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The impact of IFRS 16 on lessees' financial information: A single-industry study

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ABSTRACT

This single-industry study responds to the IFRS Foundation's call to determine the effects of implementing IFRS 16 by analyzing the isolated post-implementation effect of IFRS 16 on lessee financial statements. Using real implementation data, the findings confirm the expected results of prior studies using estimated data, in that the implementation of IFRS 16 is the primary driver of statistically significant changes in assets, liabilities, EBIT, EBITDA, and financial expenses, resulting in major changes in the structure and liquidity ratios. Regarding profitability ratios, this study adds to the literature by demonstrating a statistically significant difference in ROA. Furthermore, while prior studies suggest that the interest coverage ratio would decrease, the use of real implementation data shows no statistically significant finding on this ratio; this indicates that the increase in EBITDA and interest expenses may cancel each other out, resulting in no impact on the coverage ratio. The results support the main criticism of IAS 17—that operating leases were improperly accounted for and consequently altered the picture of financial statements and ratios, which is a key source of information in valuing companies. This single-industry study, one of the more extensive IFRS Foundation 2016 studies, is the first to use real IFRS 16 adoption data, providing substantial results regarding the impact of this standard on the financial statements of publicly traded companies. These results encourage further research using similar approaches with broader sample sizes.

1. Introduction

This study responds to the IFRS Foundation's call to research the impact of IFRS 16 International Financial Accounting Foundation (IFRS Foundation), 2023), specifically an estimate of the aggregate value of lease assets and liabilities recorded owing to the IFRS implementation. This study collects and analyzes these data in absolute and relative terms, first by providing the impact on financial statement elements and then by analyzing key financial ratios.

Leases are a vital source of funding for businesses (Morales-Díaz & Zamora-Ramírez, 2018), and much controversy has arisen over how they should be reported in financial statements (Lau, 2022). IFRS 16 was published in response to critiques of IAS 17, and became effective for annual reporting periods beginning January 1, 2019. Under IFRS 16, the distinction between financial and operating leases has been eliminated. Previously, operating leases were treated as expenses, while financial leases influenced assets and liabilities in financial position statements. Now, except for short- and low-value leases, firms must recognize all lease arrangements in their financial statements. This change aims toprevent attempts to hide liabilities resulting from operating leases and enhance the comparability and transparency of various businesses' financial statements (Delgado-Vaquero, Morales-Diaz, & Zamora-Ramírez, 2022; Van Kints & Spoor, 2019).

The transition from IAS 17 to IFRS 16 is expected to significantly affect lessees' financial statements, particularly in financial position and income statements and the resulting financial ratios. Most research on the effects of this transition relies on estimations, such as financial information initially prepared under IAS 17 but restated with estimates to reflect what may have been obtained if prepared under IFRS 16. Consequently, a gap exists in the literature describing the actual effects

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of using IFRS 16, that is, the isolated effect of real restated information, and the recognition arising from the application of IFRS 16 standards for an entire year (e.g., amortization of the right to use assets).[1] IFRS 16 leases became effective for periods starting on or after January 1, 2019. For this study, we only consider 2019, the first full year of IFRS 16 for two reasons—to guarantee an analysis of the isolated effect of IFRS 16 implementation on financial statements (non-controlled setting) and avoid bias owing to the IFRS 16 amendment launched in mid-2020 in response to the COVID-19 crisis.

According to the available data, over 85% of leases until 2016 were reported as operating (Hoogervorst, 2016), of which 47% were related to publicly traded European companies. IFRS 16 was projected to influence several industries, as assumed by the standard setter: "*The IASB noted that, for some industry sectors, such as healthcare, the increase in profit margin is not very significant. However, for industry sectors that use significant amounts of off-balance sheet leases, such as airlines, retailers, and travel and leisure, the increase in profit margin is expected to be significant*" (*International Financial Accounting Foundation (IFRS Foundation)*, 2016). In line with this statement, the present single-industry study aims to determine whether IFRS 16 implementation has a considerable impact on financial statement elements and related key financial ratios in European businesses engaged in the tourism industry, such as hotels, restaurants, transport, airports, and travel agencies, as expected from the literature. Our results provide evidence relating to one of the main criticisms of IAS 17—operating leases were improperly accounted for and, consequently, altered the picture of financial statements and financial ratios, a key source of information in valuing companies.

The findings indicate that all the observed financial statement elements except equity have, on average, statistically significant increases after recognizing operating leases as financial leases according to IFRS 16—assets (7.49%), liabilities (9.57%), EBITDA (16.85%), EBIT (5.01%), interest expenses (17%), and EBT (10.94%). These changes could heighten the potential for earnings management associated with 16 implementation. These statistically significant differences suggest that major financial ratios would also be affected following the implementation. Our results show that implementing IFRS 16 substancially impacts structural and liquidity metrics. Indebtedness increases by 6.83% on average, and financial autonomy and solvency decrease by approximately 11.48% and 10.61%, respectively. Current liquidity decreases by 5.68% and ROA increases by 31.39% on average. However, for the full sample, the differences in profitability such as ROE and earnings per share [EPS], as well as interest coverage ratios are not statistically significant.

This study supports the IFRS Foundation's call for IFRS 16 research opportunities (*International Accounting Standards Board (IASB)*, 2003) to understand whether the standard is accomplishing its objectives. It provides relevant information supporting the notion that IFRS 16 improves the transparency of corporations' lease assets and liabilities. Particularly, it provides real information on the total value of lease assets and liabilities recognized owing to IFRS implementation. It also provides data in relative terms by presenting the effects on financial ratios. Nevertheless, and following the IASB's decision to start the Post-Implementation Review of IFRS 16 Leases in Q2 2024, the EFRAG is reviewing the existing literature to collect input on the preliminary issues arising from IFRS 16 implementation (EFRAG, 2024), to which this manuscript can contribute.

This paper comprises five sections. Following the introduction, it provides a review of the relevant literature in Section 2. It presents the method in Section 3, specifically the description of the sample and research design, and reports the results in Section 4. Finally, Section 5 presents the discussion, conclusions, main limitations of this study, and suggestions for future research.

2. Literature review and research question

2.1. Main criticisms of IAS 17

As the precursor body to the IASB, the IASC issued the IAS 17 in 1994. IAS 17's lease accounting requirements have been criticized and debated for several decades (Spencer & Webb, 2015). This standard classifies leases as financial or operational. It categorizes them as financial if all risks and benefits inherent in the asset are passed on to the lessee in a meaningful manner; otherwise, leases are regarded as operational. Unlike financial leases, operational leases are not recognized in the statement of financial position as assets financed by the corresponding liability; instead, they are reported as expenses, and depending on the portfolio of existing lease agreements, they may take on a materially significant value (*International Accounting Standards Board (IASB)*, 2003; *International Financial Accounting Foundation (IFRS Foundation)*, 2016).

One of the most prominent critiques of the standard points to the difficulty of creating parameters that clearly differentiate between financial and operating leases (Biondi et al., 2011; Barone, Birt and Moya, 2014). The standard lacked uniformity, did not depict the content of transactions, and was not viewed as high quality (Beattie, Goodacre, & Thomson, 2006), enabling corporations to recognize leases as financial or operating depending on their needs (Nuryani, Heng, & Juliesta, 2015). According to De De Martino (2011), Morales-Díaz and Zamora-Ramírez (2018), and Nuryani et al. (2015), corporations can circumvent the stated conditions to identify leases as operating, as opposed to financial, to profit from them.

Moreover, companies hold leases valued at €3 trillion worldwide, of which more than 85% are recognized as operating (Hoogervorst, 2016). Companies can avoid the recognition of billions of liabilities in their financial position statements, thereby enhancing their image in the eyes of financial statement users, by not capitalizing on all the leases they own and recognizing a part of them as operating (Duke, Hsieh, & Su, 2009). On average, the absence of capitalization prevents 366 enterprises from incurring liabilities totaling $582 million and recognizing assets worth $450 million, amounting to 11% of total liabilities and 4% of total assets, respectively. In addition to its effect on liabilities and assets, the absence of capitalization results in an increase of $131.79 million (7.1%) in the average retained net earnings of all sample firms.

