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Cross-dimensional measures of asset lightness and fee orientation in lodging groups

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ABSTRACT

This study proposes cross-dimensional measures of the degree of implementation of the lodging industry's asset-light & fee-oriented (ALFO) strategy. We apply a common factor analysis to measure the degree of implemented ALFO strategy on a sample of 14 lodging companies over the period 2001–2021. The analysis confirms that there is no one-size-fits-all approach and that companies position themselves distinctively on the two dimensions. The fee-oriented strategy has strengthened continuously since 2005, while that of the asset-light strategy has increased rapidly between 2001 and 2005, but its evolution has been more erratic since then. Our results shed light on the importance of intangibles in the asset-light strategy and the operationalisation of the construct. This study also contributes to the debate on the financial impact of the ALFO strategy. We show that AL and FO positively affect financial performance and firm value and that by combining them, the effect doubles.

1. Introduction

Since the emergence of a formal hotel industry with European Grand Hotels in the late 19th century and hotel chains in the United States in the 1920 s, hotel operators have usually owned their hotel properties. They usually built or purchased properties to expand their business (Sohn et al., 2013), reflecting the industry's organic and asset-heavy approach in the 20th century. Since the 1990 s, however, lodging groups have started to sell their properties. They have gradually embarked on an Asset-Light and Fee-Oriented (ALFO) strategy, shifting from owning and developing properties to managing them and providing hotel management services (Bourke et al., 2020; Li and Singal, 2019; Sohn et al., 2014).

The underlying reason for this trend goes back when non-hospitality investors, such as real estate investment trusts (REITs) in the United States in the early 1990 s, were given the opportunity to buy properties from hotel operators (Stamm, 2013). This separated industry structure allows investors to enter the hotel sector without hotel-operating experience (Collins and Perret, 2015). Low et al. (2015) further point out that the owners rely on a franchise and/or a hotel management company to manage the hotel and bear the operational risk. On the other hand, the ALFO strategy enables hotel companies to reduce real estate risk, free up cash through divestments, and focus on franchise and/or management services to expand their business. This is known as the

'bricks and brains' split, allowing lodging groups to separate operations from properties and offering investors an opportunity to acquire hotel real estate (Gannon et al., 2010). Lin and Huang (2011) claim that an ALFO strategy focuses on both capital efficiency and the hotel company's core intangible resources and capabilities enabling them to focus on the relative importance of intangible strategic resources over tangible assets.

The asset-light (AL) dimension in the ALFO strategy allows lodging groups to own few to no hotel real estate and invest in intangible core competencies such as technology and loyalty programs (Li and Singal, 2019). As for the fee orientation dimension (FO) of the ALFO strategy, Li and Singal (2019) indicate that hotel companies implementing this strategy increase their fee income and the number of franchised and managed properties while simultaneously decreasing asset tangibility and capital intensity. When hotel companies sell properties, they often retain management agreements, known as sale and manage-back agreements (Bourke et al., 2020).

Gannon et al. (2010) argue that larger lodging groups usually follow such an ALFO strategy, with the top five hotel groups accounting for a quarter of total room capacity worldwide in 2019 (IHG, 2020). The success of international hotel companies (IHC) depends on the standardisation and replication of properties across the globe to warrant market share growth. Consequently, they have heavily invested in branding and large portfolios of branded properties (Litteljohn et al.,

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2007). According to Surdu (2011), the ALFO strategy outsources non-core assets and relies on supply-chain service providers to rapidly expand sales channels, focusing on design and marketing and employing less capital and fixed assets. Collins and Perret (2015) further argue that the ALFO strategy in IHCs has resulted in a market concentration in the industry.

Academic evidence on the ALFO strategy and its implications on different corporate policies appears to suffer from two interlinked weaknesses. First, it offers an incomplete view of the construct since it considers AL and FO separately when measuring the degree of implemented ALFO strategy. Second, the growing literature on the effects of ALFO on performance (e.g. Sohn et al., 2013; Masset et al., 2019) presents contradicting results. In line with Blal and Bianchi (2019), we suspect that the lack of a complete and cross-dimensional ALFO measure may explain diverging results regarding its effects on corporate performance and value.

This article aims to bridge these two gaps. Therefore, it first analyses the different elements of an ALFO strategy. Second, it develops a more precise and comprehensive method that measures the degree of implemented ALFO strategy in an IHC. Finally, it assesses the financial relevance of the AL and FO measures by quantifying their impact on corporate performance and value.

Research on ALFO has arrived at the conclusion that the construct is multi-dimensional. In particular, it consists of two dimensions, fee orientation and asset-lightness. Previous studies on the implications of ALFO on financial performance or firm value operationalise ALFO with a set of individual measures that usually only cover one of these two dimensions. It, thus, appears necessary to analyse the effect of each dimension and create a more comprehensive estimate of the degree of implemented ALFO strategy. By doing so, we complement and expand on existing evidence provided by Li and Singal (2019), who create a single, industry-specific ALFO variable using a PCA containing information on the degree of franchising and management, fees, the fixed asset ratio and capital intensity. We start by identifying the variables in the literature used to measure the degree of implemented ALFO strategy. Then we apply a common factor analysis to reduce the multi-dimensionality and develop a more comprehensive measure. The newly created synthetic ALFO variables are cross-dimensional and can be used as a standardised tool to evaluate the effect of an ALFO strategy in multiple contexts. In an extension of this two- into a three-dimensional analysis, we further observe that the asset-light dimension can be divided into a general asset-light and an Intangible Capital intensity (IC) dimension. This lends support to the multi-dimensionality of the construct and the need to consider the various dimensions.

Finally, we apply the measure to study the impact an ALFO strategy has on financial performance and firm value. We thereby confirm our proposition of the multi-dimensionality of the construct and contribute to the literature by showing that both dimensions positively affect financial performance and firm value. Groups that followed aggressive AL and FO strategies experienced financial performance and firm value increases. We complement this evidence by splitting the AL factor into a general asset-light and an intangible capital factor. Both affect financial performance and firm value and thus provide a more nuanced view of the initial asset-light factor. This similar impact is due to firms gradually seeing their asset disposal decelerating (and even rising), so they are becoming less asset-light, but this is due to the constitution of intangibles. These intangibles, mostly goodwill and brands, which often includes loyalty programs, are strategic to companies focusing on an asset-light strategy. These intangible assets' nature, stability and competitiveness become critical when the business shifts focus from owning and operating to operations only. The conflicting results reported in previous research can probably be explained by the fact that they only take one dimension (AL or FO) into account and consider smaller samples than ours.

The article is structured as follows. The next section reviews the

existing literature on ALFO and its financial implications. In the third section, we present our dataset. The fourth section is devoted to the empirical analysis of ALFO in the lodging industry from 2001 to 2021. In the fifth section, we examine the impact of ALFO on financial performance and firm value, while in the sixth section, we present additional considerations on the previous relationship. Finally, we discuss our conclusion and managerial implications.

2. Literature review

The implications of ALFO strategies in the hotel industry have been examined from different perspectives which typically include information on the degree of asset lightness and fee orientation (Sohn et al., 2013). While some studies only use one measure to quantify the degree of implemented ALFO strategy, others apply a few different measures to address the strategy's asset-light and fee-orientation dimensions. The following two subsections discuss the two ALFO dimensions and their related variables. The final subsection analyses the effect of the ALFO strategy on corporate performance and value.

