	1753	1956	2210	2508	2879	2975	1965	2101
D&A	441	584	430	587	574	564	550	603	628	692	686	336	325
Capex	613	324	238	167	148	389	433	254	268	310	317	58	72
EBIT	616	899	662	175	842	800	973	1353	1612	1877	1972	1571	1704
Interest on Debt	498	1611	1654	1715	946	643	569	620	618	575	587	351	371
EBT	118	−712	−993	−1540	−104	157	404	733	994	1302	1385	1220	1333
Taxes	35	−214	−298	−462	−31	47	121	220	298	391	416	366	400
Net earnings	83	−498	−695	−1078	−73	110	283	513	696	911	970	854	933
Enterprise Value													33,599
Equity Value													26,333
Net Capital Gain													19,814
Multiple of Money													4.04
IRR													13.5%

Panel D: Marriott EBITDA Growth and Capital Structure

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
EBITDA	1268	1372	1010	705	1043	992	1146	1325	1524	1718	1998	3010	2888
Equity	16,313	11,184	6542	9214	14,408	9739	11,394	14,381	21,761	17,432	32,254	47,886	36,426
Long-term Debt	1818	2790	2975	2234	2691	1816	2528	3147	3447	3807	8197	7840	8514

There are three years of financial data missing for Hilton (2007–2009). This data is constructed using the following assumptions: Hilton EBITDA grows at the same annual rate as Marriott; depreciation and amortization and capital expenditure are calculated as the same percentage of EBITDA as in the years 2010–2012 (32.3% and 17.9% respectively); interest expense is calculated using weighted average cost of debt and debt outstanding at LBO (with cash sweep); taxes are 30%.

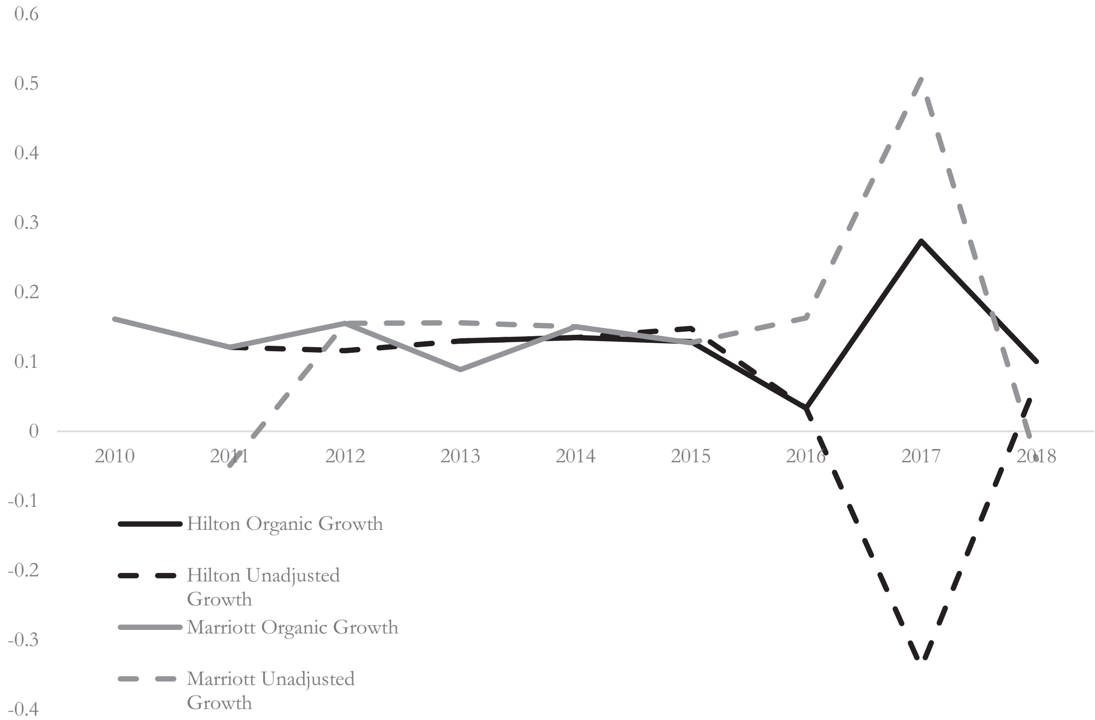

Fig. 1. Organic versus Unadjusted EBITDA Growth.

capital gain from Hilton's LBO capital structure was $19.8bn. Hence, the gain from using higher leverage is $12.7bn.