Accordingly, corporations account for identical economic activities differently, reducing the comparability and transparency of financial statements. Therefore, the standard may not fulfill the demands of financial statement users, who must alter the amounts reported in the statement of financial position to reflect the assets and liabilities originating from operating leases for certain analyses (Fitó, Moya, & Orgaz, 2013). Nevertheless, recognizing operating leases at the user level has minimal implications (Spencer & Webb, 2015). Furthermore, banks consider information regarding operating leases when granting credit, although more importance is given to information on financial leases (Durocher & Fortin, 2009). Moreover, while operating lease notes are considered for decision-making purposes, other investors and the market interpret operating and financing leases differently. For example, the market views operating leases as liabilities, even though these are not recorded (Giner & Pardo, 2018). As investor-analysis techniques and approaches may provide inaccurate estimations, different results for the same firm may result from these estimations, which could impact investment choices (*International Financial Accounting Foundation (IFRS Foundation)*, 2016).

[1] The International Financial Accounting Foundation (IFRS Foundation) (2021) recognized the limited academic research available on IFRS 16, presenting some reasons related to the need to have years of post-adoption data, the slower rate of dissemination of results through conferences during the pandemic, and the lengthy review process in high-quality academic research journals.

2.2. The new standard – The IFRS 16

IASB released IFRS 16 Leases on January 13, 2016, which became effective for periods starting on or after January 1, 2019. IFRS 16 implementation aims to end any attempt to hide liabilities resulting from operating leases and enhance the comparability and transparency of different enterprises' financial statements (Delgado-Vaquero et al., 2022). Adopting this standard has been shown to significantly improve investment decision-makings (Van Kints & Spoor, 2019).

While the application of accounting to leases has been modified under IFRS 16, the definition of a lease remains unchanged concerning the concept of control. According to IFRS 16, "control" exists when the customer has the right to both direct the use of the designated asset and obtain all the economic benefits from that usage (*International Financial Accounting Foundation (IFRS Foundation)*, 2016). The most change introduced by the standard is the elimination of the distinction between operating and financial leases.

According to this new standard, all leases must be recognized in a company's statement of financial position, but companies can elect exemptions for short-term leases by class and leases with low-value underlying assets, when new, on a lease-by-lease basis. Only the lessee's perspective is used to verify this modification (*International Accounting Standards Board (IASB)*, 2016; Van Kints & Spoor, 2019). The standard is essentially unaltered at the lower level because leases are still recorded as financial or operating leases (Morales-Díaz & Zamora-Ramírez, 2018).

In summary, in terms of recognition, IFRS 16 requires lessees to recognize a right-of-use aseet initially measured at the amount of lease liability plus any initial direct costs incurred by the lessee. The lease liability is initially measured at the present value of future lease payments payable over the lease term, discounted at the rate implicit in the lease, if this can be readily determined. For subsequent measurement, the lessee must generally adopt the cost model, with a few exceptions (*International Accounting Standards board (IASB)*, 2016). Meanwhile, lease liabilities are updated to reflect interest incurred lease payments made until maturity. Under IFRS 16, all leases are treated similarly to financial leases as defined under IAS 17 (Europe Europe Economics, 2017; *International Financial Accounting Foundation (IFRS Foundation)*, 2016); hence, accounting for operating leases has changed significantly. Previously, under IAS 17, lessees only accounted for lease rental expenses (*International Aaccounting Standards Board (IASB)*, 2003). With IFRS 16, however, lessees now affect both asset and liability accounts, requiring more comprehensive recognition of lease arrangements. In implementing IFRS 16, lessees can either apply IFRS 16 retrospectively to all prior periods or adopt a modified retrospective apporach, where comparative information is not restated. In the latter case, the cumulative effect of the initial application is recognized as an adjustment to opening equity on the date of adoption (cf. IFRS 16, C5, and C7).

The final point concerns the latest amendment to IFRS 16, launched by the IASB in response to the COVID-19 crisis. According to Moscariello and Pizzo (2022), the IASB amended IFRS 16, previously adopted by European corporations, to manage unforeseen environmental events and reconcile accounting requirements with constituents' increasing demands through practical expedients. These expedients reduced the complexity and costs associated with applying IFRS 16 in the COVID-19 context by giving the lessee a choice not to determine whether a COVID-19-related rent concession was a lease modification. The amendment also increased the possibility of a one-time gain being recognized, allowing organizations to partially offset anticipated COVID-19-related losses and maximize the benefits of the anticipated large-rent concession programs. This modification has been effective for annual periods beginning on or after June 1, 2020; thus, this study only includes 2019 as the first full year of IFRS 16 implementation, for which financial statements in 2020 are available.

2.3. Impacts on financial statements and key financial ratios

The transition from IAS 17 to IFRS 16 has been expected to significantly affect financial statements, especially those on financial position and income. These effects are more evident in enterprises with significant operating leases (Europe Europe Economics, 2017; IFRS Foundation, 2016). If the lease arrangement remains unchanged, the only change to the cash flow statement is to show payments tied to financial rather than operating activities. Consequently, the amount of cash flow exchanged between the lessee and lessor tends to remain the same. Fig. 1 summarizes the main expected effects of IFRS 16 implementation on financial statements in accordance with the *International Financial Accounting Foundation (IFRS Foundation)* (2016).

At the time of IFRS 16 implementation, the statement of financial position included an increase in assets as a result of the asset's recognition under the right of use and an increase in liabilities owing to the recognition of future lease payments (*International Accounting Standards Board (IASB)*, 2016; *International Financial Accounting Foundation (IFRS Foundation)*, 2016). These payments relate to contracts previously classified as operating leases. Subsequently, the right to use the asset depreciates, whereas the lease liability accrues the corresponding financial charges. Thus, the liability's carrying amount includes lease expenses recognized over time. The liability is amortized across the lease's duration, incurring higher interest expenses and smaller principal repayments at the start of the lease term. Interest expenses are higher in the early years of implementation owing to the front-loading effects of finance costs and decline with lease payments across the lease's duration. Conversely, the right of use depreciates over time depending on the model adopted to represent the pattern of usage of economic advantages. Finally, a decline in equity is expected, mainly because of the right to use depreciation and interest expenses compared with the straight-line rent expense under IAS 17. As the amount of interest paid decreases during the lease, the reduction in equity is expected to be the greatest in the initial years of the agreement. However, the effect on equity is greater if the interest rate is higher and the lease term is longer (*International Financial Accounting Foundation (IFRS Foundation)*, 2016; KPMG, 2016). Depreciation of the right to use also impacts equity through net income.

At the income statement level, an increase in EBITDA is anticipated as operating costs decline owing to the elimination of rent payments resulting from operating lease agreements. However, this drop is compensated for by increased depreciation charges related to the asset under the right of use and by financing expenses associated with lease liability. Therefore, earnings before tax at the conclusion of the contract appear to be unaffected as the only change that occurs is the allocation of costs across various sections of the income statement. However, these expenditures are not divided in the same manner throughout the contract's duration. Under IAS 17, the expenditure associated with rent is constant over time, whereas under IFRS 16, the expense varies according to the contract period and supported interest rate; it is greater in the initial years and tends to decline as the contract approaches its conclusion (*International Financial Accounting Foundation (IFRS Foundation)*, 2016; KPMG, 2016).

The shift from IAS 17 to IFRS 16 is expected to significantly affect financial ratios. Several studies have explored the effects of financial and operating leases on financial ratios. Imhoff, Lipe, and Wright (1991) developed a constructive technique that recognizes the present value of future operating lease rentals in financial position statements. They suggest that this change may significantly impact ROA and debt-to-equity ratios, but that the degree of impact varies within and across industries. Other researchers have used factorial techniques. Fülbier, Lirio, and Pferdehirt (2008) employed both constructive and factorial methods in their 2003–2004 study and found that capitalization affects many German enterprises. Capital structure indicators have changed the most. Conversely, changes in market evaluations and profitability indicators were limited, which suggests little influence on company