2.1. The asset-light dimension

The first dimension of an ALFO strategy focuses on asset lightness, where hotel companies divest part or all of their properties (Bourke et al., 2020; Sohn et al., 2014). Several variables have been used to capture the degree of asset lightness.

The first variable that captures the shift of hotel companies going asset-light is the *owned/leased ratio (OLR)*. This ratio is calculated as the owned and leased room inventory divided by the total room inventory (Bourke et al., 2020). The total room inventory refers to the total number of rooms a hotel company owns, leases, manages and franchises. Ownership and lease are often pooled since long-term leases of hotel properties must be reported on the balance sheet (Whittaker, 2006). Bourke et al. (2020) use this variable as a single measure of the degree of implemented ALFO strategy and argue that asset-light and fee-oriented IHCs are defined as having an OLR of less than 1%. More capital-intensive traditional IHCs are companies with an OLR of 5% or more.

Another variable for the implemented ALFO strategy is the *fixed asset ratio (FAR)*, indicating the proportion of fixed assets to total assets (Li and Singal, 2019; Sohn et al., 2013; Yu, 2018). Yu (2018) argues that a hotel company can be considered asset-light if it meets the following two conditions: i) the proportion of a company's fixed assets to total assets ranks in the bottom quintile of the industry, and ii) the proportion of intangible assets ranks in the top quintile in that industry. Sohn et al. (2013) find that FO hotel companies show lower fixed asset ratios and higher current assets. This is supported by Li and Singal (2019), who indicate that hotels implementing a higher degree of ALFO decrease fixed assets.

Masset et al. (2019) and Li and Singal (2019) discuss depreciation costs that arise from fixed assets. The *depreciation to sales ratio (DSR)* compares the depreciation expense of property, plant and equipment (PPE) to total revenues. Masset et al. (2019) use this measure to quantify a company's asset level dynamically. The more PPE a hotel company has, the higher depreciation expenses and the DSR will be.

Li and Singal (2019) argue that to achieve an ALFO state, hotel companies can either sell properties or invest less in new fixed assets. The *capital intensity (CapInt) ratio* can reflect this by measuring capital expenditures as a fraction of total assets. While CapInt captures a company's outlay on fixed assets in a given year, the fixed asst ratio indicates the cumulative effect of asset-lightness on the inventory of tangible assets. Li and Singal (2019) find that hotel companies that score higher in ALFO have lower capital intensity ratios. Nevertheless, they observe fluctuations in CapInt and argue that this is due to diverging risk factors and investment opportunities within the market (Li and Singal, 2019).

Another measure is the *current asset ratio (CAR)*. CAR shows the

proportion of current assets over total assets. Sohn et al. (2013) find an inverse relationship between hotel companies' current and fixed assets that follow an ALFO strategy, i.e., while FAR decreases, current assets increase. In addition, Sohn et al. (2014) find that CAR shows, on average, the highest values in hotel companies that have extensively implemented the ALFO strategy.

The non-physical, intangible assets on the balance sheet of a hotel company typically include acquired brands, management and franchise agreements, software or goodwill. The *intangible asset ratio (IAR)* shows the proportion of intangible assets to total assets. Li and Singal (2019) suggest that ALFO strategies allow hotel companies to focus on developing intangible assets. In most cases, the ALFO strategies replace fixed assets with intangible assets while maintaining or growing the overall balance sheet. Yu (2018) defines a hotel company as asset-light if the proportion of intangible assets to total assets ranks in the top quintile of the industry while the proportion of fixed assets ranks in the bottom quintile.

2.2. The fee orientation dimension

The second ALFO dimension refers to fee orientation. The emerging asset class and the adopted strategy in the hotel industry have resulted in adapted operating business models. The *fee income ratio (Fee)* is an often-used measure of the degree of implemented ALFO strategy. It is calculated as fee revenues generated from franchised and managed properties over total revenues. An increasing fee income ratio implies that lodging groups generate more income from franchising and management contracts than from operating their own properties (Sohn et al., 2013). Thus, a hotel company that does not offer franchise or management services has a fee income ratio of zero. Sohn et al. (2014) use the fee income ratio as a single measure of the ALFO strategy and find an inverse relationship between FAR and Fee. The findings of Sohn et al. (2014) are confirmed by Li and Singal (2019), who find that asset tangibility decreases while fee income increases.

A related variable is the *degree of franchise and management (DOFM)*, which is the proportion of a hotel company's number of franchised and managed properties versus total properties (Sohn et al., 2013). The DOFM has been widely used to approximate the degree of implemented ALFO strategy (Blal and Bianchi, 2019; Li and Singal, 2019; Seo and Soh, 2019). Blal and Bianchi (2019) argue that DOFM, as opposed to the fee income ratio (that uses revenues), integrates organisational design aspects. Li and Singal (2019) find that while DOFM increases, asset tangibility decreases, confirming that hotel companies implementing an ALFO strategy reduce fixed assets.

2.3. Impact on corporate performance and value

Research on the potential implications of the ALFO strategy on financial performance and firm value remains relatively scant, with, at times, conflicting results. Sohn et al. (2013) find that capital markets assign premia to lodging groups going asset-light. Their results show that a decreasing FAR mitigates operating risk and increases firm value. They suggest that if Tobin's Q is larger than 1, the hotel company has a competitive advantage that can result in higher than average returns on investments. They find that companies engaging in fee business have a Tobin's Q greater than one and conclude that a premium is assigned to intangible assets, i.e., fee business contributes to firm value. Sohn et al. (2013) further find a positive relationship between Tobin's Q and the fee income ratio but a negative linkage between earnings volatility and Tobin's Q. Also, disposing of fixed assets positively impacts firm value since markets recognise the advantages of being lean and flexible.

Probably the most controversial area investigated is financial performance. There is a set of measures that quantifies financial performance. Bourke et al. (2020) find that ALFO hotel companies underperform more asset-heavy hotel companies when analysing net profit margin (NPM) growth. Sohn et al., (2013, 2014) examine the operating profit margin (OPM) and find that lodging groups with high proportions of fee income have superior OPMs than hotel companies with lower or no fee income.

Another financial performance measure is *return on assets (ROA)*. When a large portion of assets are invested in intangible assets instead of fixed assets, then large values of ROA indicate a less asset-heavy business (Lin and Huang, 2011). A ROA below 5% is considered asset-heavy, and a ROA above 20% is asset-light (McIntosh, 2012). Bourke et al. (2020) find that IHCs following an ALFO strategy have improved ROA performance during expansion periods. Seo and Soh (2019) also find that ALFO hotel companies display increased investment efficiencies with a higher return on invested capital (ROIC). Bourke et al. (2020) use return on capital employed (ROCE) to measure the relationship of performance in an asset-light strategy. They find that IHCs following an ALFO strategy and conducting extensive share buybacks report more significant growth in ROCE than asset-heavy hotel companies. On the other hand, Blal and Bianchi (2019) use return on equity (ROE) and find that an implemented ALFO strategy does not impact long-term ROE performance. Yu (2018) also finds that ALFO does not increase ROE. Finally, Blal and Bianchi (2019) find that an ALFO strategy has no long-term impact on stock prices. Furthermore, they do not find an effect on EBITDA in the long run.