Leverage can impact firm performance both directly, through its impact on net earnings, and indirectly, by reducing a firm's tax liability (tax shield). We calculate change in net earnings attributable to leverage by comparing the value of Hilton's net earnings to what it would have earned had its capital structure mirrored Marriott's. If we assume positive net earnings are distributed, the value of the difference in net earnings in 2018 using Marriott's capital structure is $4.3bn (assuming distributions were reinvested at the market rate) and $7.3bn (assuming distributions were reinvested in Marriott).[40]

High leverage can also create indirect gains by enabling a company to accumulate losses carried forward that reduce its tax liability in future periods. We compare the tax Hilton paid according to the LBO model if all negative losses were carried forward to the tax Hilton would have paid using Marriott's capital structure. We treat the difference between taxes paid by Hilton under Marriott's capital structure and those paid under its LBO capital structure as dividends that are paid and immediately reinvested. The difference in total taxes paid in 2018 is $2.9bn (assuming distributions were reinvested at the market rate of return) and $4.8bn (assuming distributions were reinvested in Marriott).

According to this analysis, Hilton's total gains from leverage are about $11bn. Note that this may overestimate the potential gains from leverage because it includes the reduction in both debt level and debt payments as a result of Hilton's capital restructure and the reduced interest rates. Absent these events, the capital gain from the new capital structure would have been lower.

5. Conclusion

Private equity has grown to be a substantial industry with $12 trillion of assets under management in 2021. Yet, assessing the unique value added by private equity ownership remains a challenging task. Even with all the data at hand, the task is all but trivial and requires several assumptions. This case deconstructs the Hilton LBO, lauded as the "best leveraged buyout ever" to analyze the sources of value creation in private equity and to explore how outsiders may assess Blackstone's performance. We show how NPV may be used to evaluate the relative performance of private equity investments by breaking an investment into the capital gains from stock market appreciation, industry valuation appreciation, gains from leverage, etc. We also show the importance of calculating how these gains are distributed between GPs and LPs.

[40] Hilton's true capital structure implies net earnings of -$695mn in 2008 whereas Hilton's mirrored capital structure has net earnings of 289. Hence, we assume a distribution of 289 to stockholders in 2008 that is reinvested and increase Hilton's debt outstanding by $695mn. From 2010 onwards, we use the debt outstanding and interest expense as reported. Note that we have not made any adjustments for the debt restructure in 2010. If Blackstone had been required to retire Hilton's debt at face value, the difference in net earnings would be greater.

