

**Bringing Operating Leases onto the Balance Sheet:
How IFRS 16 and U.S. GAAP Changed Reported Leverage in Lease-Intensive Industries**

Author: **Charbel Slim¹**

Affiliation:

1. *Business School, Holy Spirit University of Kaslik, P.O. Box 446, Jounieh, Lebanon*
2. *CIRAME Research Center, Holy Spirit University of Kaslik, P.O. Box 446, Jounieh, Lebanon*

Abstract:

Businesses were able to retain the majority of their operating leases—rent contracts—off the balance sheet until 2019. This was altered by IFRS 16 and its U.S. GAAP equivalent, which mandated that businesses record future lease payments as a liability. In this analysis, I quantify the extent to which this shift raised the reported debt of businesses. In addition to a control group of businesses that lease relatively little, I gathered data from the first annual reports issued under the new regulations by 24 major U.S.-listed corporations in the retail, airline, and restaurant industries. I contrasted each company's reported ratios with what it would have displayed in the absence of the new regulations. The new regulations increased these balance sheets' lease liabilities by almost USD 134 billion. The debt-to-equity ratio rose by a median of 12.9% and the liabilities-to-assets ratio by an average of 5.8 percentage points for the 19 companies with positive equity, and all of them reported higher leverage. For businesses that lease little, the effect was almost nonexistent, but for Chipotle, it reached 273%. The impact increases with a company's leasing volume. Leverage ratios and loan covenants should be modified for the new standard by lenders and analysts, particularly in businesses that heavily rely on leases.

Keywords:

IFRS 16, U.S. GAAP, Leases, Financial Leverage, Financial Ratios, Financial Reporting

Introduction:

Many businesses do not own the buildings in which they operate. Restaurant businesses rent nearly all of their sites, retailers rent their shops, and airlines lease many of their aircraft. The majority of these agreements were regarded as operating leases under the previous regulations (IAS 17 and the previous U.S. GAAP lease requirements). The pledge to continue paying rent for many years did not show up as a liability, but the rent was recorded as an annual expense. On its balance sheet, a business may sign a 15-year lease and appear nearly debt-free. Many readers never looked at the notes, which included the information.

This practice was discontinued in 2019 by IFRS 16 and the new U.S. GAAP lease standard. For nearly all leases longer than a year, businesses now have to record a "right-of-use" asset and a lease liability (International Accounting Standards Board [IASB], 2016; Financial Accounting Standards Board [FASB], 2016). This is important since leverage ratios are used by banks, rating agencies, and investors. Agency theory explains why lenders employ such accounting-based rules to safeguard themselves, and banks include them in loan agreements (covenants) (Jensen & Meckling, 1976). Additionally, according to positive accounting theory, managers choose strategies that make their business appear less indebted (Watts & Zimmerman, 1990). One such strategy was to exclude leases from the balance sheet.

Most earlier studies estimated the effect of lease capitalization before the new rules started, using assumptions about interest rates and lease terms (Imhoff et al., 1991; Morales-Díaz & Zamora-Ramírez, 2018). Now that companies have actually reported these amounts, the effect can be measured directly. My research question is: How much did the new lease rules increase the leverage that companies report, and does the effect differ between industries? To answer it, my study aims to:

- 1) Measure the change in the liabilities-to-assets and debt-to-equity ratios of each company.
- 2) Test whether this change is statistically significant.
- 3) Compare the effect between retail, airlines, restaurants and a control group.
- 4) Check whether companies that lease more are affected more.

Literature Review:

For more than thirty years, scholars have examined lease accounting. Imhoff et al. (1991) developed a technique known as "constructive capitalization" in which they computed the present value of the future rent payments revealed in the notes and added it to the balance sheet. They discovered significant increases in leverage, particularly in the retail and aviation industries. Durocher (2008) came to the same conclusion for Canadian businesses, Fitó et al. (2013) for Spanish businesses, and Beattie et al. (1998) for U.K. businesses. Morales-Díaz and Zamora-Ramírez (2018) demonstrated that the impact was significant but concentrated in a few industries after refining the approach to conform to IFRS 16. All of these studies point to the same conclusion: the impact is significant overall, but it mostly varies by industry.