3. Data

3.1. Dataset

Our initial sample covers all lodging groups worldwide (SIC Code 7011). We then apply two criteria: i) only hotel companies that are required to produce publicly available annual reports are included; ii) if the hotel companies provide management or franchise services, they must list their managed/franchised properties separately from owned/leased properties in their annual reports and report the fee-based revenues separately from operating revenue in their P&L statement.

These two criteria substantially reduce the number of groups in the sample and reflect the hotel companies used in previous studies. The 14 lodging groups in Table 1 meet these two criteria. The sample period is 2001–2021.[1] Table 1 further illustrates the data availability per lodging group. The 14 lodging groups in the sample accounted for approximately 29% of the total room capacity worldwide in 2021. All 14 companies report fee-based income separately from other revenues, implying that they provide management and franchise services to a certain degree. Accounting and market data is retrieved from Refinitiv. Company-specific information unavailable on Refinitiv is collected manually from annual reports.

The reasons for the short sample period for some hotel companies are twofold: i) many companies were not publicly traded during the entire sample period, and ii) the M&A market in the industry was very active. Apollo Global Management acquired Diamond Resorts International in 2016 and La Quinta Holdings was bought by Wyndham Worldwide in 2018. SBE Entertainment Group acquired Morgans Hotel Group in 2016, Marriott International acquired Starwood Hotels & Resorts Worldwide in 2015, and Sonesta International Hotels purchased Red Lion Hotels in 2021.

3.2. Descriptive statistics

Descriptive statistics in Table 2 show that the sample is rather diverse when examining the eight ALFO measures previously used in the literature and which form the basis of the common factor analysis performed in Section 4.

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[1] Building on the work of Poretti and Heo (2022) on the impact of the COVID-19 crisis on the relationship between asset-light and performance, we include the years of the pandemic.

Table 1
Overview of sample companies. This table presents the name, the headquarters location and the operating presence of the lodging group included in the sample. It also reports the first and last year for which data is available.

Hotel company	HQ location / Operating presence	First and last year of data information
Accor	France/ worldwide	2002 2021
Choice Hotels International	U.S./ worldwide	2001 2021
Diamond Resorts International	U.S./ worldwide	2011 2015
Hilton Worldwide Holdings	U.S./ worldwide	2013 2021
Huazhu Group	China/ worldwide	2010 2021
Hyatt Hotels Corporation	U.S./ worldwide	2007 2021
La Quinta Holdings	U.S./North America	2013 2017
Marriott International	U.S./ worldwide	2001 2021
Morgans Hotel Group	U.S./ worldwide	2005 2015
Red Lion Hotels	U.S./U.S.	2001 2019
Scandic Hotels	Sweden/ Europe	2015 2021
Starwood Hotels & Resorts Worldwide	U.S./ worldwide	2001 2015
Wyndham Destinations (formerly Wyndham Worldwide Corporation)	U.S./ worldwide	2006 2017
Wyndham Hotels & Resorts	U.S./ worldwide	2018 2021

Table 2 shows that the minimum OLR is 0%, while the maximum OLR reaches 94.28%. On average, OLR is 24.55%. The DOFM indicates that none of the companies in the sample has zero managed or franchised properties, as the minimum DOFM is 8.02%. The maximum DOFM is 100%, and its average is 77.02%. Compared to DOFM, it is interesting that Fee has an average value of only 34.96%, while its median value is 22.86%. Fee has the greatest overall standard deviation with 32.50%, showing the highest dispersion among the sample. FAR highlights the diversity of the sample with a range between 2.49% and 87.86% and an average of 36.65%. The CapInt ratio has the lowest dispersion with a 4.58% standard deviation, a minimum of 0.23%, and a maximum of 27.55%. At the same time, its average is 4.81%, indicating that the proportion of capital expenditures to total assets is relatively low in the sample. DSR is equally low and shows little dispersion, with a minimum value of 1.19%, a maximum value of 43.80% and an average of 8.74%. CAR ranges from 1.93% to 63.50%, with an average of 23.64%, showing that certain hotel companies in the sample reach a relatively high CAR. Finally, IAR shows values ranging from 2.77% to 81.38%, averaging 24.71%.

Table 2 further reports descriptive statistics on three financial variables. In general, Tobin's Q exceeds 1.0, but there are large discrepancies as its minimum, and maximum values equal 0.65 and 7.07, respectively. The ROA and net margin are, on average, positive and close to 8.63% and 4.44%, but their standard deviation is substantial. The analysis in Section 5 will assess whether ALFO can explain (part of) these variations in financial performance and firm value while controlling for the payout ratio, leverage, sales growth and firm size. Their descriptive statistics are also reported in Table 2.

4. Construction of synthetic ALFO indicators

This section starts by examining the relationships among the eight individual ALFO variables. We then use a common factor analysis (CFA) to extract two synthetic ALFO variables, which capture the degree of

Table 2
Descriptive statistics. This table presents statistics on ALFO measures and financial and control variables for the companies in the sample over 2001–2021. Asset-light and fee orientation measures include and are defined as: owned/ leased ratio (OLR) is the number of owned/leased rooms over total rooms; fixed asset ratio (FAR) is net PPE over total assets; capital intensity (CapInt) is capital expenditures divided by total assets, and the intangible asset ratio (IAR) is defined as intangible assets over total assets. The depreciation to sales ratio (DSR) is defined as depreciation over total revenues, the current asset ratio (CAR) as current over total assets, the fee income ratio (Fee) as fee over total revenues and the degree of franchise and management (DOFM) as the number of franchised and managed properties over total properties. Tobin's Q is defined as the sum of the market value of equity and book value of debt over the book value of total assets, ROA as EBIT divided by total assets and the net profit margin as net income over total revenues. The payout ratio is dividend per share over earnings per share. Leverage is total debt over common equity, sales growth the annual growth in total revenues and size is defined as the natural logarithm of total assets. Financial and control variables have been winsorised at the 2.5% and 97.5% levels.

	Obs.	Mean	Median	Std. dev	Minimum	Maximum
ALFO variables						
OLR	176	24.55	9.13	28.03	0.00	94.28
FAR	176	36.65	34.08	24.19	2.49	87.86
CapInt	176	4.81	3.52	4.58	0.23	27.55
IAR	176	24.71	18.99	19.21	2.77	81.38
DSR	176	8.74	7.79	5.93	1.19	43.80
CAR	176	23.64	20.44	12.66	1.93	63.50
Fee	176	34.96	22.86	32.50	0.16	100.00
DOFM	176	77.02	93.62	27.20	8.02	100.00
Financial variables						
Tobin's Q	173	2.00	1.39	1.59	0.65	7.07
ROA	201	8.63	6.47	11.26	-8.43	47.23
Net margin	210	4.44	6.51	15.99	-46.39	32.18
Control variables						
Payout	179	43.31	34.12	39.26	0.00	100.00
Leverage	202	54.83	79.01	500.58	-1458.78	1609.14
Sales growth	196	5.51	5.00	24.53	-59.97	82.72
Size	205	15.05	15.82	1.54	11.56	17.60

asset lightness and fee orientation, respectively. We finally analyse the degree of ALFO cross-sectionally and its evolution over time.