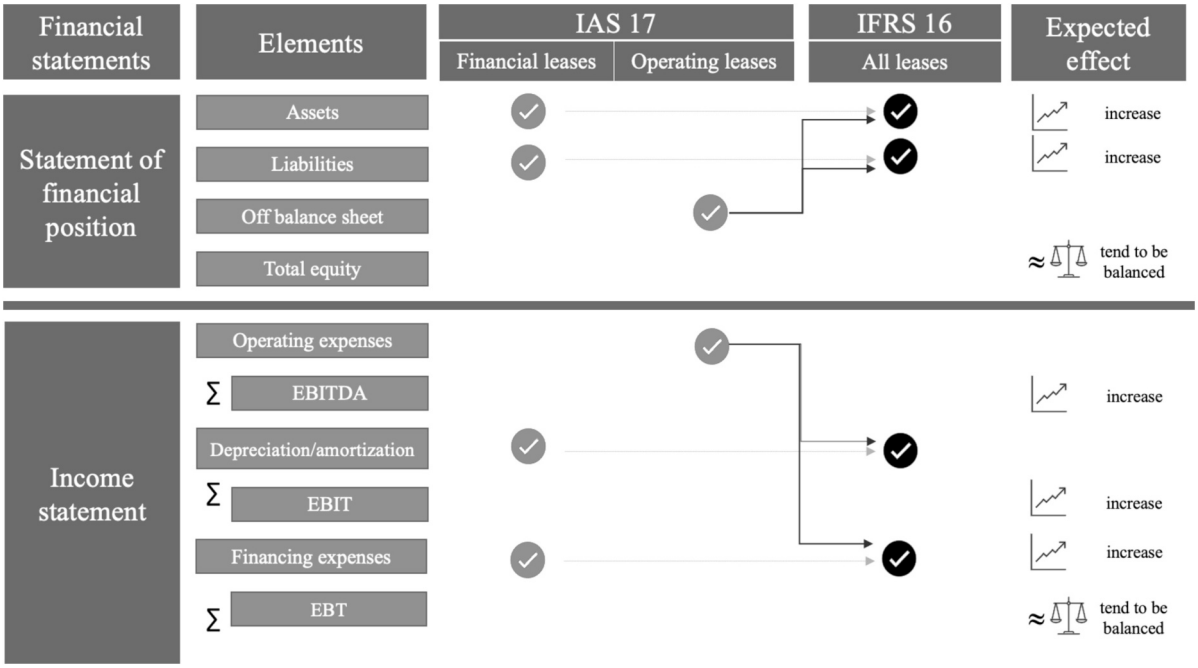

Fig. 1. Expected effects of IFRS 16 implementation on financial statements.

appraisals, management salaries, and incentives.

However, the factorial approach has not been commonly employed, with most studies using a constructive method (Morales-Díaz & Zamora-Ramírez, 2018). Durocher (2008) focused on 68 Canadian businesses in 2002 and 2003. For all organizations under consideration, the results indicate a considerable increase in the debt ratio and a significant decrease in the liquidity ratio. However, the observed modifications in profitability metrics were insignificant. Wong and Joshi (2015) identified a substantial influence on the structural indicators under examination in a sample of 107 Australian public businesses listed in 2010. Additionally, the ROA ratio changed significantly, whereas the ROE ratio changed only slightly. Furthermore, these studies reveal considerable effects on assets, liabilities, and equity. While assets and liabilities increased by 3.47% and 4.34%, respectively, equity decreased by 0.27%. Nonetheless, these earlier investigations have evaluated the relevant financial data according to the IAS 17 requirements for recognition or its equivalent.

After the publication of IFRS 16, Morales-Díaz and Zamora-Ramírez (2018) studied forward-looking data as financial statements prepared in accordance with the new standards were inaccessible. In contrast to previous studies, their study considers the pertinent features of the standard, including calculating the discount rate and determining lease terms. A sample of 646 European firms registered in 2015 indicated that IFRS 16 adoption significantly affects critical financial indicators, particularly capital structure ratios, which demonstrated that liabilities or assets (indebtedness) increased by 9.28%. Additionally, the ROA increased by 3.07%, whereas the coverage ratio dropped by 13.6%. Moreover, assets and liabilities grew by 12.9% and 28.5%, respectively, on average. Morales-Díaz and Zamora-Ramírez (2018) also conducted a second study focusing solely on 101 Spanish enterprises and observed rising profitability and structural ratios with declining coverage ratios. Furthermore, Giner, Merello, and Pardo (2019) used the Monte Carlo approach, which considers the uncertainty of the future value of variables while making predictions, to model the effects of IFRS 16. Using a sample of 72 European firms, they discovered a decline in liquidity and ROA ratios and an increase in structure and ROE ratios.

These studies have suggested that the capitalization of operating leases significantly affects financial ratios (Bennett & Bradbury, 2003; Fitó et al., 2013; Nuryani et al., 2015). However, they have demonstrated disagreement regarding profitability ratios, namely ROA, ROE, and EPS. Table 1 summarizes the main financial ratios used in these studies and their expected effects.

Most previous studies are based on financial information published in light of IAS 17 but restate what would have been obtained had this information been prepared in accordance with IFRS 16. Accordingly, this study analyzes the real effects of IFRS 16 based on data after IFRS 16 implementation and answers the following research question:

RQ. : Has the implementation of IFRS 16 had a significant impact on financial statement elements and related key financial ratios?

2.4. Research setting

Some prior studies have examined the possibility that the industry in which businesses operate influences the impact of capitalizing operating leases. They found that (1) the sector of activity is relevant for the analysis and (2) the impact of each industry is proportional to the number of operating leases held by each company (Fitó et al., 2013; Fülbier et al., 2008; Morales-Díaz & Zamora-Ramírez, 2018).

Some studies in this research stream have been limited to a specific industry. Singh (2012) compared the anticipated effects of the restaurant industry with those of the retail industry. He found that although the capitalization of operating leases significantly impacts businesses in both sectors, the retail sector would be the most affected. Additionally, he pointed out that the variable "size" is crucial in explaining why businesses use operating leases. Nuryani et al. (2015) included three other criteria as determinants in the decision to opt for operational leases—asset worth, company growth, and financial restrictions, of which the latter is not statistically relevant.

Conversely, Chatfield, Chatfield, and Poon (2017) focused on the hospitality business, which, like the retail industry, has been among the most affected by the introduction of IFRS 16. In 2015, they evaluated 143 global firms in three distinct categories: restaurants, hotels, and casinos. According to the survey findings, restaurants used operating leases more frequently than the other two categories. Regarding the anticipated effects on financial indicators, a rise in the debt ratio and a decline in the liquidity and ROA ratios were estimated across all investigated categories.

Table 1
Expected effects of IFRS 16 implementation on key financial ratios.

Financial ratio	Formula	Expected effect	Authors
Capital structure			
Indebtedness	$\frac{\text{Total liabilities}}{\text{Total assets}}$	Increases	Bennett and Bradbury (2003), Durocher (2008), Giner et al. (2019), Morales-Díaz and Zamora-Ramírez (2018), Nuryani et al. (2015), Wong and Joshi (2015)
Financial autonomy	$\frac{\text{Total equity}}{\text{Total assets}}$	Decreases	Fülbier et al. (2008)
Solvency	$\frac{\text{Total equity}}{\text{Total liabilities}}$	Decreases	Fitó et al. (2013)
Liquidity			
Current liquidity	$\frac{\text{Current assets}}{\text{Current liabilities}}$	Decreases	Bennett and Bradbury (2003), Durocher (2008), Fitó et al. (2013), Giner et al. (2019), Nuryani et al. (2015)
Profitability			
Return on assets	$\frac{\text{EBIT}}{\text{Average total assets}}$	Inconclusive	Fülbier et al. (2008), Giner et al. (2019)
	$\frac{\text{EBIT}}{\text{Total assets}}$	Inconclusive	Bennett and Bradbury (2003), Fitó et al. (2013), Morales-Díaz and Zamora-Ramírez (2018)
	$\frac{\text{Net income}}{\text{Total assets}}$	Decreases	Nuryani et al. (2015)
	$\frac{\text{Net income}}{\text{Average total equity}}$	Inconclusive	Durocher (2008), Giner et al. (2019), Wong and Joshi (2015)
Return on equity	$\frac{\text{Net income–Noncontrolling interests}}{\text{Average common equity–Noncontrolling interests}}$	Increases	Fülbier et al. (2008)
	$\frac{\text{Net income}}{\text{Total equity}}$	Inconclusive	Fitó et al. (2013)
Earnings per share	$\frac{\text{Net income}}{\text{Total share capital + Reserve}}$	Virtually null	Nuryani et al. (2015)
	$\frac{\text{Net income}}{\text{Number of shares outstanding}}$	Inconclusive	Durocher (2008), Fülbier et al. (2008)
Interest coverage ratio	$\frac{\text{EBITDA}}{\text{Interest expenses}}$	Decreases	Morales-Díaz and Zamora-Ramírez (2018)
	$\frac{\text{EBIT}}{\text{Interest expenses}}$	Decreases	Fülbier et al. (2008), Nuryani et al. (2015)

In the present study, we select the tourism industry, including hotels, restaurants, transport, airports, and travel agencies, to respond to the IFRS Foundation's call to analyze the isolated post-implementation effect of IFRS 16 on lessee financial statements. In addition to the 2016 IFRS Foundation study, previous studies (e.g., Morales-Díaz & Zamora-Ramírez, 2018) have indicated that the hotel and transportation industries are among the most impacted. Hence, European firms in these industries are ideal examples to enrich the existing literature.