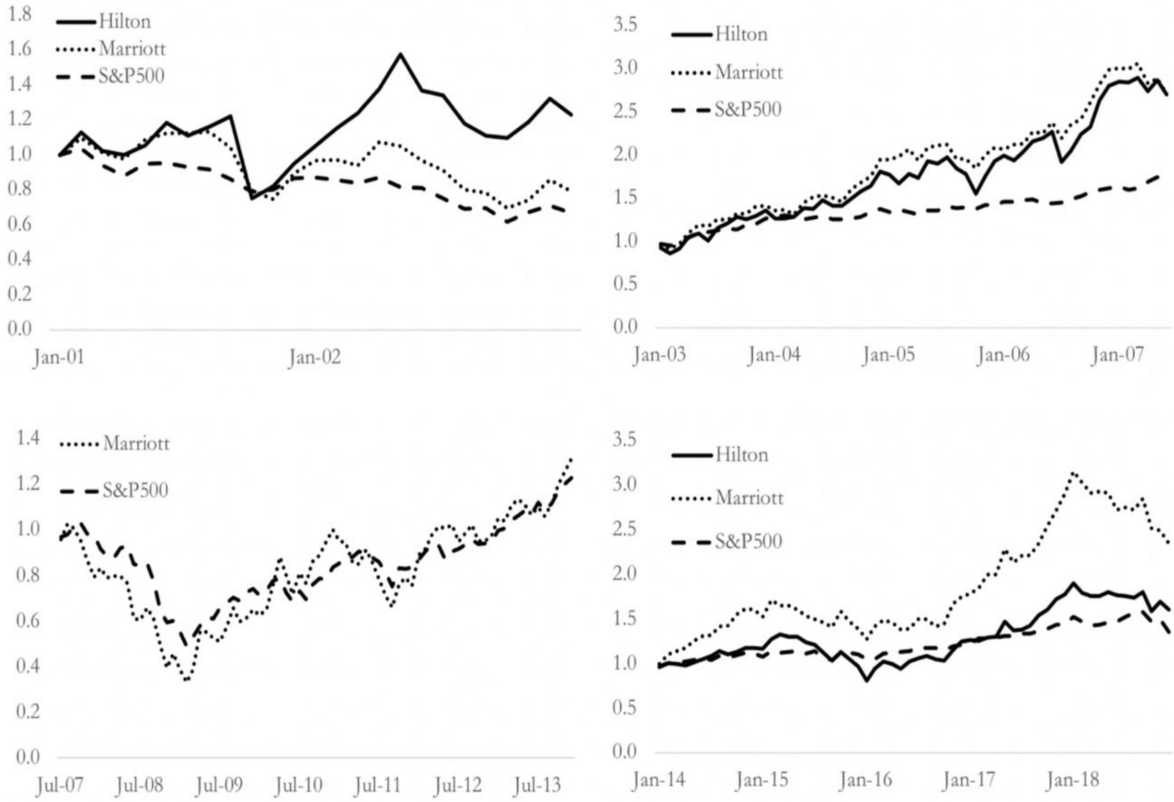

Fig. 2. Hilton and Marriott stock prices.
This figure shows the change in prices of Hilton, Marriott, and the S&P 500. Each is re-based as at 1 January 2001, 1 January 2003, 1 July 2007, and 1 January 2014, respectively.

5.1. Questions to consider

(1) Hilton was sued for alleged use of Starwood documents to create the Denizen concept. Yet large hotel companies were all following similar operational strategies over the 2008–2018 period. Assume you were defending Hilton in this case. What examples of strategies/concepts could you use to argue that Hilton was merely adept at following industry trends (and thus could have organically created a similar concept to Starwood's W without access to the confidential documents)?

(2) Evaluations of relative performance are influenced by the choice of benchmarks and modelling approaches. Assume you are an LP. Which benchmarks and set of modelling assumptions would you use to highlight the success of the Hilton LBO? Which benchmark and set of assumptions would you use to argue that the Hilton LBO was not a good investment?

(3) The post-IPO performance of Hilton raises questions on the role of private equity investments in public equity or PIPEs. One of the criticisms levelled at PIPEs is that LPs pay private market fees for public market performance. How would you adjust the post-IPO analysis to account for fees? Is there a role for private equity in public markets (you may consider comparisons to activist investors)?

(4) Following the LBO, Blackstone made changes to Hilton we often associate with private equity, including reducing board size, making compensation performance oriented, and reducing organizational expenses. What elements of the success of the strategy are uniquely attributable to Blackstone?

(5) This deal would probably be considered 'proprietary' because it was not bought via an auction. Discuss whether this distinction between proprietary and non-proprietary deal is useful in this case, and more generally. As a follow up, discuss the extent to which sellers can pocket the gains that will be generated by the buyer. What parameters may the 'split' depend on? What happened here and what happens generally in the industry?

(6) It is widely believed that the stock price for a large publicly traded company should be about right. In 2006, US stock-market participants valued the whole of Hilton at about $20bn. Blackstone secured a debt package of the same value to take control of Hilton. Effectively, lenders provided a debt package equal to that the stock-market said the whole value of Hilton was. Why would lenders do this?

(7) The amount of debt on a PE-backed company is high. In this deal, debt as a multiple of EBITDA is particularly high. Yet, the company did not go bankrupt despite a severe downturn. Discuss why and how the structure of the debt in private equity differs from the 'textbook' version (where you just borrow to invest more in equity) and how that difference should inform the choice of

Beta when benchmarking. Another basic principle in capital structure is that senior claimants get their payment in full if more junior claimants receive some payment. Only if a more junior claim has not been paid at all, can the more senior claim be impaired. It was not the case in this deal and in many other PE deals. Some call this an inversion of capital structure. Discuss the consequences of this phenomenon.

