THE EFFECTS OF LEASES ON COMPANY VALUE IN THE PRE- AND POST-LEASE CAPITALIZATION RULES PERIOD: EVIDENCE FROM AUSTRALIA

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Abstract

This study explores the potential impact of the Australian Accounting Standards Board's (AASB) Accounting Standard for Leases, AASB 16, on firm value using data from 2016 to 2022, which covers three years before and four years after adopting AASB 16. It finds a significant positive association between operating leases and firm value and a significant negative relationship between lease capitalization (right-of-use [ROU] assets) and firm value. This evidence lessens concern over the potential negative consequences of operating lease accounting and raises adverse concerns about the implemented lease standard, AASB 16, which mandates companies to recognize all leases as capitalized (ROU) assets. By using Australian data, the research fills a gap in the current literature by providing insights into the effects of lease accounting rules on a company's value. Using real data, no previous research has looked at how changes to lease rules affected the firm value for companies before and after AASB 16 was put into place. This study contributes to the existing literature by providing empirical evidence on how the new lease accounting standards impact policymakers, standard setters, investors, creditors, company managers, and academics. The findings of this study will undoubtedly have a significant economic impact on the AASB 16 standard. Given the previous discussion of the possible effects of lease capitalization on how changes in a company's leverage may impact its capital structure, debt covenants, relative position in the market, and, ultimately, its reputation among investors and users, our findings are particularly pertinent. From a standard-setting perspective, we believe this study is timely and could be beneficial, particularly if the AASB undertakes a post-implementation review of AASB 16.

Keywords: Operating Leases, Lease Capitalization, Right-of-Use Assets, Firm Value, Australia, AASB 16

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1. INTRODUCTION

This study investigates the financial implications of the new Australian Accounting Standards Board's (AASB) Accounting Standard for Leases, AASB 16 (incorporates IFRS 16 Leases issued by the International Accounting Standards Board [IASB]), which requires the capitalization of leases that commence in January 2019 and introduces a single model instead of the previous two that operated as off-balance sheets (operating leases) and on-balance sheets (finance leases). The prior standard, AASB 117, permitted two distinct accounting procedures for leasing agreements based on the type of lease, making leasing an intriguing research topic in accounting and finance. Under operating leases, lease payments are recorded as a rent expense in the relevant year. Conversely, lease payments for finance leases are capitalized and recorded as both an asset and a liability on the balance sheet. The lease payment is divided between interest expense and the repayment of the lease liability, and the leased asset is depreciated over its useful life.

Since operating leases do not appear on the lessee's balance sheet, which is also referred to as off-balance sheet reporting, and financial leases do appear, as shown on the lessee's balance sheet as both an asset and a liability, the accounting practices for these two types of leases are different (Graham & Lin, 2018). Many critics argue that off-balance sheet transactions do not provide investors and analysts with an accurate or fair representation of a company's balance sheet or its comparable accounting ratios (McGregor, 1996). In response to this criticism, the IASB and the Financial Accounting Standards Board (FASB) have developed IFRS 16. Prior to releasing IFRS 16, the IASB and FASB published two exposure drafts (EDs) on a new lease standard to address the issues associated with International Accounting Standard (IAS 17). To resolve the problem of similar transactions being recorded in different ways, both the first and second EDs exclude the option for off-balance sheet accounting (operating leasing). The balance sheets and income statements of companies that utilise operating leases will be affected if this type of lease is removed from the standard (Imhoff et al., 1991, 1997). In particular, many studies indicate that accounting ratios will be significantly impacted by this change (Imhoff et al., 1991, 1997; Fitó et al., 2013; Fülbier et al., 2008). This impact may affect a company's capacity to secure loans, as loan covenants are occasionally evaluated using financial ratios set as standards (Goodacre, 2003). When comparing companies, having consistent financial measures is particularly beneficial since stakeholders frequently utilise them as a tool when making decisions (Barnes, 1987; Beaver, 1966). The majority of research on operating lease capitalization was conducted prior to the first ED's publication in 2010 (Bennet & Bradbury, 2003; Durocher, 2008; Fülbier et al., 2008; Imhoff et al., 1991, 1997), employing the constructive capitalization method and focusing on the proposed lease standard. Such research has become increasingly crucial since the release of the first and second EDs, as changes in the standard will ultimately affect companies' financial positions and performance.

The AASB addressed these issues by introducing a novel accounting concept, right-of-use (ROU) assets, which capitalizes all leases at the outset (AASB, 2016). According to AASB 16, at the commencement date, a lessee must recognise all leased assets as ROU assets and a lease liability on the balance sheet. However, opponents of these amendments contend that, without significantly enhancing the quality and relevance of financial information, the new regulations complicate compliance (Altamuro et al., 2014; Graham & Lin, 2018). Most leases must be recorded as capitalized leases (ROU assets) under AASB 16, which will take effect in the public sector for annual reporting periods commencing on or after January 1, 2019. This approach is known as the "right-of-use model", with certain exclusions for low-value items or short-term leases of less than a year. According to Sivanantham (2016), AASB 16 was widely regarded as contentious and had significant implications, particularly for sectors such as retail and aviation that previously recorded substantial assets as operating leases. Furthermore, Deloitte (2016) states that implementing IFRS 16 leases would lead to an increase in the lessee's leased assets and financial liabilities on the balance sheet, as well as an increase in the lessee's earnings before interest, taxes, depreciation, and amortization (EBITDA). Consequently, firms with considerable off-balance sheet leasing obligations will experience notable shifts in their valuation multiples, leverage ratios, and return on invested capital. Therefore, AASB 16's mandate, in alignment with IFRS 16, has extensive accounting implications.