4.1. Interdependencies among ALFO variables

Table 3 reports Pearson correlations on the eight selected ALFO measures as a preliminary step for the subsequent common factor analysis (CFA). Of the 28 correlations, 24 are statistically significant.

There is a nearly perfect inverse relationship between OLR and DOFM.[2] Furthermore, Fee correlates with OLR at − 0.693, implying that while firms increase franchised and managed rooms, they decrease their owned properties. The OLR has a strong positive relation of 0.546 with FAR, suggesting that reducing owned/leased rooms simultaneously decreases fixed assets. This is in line with the positive correlation between OLR and DSR. We further observe a − 0.324 correlation between OLR and IAR, suggesting that decreasing owned/leased hotel rooms increases intangible assets. This initial finding points to the fact that the asset-light strategy often consists in replacing tangible with intangible assets. In other words, companies tend to balance out their reduction in tangible assets with an increase in intangibles and thus maintain or increase their overall balance sheet. This indicates a shift in their domain of activity from owner-operators to operators.

Table 3 also shows a statistically significant inverse relationship

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[2] This high degree of correlation may affect our results. We, therefore, rerun all our analyses dropping the OLR variable. In other words, we built factors with the remaining seven indicators and then examine the linkage with corporate performance. The factor loadings slightly change but all other results remain qualitatively and quantitatively similar.

Table 3

Correlation matrix. This table presents a Pearson correlation matrix on all ALFO measures. Items include and are defined as: owned/leased ratio (OLR) is the number of owned/leased rooms over total rooms; fixed asset ratio (FAR) is net PPE over total assets; capital intensity (CapInt) is capital expenditures divided by total assets, and the intangible asset ratio (IAR) is defined as intangible assets over total assets. The depreciation to sales ratio (DSR) is defined as depreciation over total revenues, the current asset ratio (CAR) as current over total assets, the fee income ratio (Fee) as fee over total revenues and the degree of franchise and management (DOFM) as the number of franchised and managed properties over total properties. *** , ** , * denote significance at the 1%, 5% and 10%-level, respectively.

	OLR	Fee	DOFM	FAR	CapInt	IAR	DSR	CAR
OLR	1.000							
Fee	-0.693 ***	1.000						
DOFM	-0.992 ***	0.673 ***	1.000					
FAR	0.546 ***	-0.721 ***	-0.511 ***	1.000				
CapInt	0.226 ***	-0.171 **	-0.235 ***	0.235 ***	1.000			
IAR	-0.324 ***	0.464 ***	0.315 ***	-0.604 ***	-0.295 ***	1.000		
DSR	0.241 ***	-0.406 ***	-0.212 ***	0.500 ***	-0.010	-0.123	1.000	
CAR	-0.143 *	0.262 ***	0.104	-0.466 ***	0.109	-0.231 ***	-0.433 ***	1.000

between FAR, DOFM and Fee. This relationship is confirmed by Sohn et al. (2013) and Li and Singal (2019). FAR negatively correlates with CAR, in line with Sohn et al. (2013). We also observe positive correlations between CapInt and OLR or FAR and a negative relationship between FAR and IAR.

CapInt is negatively correlated with DOFM, implying that increasing the degree of franchised and managed rooms lowers capital expenditures in relation to total revenues. In management practice, shifting to an operating business eliminates the large capital expenditures related to real estate, thus reducing the overall ratio of capital expenditures to total revenues. Similarly, the shift increases the intangible assets, which require less capex than tangible assets, and as such IAR negatively correlates with CapInt. CapInt is one of the two variables that does not correlate with other ALFO measures. More specifically, it has no significant relation with three out of eight variables: Fee, DSR and CAR. Nevertheless, we suspect that this is due to a more intricate role of intangible assets rather than its irrelevance in the examined relationships.

Table 3 further shows that CAR has an inverse relationship with DSR. The negative relation between CAR and IAR implies that while current assets increase, intangible assets decrease. As described in previous literature, this is a controversial finding as CAR and IAR are seemingly positively related to the degree of implemented ALFO strategy. There is a positive relation, however, between CAR and Fee. Like CapInt, CAR does not correlate with two out of eight variables: DOFM and CapInt. We suspect that this is related to the shift in the business in which companies shift their focus to operations when opting for an asset-light strategy. The latter is more liquid and cash-based (collection of fees based on revenues, loyalty programs essentially) than the asset-light structure driven by the real estate mechanisms. The IAR positively correlates with Fee and DOFM, implying that while increasing the proportion of franchised and managed rooms and fee income, the ratio of intangible assets increases. Finally, Fee and DOFM display a strong positive correlation as their information is similar, though calculated differently.

4.2. Extraction of synthetic ALFO variables

The correlation analysis in the previous section shows that the eight measures of the ALFO strategy are significantly correlated. This motivates us to run a common factor analysis (CFA). We conduct some preliminary tests to formally assess the fit of the eight variables for a CFA. Bartlett's Test of Sphericity indicates a p-value lower than 0.001, suggesting that it is relevant to conduct a CFA. The overall Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy of the ALFO measures in the model has a measure of sampling adequacy (MSA) value of 0.652. The value surpasses the threshold of 0.5, and we conclude that the model with the eight variables is adequate for a CFA. Concerning the individual variables in the model, CAR is below the threshold of 0.5 (at 0.36). This result is in line with the previous section, where we observe that CAR strongly correlates with only five out of eight variables. IAR, too,

indicates an MSA value below 0.5 (at 0.48). Even though these two individual variables show low MSA values, we keep them in the model since we aim to capture as much information as possible.

The initial unrotated CFA also describes how many factors to extract in the rotated CFA. Up to eight factors can be extracted. They are reported in Table 4. There is only one factor with an eigenvalue larger than 1. The percentage of total variance explained is the second criterion for deciding how many factors to extract. By extracting one factor only, 37%

Table 4

Factor loadings. This table presents the factor loadings, and the percentage of variance explained for specifications extracting 1 (Panel A), 2 (Panel B) and 3 factors (Panel C). The dimensions related to the factors are denoted as FO (fee orientation), AH (asset heaviness) and IC (intangible capital intensity). Items include and are defined as: owned/leased ratio (OLR) is the number of owned/leased rooms over total rooms; fixed asset ratio (FAR) is net PPE over total assets; capital intensity (CapInt) is capital expenditures divided by total assets, and the intangible asset ratio (IAR) is defined as intangible assets over total assets. The depreciation to sales ratio (DSR) is defined as depreciation over total revenues, the current asset ratio (CAR) as current over total assets, the fee income ratio (Fee) as fee over total revenues and the degree of franchise and management (DOFM) as the number of franchised and managed properties over total properties. % variance indicates the percentage of variance explained by the respective factor.