3. Method

3.1. Sample and data collection

This study employs a sample of publicly listed European companies in the tourism industry that used IFRS—specifically IAS 17—immediately before implementing IFRS 16. We retrieve the data in two steps. First, the primary data source is Eikon Refinitiv®, from which we retrieve the companies' names based on SIC codes, namely, railroads (SIC 4011); local and suburban transit (SIC 4111); deep sea transportation (SIC 4481); air transportation (SIC 4512); airports, flight fields, and airport terminal services (SIC 4581); travel agencies (SIC 4724); eating places (SIC 5812); hotels and motels (SIC 7011); and passenger car rentals (SIC 7514). Second, we wholly and directly hand-collect the economic and financial data to conduct the study from the published financial statements of those companies, which we previously downloaded from their websites. Table 2 illustrates a total sample of 74 companies grouped into five industries (Panel B) and 21 European countries (Panel C) after dropping companies from a total of 138 (Panel A).

When adopting IFRS 16, companies may choose between a modified and a full retrospective application. Unlike full retrospective applications, which compel firms to restate comparable periods, modified retrospective applications merely require corporations to record the cumulative effect as an adjustment to equity in the opening statement of their financial positions during the period in which the standard is applied (*International Accounting Standards Board (IASB)*, 2016). We obtain data from companies that used the modified retrospective application when the standard was implemented (2019), with details of the restatement described in the notes. For the few companies applying for the full retrospective application, which are 8 out of 74, we collect data for the period immediately preceding the standard's implementation (end of 2018).

The following data are collected for this study: (i) statements of financial position and income statements for the periods in which IFRS 16 was implemented (modified retrospective application) or for the immediately preceding period (full retrospective application[2]); (ii) information on the implications or restatement of the implementation of IFRS 16 as disclosed in the notes to the financial statements, including recognized assets and liabilities, changes in operating earnings and depreciation or amortization charges, and hand-collected data on financing expenses; and (iii) statements of financial position and income statements for the last period in which IAS 17 was applied.

3.2. Research strategy and methods

To answer the research question, we conduct several statistical analyses using only the data from 2019. First, as previously explained, the amendment to IFRS 16 launched by the IASB in 2020 in response to the COVID-19 crisis reduced the complexity and costs associated with applying IFRS 16. It gave the lessee the choice not to determine whether a COVID-19-related rent concession was a lease modification. Moreover, it enhanced the possibility for one-time gain recognition, allowing

[2] Our results are maintained after dropping companies with the full retrospective, as tested.

Table 2
Sample characteristics.

Panel A: Sample selection	# companies
Companies in the tourism industry applying IFRS	138
Motives for exclusion:	
• *Availability*: Not possible to collect detailed information about IAS 17/ IFRS 16 because financial statements are not publicly available for download[a]	(28)
• *Accuracy*: Companies not applying IAS 17/IFRS 16 or those with missing data in the financial statements[b]	(22)
• *Language*: Companies with financial statements written in languages other than English, French, Italian, Spanish, Portuguese[c]	(10)
• *Comparability*: Companies with different fiscal year-end[d]	(4)
Final sample (Number of companies)	**74**
Panel B: Distribution by industries	
Hotels and motels (SIC 7011)	25
Eating places (SIC 5812)	9
Transport (SIC 4111, 4481, 4512, 7514)	26
Airports (SIC 4581)	11
Travel agencies (SIC 4724)	3
Total	74

Panel C: Distribution by European Country

Country	#	**Country**	#	**Country**	#
Austria	3	Germany	6	Poland	3
Croatia	7	Greece	4	Portugal	1
Cyprus	2	Holland	1	Romania	2
Denmark	2	Ireland	3	Slovakia	1
Estonia	1	Italy	7	Spain	6
Finland	3	Malta	2	Sweden	6
France	9	Monaco	1	United Kingdom	4

[a] Companies in Bulgaria, Croatia, Cyprus, Greece, Poland, and Slovenia.
[b] Companies in Bulgaria, Croatia, Denmark, Italy, Poland, and the United Kingdom.
[c] Companies in Bulgaria, Croatia, Cyprus, Greece, Poland, Romania, and Slovenia.
[d] Companies in France and Italy.

organizations to partially offset the anticipated COVID-19-related losses and maximize the benefits of the anticipated large-rent concession programs. This modification is effective for annual periods beginning on or after June 1, 2020; thus, this study includes only 2019 as the first full year of IFRS 16 implementation. Second, it is only conducted for one year to guarantee an analysis of the isolated effect of IFRS 16 implementation on financial statements.

For data collection, we collect the values for each variable, such as assets, liabilities, equity, operating income, interest expenses, and earnings before taxes, for the year-end of 2018 and 2019. We also compute a third value for each variable for the year-end of 2019, which we obtain by deconstructing and computing the results, although IAS 17 was still in effect. We hand-collect all the necessary financial data on the real impacts revealed in the notes and appropriately disclosed by each company. A step-by-step process to test the isolated post-implementation effect of IFRS 16 on financial statements is required, as illustrated in Fig. 2.

First, we determine the year-end differences identified as (1) in Fig. 2 using the year-end financial statements of 2018 under IAS 17 and of 2019 under IFRS 16. This difference represents the combination of effects resulting from business-as-usual together with the effect of IFRS 16 implementation because IFRS 16 requirements were applied in 2019—for example, the amortization of the right to use assets.

Second, we compare the year-end financial statements of 2018 and 2019. However, for 2019, we deconstruct the values based on real information disclosed in the notes and calculate them as if IAS 17 is still applied. This difference, identified as (2) in Fig. 2, highlights the real effects of business-as-usual activities on financial statements.

Finally, the third difference (3) refers to the isolated real effect of IFRS 16 implementation. In this case, we compare the values disclosed in the year-end financial statements of 2019 under IFRS 16 with those of the year-end 2019 as if IAS 17 is still applied. By comparing the year-end 2019 values with and without IFRS 16 effects, this study provides novel information by capturing the post-implementation effect at the end of the year behind the simple restatement of financial statements at the beginning of the implementation period.

The following formulas are computed:

(1) Combined effect $= V_i - V_{i-1}$
(2) Business effect $= V'_i - V_{i-1}$
(3) Isolated post-implementation effect of IFRS 16 = Combined effect – Business effect $= (V_i - V_{i-1}) - (V'_i - V_{i-1}) = V_i - V'_I$

where V_{i-1} refers to values in the year-end financial statements of 2018 under IAS 17 for company i; V_i refers to values in the year-end financial statements of 2019 under IFRS 16 for company i; and V'_i refers to values in the year-end financial statements of 2019 as if under IAS 17 for company i.

In terms of statistical procedures, we compute pairwise comparisons and tests for the statistical significance of the paired samples. This procedure distinguishes and isolates the post-implementation effect of IFRS 16 adoption from any other change resulting from business operations. The main goal is to calculate (3) in Fig. 2, that is, the isolated effect of IFRS 16 implementation. However, we also calculate (1) and (2) to ensure that the statistical significance of (3) is not biased by accounting policies or estimates from issues other than IFRS 16 implementation (Appendixes A and B). This procedure is conducted by following some in-depth notes found in the financial statements published by certain firms included in the sample. These firms have justified their decision to recalculate the financial information at the end of the reporting periods under IFRS 16 in line with the previous IAS 17. This allows for year-on-year comparisons and demonstrates the impact of the implementation. The subsequent illustration elucidates the importance of the three formulas. Assume that a firm had total assets of €300,000.00 at the end of 2018 and €400,000.00 at the end of 2019. However, the €300,000.00 were reported under IAS 17, whereas the €400,000.00 were reported under IFRS 16. The discrepancy of €100,000.00 is the result of both the one-year change in the use of assets and the change in the standard, identified in this study as combined effect (1). If IAS 17 was still in place at the end of 2019, assume that the reported value of assets is €320,000.00 euros. The total isolated post-implementation effect (3) of IFRS 16 is €80,000.00; this is the net value obtained by subtracting the business effect (2) from the combined effect (1).