Moreover, companies must gather, process, and report more data to comply with lease capitalization rules. Consequently, the information that managers gather and process to meet lease capitalization requirements is likely to gradually enlighten them about the profitability of various projects. Additionally, as part of preparing to implement these standards, managers conduct a thorough analysis of the company's operations (Shumsky, 2016; Trentmann, 2019). We argue that this process represents an additional information cost to the organisation. Furthermore, lease capitalization may also impact contractual outcomes due to the implications of AASB 16 on the income statement and balance sheet. If accounting-based debt covenant ratios are not fully adjusted for lease capitalization or modifications to AASB 16, the implementation of lease capitalization standards may lead to a decline in these ratios. Lenders may take advantage of the opportunity to re-negotiate loan terms by charging high covenant waiver fees, adding more restrictive covenants to loan agreements (Nini et al., 2009), or negotiating higher interest rates (Hart & Moore, 1988; Aghion & Bolton, 1992; Rajan, 1992). They may also exploit the lack of alternative financing options or firm switching costs to their advantage. If interest-increasing performance pricing elements are included in debt contracts, firms may also face a contractually determined rise in interest rates (Asquith et al., 2005; Ball et al., 2008). Graham and Lin (2018) also conclude that the new standard may negatively affect the applicability of lease asset accounting.

Therefore, investigating the effect of operating lease capitalization on a firm's financial consequences using actual data is an interesting research topic because most research uses the constructive lease capitalization method. Moreover, we did not find any published research on the effect of capitalized operating leases (ROU assets) on the financial consequences of Australian companies that was

carried out using actual data. These elements inspired us to investigate how capitalizing on leases affects firm value for Australian listed companies. In this study, we investigate whether operating leases or ROU assets influence the market values of Australian listed companies.

Focusing on the content, we are motivated to identify the factors and features of operating leases and capitalized leases that affect companies' market value, resulting in the introduction of the new standard (AASB 16) to recognise leases on the company balance sheet. As a result, we developed the following research question to direct the empirical data collection process. The following research question addresses the research gap in this study:

RQ: How do operating leases and right-of-use assets affect companies' firm value?

This work contributes in several ways to the literature and research on lease accounting. First, while operating leases are significant, this research suggests that lease capitalization (ROU assets) does not hold the same significance in terms of impacting company value. Second, it represents the first study of its kind in Australia to investigate the effects of lease capitalization (ROU assets) and operating leases on firm value. These factors are important for regulators, policymakers, lenders, accountants, and shareholders. Third, we aim for policymakers to find these research findings beneficial, as they illustrate how the changes made to lease accounting by the AASB have influenced Australian public companies that utilise IFRS-based accounting standards. Fourth, our study employs real data to measure operating leases and lease capitalization (ROU assets) rather than the constructive lease capitalization methods used in previous research based on proposed lease rules.

This study has several limitations. The cross-sectional analyses in this study were restricted to the top 100 Australian Securities Exchange (ASX)-listed firms during seven years, accounting for three years before and four years following the lease standard, AASB 16. Furthermore, because the data is not publicly available, it excludes administrative and qualitative elements of lease capitalization decisions made by businesses. We also leave it up to future studies to find out if users think about off-balance-sheet obligations and balance-sheet liabilities in the same way. Lastly, the absence of comprehensive operating lease agreements and their reported results in balance sheets compels us to manually extract operational leases from footnotes and notes.

Future studies in accounting and finance could incorporate listed firms from other countries and employ various techniques that could affect the data in financial reports and company information for users. Future studies can also look into whether non-capitalized operating lease financing is a significant source of funding that ought to be covered in capital structure research. Future studies should look into whether the adoption of lease capitalization regulations causes businesses to use operating leases less frequently. The topic of whether users handle off-balance sheet obligations and balance sheet liabilities equally is left for further study.

The rest of the paper is organized as follows. Section 2 reviews the relevant literature. Section 3 presents hypotheses for explaining the relationships between the leases and firm value. Section 4 describes the methodology employed in this research. Section 5 presents the results of the empirical analysis of this study. Section 6 summarises the study's main findings and its implications and contributions for practitioners and academia. It also identifies the limitations of the study and concludes with a set of recommendations for future research.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Accounting standards and leases

Changes in accounting standards can significantly affect financial reporting. The newly introduced accounting standard AASB 16 will significantly impact numerous businesses and enhance transparency for those using financial statements. The accounting treatment of leases has undergone periodic changes, aiming to alleviate long-standing discontent with their treatment of corporate financial records.

The U.S. Securities and Exchange Commission (SEC) estimated $1.25 trillion in off-balance-sheet leases for US public corporations in 2005, prompting the IASB and the FASB to collaborate on lease accounting (Forbes & Gupta, 2019). The project, initially intended to harmonize standards, was politically impossible, leading to the release of Accounting Standards Update 2016-02 Leases and IFRS 16 Leases. The IASB determined that all leases would be regarded as finance leases and that lessees should use a single model for all leases (IFRS 16 Leases). The FASB continued to use a dual model, classifying leases as either operating or financing (Accounting Standard Codification ASC 842 issued by FASB). The primary modification to Generally Accepted Accounting Principles (GAAP) is that, with the exception of short-term leases lasting twelve months or less, operational leases are now recorded on the balance sheet. The predicted three trillion dollars in operating leases that hit business balance sheets in 2019 are one of the main effects of these shifts (Ma & Thomas, 2023).

Lease accounting has been a Favorite topic for researchers for decades. Even prior to the publication of ASC 842 and IFRS 16, several accounting studies (Kraft & Lopatta, 2013; Barone et al., 2014; Branswijck et al., 2011) focused on the impact of lease capitalization on financial ratios. However, since the publication of the new lease standard, only a few studies have focused on this issue. Those few studies are also based on U.S. data and dual model-based leasing.

2.2. Operating and finance leases

Old lease accounting standards (AASB 117) divided leases into operating and finance leases, with operating leases not recording assets or liabilities on balance sheets. AASB 16 addresses off-balance-sheet leases by requiring lessees to record most leases as ROU assets and liabilities on balance sheets. This may improve financial reporting quality and comparability by recognizing assets and liabilities for most leases over 12 months (Spencer & Webb, 2015).