Another group of studies asked whether investors and lenders already knew about these hidden debts. Altamuro et al. (2014) found that credit ratings and loan pricing already took operating leases into account, and Lim et al. (2017) found that lenders treated operating leases almost like normal debt. Giner and Pardo (2018) showed that estimated lease liabilities were value-relevant for investors. However, Bratten et al. (2013) found that users treat numbers in the notes like numbers in the balance sheet mainly when they are reliable, so putting leases on the balance sheet still matters, especially for less experienced users and for contracts that use ratios automatically.

From a reporting quality point of view, showing lease liabilities makes the balance sheet more complete, but it also requires new judgements, such as the discount rate and the lease term, which depend on good auditing (Sawaya et al., 2025). Since the new rules started, a few studies have used real reported numbers. Lopes and Penela (2025) found that IFRS 16 increased the liabilities of European tourism companies by 9.57% and worsened their debt ratios. However, most of this evidence is still based on estimates or focuses on one industry. This study adds to it by using real reported amounts and comparing several industries with a control group. The transition to IFRS 16 and the corresponding U.S. GAAP standards extends beyond mechanical ratio adjustments; it represents a fundamental test of a firm's internal controls and corporate governance frameworks. Ensuring financial transparency during such significant reporting shifts requires rigorous internal audit mechanisms (Saber & Sassine, 2022). Because capitalizing operating leases involves complex managerial judgments regarding discount rates and lease durations, maintaining high financial reporting quality is heavily contingent on auditor independence and industry-specific expertise (Sawaya et al., 2025). To navigate the growing complexity of these consolidated financial statements, modern audit practices are increasingly adopting artificial intelligence to validate reporting accuracy (Sawaya et al., 2026). The successful deployment of these AI-driven audit methodologies depends strongly on user trust and the recognized operational benefits among auditing professionals (Jabbour Al Maalouf et al., 2026).

Furthermore, the sudden inflation of reported leverage under the new lease rules can artificially trigger loan covenants, raising immediate concerns about apparent financial distress. Accurately modeling financial distress—often through established frameworks like the Altman Z-score—is critical for lenders who must reassess credit capacity and risk in impacted industries (Elia et al., 2021). Managing this structural transition requires robust corporate governance to maintain lender confidence and stabilize financial performance, an element that is particularly vital for entities operating within vulnerable or economically fragile environments (El-Chaarani et al., 2023; Athari et al., 2023).

Methodology:

A "with versus without" design is what I employ. I compare the reported ratios on each company's first annual balance sheet under the new regulations with the ratios that would have been displayed if the leases had remained off the balance sheet. So that equity stays the same, I subtract the right-of-use (ROU) asset from total assets and the equivalent amount from total liabilities while creating this second balance sheet. I do not just compare 2018 and 2019 because a lot happens in a single year and the previous year was not restated. I redo the test with the entire lease liability removed as a robustness check.

The sample includes 24 large U.S.-listed companies: eight retailers (e.g., Walmart, Target, TJX), six airlines (e.g., Delta, United, Southwest), five restaurant chains (e.g., McDonald's, Starbucks, Chipotle) and five companies that lease very little (Microsoft, Apple, Johnson & Johnson, Pfizer and Merck), which form the control group. I chose U.S. companies because their reports are free and machine-readable. On the balance sheet, U.S. GAAP and IFRS 16 work in the same way for lessees. All data come from each company's first annual report (Form 10-K) under the new rules, downloaded from the SEC EDGAR database (U.S. Securities and Exchange Commission [SEC], 2026). The full data set is provided in an Excel file.

Table 1: Sample by industry

Industry	Firms	Average lease intensity	Range	Firms with negative equity
Retail	8	18.3%	5.8% – 38.5%	1
Airlines	6	10.1%	5.1% – 15.2%	1
Restaurants	5	34.5%	13.5% – 55.9%	3
Control (low-lease)	5	1.6%	0.6% – 2.8%	0

Note: Lease intensity = operating lease liability / total assets. Negative equity means liabilities are larger than assets.