To answer the research question thoroughly, we apply a similar method to major financial ratios, in addition to the variables in financial statements. To do so, we also compute the most-used ratios included in previous research (e.g., Bennett & Bradbury, 2003; Durocher, 2008; Fitó et al., 2013; Fülbier et al., 2008; Giner et al., 2019; Morales-Díaz & Zamora-Ramírez, 2018; Nuryani et al., 2015; Wong & Joshi, 2015). The subsequent analysis provides details on the financial ratios affected by the post-implementation effects of the IFRS 16.

Moreover, this study enhances the exploration of the post-implementation effects of IFRS 16 by introducing the comparability index (CI), a metric adapted from Fitó et al. (2013). Unlike previous analyses that have focused solely on determining the presence or absence of an impact, the CI provides a nuanced assessment of the degree of impact. This approach broadens our understanding, offering insights into whether IFRS 16 has an impact and the extent to which it influences the variables under consideration. We apply the following formula to the main elements of the financial statements and to the key financial ratios:

$$CI = \frac{V - V}{V} \text{x } 100$$

where *CI* refers to the comparability index; *V* refers to the average values in the year-end financial statements of 2019 under IFRS 16; and *V'* refers

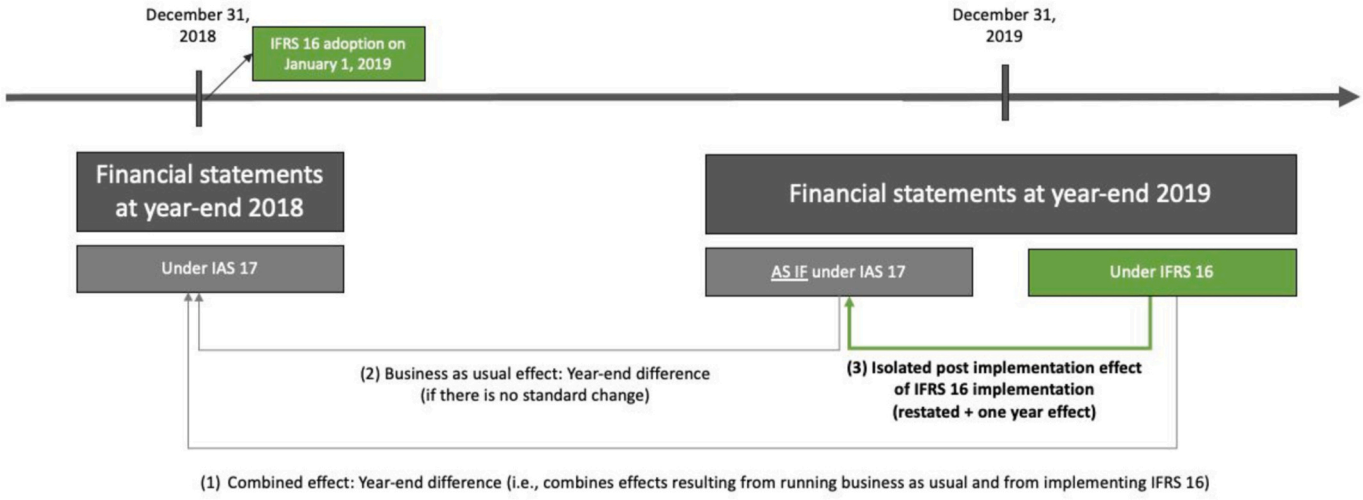

Fig. 2. Research strategy.

to the values in the year-end financial statements of 2019 as if under IAS 17.

4. Results and discussion

4.1. Significant impacts of IFRS 16 on financial statements and key financial ratios

Tables 3 and 4 present the results of the paired samples *t*-test for the difference between the average values at the end of 2019 under IFRS 16 and for the year-end of 2019 under IAS 17 for companies in the tourism industry, as described in Fig. 2. In other words, the tables show the outputs for the third difference (3), that is, the isolated post-implementation effect of IFRS 16 (= Vi – V'i).

As observed in Table 3, the differences are statistically significant at the 5% level for all financial statement elements presented except equity. Furthermore, the positive sign of the test statistic for pairwise differences indicates that the amount in euros of the average elements of financial statements in Pair A is higher than that in Pair B; thus, the average of all elements of financial statements in the tourism industry increases in value. These statistically significant differences are a direct result of the effect of IFRS 16 implementation on financial statement items, which are free from any bias related to the application of other accounting principles and estimates.

Concerning Table 4 and regarding structure and liquidity ratios, the results indicate a statistically significant difference at the 1% level ($p < 0.01$). Therefore, these ratios show a significant difference after IFRS 16 implementation, and these effects are solely due to the effect of IFRS 16 implementation and not to business-as-usual activities (Appendix A). The negative sign of the test statistic for pairwise differences indicates that the ratio is higher under IFRS 16 than under IAS 17. These findings are consistent with prior research using forecasted but real data and a multi-country sample. For example, indebtedness has been the topic of numerous studies, such as those of Morales-Daz and Zamora-Ramrez (2018) and Durocher (2008), both of which reached similar conclusions. Morales-Díaz and Zamora-Ramírez (2018) included only Spanish companies in their sample, whereas Durocher (2008) focused exclusively on Canadian businesses. Fülbier et al. (2008), whose study only included German firms, and Fitó et al. (2013), whose study was limited to Spanish organizations, also predicted that the capitalization of operational leases would have a major impact on financial autonomy and solvency ratios. This study supports the conclusions of Durocher (2008) and Giner et al. (2019), who predicted that IFRS implementation 16 may have a considerable impact on the current liquidity ratio.

Regarding profitability ratios, the results demonstrate that adopting the standard has a statistically significant effect on ROA at a 5% confidence level. This result contradicts that of Nuryani et al. (2015), which predicted a decrease. However, most prior studies have been inconclusive about the impact of this ratio (e.g., Giner et al., 2019; Morales-Díaz

Table 3
Real impacts of IFRS 16 implementation on financial statement elements.

Financial statement elements	Test statistic[a,b,c] Pair A (−) Pair B	Adj. sig. (*p*-value)
Assets	4.100***	(0.000)
Liabilities	4.057***	(0.000)
Equity	−1.089	(0.280)
EBITDA	3.586***	(0.000)
EBIT	2.158**	(0.034)
Interest expenses	2.332**	(0.022)
EBT	3.048***	(0.003)

[a] Pair A (V_i) = Year-end 2019 (under IFRS 16); Pair B (V'_i) = Year-end 2019 (as if under IAS 17); meaning the isolated effect of IFRS 16 ($V_i - V'_i$).
[b] The sign of the test statistics for paired samples is (−) if Pair A is lower than Pair B and (+) otherwise.
[c] ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

Table 4
Real impacts of IFRS 16 implementation on key financial ratios.

Financial ratios	Test statistic[a,b,c] Pair A (−) Pair B	Adj. sig. (*p*-value)
Structure		
Indebtedness	5.265***	(0.000)
Financial autonomy	−5.265***	(0.000)
Solvency	−4.299***	(0.001)
Liquidity		
Current liquidity	−4.657***	(0.000)
Profitability[d]		
ROA	2.314**	(0.023)
ROE	−0.610	(0.544)
EPS	1.401	(0.166)
Coverage[e]		
Interest coverage ratio	−1.218	(0.227)

[a] Pair A (V_i) = Year-end 2019 (under IFRS 16); Pair B (V'_i) = Year-end 2019 (as if under IAS 17); meaning the isolated effect of IFRS 16 ($V_i - V'_i$).
[b] The sign of the test statistics for paired samples is (−) if Pair A is lower than Pair B and (+) otherwise.
[c] ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.
[d] ROA = EBT/Assets; ROE = EBT/Assets; EPS = net income/number of shares outstanding.
[e] Interest coverage ratio = EBITDA/Interest expenses.

& Zamora-Ramírez, 2018). Finally, for the sampled companies, we find no statistically significant effect for the differences in the means of ROE and EPS ($p > 0.05$). Similar to prior research, which has been inconclusive regarding these ratios, our results suggest that IFRS 16 implementation may have a reduced impact on these ratios in the tourism industry, which makes it statistically insignificant. This finding is congruent with Durocher's (2008), although the author focuses on Canadian and European companies.