Dargenidou et al. (2006) argue that the implementation of IFRS 16 results in changing risk and growth assessments, which consequently affect the costs of capital. Greater transparency resulting from lease capitalization could cause investors to adjust the risk premiums they require. Furthermore, Chen et al. (2023) find that capitalizing leases promotes transparency about future commitments, which may be a good thing for

investment efficiency. Leasing is praised as providing valuable flexibility to airlines by allowing capacity to be adjusted and increased or decreased in line with market demand, improving operational efficiency (Bourjade et al., 2017). On the flip side, they warned heavy leasing could raise financial risk on account of higher fixed obligations. Additionally, Aktaş et al. (2017) suggest that capitalizing leases inflates reported assets and liabilities, which can mislead important measures like debt-to-equity (D/E) and return on assets (ROA).

Other factors influencing leasing decisions include firm size, management compensation, and ownership structure. Evidence on firm size remains inconclusive, as it can represent varied characteristics such as diversification capabilities and political costs. Regarding management incentives, researchers argue that managers favor operating leases when their compensation is tied to return on capital, as these leases do not appear as assets on financial statements. However, results are mixed; while Smith and Wakeman (1985) and El-Gazzar et al. (1986) support this hypothesis, others like Imhoff et al. (1993) and Duke et al. (2024) do not. Ownership structure also plays a role, with higher managerial ownership often linked to greater use of operating leases. The authors also suggest that industries with higher fixed capital investment and lower marginal tax rates are more likely to utilize leasing, as these assets serve as strong collateral and minimize tax burdens. Further, Graham et al. (1998) and Sharpe and Nguyen (1995) report a negative correlation between tax rates and operating lease intensity.

The above review indicates that operating and finance leases have far-reaching implications for a firm's performance, various ratio analyses, and shareholders' and creditors' decision-making ability. Furthermore, greater transparency concerning the recognition of lease obligations could improve investment decision-making and, possibly, lower the cost of capital; it would also increase reported liabilities and thus impact financial ratios as well as perceived risk.

2.3. Capitalization of leases

The section provides an analysis of the anticipated effects of IFRS 16 on financial reporting across various countries and industries. The primary focus is on the shift from off-balance-sheet accounting under IAS 17 to mandatory capitalization of lease obligations under IFRS 16, which fundamentally alters financial disclosures. The earliest studies predicting the effects of lease capitalization originated in the U.S. Nelson (1963) analyzed a sample of U.S. companies and found that lease capitalization adversely affected key financial ratios. This line of inquiry gained momentum with the issuance of FASB Statement No. 13 in 1976, which required capital leases to be reported on balance sheets as assets and liabilities. Imhoff and Thomas (1988) investigated the economic consequences of this standard and documented significant changes in corporate financial structures, including reductions in the use of capital leases relative to operating leases, shifts in total debt versus equity, and altered financing strategies. These findings argue that accounting regulations influence economic decisions. Later, Imhoff et al. (1993) extended this research by estimating the present value of operating leases for a sample of airlines and grocery stores, identifying substantial impacts from lease capitalization.

In Europe, lease accounting standards have evolved in a similar direction, with an increasing focus on incorporating leases into financial statements. Beattie et al. (1998) conducted a prospective analysis of the impact of capitalizing operating leases for UK-listed companies, finding significant effects on financial ratios and gearing measures. Country-specific studies have also examined the implications of on-balance-sheet lease accounting. For instance, Bennet and Bradbury (2003) analyzed New Zealand companies, Durocher (2008) focused on Canada, and Fülbier et al. (2008) investigated German firms. These studies generally observed substantial capitalization effects on financial position ratios, particularly in the fashion and retail industry, though the impact on profitability ratios and valuation multiples was often less pronounced.

Moving beyond ex-ante research, ex-post studies explore the broader economic consequences of accounting standards. Holthausen and Leftwich (1983) initiated this line of inquiry, examining whether standard setters should consider the economic effects of their regulations. Subsequent research has explored topics such as why firms adopt specific accounting treatments, the role of lobbying in standard-setting, and the overall significance of accounting standards on financial statements. If changes in accounting regulations affect financial statements, they are likely to have broader economic implications, potentially influencing decision-making processes and resource allocation.

Subsequent studies have extensively modified constructive capitalization techniques to model the impacts of lease capitalization in other geographical areas and business sectors. For instance, Fülbier et al. (2008) explored the impacts on German companies, noting material changes in balance sheet metrics, particularly in asset-heavy industries such as fashion and retail. Similarly, Wong and Joshi (2015) studied Australian firms and found significant shifts in financial ratios such as D/E and ROA, although the return on equity (ROE) showed minimal changes. Kostolansky and Stanko (2011) and Tai (2013) highlighted the substantial variations in financial ratios for industries heavily reliant on leasing, indicating that lease capitalization can significantly alter company risk perceptions and financial transparency.

Other researchers, such as Lee et al. (2014) and Paik et al. (2015), examined the implications for debt covenants and borrowing constraints, noting that while some firms might face increased risks of covenant violations, others could see improved financial reporting accuracy. The findings underscore that the magnitude of impact depends on pre-existing lease structures and the industry's reliance on operating leases.

Accounting standards also influence leasing trends. Firms frequently design contracts to avoid capitalization, using operating leases to maintain a favourable appearance on financial statements. This practice, as highlighted by Cornaggia et al. (2013), allows firms to exploit private information about their financial health. Additionally, research into the impact of capitalizing off-balance-sheet liabilities and assets reveals significant effects on financial indicators across various industries and regions. Studies in the U.S. (Kilpatrick & Wilburn, 2006; Duke et al., 2009), New Zealand (Bennet & Bradbury, 2003), Canada (Durocher, 2008), and the European Union (EU) (Beattie et al., 2018; Fülbier et al., 2008)

consistently demonstrate that capitalization alters key metrics, explaining industry resistance to proposed accounting reforms (Morais, 2013).

Recent research by Giner and Pardo (2018) underscores the motivations behind using operating leases and the pronounced impact of their capitalization on financial ratios tied to covenant agreements. Their findings align with broader conclusions that lease capitalization particularly affects large companies and industries such as retail and technology. By building on this body of literature, Giner and Pardo's (2018) research seeks to contribute to the ongoing debate by demonstrating how changes to lease accounting standards may affect financial analysis and corporate performance. If the effects are significant, they could have implications for decision-makers and stakeholders in the financial ecosystem.