The main variables are: total liabilities (L) = total assets (A) – equity (E); lease intensity = lease liability / total assets; liabilities-to-assets = L/A, and without leases (L – ROU)/(A – ROU); debt-to-equity = L/E, and without leases (L – ROU)/E. The debt-to-equity ratio has no meaning when equity is negative, so the main tests use the 19 companies with positive equity. I use a paired t-test and a Wilcoxon signed-rank test to check whether the change is significant, the Kruskal–Wallis test to compare industries, and Spearman's correlation to link lease intensity to the size of the effect. The significance level is 5%, and all calculations were done in Python. AI tools were used to help with brainstorming and editing; all data come from official SEC filings.

Results:

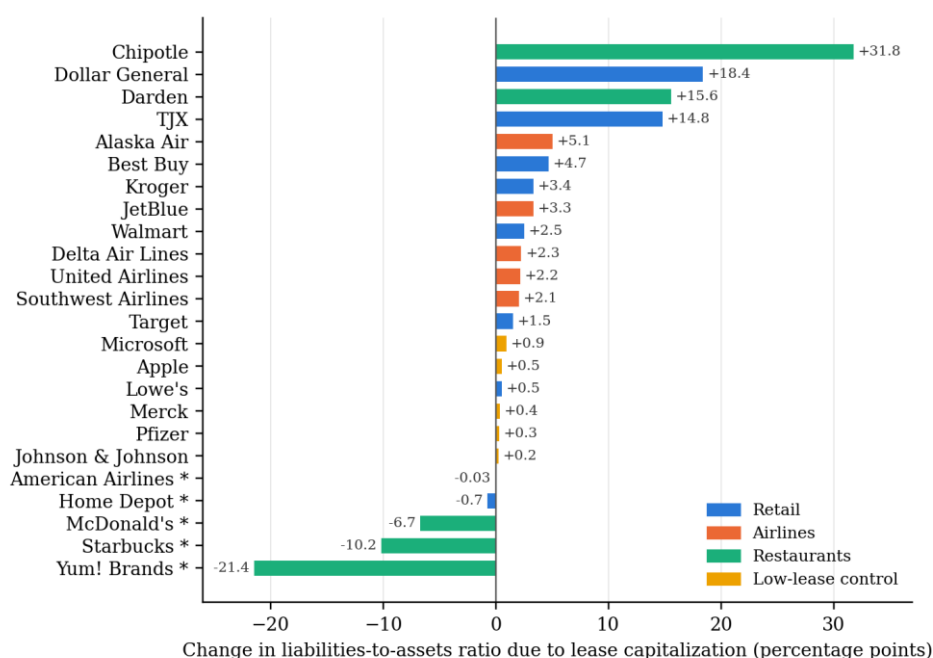
The new rules added USD 133.9 billion of lease liabilities to the 24 balance sheets, and about 85% of this amount belongs to the retail, airline and restaurant companies. Lease intensity is very different between industries: leases are on average 34.5% of total assets for restaurants but only 1.6% for the control group (Kruskal–Wallis $p = .001$). Table 2 shows the main results.

Table 2: Leverage with and without leases (companies with positive equity, n = 19)

Measure	Without leases	Reported	Change	t(18)	Wilcoxon p
Liabilities / assets (%), mean	66.0	71.8	+5.82 pp	3.03	< .001
Liabilities / assets (%), median	63.3	70.6	+2.27 pp		
Debt / equity, mean	2.83	3.45	+0.62	4.15	< .001
Debt / equity, median	1.73	2.41	+0.37		

Note: pp = percentage points. Paired t-test: p = .007 for liabilities/assets and p < .001 for debt/equity.

The liabilities-to-assets ratio rose from 66.0% to 71.8% on average, and the debt-to-equity ratio from 2.83 to 3.45. Both changes are significant. The Wilcoxon statistic is zero, which means that all 19 companies reported higher leverage. The median company's debt-to-equity ratio rose by 12.9%. The robustness check gives the same result (mean increase of 6.59 percentage points, Wilcoxon p < .001).