Panel A. 1 factor	FO			Uniqueness
FAR	-0.540			0.709
DSR	-0.235			0.945
CAR	0.133			0.982
IAR	0.325			0.894
Fee	0.691			0.522
CapInt	-0.230			0.947
DOFM	0.994			0.011
OLR	-0.998			0.005
% variance	37.3%			
Panel B. 2 factors	AH	FO		Uniqueness
FAR	0.999	< 0.010		0.005
DSR	0.534	< 0.010		0.746
CAR	-0.563	-0.180		0.761
IAR	-0.602	< 0.010		0.636
Fee	-0.492	0.423		0.351
CapInt	0.151	-0.153		0.929
DOFM	< 0.010	1.022		0.005
OLR	< 0.010	-0.992		0.009
% variance	28.3%	27.9%		
Panel C. 3 factors	FO	AH	IC	Uniqueness
FAR	< 0.010	-0.612	0.613	0.019
DSR	< 0.010	-0.545	< 0.010	0.676
CAR	< 0.010	0.991	0.372	0.154
IAR	-0.141	-0.165	-1.017	0.182
Fee	0.429	0.271	-0.300	0.346
CapInt	-0.112	0.118	0.320	0.866
DOFM	1.082	< 0.010	0.102	0.006
OLR	-1.055	< 0.010	< 0.010	0.007
% variance	31.3%	22.2%	22.1%	

of the total variance is explained. 56% (75%) of the variance can be explained by extracting two (three) factors, surpassing the 50% minimum variance threshold. We extract two factors for our baseline specifications in Section 5 and use one and three-factor specifications to refine the analysis in Section 6.

We then check whether an oblique rotation method is suitable. For example, we produce a two-factor solution with Promax rotation and extract a correlation matrix of the two extracted factors. The correlation coefficient is 0.491. Consequently, we conclude that an oblique rotation method is appropriate for the two-factor solution. The equivalent is valid for the one and three-factor solutions.

The maximum likelihood solutions with Promax rotation produce one to three factors with their corresponding loadings from the eight measures (items). Each item indicates its uniqueness which is the proportion of common variance associated with the factors. As shown in Panels A to C of Table 4, CapInt shows the highest uniqueness among the eight items for the two and three-factor models. This confirms the low correlation of CapInt with the other items in the model. CAR, the item with the second-highest uniqueness, also has relatively low correlations with the other items in the model. When only one factor is extracted CAR and CapInt switch positions.

The extracted factors can be interpreted based on their factor loadings. The factor loadings explain the interactions of the items with each extracted factor and carry the information of the factor. Table 4 Panel A shows that the extracted factor mainly represents fee orientation with high positive loadings on Fee and DOFM and a negative loading on OLR. The two-factor solution appears to be relatively clean in Panel B. There are no major cross-loadings apart from Fee, which loads on factors one and two with values of -0.492 and 0.423, respectively. This, in turn, can be neglected since Fee does not have the highest loading on either of the two factors. Furthermore, neither factor has standalone loadings, i. e., a single strong loading.

Factor one contributes 28.3% to the overall information of the model, being the factor that carries the most information on ALFO. The strongest loading in factor one comes from FAR, with a value of 0.999, carrying information on the proportion of the fixed assets of a hotel company. The second-highest item loading with a value of 0.534 is DSR which carries information on depreciation and amortisation expenses. Given the nature of the two highest loadings, factor one appears to carry information on the asset heaviness of a lodging group. Accordingly, CAR loads negatively on factor one with a loading of -0.563. This means that when the asset structure of a hotel company becomes more tangible, current assets decrease. This is in line with the negative IAR -0.602 loading and is consistent with the Pearson correlation analysis, which shows negative relations between IAR and FAR and between IAR and DSR.

Factor two contributes 27.9% to the overall information of the model. The most substantial positive loading in factor two is DOFM, with a value of 1.022, indicating that most information carried by factor two is the degree of franchised and managed properties in the network. The second-highest loading with a value of -0.922 is OLR, which is inverse to DOFM. Moreover, Fee has the third-highest loading with a 0.423 load on factor two, which seems reasonable as Fee is closely related to DOFM. The five remaining items load low to very low on factor two. Given the nature of the three highest loadings DOFM, OLR and Fee, factor two can be called *fee orientation*. This appears reasonable, given that two of the highest loadings come from the two fee orientation variables defined in the literature review.

Panel C presents the results of the three-factor solution. Findings on the fee-orientation dimension remain stable and in line with the two-factor solution. However, the asset-light factor appears to split into two more distinct components representing companies' general asset-lightness and intangible capital intensity. The asset-lightness factor loads especially positively on CAR and negatively on FAR and DSR. In contrast, the intangible capital factor loads negatively on IAR and positively in FAR, thus slightly overlapping with the asset-light factor.

To summarise, one to three factors have been extracted, explaining a large part of the variation in the eight original ALFO variables. In the two-factor solution used in the next section, factor one can be interpreted as asset heaviness and explains the asset structure of a company. In contrast, factor two is fee orientation and informs about the franchise and management business degree. The two factors include both dimensions of the ALFO structure. Each factor has an inverse effect: factor one, which captures asset heaviness (i.e., the reverse of asset lightness), has an inverse relationship to ALFO, while factor two shows a positive relation to ALFO.

4.3. Analysis of ALFO indices

To analyse the cross-dimensional ALFO measures derived from the factor scores, we conduct a regression for each factor (i.e., asset heaviness and fee orientation). The dependent variables in the regression model are the factor scores resulting from the CFA. Time and company dummies are included as independent variables. The regression coefficients attached to the time dummies allow us to study the trend of the ALFO degree over the 21 sample years. Likewise, the company coefficients allow us to compare the ALFO degree of the various lodging groups. We define Accor and the year 2001 as the references in the regression (i.e., their coefficients are nil), implying that the regression coefficients for all other years and companies can be interpreted relative to these two references.

Fig. 1 illustrates the overall situation per company regarding asset lightness and fee orientation, respectively. For asset lightness, the higher the coefficient, the lower the degree of implemented ALFO strategy in the hotel company. For fee orientation, the higher the coefficient, the higher the degree of implemented ALFO strategy in the company.

La Quinta has the highest asset lightness coefficient. It owned/leased a considerable amount of properties, on average 50%. This is high compared to the other hotel companies and is confirmed by its average FAR, which reaches 85%. On the other hand, La Quinta's fee orientation is not on the low end of the sample, indicating that a company may have a rather asset-heavy asset structure while still providing a considerable amount of fee business. La Quinta's DOFM in 2013 was 56%, increasing to 65% in 2017. Diamond Resorts shows the highest asset lightness and the second lowest fee orientation. This is because its FAR is relatively low, on average 5%, while its CAR reaches 57%. It may be that Diamond Resorts has a high degree of leased properties and therefore shows low FAR.

Interestingly, Choice Hotels does not rank the highest in fee orientation, given that its average DOFM and Fee are 100% and 99%, respectively. Compared to Starwood - the highest ranked company in fee orientation - this may be due to its slightly lower average CapInt than Choice Hotels and a lower average CAR. This result may indicate that ALFO is cross-dimensional, and the definition of the degree of implemented ALFO strategy does not only include DOFM, Fee and FAR. The case of Choice Hotels illustrates that ALFO has two dimensions correlated with each other but that do not move exactly proportionally. This is because fixed assets include land and properties and non-real-estate items such as computer equipment and software, which can be large investments. On the lower end of fee orientation is Scandic. As reported in its annual reports, Scandic relies on an ownership strategy for its targeted geographic market and owns/leases, on average, 93% of its properties. Nevertheless, its asset lightness is on the higher end compared to the other companies in the sample. This can be explained by the proportion of intangible assets it holds. On average, Scandic reports more than 60% of total assets as intangible assets (especially goodwill from acquisitions), whereas their fixed assets account for only 25%. The analysis of the overall situation of ALFO per company confirms the accuracy of the two cross-dimensional ALFO variables since they reflect in a condensed manner what the hotel companies report in their annual reports.