Overall, the capitalization of operating leases alters key financial ratios, impacting profitability indicators, leverage measures, and stability within industries. These changes are most pronounced in service-oriented sectors and countries with extensive lease usage, such as the UK, Germany, and the U.S. For Italian companies, this research review reveals that lease capitalization significantly affects leverage ratios, offering valuable insights for policymakers and stakeholders adapting to IFRS 16 requirements.

2.4. The leases and firm value

The standard AASB 16 has significant implications for investment behavior and economic consequences for lessee firms and their stakeholders. This change is substantial in terms of the manner leases impact a company's financial statements and, therefore, its market valuation. Damodaran (2009) contended that capitalizing leases reduces the chances of companies misrepresenting their financial obligations in a way that may influence investor perceptions and firm value.

Using Australian data, Wong and Joshi (2015) investigated the effect of lease capitalization in financial statements and benchmark ratios, revealing that recognizing operating leases on the balance sheet is associated with substantial alterations in solvency and profitability ratios. Similarly, Aktaş et al. (2017) examine the impact of capitalizing leases under IFRS 16 on financial statements and ratios and report that firms with high leverage ratios tend to be seen as higher risk by investors and, therefore, command lower market values. Furthermore, leases can affect the firms' debt capacity and their value (Schallheim et al., 2013). Capitalizing leases also helps with transparency around a company's financial obligations, meaning that the market should be able to assign firm value more accurately (Nikolaev & van Lent, 2005).

Prior research shows that this is indeed the case, for capitalization of lease obligations using the constructive lease capitalization method (operating leases and finance leases) greatly impacts firm value. Recognizing lease liabilities on the balance sheet results in higher financial leverage and impacts key financial ratios, impacting how investors perceive risk and profitability. Operating leases once enabled companies to capitalize on cheaper off-balance-sheet financing to enhance firm value, and the accounting standards change has diminished this benefit. This review shows that the relationship between leases and firm value is inconsistent, and there is no evidence to prove that this relationship has been examined using real data-based empirical research, particularly in Australia, where a single model of leases was mandated for the 2019 reporting periods onwards. Accordingly, using a sample of the top 100 public Australian companies, this study investigates the effects of both operating leases and capitalized operating leases on firm value to fill the gap in the prior literature.

2.5. Hypotheses development

Company value is significantly driven by financial structure and profitability of the borrower, which are both impacted by leasing arrangements. Industrial firms are significantly affected by share prices due to financial leverage among them, including lease obligations (Barakat, 2014). More leverage equals higher returns, but also more financial risk and lower firm values if the leverage is not properly managed. Furthermore, the size of a company affects profitability and value in the manufacturing sector (Budisaptorini et al., 2019). Moreover, larger contractors achieve economies of scale and cheaper finance arrangements, such as leasing, which result in increased profitability and higher value. It might be oversold, though, as adding leases to the balance sheet following IFRS 16 might make smaller businesses less valuable because it would raise their liabilities. Leases are a form of debt, and a proper approach to valuation would include this in the valuation. Neglecting lease obligations could lead to an underestimation of a company's financial leverage and risk, ultimately inflating the firm value (Damodaran, 2009). Capitalizing leases reduces the chances of companies misrepresenting their financial obligations in a way that may influence investor perceptions and firm value.

The empirical results revealed that the recognition of operating leases on the balance sheet is associated with substantial alterations in solvency and profitability ratios (Wong & Joshi, 2015). Consequently, investors' perception of a firm's market value may change due to updated considerations about the company's financial strength or risk profile. On the other hand, firms with high leverage ratios tend to be seen as a higher risk by investors and therefore command lower market values (Aktaş et al., 2017).

Leases may also have an impact on a company's debt capacity and, consequently, its value. According to the theory, leasing might allow businesses to acquire more assets without immediately reaching their borrowing limits. However, when leases are capitalized, this benefit is likely to disappear because lease commitments would show up on the balance sheet as debt, which may limit a company's capacity to borrow money and make investments in ventures that could increase its value (Schallheim et al., 2013).

Furthermore, profitability is a key factor in determining a company's value, and leases affect profit measures. Bourjade et al. (2017) demonstrate how leasing can enhance financial performance by preventing excessive capital expenditures and permitting operational flexibility. However, increased profitability would enhance the firm's value, and it complicates matters further regarding capitalization leases and their impact on overall profitability ratios due to increased depreciation and interest costs.

All leases must be capitalized under the new accounting standard, which alters important accounting leverage ratios and rates of return and raises company values (Chung, 2022). Further, the goal of the new IASB and FASB lease models is to raise the quality of financial reporting. Both standard-setters enforce the recognition of operating lease assets and liabilities to achieve this. In the meantime, preparers have been actively opposing these changes since they believe the new approach will have detrimental effects on the company's value. According to reports, investors in common-law countries with more developed markets and stronger enforcement practices behave no differently than those in code-law countries with less developed markets and poorer enforcement (Giner & Pardo, 2018). Due to the information in the notes, investors in the retail sector place equal value on recognized debts and operating lease liabilities, and this move won't significantly affect the stock exchange.

The discussion above shows that previous research on the connection between leases and firm value has produced contradictory findings. As a result, we developed our hypotheses:

H1: The operating leases have no relationship with the firm value.

H2: The capitalized leases (right-of-use assets) have no relationship with the firm value.

3. RESEARCH METHODOLOGY

This research uses a quantitative research methodology based on historical data. Its purpose is to test the predictive generalizations of several approaches with regard to the relationship between the effects of newly adopted leasing standard AASB 16-based ROU assets and the old standard (AASB 117) based operating lease on firm value. The accounting and finance literature mostly uses quantitative research to study the relationships between accounting for lease transactions and companies' firm value.

This study explores the potential impact of AASB 16 on firm value to examine the implications of the recently adopted accounting standard for Australian public companies. To achieve the objectives of this study, the regression analysis is used to examine the relationships between operating leases and ROU assets as independent variables and firm value as dependent variables.