Finally, the effect on the interest coverage ratio is not statistically significant. This finding contradicts the results of Morales-Díaz and Zamora-Ramírez (2018), who suggest a decrease in this ratio owing to increased interest expenses. We find no statistically significant effects on this ratio in the present sample using real implementation data.

Overall, IFRS 16 implementation has a substantial impact on the structure (indebtedness, financial autonomy, and solvency), liquidity (current liquidity), and ROA (profitability ratio) of the European firms studied. However, we find no statistically significant influence for the profitability metrics of ROE and EPS or the interest coverage ratio.

To answer the research question, these findings demonstrate that when users of financial statements compare the amounts at the end of 2018 and 2019, the material differences are primarily due to the implementation of IFRS 16 (Appendix A). Based on the data, we conclude that IFRS 16 implementation significantly impacts most of the elements and ratios of the European companies included in the sample. This confirms the anticipated perspective of the IFRS Foundation supported by the assumptions.

4.2. The degree of impact of IFRS 16 on financial statements and key financial ratios

We generate the CI using an adapted formula from Fitó et al. (2013), as previously described. Table 5 summarizes the average results of the CI for financial statement elements and key financial ratios. These results complement prior findings by providing information to understand whether the CI is impacted positively or negatively and how much it has increased or decreased each financial statement's elements and key financial ratio.

According to this analysis, IFRS 16 increases the value of all financial position statement components. On average, assets increase by 7.49%, liabilities by 9.57%, and equity by 1.2%. Assets and liabilities increase less than expected in the literature; Morales-Daz and Zamora-Ramirez (2018) projected a 12.9% growth in assets and a 28.5% increase in liabilities, but their data were estimated rather than real.

Regarding the income statement, implementing IFRS 16 results in average increases of 16.85%, 5.01%, 17%, and 10.94% in EBITDA, EBIT, interest expenses, and EBT, respectively. These findings reinforce the considerable impact of this standard on elements of both financial position and income statements in the European tourism firms included in this study.

Concerning the major financial ratios, the first structural ratio analyzed, indebtedness, which assesses the risk of non-compliance with payment obligations, increases by 6.83% on average. Giner et al. (2019), Morales-Diaz and Zamora-Ramirez (2018), Nuryani et al. (2015), and Wong and Joshi (2015) calculated the predicted influence on this indicator and suggested that it will increase. Our results support these findings. The ratio of financial autonomy, which is the ability of businesses to meet their financial responsibilities without external aid, decreases by 11.58%—higher than Fülbier et al.'s (2008) prediction of a 9.6% decrease. Solvency decreases by 10.61%, which is also a greater impact than the 8.5% decrease suggested by Fitó et al. (2013). Therefore, on average, the predicted impacts on these ratios are greater than those anticipated in earlier studies on the tourism industry.

Conversely, the current liquidity ratio, which assesses a firm's financial flexibility, decreases by 5.68%. Despite this reduction, the sampled companies have sufficient current assets to cover their short-term liabilities, in agreement with Bennett and Bradbury (2003), Durocher (2008), Fitó et al. (2013), Giner et al. (2019), and Nuryani et al. (2015).

This study's inability to find statistically significant results in ROE and EPS ratios regarding the effects of IFRS 16 implementation is also consistent with the contradicting findings in the literature (Durocher, 2008; Fitó et al., 2013; Fülbier et al., 2008; Giner & Pardo, 2018). Prior research has been inconclusive regarding these ratios.

The last financial ratio analyzed is the interest coverage ratio, which measures a company's financial risk. Morales-Daz and Zamora-Ramirez (2018) forecasted a significant reduction in this ratio. Our results suggest an average decrease, although this change is not significant for the isolated effect of IFRS 16 implementation (Appendix B). This finding suggests that the increase in EBITDA and interest expenses may cancel each other out, resulting in no direct impact on the coverage ratio; as attested by the CI of both ratios, EBITDA increases by 16.85% and interest expenses by 17.00% on average.

Table 5
Comparability index and pairwise comparison statistical significance.

	Comparability index (CI)	Statistically significant?
Financial statements elements		
▪ Assets	+7.49%	Yes
▪ Liabilities	+9.57%	Yes
▪ Equity	+1.20%	No
▪ EBITDA	+16.85%	Yes
▪ EBIT	+5.01%	Yes
▪ Interest expenses	+17.00%	Yes
▪ EBT	+10.94%	Yes
Financial ratios		
Structure		
▪ Indebtedness	+6.83%	Yes
▪ Financial autonomy	−11.48%	Yes
▪ Solvency	−10.61%	Yes
Liquidity		
▪ Current liquidity	−5.68%	Yes
Profitability		
▪ ROA	+31.39%	Yes
▪ ROE	−11.65%	No
▪ EPS	+12%	No
Coverage		
▪ Interest coverage ratio	−0.30%	No

4.3. Comparison of expected and real implementation effects: Economic impacts of IFRS 16 implementation

Fig. 3 summarizes our main findings, comparing the expected results based on the prior literature and the real effects of IFRS 16 on the sampled companies based on this study's findings.

Fig. 3 demonstrates that most of the anticipated effects align with the real-data validation in the context of this study. However, we observe divergent outcomes for EBT, ROA, and the interest coverage ratio compared with estimations in prior literature. To understand the possible reasons for these findings, we refer to the narratives of the sampled companies' financial statements. An analysis of these narratives adds important information to explain some of the variations found as some figures are influenced by the transition of practical expedients permitted by IFRS 16.

Specifically, concerning EBT, the tendency to be balanced anticipated by the literature is not verified as we find a statistically significant increase. In essence, the expected EBITDA growth stemming from reduced operating costs owing to the elimination of rent payments is projected to counterbalance the increased depreciation and financing expenses associated with right-of-use assets and lease liability. A possible justification is that companies commonly rely on discretionary judgments and estimates when determining lease terms and selecting the incremental borrowing rate for discounting; this introduces potential biases into accounting figures and study outcomes. Most companies