Fig. 2 shows trends of all 14 hotel companies between 2001 and
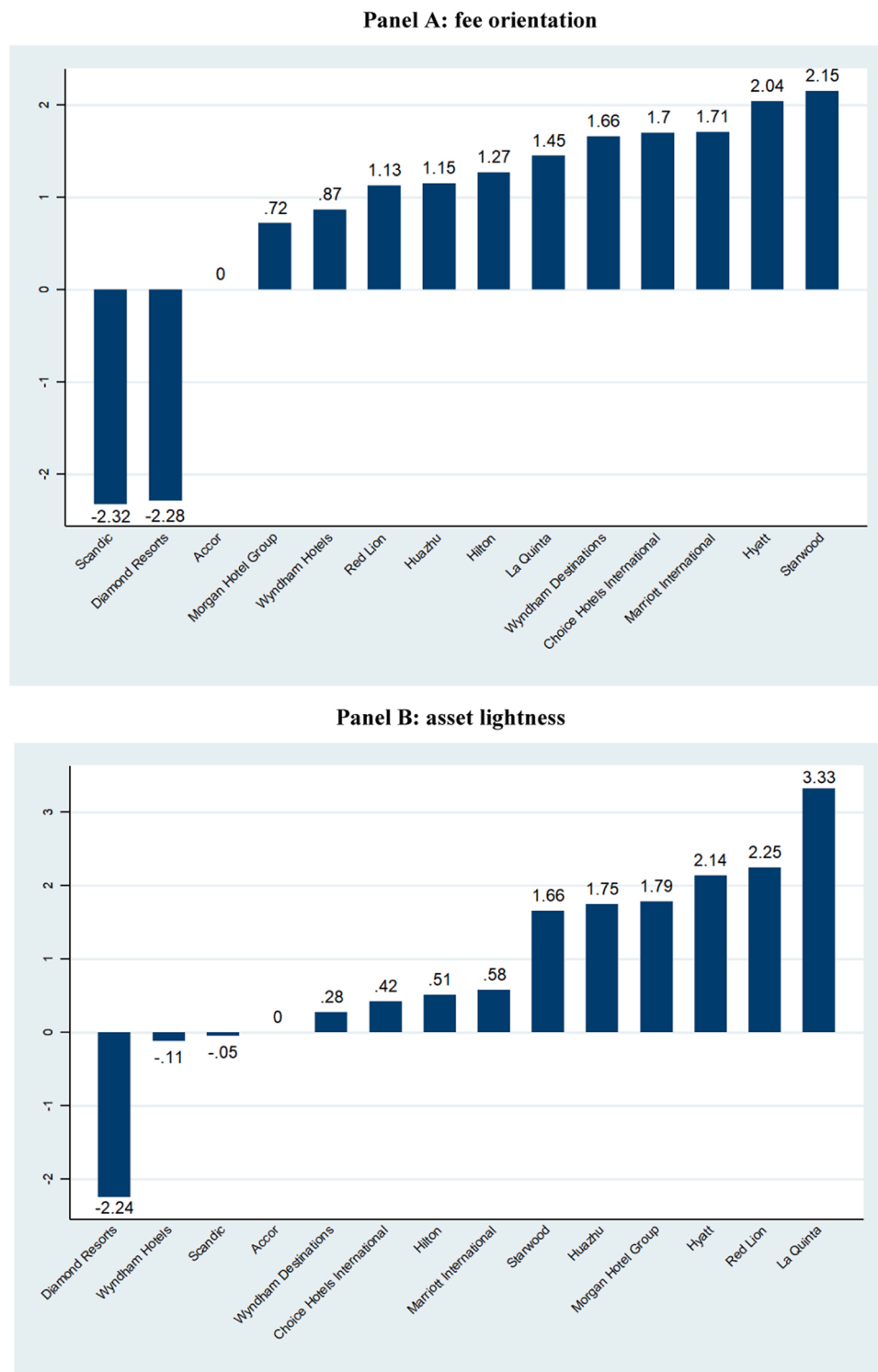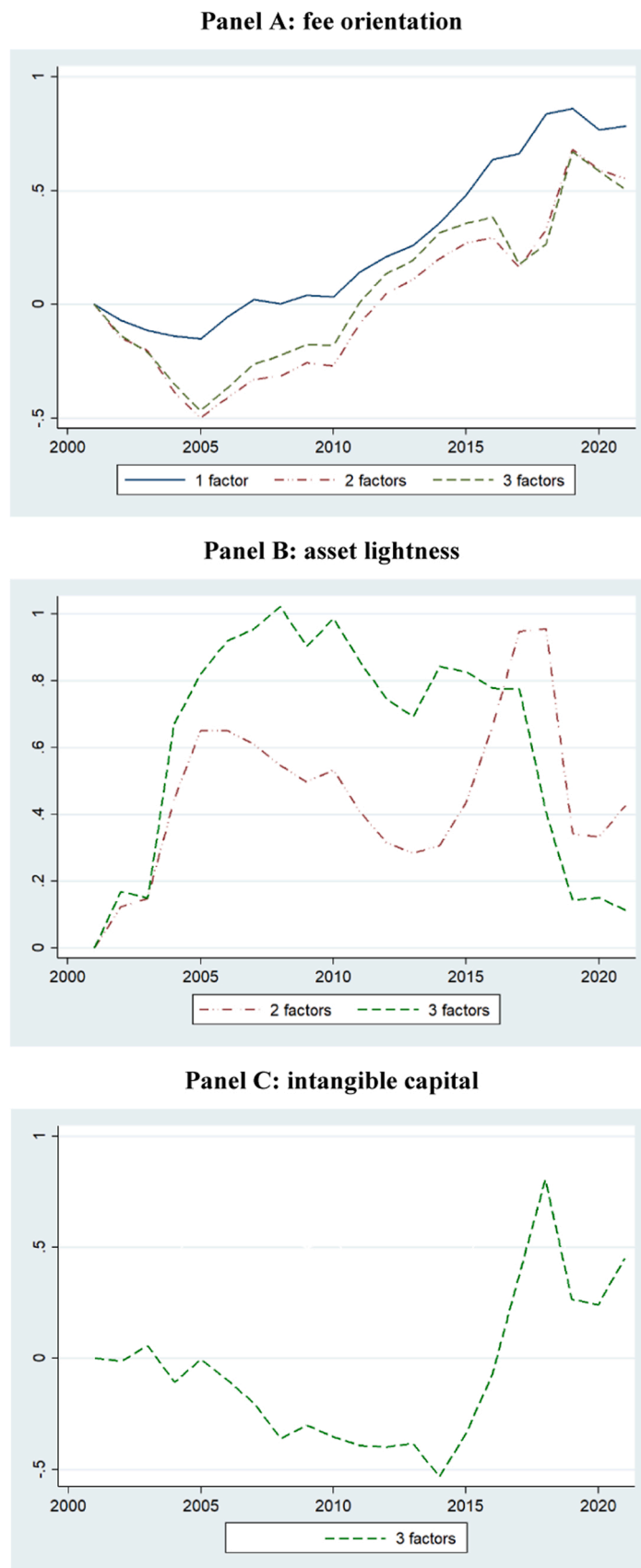
Panel A: fee orientation

Panel B: asset lightness

Fig. 1. ALFO by lodging group. This figure presents the indexed average asset lightness (panel A) and fee orientation (panel B) by lodging group over 2001–2021.