In order to increase the degree of freedom, decrease estimation problems with collinearity among explanatory variables, and provide more effective estimates and inferences, this study uses pooled ordinary least squares (OLS) regression to accommodate a greater number of panel data (Gujarati & Porter, 2009). The uncorrelated nature of the independent variables and the error term is the main regression assumption of the pooled model. The estimates are biased if there is a correlation between the independent variables and the error term (Hair et al., 2010). A pooled model is used to examine how accounting for lease transactions affects firm value for Australian listed companies, assuming that there are no firm or time-specific effects on these factors. The incidental parameters problem, which can result in significant biases in estimates of common parameters, is another acknowledged issue with fixed effects models (Bester & Hansen, 2016). Consequently, the research topic of this study is addressed through the use of pooled multiple regression analysis. To investigate the relationship between operating leases and company risk for panel data, previous studies have also used a pooled regression model (Altamuro et al., 2014; Ma & Thomas, 2023).

In this study, serial correlation is controlled with year dummies. The residuals are assumed to be serially uncorrelated from one observation to the next in pooled multiple regression. Thus, the residual size for one example does not affect the residual size for the subsequent case. This is especially problematic when dealing with time-series pooled data. To determine whether serial correlation exists among the residuals, the Durbin-Watson Statistic is employed. The higher the serial correlations, the smaller the observed and projected values are (Gujarati & Porter, 2009). From 0 to 4 is the range of values for the Durbin-Watson statistic. A Durbin-Watson score of about 2 indicates that the residuals are uncorrelated. According to Gujarati and Porter (2009), value 4 denotes a high negative correlation, whereas a value around 0 implies a significant positive correlation.

According to the nature of the data needed to perform this study on ASX-listed companies, the information would be publicly available. We predicate this study's examination of operating leases (off-balance sheet) and ROU assets (on-balance sheet) on longitudinal data collected from different industries comprising ASX top 100 companies. From 2019, when AASB 16 became mandatory, we divided the year-wise data collected from 2016 to 2022 into two parts. It is, therefore, an accounting standards-based analysis.

3.1. Sample selection

To generalize research findings, any empirical research must clearly define the sample and ensure that it accurately represents the population (Ticehurst & Veal, 2000; Bell et al., 2022). The initial data set for this study is the top 150 firms that were listed on the ASX in 2016 and ranked by market capitalization for the seven years from 2016 to 2022. Eighty-two percent of the market capitalization of ASX-listed companies is held by the top 150 companies out of the total market capitalization of all 2210 companies listed on ASX, according to the ASX website in January 2016. Moreover, leasing is a prominent feature of big companies (Barone et al., 2014; Zhang & Liu, 2020).

As indicated in Table 1, the original sample size of 150 firms in this study has been decreased to 100 due to the exclusion of financial companies and those that did not provide lease data. The top 100 listed companies represented about 73% of the total market capitalization of the Australian share market, according to the ASX 100 companies. We excluded twenty-four finance companies from the sample due to differences in their financial reporting, as their total asset base and financial structure are not comparable to those of the other companies (Bliss, 2011; Carey & Simnett, 2006; Francis & Stokes, 1986). The inability to collect sufficient lease data relating to the operating leases and ROU assets led to the elimination of 26 firms.

Table 1. Sample selection

Selection criteria	*No. of firms*
Top 150 listed companies	150
Less financials	(24)
Top 150 listed companies except financials	126
Less companies with missing data	(26)
Total listed companies in the sample	100
Firm years (2016–2022)	700

3.2. Data collection

We test our hypotheses using a panel data sample that comprises the top 100 ASX-listed Australian companies from 2016 to 2022 to answer our research question. The study employs multiple regression models and uses a statistical software package for data science, Stata 17, to examine the association between leases (independent variable) and the firm value (dependent variable). Therefore, we analyzed the company's annual reports and found that the balance sheets, income statements, and cash flows provide related data. We manually collected data for market capitalization, a proxy for firm value, from the Yahoo Finance website[1] and checked with the CompaniesMarketCap website[2].

Table 2. Industry type per Global Industry Classification Standard (GICS) code — Sample companies

No.	*Sector*	*GICS code*	*No. of companies*
1	10 — Energy	1010	6
2	15 — Materials	1510	25
3	20 — Industrials	2010	15
4	25 — Consumer discretionary	2520	10
5	30 — Consumer staples	3010	03
6	35 — Healthcare	3510	12
7	40 — Real estate	4040	12
8	45 — Information technology	4510	05
9	55 — Utilities	5510	04
10	25 — Communication services	2540	08
Total			100

3.3. Empirical models

The impact of operating and capitalized (ROU assets) leases on firm value is measured as follows:

$$MKTCAP_{i,t} = \beta_0 + \beta_1 OPLEASE_{i,t} + \beta_2 CAPLEASE_{i,t} + \beta_3 FS_{i,t} + \beta_4 PPE/SALES_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CASH/ASSETS_{i,t} + \beta_7 EBIT/SALES_{i,t} + \beta_8 LEVERAGE_{i,t} + \sum Year_{i,t} + \varepsilon_{i,t} \quad (1)$$

where,

- *MKTCAP* = firm value (natural log of market capitalization, the company's outstanding shares multiplied by its stock price per share);
- *OPLEASE* = operating lease (operating lease / total assets);
- *CAPLEASE* = capitalized lease (ROU assets / total assets);
- *FS* = firm size (natural log of total assets);
- *LEVERAGE* = leverage (long-term debt to total assets [D/A]);
- *PPE/SALES* = the ratio of property-plants-equipment to sales;
- *ROA* = return on assets (net profit to total assets);
- *CASH/ASSETS* = the ratio of cash to total assets;
- *EBIT/SALES* = the ratio of earnings before interest and taxes to sales;
- *Year* = year effect;
- ε = error term.