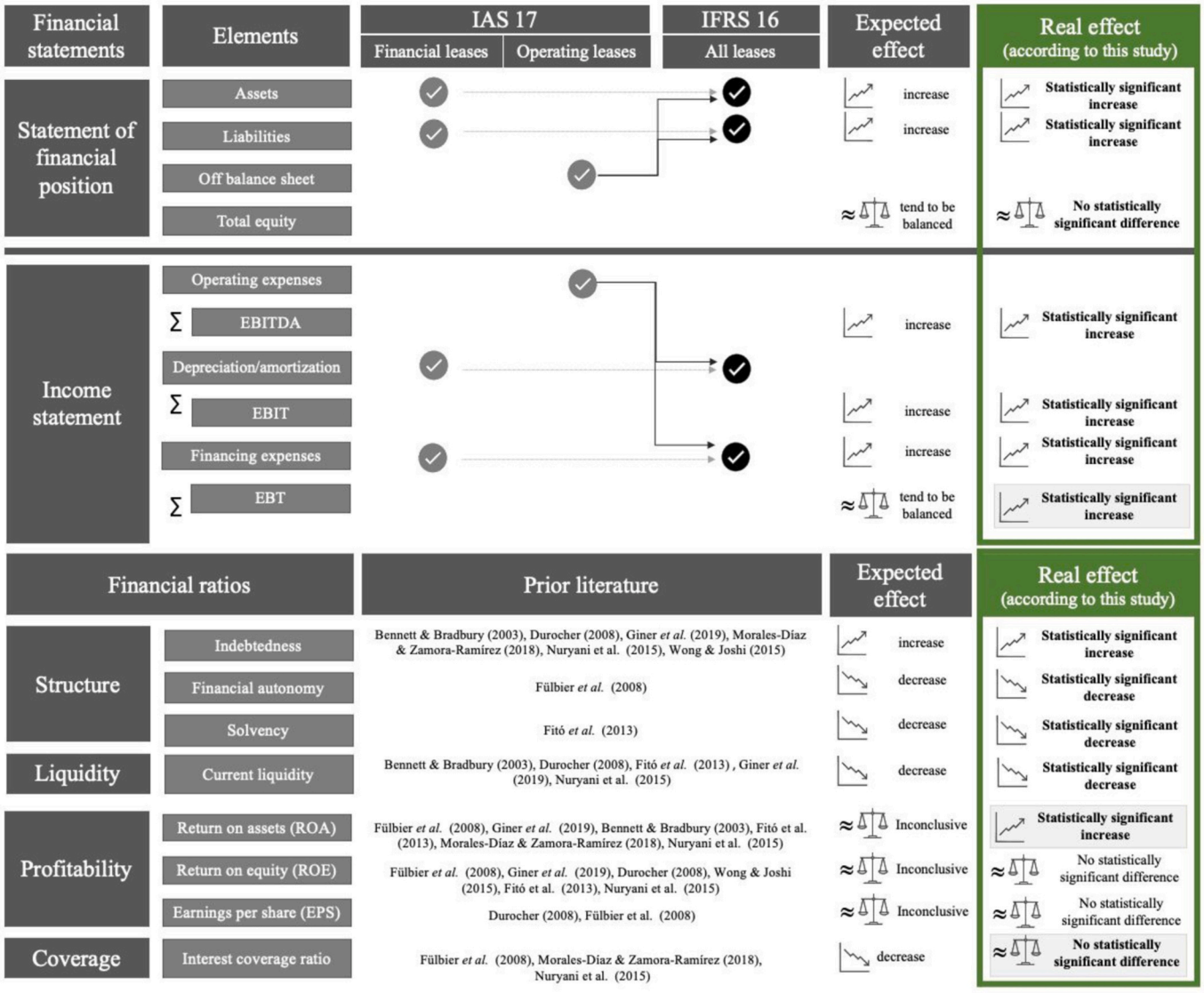

Fig. 3. Comparison of expected and real implementation effects of IFRS 16.

struggle to determine the implicit interest rate in leases, instead opting for their incremental borrowing rate. This impacts lease liabilities and rights of use and influences interest expenses, affecting EBT. Many firms openly admit to using a single discount rate for a portfolio of leases with similar characteristics, as permitted by IFRS 16 during its initial implementation, whereas others utilize the option of lease extension. However, few studies have disclosed details about the impact of the extension on contract maturity, showing the awareness of potential prolongation or termination options and their influence on assets and related ratios.[3]

Furthermore, this statistically significant increase in EBT could justify the statistically significant increase in ROA. For ROA to increase, EBT should have increased more than the assets. Some companies may have applied other practical expedients, such as the exclusion of the initial direct costs from the measurement of the right-of-use asset at the date of initial application—for example, consulting, legal expenses, and "key money." This is because certain companies have admitted to not separating the lease component from other service components included in its property lease agreements; therefore, all fixed payments provided for in the lease agreement are included in the lease liability regardless of their nature.

Finally, the anticipated decline in the interest coverage ratio predicted by earlier research owing to increased interest costs is not confirmed. The present study's findings demonstrate no statistically significant effect on this ratio, which indicates that the rise in interest and EBITDA costs may cancel each other out and have no effect on the coverage ratio. According to the narrative in the financial statements, some companies comment that creditors may have already accounted for operating leases as liabilities; therefore, credit risk is already estimated considering leases, resulting in a smaller impact on interest expenses when compared with EBITDA. Moreover, as illustrated in Table 5, both the EBITDA and interest expenses increase by approximately 17% on average.

5. Final remarks

This study addresses the IFRS Foundation's concerns about the effects of IFRS 16 implementation on companies by estimating the aggregate value of lease assets and liabilities recorded as a result of IFRS implementation. IFRS 16 is expected to have the greatest impact on the

[3] Based on disclosed information on the sampled companies' financial reports.

airline, travel and leisure, and transport industries, which rank among the top four in terms of total assets. In line with this assumption, this single-industry study determines whether, as expected from the literature, IFRS 16 implementation has a significant impact on financial statement elements and related key financial ratios in European businesses engaged in the tourism industry.

In conclusion, this study supports the primary concern of IAS 17 that operating leases may be improperly accounted for by changing the appearance of financial statements and financial ratios, which are crucial sources of information for investors. It also suggests that IFRS 16 implementation achieves its objectives by providing more transparency in corporations' lease assets and liabilities.

Nevertheless, this study has some limitations. As a single-industry study, it utilizes only listed entities from the tourism industry using publicly available data; the sample size is small yet nearly representative of the population. However, a single-industry study that focuses on a specific sector to explore issues, test theories, or gather detailed information has several limitations. These include limited generalizability owing to the narrow scope and sector-specific bias as findings may not apply to other industries with unique characteristics and dynamics. Context-specific variables, such as regulatory environment and market dynamics, further restrict applicability (Creswell & Creswell, 2022). Such a study also carries a risk of overgeneralization and misleading assumptions if the patterns observed in one industry are inappropriately applied to other industries (Bamber, Christensen, & Gaver, 2000). Thus, while providing deep insights, single-industry studies should be supplemented with multi-industry research for broader applicability.

Suggestions for further research include the analysis of the fiscal effect or the effect of changes in foreign exchange rates when lease agreements are made in different currencies. Future research could bring these effects into the discussion.

Further research could also build on the impact of the standard's implementation, depending on variables such as the companies' sector or size (Fitó et al., 2013; Fülbier et al., 2008; Morales-Díaz & Zamora-Ramírez, 2018; Graham and Lin, 2018). More specifically, the studies could test whether the isolated IFRS 16 effect is size-independent or whether it affects small businesses differently from large ones. Additionally, research should identify which entity-level characteristics could drive the effect of new lease standards' implementation, detecting trends in accounting numbers and disclosures in post-adoption periods useful for the post-implementation reviews of IFRS 16.

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Declaration of competing interest

None.

Data availability

Data will be made available on request.

Appendix

Appendix A
Impacts of IFRS 16 on financial statement elements.

Elements	Line[a]	Test statistic[b,c] Pair A (−) Pair B	Adj. sig. (*p*-value)
Assets	1 – combined effect	−0.506	0.615
	2 – business-as-usual effect	−0.799	0.427
	3 – isolated IFRS 16 effect	**4.100*****	**0.000**
Liabilities	1 – combined effect	−0.443	0.659
	2 – business-as-usual effect	−0.750	0.455
	3 – isolated IFRS 16 effect	**4.057*****	**0.000**
Equity	1 – combined effect	−1.294	0.200
	2 – business-as-usual effect	−1.263	0.211
	3 – isolated IFRS 16 effect	**−1.089**	**0.280**
EBITDA	1 – combined effect	−0.250	0.804
	2 – business-as-usual effect	−0.933	0.354
	3 – isolated IFRS 16 effect	**3.586*****	**0.000**
EBIT	1 – combined effect	0.362	0.718
	2 – business-as-usual effect	0.059	0.953
	3 – isolated IFRS 16 effect	**2.158****	**0.034**
Interest expenses	1 – combined effect	−0.421	0.675
	2 – business-as-usual effect	−0.630	0.531
	3 – isolated IFRS 16 effect	**2.332****	**0.022**
EBT	1 – combined effect	0.093	0.926
	2 – business-as-usual effect	0.363	0.718
	3 – isolated IFRS 16 effect	**3.048*****	**0.003**

[a] For each element, Line 1 related sample is as follows: Pair A: Year-end 2018 (under IAS 17), Pair B: Year-end 2019 (under IFRS 16); Line 2 related sample is as follows: Pair A: Year-end 2018 (under IAS 17), Pair B: Year-end 2019 (as if under IAS 17); Line 3 related sample is as follows: Pair A: Year-end 2019 (as if under IAS 17), Pair B: Year-end 2019 (under IFRS 16).

[b] The sign of the test statistics for related samples in multiple groups is (−) if Pair A is lower than Pair B and (+) otherwise.

[c] ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

Appendix B
Impacts of IFRS 16 on key financial ratios.