Figure 1: Change in the liabilities-to-assets ratio caused by the new lease rules, by company

Note: * = negative equity (liabilities larger than assets).

Table 3: Median effect by industry (companies with positive equity)

Industry	n	Lease intensity	D/E without leases	D/E reported	Change in D/E
Retail	7	15.7%	2.43	3.06	+22.8%
Airlines	5	9.4%	1.60	2.00	+13.1%
Restaurants	2	50.2%	1.05	2.65	+191.2%
Control (low-lease)	5	1.2%	1.73	1.80	+1.9%

Note: Industry medians. Only two restaurant chains (Chipotle and Darden) have positive equity.

Table 3 shows that the effect grows with lease intensity. The debt-to-equity ratio of the control group rose by only 1.9%, compared with 13.1% for airlines, 22.8% for retailers and 191.2% for

restaurants. The differences between industries are significant (Kruskal–Wallis $p = .005$), and the correlation between lease intensity and the increase in debt-to-equity is very strong (Spearman $\rho = 0.96$, $p < .001$). The biggest changes were at Chipotle (debt-to-equity from 0.54 to 2.03), Dollar General (1.09 to 2.41), Darden (1.56 to 3.27) and TJX (1.54 to 3.06). Six companies moved from a debt-to-equity ratio below 2.0 to 2.0 or more only because of the new rules.

Figure 1 also shows a surprising result. For the five companies whose liabilities were already larger than their assets (Home Depot, American Airlines, McDonald's, Starbucks and Yum! Brands), the liabilities-to-assets ratio went down. This is simple arithmetic: when a ratio is already above 100%, adding the same amount to the top and the bottom brings it closer to 100% (for example, $12/10 = 1.20$ but $14/12 = 1.17$). For these companies, the liabilities-to-assets ratio is therefore not a good measure of risk.

Discussion and Conclusion:

This study demonstrates how the new lease regulations significantly affected the amount of debt reported by businesses. Following the move, every company with positive equity appeared more indebted, and the median debt-to-equity ratio increased by around 13%. The most significant discovery, however, is that the impact is highly uneven: it can double or even quadruple the debt-to-equity ratio of lease-heavy retailers and restaurants, while it is nearly nonexistent for businesses like Pfizer or Apple. These findings correspond with Lopes and Penela (2025) and support previous estimates (Imhoff et al., 1991; Beattie et al., 1998; Morales-Díaz & Zamora-Ramírez, 2018) with actual reported figures.

The findings have practical implications. Because a corporation may violate a covenant without altering its operations, banks and borrowers should evaluate loan covenants based on leverage. The older figures must be adjusted by analysts comparing years prior to and following 2019. The liabilities-to-assets ratio is less helpful for businesses with negative equity than cash-flow or earnings-based metrics. The findings are also pertinent to Lebanon since local banks and auditors should consider the impact of IFRS 16 on Lebanese stores, restaurants, and other businesses that rent space, as Lebanese enterprises report using IFRS. From a theoretical point of view, the findings support the idea that corporations were able to appear less indebted than they actually were by keeping leases off the balance sheet (Jensen & Meckling, 1976; Watts & Zimmerman, 1990).

This study has limitations. The sample is small, it includes only large U.S. companies and it covers one year. It assumes that companies would have behaved in the same way without the new rules, and it looks only at the balance sheet, not at income statement ratios such as EBITDA or interest coverage. Future research could study Lebanese and MENA companies that report under IFRS, look at income statement effects, and examine how companies renegotiated their loan covenants.