3.3.1. Dependent variable

According to Permata and Alkaf (2020), market capitalization value (*MKTCAP*) serves as a representation of the market value of a single firm. Before investing, potential investors take the stock market's capitalization into account. Stocks with a limited market value indicate the company's size in terms of capital and assets. This is due to the company's strong growth potential and the significant return on investment that these shares will eventually yield. Large market capitalization stocks, on the other hand, suggest that the company is already in a mature business cycle and has little chance of growing again. This study uses market capitalization to determine a firm's worth, following Permata and Alkaf (2020). We estimated the market capitalization of the company's outstanding shares multiplied by its stock price per share, as done by Al Mubarak and Hamdan (2016).

3.3.2. Independent variables

Operating leases

The ROU assets are readily collected from the balance sheet of lessee firms, but operating lease values are not. We manually extracted the operating lease data from the notes in the financial statements of the sample companies for the period 2016–2018. No financial database exists that offers sufficient availability for operating-lease data. To calculate operating lease values, we follow (Elam, 1975; Dogan, 2016; Lawrence & Bear, 1986).

The operating lease ratio (*OPLEASE*), one of the important independent variables, is as follows:

$$OPLEASE = \frac{Firm's\ operating\ lease\ payments}{Firm's\ total\ assets} \quad (2)$$

Capitalized leases

According to AASB 16, a lessee must measure ROU assets in the same way as other non-financial assets (such as property, plant, and equipment). The ROU assets can be easily retrieved from lessee companies' balance sheets. We manually extracted the ROU assets data from the balance sheet of the sample companies for the period 2019–2022.

The constructive lease capitalization approach, developed by Imhoff et al. (1991), was used in all previous studies that used data from before 2019 to estimate the amounts of unrecorded lease obligations and unrecorded lease assets.

Consistent with Jennings and Marques (2013), we estimated capitalized leases (*CAPLEASE*) as follows:

$$CAPLEASE = \frac{Firm's\ ROU}{Firm's\ total\ assets} \quad (3)$$

Furthermore, the ratio of ROU assets divided by total assets is used as a proxy for measuring capitalized leases in recent lease research. For example, Sa'diyyah et al. (2024) use this formula as a proxy for the ROU assets variable.

[1] https://finance.yahoo.com/
[2] https://companiesmarketcap.com/

3.3.3. Control variables

According to Aggarwal and Goodell (2009), the control variables were chosen. A natural logarithm of total assets is included to control for firm size (*FS*). Because there is less opportunity for asset misuse, businesses with higher (lower) amounts of fixed (intangible) assets may view a stringent governance system as less desirable. This is why the property-plants-equipment to sales ratio (*PPE/SALES*) is used. The ratio of cash to total assets (*CASH/ASSETS*), the ratio of EBIT to sales (*EBIT/SALES*), and *LEVERAGE* are further factors that we control for because they are typically linked to company value. The ratio of long-term D/A was used to determine leverage, which was adjusted for the effect of a company's capital structure on business risk.

4. RESULTS

4.1. Descriptive statistics

Table 3 presents the descriptive statistics calculated for the dependent, independent, and control variables used in the analysis of the impact of operating and lease capitalization (ROU assets) on firm value. It offers a summary of the characteristics of the data under analysis. The pooled multiple regression test was used in this study because it allowed for more data, which increased the degree of freedom, reduced estimation problems caused by collinearity among explanatory variables, and led to better estimates and inferences (Gujarati & Porter, 2009).

Table 3. Descriptive statistics for analysis of the impact of operating and capitalized leases (ROU assets) on firm value

Variables	*N*	*Mean*	*Std. dev.*	*Min*	*Max*
MKTCAP	700	5.5023	1.138145	3.03	8.66
OPLEASE	700	0.0399335	0.0894082	0	0.9722387
CAPLEASE	700	0.0367561	0.0900076	0	0.9023535
PPE/SALES	700	2.16653	4.143816	0.0176745	36.51023
FS	700	4.899175	1.234658	2.294255	8.707372
ROA	700	0.0834872	0.0804622	-0.072786	0.3512147
LEVERAGE	700	0.253592	0.2277915	0	0.92887
EBIT/SALES	700	0.1778672	0.2478094	-3.69921	1.716033
CASH/ASSETS	700	0.1069658	0.143111	0.0001194	0.9737864

The mean, standard deviation, minimum, and maximum values for each variable and observation are shown in Table 3. When understanding each figure, keep in mind its nature. While firm size and market capitalization are the natural logarithm values, the variables *OPLEASE, CAPLEASE, PPE/SALES, ROA, LEVERAGE, EBIT/SALES*, and *CASH/ASSETS* are relative numbers that represent a ratio. Table 3 provides descriptive statistics concerning operating and ROU assets of the large Australian listed firms used in the sample. It reveals that the average presence of operating leases of companies in the sample is 4% (0.039) of total assets. Similarly, ROU assets in the sample ranged from 0 to 0.90, with a mean score of 0.036, indicating that they represented 3.6% of the total assets.

The control variables employed for our study over the period from 2016 to 2022 show that the *ROA* varies between -7.3% and 35% with a mean of 8.3% and a standard deviation of 8%. The average ratio of long-term D/A, which serves as a proxy for *LEVERAGE*, is 0.25, with a standard deviation of 0.22. This shows that to pay off its long-term debt, a company would have to liquidate 25% of its assets. The firm size (*FS*) had a mean value of 4.89, a standard deviation of 1.23, and a minimum and maximum value of 2.29 and 8.7.

4.2. Normality of data

We initially assess data normality by reviewing descriptive statistics. Unreported histograms and detrended normal probability plots offer a clear visual depiction of the data and the result. The normality tests confirmed the heavy skewness of the *PPE/SALES* values for the period 2016–2022. We excluded the few firms identified as extreme cases entirely from the analysis after reviewing the regression residual scatterplots and case-wise diagnostics table.

4.3. Correlation test

After a preliminary analysis to confirm the assumptions of normality, linearity, and homoscedasticity, we performed a Pearson correlation analysis to test the relationship between the dependent and independent variables. The dependent variable (*MKTCAP*) has a positive correlation with the *OPLEASE, PPE/SALES, ROA, EBIT/SALES*, and *CASH/ASSETS*, and a negative correlation with *CAPLEASE*, according to the Pearson correlations shown in Table 4.