2021related to the overall fee orientation (1–3 factor extraction), asset lightness (2 and 3 factor extraction) and intangible capital (3 factor extraction).

The fee orientation dimension experiences a steady, increasing trend line throughout the period under review (Panel A). It furthermore shows stability in its evolution, irrespective of the number of factors extracted. Although from 2001 to 2005, fee orientation declined, it started to increase again afterwards. The fee orientation dimension confirms the existing literature reporting ALFO as an emerging trend. The sample's

degree of asset lightness (Panel B) increased between 2002 and 2005. It then started dropping in 2006 and increased again from 2013 onwards. Moreover, in 2019, a sharp drop can be observed, which can be explained by several large-scale acquisitions among lodging groups. This somewhat fluctuating evolution without a strong trend may be explained by mergers and acquisitions in the hotel industry throughout the period under review. As displayed in the three-factor case of Panel B and Panel C, asset-lightness may be composed of different dimensions. Part of it may be traced back to the general evolution of tangible assets,

Panel A: fee orientation

Panel B: asset lightness

Panel C: intangible capital

Fig. 2. ALFO evolution over time. This figure compares the evolution of the indexed average fee orientation (panel A), asset lightness (panel B) and intangible capital intensity (panel C) for one, two and three factor extractions over the sample period 2001–2021.

but it can also be associated with the development of more intangible capital by lodging groups. Indeed, when companies opt for an asset-light structure, the core competencies required to compete in an operator business shift to intangibles such as brand attractiveness, loyalty program robustness, and distribution competencies. To compete in this new domain, a new business model is required focusing on brands and other intangible assets that substitute for traditional brick and mortar assets and related expenditures. Furthermore, other capital expenditures in this operating model are reported to the owners through the management agreements or franchisees in the franchise contracts. This is shown in the sharply increasing trend in intangibles since 2014. Thus, trends toward more asset-lightness in balance sheets slow down or become more erratic because the drop in tangible assets is compensated by the increase in intangible assets.

This analysis shows that ALFO is a cross-dimensional and complex construct that combines asset and revenue dimensions and for which dimensionality is essential. This study confirms that our cross-dimensional ALFO measures accurately assess ALFO while considering its different dimensions.

5. ALFO, financial performance and firm value

This section examines the impact of the two cross-dimensional ALFO measures on financial performance and firm value. The dependent variable in each case is a measure of financial performance/firm value, while the independent variables include the two synthetic ALFO measures for asset heaviness and fee orientation. The model controls for other company characteristics that may impact financial performance and firm value. In line with previous literature, it includes firm size (natural logarithm of total assets), leverage, dividend payout, annual

Table 5

ALFO and firm performance / firm value. This table presents panel regressions of the two ALFO factors on firm performance and value. The factor dimensions are denoted FO for fee orientation and AH for asset heaviness. Tobin's Q is defined as the sum of the market value of equity and book value of debt over the book value of total assets, ROA as EBIT divided by total assets and the net profit margin as net income over total revenues. Control variables include the payout (dividend per share over earnings per share), leverage (total debt over common equity), sales growth (annual growth in revenues) and firm size (natural logarithm of total assets). All regressions include country and year fixed effects. All variables are winsorised at 2.5–97.5%, and robust standard errors are indicated in parentheses. *** , ** , * denote significance at the 1%, 5% and 10% level, respectively.

	Tobin's Q	ROA	Net margin
FO	1.083 **	7.898 **	4.216
	(0.418)	(3.233)	(2.538)
AH	-1.076 **	-8.030 **	-6.647 ***
	(0.377)	(2.753)	(1.847)
Payout	-0.001	-0.046 **	-0.148 **
	(0.003)	(0.019)	(0.051)
Leverage	-0.000	-0.001	0.001
	(0.000)	(0.002)	(0.004)
Sales growth	0.006 *	0.041 *	0.007
	(0.003)	(0.021)	(0.038)
Size	-0.657 *	-4.694 *	0.286
	(0.345)	(2.519)	(1.334)
Constant	11.676 *	87.662 *	13.463
	(5.565)	(42.164)	(25.893)
Observations	166	169	169
R-squared	0.616	0.636	0.633
Country FE	YES	YES	YES
Year FE	YES	YES	YES

sales growth, and year and country dummies. All regressions have a variance inflation factor below ten, suggesting multicollinearity is not a concern.

Table 5 indicates that asset heaviness significantly impacts net profit

margin (NPM). The regression coefficient of asset heaviness is − 6.647 showing an increase in NPM for companies with lower asset heaviness.[3] ALFO also significantly impacts ROA on asset heaviness and fee orientation dimensions. This demonstrates that firms with a high degree of ALFO strategy tend to be more profitable. Interestingly, the effect of asset lightness and fee orientation seems relatively comparable.[4]

The model on firm valuation, proxied by Tobin's Q, also displays a high explanatory power. The results suggest that ALFO improves firm value. The significantly negative asset heaviness coefficient implies that lower asset heaviness improves firm value, while fee orientation positively correlates with Tobin's Q.

6. Additional considerations on ALFO and firm performance / value

In this section, we expand the results obtained in the previous sections to ensure that results are robust to variations in the empirical approach. It also allows us to refine our findings to better characterise the ALFO construct.

6.1. Single ALFO dimensions

In unreported results, we run the specifications of Table 5 on the eight single variables representing the ALFO construct in our analysis. All variables, except CapInt, significantly affect all three financial performance variables. However, the signs and magnitude of the coefficients vary. While Fee, DOFM, IAR and CAR display a positive relationship, it is negative for OLR, FAR, and DSR. The results suggest that these variables are essential in capturing some of the essences of asset-heaviness or fee orientation and influence corporate performance. They are also in line with our factors as Fee appears to be an essential driver of performance. This is because the fee orientation factor is central to our other findings. It also confirms prior evidence by Sohn et al. (2013), Seo and Soh (2019) or Märklin and Bianchi (2022). However, these findings also indicate that the dimensions are complementary in describing the construct and its effect on financial performance. Thus, it supports the construction of ALFO factors to better encompass the multi-dimensionality of the different variables.

6.2. Number of factors extracted

In order to make our analysis more generalisable and alleviate concerns that the construction and use of two factors may drive results, we construct and analyse findings using (i) only one or (ii) three factors.

Concerning the case with only one factor, it loads on all variables but at a different intensity. Thus, we obtain a factor that measures the general ALFO intensity but with a strong fee orientation effect. We have positive loadings on DOFM (0.994), Fee (0.691), IAR (0.325) and CAR (0.133) and negative loadings on OLR (−0.998), FAR (−0.540), DSR (−0.235) and CapInt (−0.230). This confirms that different measures of the construct have an effect and are important to consider. Overall, the factors tilt towards fee orientation being the driver of the factor and, thus, financial performance.