References

- Altamuro, J., Johnston, R., Pandit, S., & Zhang, H. (2014). Operating leases and credit assessments. *Contemporary Accounting Research*, 31(2), 551–580.
- Athari, S. A., Saliba, C., Khalife, D., & Salameh-Ayanian, M. (2023). The role of country governance in achieving the banking sector's sustainability in vulnerable environments: New insight from emerging economies. *Sustainability*, 15(13), 10538.
- Beattie, V., Edwards, K., & Goodacre, A. (1998). The impact of constructive operating lease capitalisation on key accounting ratios. *Accounting and Business Research*, 28(4), 233–254. <https://doi.org/10.1080/00014788.1998.9728913>
- Bratten, B., Choudhary, P., & Schipper, K. (2013). Evidence that market participants assess recognized and disclosed items similarly when reliability is not an issue. *The Accounting Review*, 88(4), 1179–1210. <https://doi.org/10.2308/accr-50421>
- Durocher, S. (2008). Canadian evidence on the constructive capitalization of operating leases. *Accounting Perspectives*, 7(3), 227–256. <https://doi.org/10.1506/ap.7.3.2>
- El-Chaarani, H., Abraham, R., Khalife, D., & Salameh-Ayanian, M. (2023). Corporate governance effects on bank profits in Gulf Cooperation Council countries during the pandemic. *International Journal of Financial Studies*, 11(1), 36.
- Elia, J., Toros, E., Sawaya, C., & Balouza, M. (2021). Using Altman Z"-score to predict financial distress: Evidence from Lebanese alpha banks. *Management Studies and Economic Systems*, 6(1/2), 47-57.
- Financial Accounting Standards Board. (2016). Accounting Standards Update No. 2016-02, Leases (Topic 842). FASB.
- Fitó, M. À., Moya, S., & Orgaz, N. (2013). Considering the effects of operating lease capitalization on key financial ratios. *Spanish Journal of Finance and Accounting / Revista Española de Financiación y Contabilidad*, 42(159), 341–369. <https://doi.org/10.1080/02102412.2013.10779750>
- Giner, B., & Pardo, F. (2018). The value relevance of operating lease liabilities: Economic effects of IFRS 16. *Australian Accounting Review*, 28(4), 496–511. <https://doi.org/10.1111/auar.12233>
- Imhoff, E. A., Lipe, R. C., & Wright, D. W. (1991). Operating leases: Impact of constructive capitalization. *Accounting Horizons*, 5(1), 51–63.
- International Accounting Standards Board. (2016). IFRS 16 Leases. IFRS Foundation.
- Jabbour Al Maalouf, N., Ficani, A., & Elia, J. (2026). Drivers of AI adoption in auditing: a quantitative exploration of perceived benefits and trust across auditor profiles. *Cogent Business & Management*, 13(1). <https://doi.org/10.1080/23311975.2026.2709916>

- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360.
[https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Lim, S. C., Mann, S. C., & Mihov, V. T. (2017). Do operating leases expand credit capacity? Evidence from borrowing costs and credit ratings. *Journal of Corporate Finance*, 42, 100–114.
- Lopes, A. I., & Penela, D. (2025). The impact of IFRS 16 on lessees' financial information: A single-industry study. *Advances in Accounting*, 68, Article 100803.
- 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.
<https://doi.org/10.1080/17449480.2018.1433307>
- Saber, A. M., & Sassine, M. E. (2022). Reflections on internal control and internal audit roles for ensuring financial transparency toward Lebanese NGOs financial donors. *EuroMed Journal of Management*, 4(3), 186-198.
- Sawaya, C., Al Maalouf, N. J., Hanoun, R., & Rakwi, M. (2025). Impact of auditor independence, expertise, and industry experience on financial reporting quality. *Asia Pacific Management Review*, 30(1), Article 100357.
- Sawaya, C., Khalil, F. C., Jabbour Al Maalouf, N., & Kaspard, J. (2026). Revolutionizing audit practice in emerging economies: the role of Artificial Intelligence in enhancing the audit of consolidated financial statements. *Cogent Business & Management*, 13(1), 2625974.
- U.S. Securities and Exchange Commission. (2026). EDGAR application programming interfaces [Data set]. <https://www.sec.gov/edgar/sec-api-documentation>
- Watts, R. L., & Zimmerman, J. L. (1990). Positive accounting theory: A ten year perspective. *The Accounting Review*, 65(1), 131–156.