Ratios	Formula	Line[a]	Test statistic[b,c] Pair A (−) Pair B	Adj. sig. (*p*-value)
Structure:				
Indebtedness	Total liabilities / Total assets	1 – combined effect	2.923	0.005
		2 – business-as-usual effect	0.201	0.841
		3 – isolated IFRS 16 effect	**5.265*** **	**0.000**
Financial autonomy	Total equity / Total assets	1 – combined effect	−2.923	0.005
		2 – business-as-usual effect	−0.201	0.841
		3 – isolated IFRS 16 effect	**−5.265*** **	**0.000**
	Total equity / Total liabilities			
Solvency		1 – combined effect	−3.220	0.002
		2 – business-as-usual effect	−0.480	0.633
		3 – isolated IFRS 16 effect	**−4.299*** **	**0.001**
Liquidity:	Current assets / Current liabilities			
Current liquidity		1 – combined effect	1.116	0.268
		2 – business-as-usual effect	1.804	0.076
		3 – isolated IFRS 16 effect	**−4.657*** **	**0.000**
Profitability[d]:				
ROA	EBT* / Total assets	1 – combined effect	0.238	0.812
		2 – business-as-usual effect	−0.865	0.390
		3 – isolated IFRS 16 effect	**2.314** **	**0.023**
ROE	EBT* / Total equity	1 – combined effect	−1.164	0.248
		2 – business-as-usual effect	−1.202	0.233
		3 – isolated IFRS 16 effect	**−0.610**	**0.544**
EPS	Net income / Number of shares outstanding	1 – combined effect	−1.220	0.226
		2 – business-as-usual effect	−1.306	0.196
		3 – isolated IFRS 16 effect	**1.401**	**0.166**
Coverage[e]:	EBITDA / Interest expenses			
Interest coverage ratio		1 – combined effect	−2.574	0.012
		2 – business-as-usual effect	−2.935	0.005
		3 – isolated IFRS 16 effect	**−1.218**	**0.227**

[a] For each element, Line 1 related sample is as follows: Pair A: Year-end 2018 (under IAS 17), Pair B: Year-end 2019 (under IFRS 16); Line 2 related sample is as follows: Pair A: Year-end 2018 (under IAS 17), Pair B: Year-end 2019 (as if under IAS 17); Line 3 related sample is as follows: Pair A: Year-end 2019 (as if under IAS 17), Pair B: Year-end 2019 (under IFRS 16).

[b] The sign of the test statistics for related samples in multiple groups is (−) if Pair A is lower than Pair B and (+) otherwise.

[c] ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

[d] Return on assets (ROA) = Net income/Assets Return on Equity (ROE) Earnings per share = Net income/Number of shares outstanding

[e] Interest coverage ratio = EBITDA/Interest expenses.

References

Bamber, L. S., Christensen, T. E., & Gaver, K. M. (2000). Do we really 'know'what we think we know? A case study of seminal research and its subsequent overgeneralization. *Accounting, Organizations and Society, 25*(2), 103–129.

Barone, E., Birt, J., & Moya, S. (2014). Lease accounting: A review of recent literature. *Accounting in Europe, 11*(1), 35–54.

Beattie, V., Goodacre, A., & Thomson, S. J. (2006). International lease-accounting reform and economic consequences: The views of U.K. users and preparers. *The International Journal of Accounting, 41*(1), 75–103.

Bennett, B. K., & Bradbury, M. E. (2003). Capitalizing non-cancelable operating leases. *Journal of International Financial Management and Accounting, 14*(2), 101–114.

Biondi, Y., Bloomfield, R. J., Glover, J. C., Jamal, K., Ohlson, J. A., Penman, S. H., … Jeffrey Wilks, T. (2011). A perspective on the joint IASB/FASB exposure draft on accounting for leases. *Accounting Horizons, 25*(4), 861–871.

Chatfield, H. K., Chatfield, R. E., & Poon, P. (2017). Is the hospitality industry ready for the new lease accounting standards? *Journal of Hospitality Financial Management, 25*(2), 101–111.

Creswell, J. W., & Creswell, J. D. (2022). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th edition). SagePublications Inc.

De Martino, G. (2011). Considerations on the subject of lease accounting. *Advances in Accounting, 27*(2), 355–365.

Delgado-Vaquero, D., Morales-Diaz, J., & Zamora-Ramírez, C. (2022). IFRS 16 incremental borrowing rate: Comparability issues and a methodology proposal for loss given default adjustment. *Accounting in Europe, 19*(2), 287–310.

Duke, J. C., Hsieh, S. J., & Su, Y. (2009). Operating and synthetic leases: Exploiting financial benefits in the post-Enron era. *Advances in Accounting, 25*(1), 28–39.

Durocher, S. (2008). Canadian evidence on the constructive capitalization of operating leases. *Accounting Perspectives, 7*(3), 227–256.

Durocher, S., & Fortin, A. (2009). Proposed changes in lease accounting and private business bankers' credit decisions. *Accoun. Perspectiv., 8*(1), 9–42.

EFRAG. (2024). *IFRS 16 post-implementation review*. Retrieved from: https://www.efrag.org/Activities/2312211547057359/IFRS-16-Post-implementation-Review.

Europe Economics. (2017). *Ex ante impact assessment of IFRS 16. Retrieved from: https://www.efrag.org/sites/default/files/sites/webpublishing/SiteAssets/IFRS%2016%20-%20Europe%20Economics%20-%20Ex%20ante%20Impact%20Assessment%20(22%20February%202017).pdf*.

Fitó, M.Á., Moya, S., & Orgaz, N. (2013). Considering the effects of operating lease capitalization on key financial ratios. *Spanish Journal of Finance and Accounting, 42*(159), 341–369.

Fülbier, R., Lirio, J., & Pferdehirt, M. (2008). Impact of lease capitalization on financial ratios of listed German companies. *Schmalenbach Business Review, 60*(1), 122–144.

Giner, B., Merello, P., & Pardo, F. (2019). Assessing the impact of operating lease capitalization with dynamic Monte Carlo simulation. *Journal of Business Research, 101*, 836–845.

Giner, B., & Pardo, F. (2018). The value relevance of operating lease liabilities: Economic effects of IFRS 16. *Australian Accounting Review, 28*(87), 496–511.

Graham, R. C., & Lin, K. C. (2018). How will the new lease accounting standard affect the relevance of lease asset accounting? *Advances in Accounting, 42*, 83–95.

Hoogervorst, H. (2016). *Introductory comments to the European Parliament*. Retrieved from: https://www.ifrs.org/news-and-events/news/2016/03/hans-hoogervorst-article-shining-the-light-on-leases/.

Imhoff, E. A., Lipe, R. C., & Wright, D. W. (1991). Operating leases: Impact of constructive capitalization. *Accounting Horizons, 5*(1), 51–63.

Revised international accounting standard 17: Leases. London. In . *International accounting standard board (IASB)*, (2003).

International financial reporting standard 16: Leases. London. In . *International accounting standards board (IASB)*, (2016).

IFRS 16 leases – Effects analysis. London. In . *International financial accounting foundation (IFRS foundation)*, (2016).

Spencer, A. W., & Webb, T. Z. (2015). Leases: A review of contemporary academic literature relating to lessees. *Accounting Horizons, 29*(4), 997–1023.

International Financial Accounting Foundation (IFRS Foundation). (2023). *IFRS 16 and research opportunities*. Retrieved from: https://www.ifrs.org/content/dam/ifrs/news/2021/basics-of-ifrs16-and-research-opportunities-final.pdf.

KPMG. (2016). *IFRS 16 leases – A more transparent balance sheet. London*.

Lau, C. K. (2022). The economic consequences of IFRS 16 adoption: The role of gearing restrictions in debt covenants. *Journal of Applied Accounting Research, 24*(3), 464–482.

Morales-Díaz, J., & Zamora-Ramírez, C. (2018). The impact of IFRS 16 on key financial ratios: A new methodological approach. *Accounting in Europe, 15*(1), 105–133.

Moscariello, N., & Pizzo, M. (2022). Practical expedients and theoretical flaws: The IASB's legitimacy strategy during the COVID-19 pandemic. *Accounting, Auditing & Accountability Journal, 35*(1), 158–168.

Nuryani, N., Heng, T. T., & Juliesta, N. (2015). Capitalization of operating lease and its impact on firm's financial ratios. *Procedia - Social and Behavioral Sciences, 211*, 268–276.

Singh, A. (2012). Proposed lease accounting changes: Implications for the restaurant and retail industries. *Journal of Hospitality and Tourism Research, 36*(3), 335–365.

International Financial Accounting Foundation (IFRS Foundation) (2021). Timing of post implementation reviews for impairment and hedge accounting requirements of IFRS 9, for IFRS 15 and for IFRS 16. London. Retrieved from: https://www.ifrs.org/content/dam/ifrs/meetings/2021/november/iasb/ap8-board-week-plan-update.pdf.

Van Kints, R. R., & Spoor, L. L. (2019). Leases on balance, a level playing field? *Advances in Accounting, 44*, 3–9.

Wong, K., & Joshi, M. (2015). The impact of lease capitalisation on financial statements and key ratios: Evidence from Australia. *Australasian Accounting, Business and Finance Journal, 9*(3), 27–44.