The results show that the highest degree of correlation (0.27) is between *ROA* and *CASH/ASSETS*. Fields et al. (2001) posit that multicollinearity becomes harmful when it surpasses a critical value of 0.8. We can examine the variance inflation factor (VIF) or tolerance for any multicollinearity problems in such a situation (Hair et al., 2010). We calculate the VIF for each independent variable to test for multicollinearity. Myers (1990) suggests that a VIF value of 10 and above is cause for concern. The results shown in Table 5 indicate that all the independent variables have VIF values of less than 2.01, which implies that multicollinearity is not a concern.

Table 4. Correlation coefficient for analysis of the impact of operating and capitalized leases (ROU assets) on firm value

Variable	*MKTCAP*	*OLEASE*	*CAPLEASE*	*PPE/SALES*	*FS*	*ROA*	*LEVERAGE*	*EBIT/SALES*	*CASH/ASSETS*
MKTCAP	1.0000								
OPLEASE	0.0094***	1.0000							
CAPLEASE	-0.1243***	0.1031	1.0000						
PPE/SALES	0.0733	-0.0348	-0.0510	1.0000					
FS	0.8867***	-0.0633	-0.0607	0.0812	1.0000				
ROA	0.0286***	0.0427	0.0294	-0.1709	-0.0313	1.0000			
LEVERAGE	-0.1822	-0.0167	0.1219	0.0008	-0.1646	0.0105	1.0000		
EBIT/SALES	-0.0518	-0.0631	-0.0137	0.1495	-0.0562	0.1862	-0.0183	1.0000	
CASH/ASSETS	0.0621	-0.0197	-0.0762	0.0248	0.0229	0.2702	-0.1912	0.0458	1.0000

*Note: ** and * correlation is significant at the 0.01 level (2-tailed) and 0.05 level (2-tailed).*

4.4. Multiple regression results

This section describes the multiple regression results, which show the relationship between the impact of operating and capitalized (ROU assets) leases on firm value (dependent variable). We regress the dependent variable, *MKTCAP*, against the independent variables, operating lease (*OPLEASE*) and capitalized lease (*CAPLEASE*).

The results of Table 5 indicate that there is strong support for firms' operating leases being positively associated with firms' market capitalization (firm value). There is a strong positive relationship ($p < 0.01$) between *OPLEASE* and *MKTCAP*. The coefficient of 0.8933 at the 1% significance level means that we have 99% confidence that the *MKTCAP* will increase by 0.8933% for every 1% increase in operating leases. This result suggests that operating leases are appropriately considered by users of the financial statements, particularly shareholders and capital market investors.

Conversely, *CAPLEASE* is negative and statistically significant at 1% ($p < 0.01$). The coefficient of -0.9464 at the 1% significance level means that we have 99% confidence that the *MKTCAP* will increase (decrease) by 0.9464% for every 1% decrease (increase) of capitalized leases. This result suggests that capitalized leases (ROU assets) are negatively considered by users of the financial statements, particularly shareholders and capital market investors. This result is consistent with Chen et al. (2023), who found that the introduction of operating lease capitalization rules led to a decrease in investment.

Table 5. Pooled multiple regression results for analysis of the impact of operating and capitalized leases (ROU assets) on firm value

Variables	*Predicted sign*	*St. Beta*	*t-value*	*Significance*	*VIF*
Dependent variable: MKTCAP					
Independent variables					
OPLEASE	+	0.8932693	3.78	0.000***	1.96
CAPLEASE	+	-0.9463896	-4.01	0.000***	1.85
Control variables					
PPE/SALES	+	0.0030123	0.57	0.566	1.35
FS	?	0.8134258	46.99	0.000***	1.65
ROA	+	0.7749566	2.75	0.006***	2.01
LEVERAGE	+	-0.1194128	-1.25	0.212	1.85
EBIT/SALES	+	-0.0548512	-0.62	0.533	1.82
CASH/ASSETS	+	0.1470442	0.94	0.345	1.42
R-squared			0.8009		
Adjusted R-squared			0.7982		
F-value			297.14		
N			700		

*Note: ***, **, * indicates significance at the 1%, 5%, and 10% levels, respectively.*

In terms of the control variables, as hypothesised, *FS* and *ROA* are positive and statistically significant with *MKTCAP*, *PPE/SALES*, and *CASH/ASSETS* are positive but statistically insignificant with *MKTCAP*. *LEVERAGE* and *EBIT/SALES* have a negative and insignificant impact on *MKTCAP*. This suggests that the ratios of noncurrent assets to sales revenue, cash balance to total assets, and earnings before interest and tax to sales revenue do not significantly impact the firm's value.

Overall, the F-value (297.14) in Table 5 is significant at the 1% level. This suggests that the linear regression model results in a statistically significant fit to the data overall. The F-statistic value's higher significance F-test indicates a strong linear relationship between the predictors and the target variable. Importantly, the explanatory power of the model (Adjusted R-squared of 0.8009) also contributes significantly to its predictive accuracy. In conclusion, it appears that there is strong support for hypothesis *H1* in that there is a positive relationship between operating leases and market caps and a negative relationship between market caps and capitalized leases (ROU assets). This result is consistent with that of Altamuro et al. (2014) and Graham and Lin (2018), who used data from the U.S. and who contend that the evidence strengthening their findings raises questions about lease accounting that capitalizes all leases, regardless of their economic characteristics, and reduces concerns about the potential disadvantages of operating lease accounting, and new lease standard will have an adverse impact on lease asset accounting.

4.5. Sensitivity tests

This section investigates the sensitivity analyses for the reported results on the impact of operating and capitalized leases (ROU assets) on firm value.

To investigate the robustness and reliability of this study's findings, which examine the association between operating and capitalized leases (ROU assets) and firm value, a sensitivity test is performed. We estimated the Approximate Tobin's Q using the formula of (*Market value of common equity + Preferred stock + long-term debt*) / *Total assets*.