(8) Who should receive the glory for the success of the Hilton transaction? The Fed? LPs? Blackstone? Hilton Management? Marriott management? The lenders? Selling shareholders? Hilton employees? Someone else?

Data availability

Data will be made available on request.

Appendix A. Measuring organic growth

This appendix provides details of how reported EBITDA may be adjusted for inorganic growth. Decomposition of the growth attributable to the core business versus investment or divestment is critical to valuing the role of management in an LBO model.

Organic EBITDA growth is available only if a company reports EBITDA in its 10 K and opt to provide organic estimates.[41] Yet, even if adjusted EBITDA is reported, it is not a GAAP (nor SEC mandated) measure, so there can be inconsistencies in its calculation. For example, Hilton's reported EBITDA fell from $2.975bn in 2016 to $1.965bn in 2017, coinciding with the spin-off of HGV and Park. Hilton revised its estimate of 2016 EBITDA to $1.543bn to adjust for these transactions (Table 3, Panel A).[42] However, if we instead adjust for the spin-offs by subtracting the 2016 EBITDA of HGV and Park from Hilton's 2016 EBITDA, we find an adjusted EBITDA for Hilton of $1.771bn.[43] It could be that there were other divestments and acquisitions, or that they used a different method to that one to compute organic growth.

If transaction-adjusted EBITDA is not available, an alternative is to add the reported EBITDA of the transacted company from the corporate parent's EBITDA. This is only possible where separate accounts are provided. Marriott does not report transaction-adjusted EBITDA, for example, and Starwood did not maintain separate accounts following the acquisition. Hence, we cannot use Starwood performance post-merger to adjust Marriott's EBITDA for the acquisition.[44] Instead, we estimate Marriott's post-merger EBITDA ex-Starwood by deducting Starwood's last available EBITDA from Marriott's EBITDA.[45] If Hilton had grown at Marriott's organic EBITDA growth rate (and assuming the same EV/EBITDA multiple as Hilton at exit), it would have an EBITDA of $2.4bn at exit, an EV of $38.6bn, an equity value of $31.4bn, and a corresponding MOM of 4.81. According to this analysis, Hilton achieved an equity value $5.1bn lower (i.e., a negative capital gain) than it would have if it had followed Marriott's growth path.

It is arguable that this evaluation of Hilton is biased downward since we did not adjust Hilton's EBITDA for its 2017 spin-offs. We can estimate Hilton's EBITDA attributable to organic growth using year-on-year changes in Hilton's reported EBITDA from 2013 to 2018 and the revised figure of 11% for 2016–2017. Using this approach, Hilton's transaction-adjusted EBITDA at exit would be $3.6bn, which implies an EV/EBITDA multiple of 9.4. If Hilton grew at Marriott's organic growth rate but was valued at this lower multiple, Hilton's EV would be $22.7bn, its equity value $15.4bn, and its MOM 2.37. This analysis supports the opposite conclusion of Hilton's relative performance (i.e., Hilton's EBITDA growth resulted in a capital gain of $10.9bn and an MOM 1.67 higher than what it would have achieved had it grown at Marriott's rate). If we instead use Marriott's EV/EBITDA multiple in 2018, Hilton's EV would have been $30.5bn, its equity value $23.2bn, and its MOM 3.56, implying a capital gain of $3.1bn attributable to Hilton's growth rate.

[41] EBITDA is not required to be reported in a company's 10 K and it has no standardised method for calculation.

[42] 2016 EBITDA was reported in the 2017 10-K. The 2016 EBITDA was revised to $1484 in the 2018 10-K.

[43] HGV and Park were spun-out of Hilton and became publicly listed; their 10-K contain their financials for the period 2015–2017.

[44] Starwood was merged into Marriott and did not report separate accounts following the acquisition. To illustrate the absurdity of using EBITDA unadjusted for acquisitions, if Hilton had grown at Marriott's growth rate until 2018, its 2018 EBITDA would have been $3.8bn, EV would have been $60.8bn, and equity value would have been $53.6bn.

[45] Using Starwood's last available EBITDA is an agnostic approach. Starwood's reported EBITDA was decreasing in the last two years prior to the Marriott merger, so it may have continued to follow this trend post-merge. However, competitor hotels had increasing EBITDA in the years 2016–2018, so it is not obvious that Starwood's EBITDA would have continued to decline.