The three-factor analysis yields interesting and complementary insights relative to our baseline specifications. Factor 1 covering fee orientation remains the same and stable irrespective of using two or three factors and covers the Fee, DOFM and OLR dimensions. In this, it covers the asset-light construct's fee orientation dimension. Factor 2 on asset lightness is more affected due to its interaction with the new factor 3, Intangible Capital intensity (IC) dimension. It shows inversions in

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[3] We run the same regression with operating margin as dependent variable and obtain similar results (available from the authors upon request).

[4] We also examine the effect of ALFO on other profitability measures (ROCE and ROIC) and find similar results (available from the authors upon request).

coefficient signs due to the rotation and somewhat overlaps with IC. Factor 1 now covers the FAR, DSR and CAR measures and thus corresponds to an overall degree of asset-lightness. The new IC factor covers similar dimensions to the AL factor but is more strongly associated with IAR (negative sign) and, to some extent, captures CapInt (positive sign). Thus, it, instead, represents a dimension related to Intangible Capital Intensity and complements the two initial factors.[5]

We also run company-year regressions on the three factors and then use the obtained company and year coefficients to study correlations. Using only two factors, the correlation between AL and FO is mainly due to inter-company effects, whereas the dynamic over time is random. In other words, firms that are fee-oriented also tend to be asset-light. However, the evolution over time is relatively distinct for the two factors. When using three factors, some differences appear. Fee-oriented companies are still asset-light and, to some extent, have a higher intangible capital intensity. Over time FO and AL evolve together, but IC moves in an opposite direction. This shows that companies in the best position to implement an FO and AL strategy were those with a high IC, which they reduced gradually. Furthermore, the company-wise linkage between AL and IC is limited, but the two measures evolve together as IC decreases over time when AL increases. This additional analysis allows us to deepen the discussion on the asset-light construct and highlight the importance of the FO, AL, and IC (tangibles vs intangibles) dimensions. However, it should be noted that there is no overlap between the AL and FO factors, but there is some when the IC dimension factor is included.

Table 6 reports evidence of the impact of using a different number of factors on financial performance. The table indicates that findings remain very similar and consistent with our baseline results.[6] When only one factor is used, the coefficient is positive and significant in statistical and economic terms. In other words, the more asset-light and fee-oriented a company is, the better its performance becomes. R2, on the other hand, drops by around 10% for all three performance measures indicating that adding additional factors is beneficial in terms of explanatory power. R2 increases, especially for Tobin's Q and ROA, with the addition of the IC factor. This relative similarity in R2 following the use of two or three factors suggests that the IC factor refines the AL factor. However, in a two-factor specification, the latter factor takes both the AL and intangible capital dimensions into account. Overall, tangibility affects all three performance measures negatively but explains net profit margin to a lesser extent than Tobin's Q or ROA.

7. Discussion and conclusions

This study addresses two main gaps in the existing knowledge on the Asset-Light and Fee-Oriented (ALFO) strategy. The first objective is to explore the literature's divergent results on the impact of the ALFO strategy on financial performance and firm value. The second objective is to develop new cross-dimensional measures for the ALFO construct to address these apparent contradictions. This new method integrates the different dimensions of ALFO: Asset Lightness (AL), and Fee Orientation (FO) and uncovers the role of intangible assets and CapInt as dimensions of the construct. Our goal is to provide a stronger operationalisation of the ALFO construct, serving both researchers and practitioners. It also helps better analyse and interpret the trend of asset lightness and fee orientation. We trust that such a comprehensive measure will contribute to future endeavours on the subject of ALFO strategies. For academia and practitioners, it suggests that the extent to which intangible relace tangible assets plays a critical role in defining the construct and consequently its management and impact on financial performance.

The common factor analysis produces two factors that carry information on both ALFO dimensions, asset lightness and fee orientation. They cumulatively explain 56% of the variance. Also, when extracting a third factor related to Intangible Capital, 75% of the variance is explained. Given the base of the resulting cross-dimensional variables derived with the factor score extraction, they are multi- and cross-dimensional. Thus, they offer a more comprehensive explanation for the degree of implemented ALFO strategy than single variable models. Moreover, these more comprehensive measures appear to reflect an ALFO strategy's multi-dimensional dynamics. They allow us to combine the type and nature of assets to disinvest, the structure of the manage-back deal, the cash conditions of the sales, the structure of tangible to intangible assets, and the timing of the sale related to capital investments. They also include revenue-related aspects such as the geographical market of the properties, the brand and segment diversification affecting the fee income stream. Both are witnessed and of importance in a managerial context. Finally, we show that the general AL dimension can be broken down into a general asset-light and an intangible capital dimension, which allows us to better understand the evolution and impact of the balance sheet dimension of the construct. Primarily, we suggest that the drop in tangible brick and mortar assets has started to be compensated by an increase in intangible assets. In other words, to maintain their overall balance sheet value, companies opting for an ALFO strategy need to replace the value of tangible assets with intangible ones. For the company, this requires a considerable growth effort in the number of rooms and a shift in the business model. For strategic reasons, ALFO companies should focus on competing in the operating business. The latter consists essentially of the ability to sell rooms and support owners and franchisors through hotel operating procedures and tools. This explains the slowing in the asset reduction witnessed in recent years.

We also find evidence that ALFO is positively related to financial performance. We illustrate that both ALFO dimensions positively impact net and operating profit margins. This contradicts the results of Yu (2018), who shows that the AL dimension alone does not improve net profit margins. Our results, however, confirm Sohn et al. (2013), who find that fee business improves profitability proxied by OPM. Similarly, we show that both ALFO dimensions positively impact profitability (measured as ROA, ROIC or ROCE). This confirms Bourke et al. (2020), who show that ALFO companies have higher ROAs than asset-heavy lodging companies. The positive impact of ALFO on ROIC is also in line with Seo and Soh (2019). They find that ALFO has increased investment efficiencies, operationalised with ROIC, compared to hotel companies with a lower degree of implemented ALFO strategy. Bourke et al. (2020) find that IHCs following an ALFO strategy and conducting extensive share buybacks experience more significant growth in ROCE than asset-heavy companies. Our study reveals an unexamined dimension: intangible assets and their effects in the examined relationship between ALFO and financial performance.

Finally, the study suggests that the capital markets tend to assign higher valuations to companies following an ALFO strategy. The results align with Sohn et al. (2013), who find that ALFO contributes to increased firm value. However, these promising results may be biased by ALFO lodging companies that conduct massive share buybacks to increase the demand for their shares and shareholder value (Bourke et al., 2020). Based on the results, we also suspect that the change in capital expenditure (in the third dimension of intangible capital) may also play a role in these relationships.

We recommend further exploring this point in subsequent studies. In particular, we suggest future research to examine the effects of the ALFO strategy's execution along the asset-light and fee orientation. We suspect that the specificities of the ALFO implementation related to the assets, their location, and the timing and structure of their sale strongly affect capital structure measures (i.e., FAR, DSR and CAR). These same specificities will affect the nature of the fees collected (i.e., DOFM and OLR) and impact the company's overall financial performance and value. To

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[5] The reason we continue to prefer a two factor model is due to the strong factor loadings in factors 1 and 3 on FAR which may cause multicollinearity issues in our specifications.

[6] Note that the sign of factor 1 inverses in the three factor specifications, but this is normal since the factor inverses compared to the two factor case.