Table 6. Pooled multiple regression results for analysis of the impact of operating and capitalized leases (ROU assets) on firm value (Sensitivity test)

Variables	*Predicted sign*	*St. Beta*	*t-value*	*Significance*	*VIF*
Dependent variable: Q					
Independent variables					
OPLEASE	+	0.5647812	2.56	0.014**	1.86
CAPLEASE	+	-0.6534127	-3.51	0.032**	1.75
Control variables					
PPE/SALES	+	0.0045871	0.67	0.566	1.45
FS	?	0.7254177	24.12	0.000***	1.52
ROA	+	0.6587412	3.41	0.006***	2.35
LEVERAGE	+	-0.1194132	-1.35	0.212	1.65
EBIT/SALES	+	-0.0625874	-0.73	0.533	1.72
CASH/ASSETS	+	0.2587416	0.82	0.345	1.46
R-squared			0.6241		
Adjusted R-squared			0.5214		
F-value			8.456		
N			700		

*Note: ***, **, * indicates significance at the 1%, 5%, and 10% levels, respectively. Q = approximate Tobin's Q.*

We employ Tobin's Q (*Q*) as an alternate performance measure, and the results, as shown in Table 6, are qualitatively almost identical to the main results. The regression results indicate that the firms' operating leases are positively associated with the firm's *Q* (firm value). There is a positive relationship ($p < 0.05$) between *OPLEASE* and *Q* at the 5% significance level. A 5% significance level ($p < 0.05$) shows that the analysis of the effect of the *CAPLEASE* is negative, as the main results in Table 5. The analysis reveals a coefficient of -0.6534 at the 5% significance level. The coefficients of control variables do not show any qualitative differences from the original findings.

Overall, the F-value (8.456) for the model is significant at the 1% level, and importantly, the explanatory power of the regression model (Adjusted R-squared of 0.5214) also contributes significantly to its predictive accuracy. This finding provides further evidence for the existence of a positive association between operating leases and firm value and a negative relationship between capital lease assets (ROU assets) and firm value.

5. DISCUSSION

This evidence indicates that prior to the implementation of the AASB 16 lease capitalization standard, the capital market viewed operating leases as positively influencing firm value. However, after the introduction of this standard, the capital market demonstrated a negative effect of lease capitalization on firm value.

Previous research has indicated that not only do high leverage ratios and financial constraints influence the use of off-balance sheet operating leases (Dhaliwal et al., 2011), but also that operating lease capitalization can negatively affect the firm value of minimally leveraged and unconstrained firms (Chung, 2022). Our findings suggest that this negative impact extends to large, financially sound, high-performance companies, as evidenced by metrics such as asset growth, total shareholder returns, and sustained superior cash flow returns (Needless et al., 2009). Consequently, policymakers should consider revising accounting standards that could modify key accounting ratios used to assess financial soundness, given their influence on firm value.

The leverage ratios of industries that predominantly rely on operating leases, such as European retail, hotels, and transportation companies, are found to be considerably impacted by IFRS 16 (Morales-Díaz & Zamora-Ramírez, 2018). Although their investigation's findings on the impact of IFRS 16 on profitability ratios are not entirely consistent, lease capitalization significantly impacts accounting ratios, which reinforces our findings. However, because creditors *ex-ante* consider the use of off-balance sheet leases when determining the terms of covenant contracts, Paik et al. (2015) contend that changes in leverage ratios caused by operating lease capitalization may have limited effects on covenant violation. According to their study of covenant agreements, businesses that rely significantly on off-balance sheet leases are more likely to employ income-statement-based covenants rather than balance-sheet-based agreements. Our findings contradict their conclusion. We find that the value of companies that rely on operating leases is inversely correlated with operating lease capitalization, which is consistent with (Chung, 2022).

Our research findings also support one of the primary arguments against capitalizing leases and associated liabilities because they may have detrimental economic effects on firms by affecting certain financial ratios that are used as debt covenants (Beattie et al., 1998; Bennet & Bradbury, 2003; Fulbier et al., 2008; Duke et al., 2009; Chung, 2022). Moreover, we find that this is the case for large companies in developed country markets, despite existing evidence suggesting that the impact should be greater for firms with greater financial restrictions since they tend to use operational leases more frequently (Eisfeldt & Rampini, 2009).

6. CONCLUSION

This study examined the relationship between the operating and capitalized leases (ROU assets) and firm value in Australia during the period 2016–2022. The OLS regression was used to test a set of hypotheses.

The increasing use of operating leases has raised concerns about financial reporting transparency and potential misallocation of capital. The AASB introduced AASB 16 to account for all

leases, introducing ROU assets. Critics argue this would increase complexity and compliance burden without improving financial information quality or relevance. There is sparse evidence in the prior literature on how the operating lease capitalization rule affects the economic consequences of the company.

Overall, empirical analysis produces results indicating that operating leases increase the firm value. This finding implies that users of the financial statements, especially shareholders, capital market participants, and corporate managers, give operational leases due consideration. This finding is in line with the findings of Altamuro et al. (2014) and Ma and Thomas (2023), who have used U.S. data and suggest that the evidence supporting their conclusions raises concerns about lease accounting that capitalizes all leases regardless of their economic characteristics and reduces concerns about the possible drawbacks of off-balance sheet operating lease accounting.

In contrast, the empirical analysis reveals that operating lease capitalization (ROU assets) decreases the firm's value. This study identifies a setting where operating leases matter but not operating lease capitalization (ROU assets) when considering firm value. These findings are consistent with Ooi et al. (2023), who record that, except for its asset turnover ratio, the results demonstrated that the implementation of IFRS 16 Leases had resulted in adverse changes in AirAsia's D/E, D/A, ROE, and ROA ratios as well as an increase in the company's assets and liabilities. However, the research has several limitations, in particular, the sample is limited to the top 100 leading companies listed on the ASX over a seven-year period, and a lack of sufficient publicly available data.

This study makes several contributions to the lease accounting research and literature. When taking firm value into account, this analysis finds a situation in which operating leases are important, but operating lease capitalization (ROU assets) is not. It is also the first Australian top 100 ASX company sample study to assess the impact of operating leases and capitalized leases (ROU assets) on the assessment of firm value by shareholders, lenders, accountants, regulators, and policymakers.

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