

Financial Leverage and Profitability at Apple Inc from 2015 to 2024Author: Youssef Daou¹*Affiliation:*

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Abstract:

This study examines the relationship between financial leverage and profitability at Apple Inc. over the 2015-2024 fiscal years. It responds to a practical corporate-finance question: whether higher use of liabilities is associated with stronger operating returns within one large technology company. The study uses annual financial-statement data reported through the U.S. Securities and Exchange Commission. Leverage is measured as total liabilities divided by total assets, while profitability is measured by return on assets using average total assets. Ten annual observations are analyzed through descriptive statistics, Pearson correlation, and simple ordinary least squares regression. Average leverage was 74.16%, and average return on assets was 20.84%. The correlation between leverage and return on assets was positive and strong ($r = 0.743$, $p = .014$). The regression produced a positive leverage coefficient of 0.438 and an R-squared of 0.552, meaning leverage was associated with about 55.2% of the observed variation in return on assets in this small sample. These findings show a statistically significant association, but they do not establish causality. Apple-specific decisions, time trends, product performance, share repurchases, and macroeconomic conditions may also explain the pattern. The study provides a transparent and reproducible example of how public accounting data can support a focused capital-structure analysis.

Keywords:

Capital structure, Financial leverage, Profitability, Return on Assets, Apple Inc.

Introduction:

Capital structure is one of the central decisions in corporate finance because firms must choose how much of their activity to finance through liabilities and how much to finance through shareholders' equity. Debt and other liabilities can provide tax and financing advantages, but they also increase fixed obligations and financial risk. Profitability may therefore rise with leverage when borrowed funds support productive assets, or fall when financing costs and risk become excessive.

Apple Inc. offers a useful case for studying this relationship. Between 2015 and 2024, the company remained highly profitable while its balance-sheet structure changed substantially. Its total-liabilities-to-assets ratio rose from 58.91% in 2015 to 84.40% in 2024. Over the same period, return on assets varied from 13.87% to 28.36%. These movements create a clear setting for examining whether the two ratios moved together.

Many capital-structure studies compare large samples of firms across industries or countries. Those designs are useful for general conclusions, but they can hide the way financing and profitability evolve inside one company over time. A focused Apple case cannot replace a broad panel study, yet it can show whether the association predicted by corporate-finance theory appears in a transparent and easily verified set of annual reports. This is the specific research gap addressed here.

The study answers two research questions:

- How did Apple's leverage ratio and return on assets change between fiscal years 2015 and 2024?
- Was the relationship between leverage and return on assets statistically significant during the study period?

The objectives are to:

- calculate consistent annual leverage and profitability ratios from public financial statements;
- summarize the direction and size of the changes in both variables;
- estimate their correlation and a simple regression model; and
- explain the practical meaning and limitations of the findings.

The null hypothesis states that leverage has no linear association with return on assets during the study period. The alternative hypothesis states that a linear association exists. The test uses a 5% significance level.

Literature Review:

Modern capital-structure research begins with Modigliani and Miller (1958), who showed that financing choice does not change firm value under highly restrictive conditions such as perfect capital markets, no taxes, and no distress costs. Their result is important because it identifies the conditions that make financing relevant in practice. Once taxes, information problems, transaction costs, and bankruptcy risk are introduced, managers have reasons to choose one financing mix over another.

Agency theory provides one explanation for a possible positive relationship between leverage and performance. Jensen and Meckling (1976) argue that financing arrangements affect conflicts among managers, shareholders, and lenders. Debt can discipline managers by creating required payments and reducing free cash flow available for inefficient spending. However, high debt can also create conflicts between shareholders and creditors and encourage riskier decisions. The expected effect is therefore not automatically positive at every level of leverage.

The pecking-order view leads to a different expectation. Myers (1984) explains that firms may prefer internal funds, then debt, and finally new equity because external investors do not possess the same information as managers. More profitable companies can finance investment from retained earnings and may therefore carry less debt. This theory predicts that profitability can be negatively related to leverage even when the firm has substantial borrowing capacity.

Large empirical studies confirm that the relationship depends on the measure and context. Rajan and Zingales (1995) find that leverage patterns across major industrialized countries are connected to factors such as size, asset tangibility, growth opportunities, and profitability. Frank and Goyal (2009) later identify profitability as one of the most reliable factors associated with leverage in U.S. firms, while also showing that results change when book and market definitions are used. These findings justify defining leverage clearly and avoiding claims that one ratio captures every aspect of capital structure.

Research on leverage and operating performance also reports mixed results. Berger and Udell (2006) find evidence that higher leverage can improve bank performance through agency-cost effects, although their banking sample differs from a technology company. Margaritis and Psillaki (2010) report a positive relationship between leverage and efficiency for French manufacturing firms, with ownership structure playing an important role. Together, these studies suggest that leverage may support performance in some settings, but the result depends on industry, ownership, risk, and the possibility of non-linear effects.

Finally, as we examine literature related to Apple, we must discuss the impact of AI since Apple is a technology company. The new data driven culture is enabling apple to better develop their products (Azoury et al., 2024), especially given that apple applies their big data analytics to gain a competitive advantage over other, smaller firms (Subrahmanyam et al., 2024). Furthermore, Apple is part of the AI hike, even though some studies argue that AI may not always mean more profits nor growth (Athari et al., 2026). In the case of Apple, smart decisions and technology may further enhance efficiency (Subrahmanyam & Beainy, 2027), especially given that the balance sheet has this particular weakness of not including the quality of employees in the assets

value, and Apple from the time of Steve jobs till today, is known for hiring the best scientists in the industry.

The literature therefore does not provide one universal prediction. Broad samples show average relationships, whereas firm-specific evidence can reveal a different pattern. This study contributes a narrow case analysis of Apple using a single, consistent source and a fully stated calculation method. Its purpose is not to resolve the capital-structure debate, but to test whether leverage and profitability moved together within this company over the selected decade.

Methodology:

Research Design and Scope

The study uses a quantitative longitudinal case-study design. The unit of analysis is Apple Inc., and the observation period covers ten fiscal years from 2015 through 2024. Each fiscal year is one observation. The design was selected because the same company and accounting framework can be followed over time without mixing industries or currencies.

Data Sources

Financial data were collected from the SEC Companyfacts XBRL data set for Apple Inc. and checked against Apple's annual Form 10-K filings (Apple Inc., 2024; U.S. Securities and Exchange Commission [SEC], n.d.). The extracted items were total assets, total liabilities, and net income. All monetary values are reported in millions of U.S. dollars. Only annual 10-K observations for Apple's fiscal year were used. The 2014 total assets value was retained only to calculate average assets for 2015.

Variables

Variable	Role	Measurement	Interpretation
Leverage ratio	Independent	Total liabilities divided by total assets	Share of assets financed by liabilities
Return on assets	Dependent	Net income divided by average total assets	Profit generated for each dollar of average assets

Note. Average total assets equal the mean of beginning and ending total assets for each fiscal year.

Statistical Analysis

The analysis was completed in three steps. First, descriptive statistics summarized the mean, standard deviation, minimum, and maximum of both ratios. Second, Pearson's correlation coefficient measured the strength and direction of the linear relationship. Third, an ordinary least squares regression estimated return on assets as a function of the leverage ratio. The regression included one explanatory variable and a constant. Statistical significance was evaluated at the 5%

level using a two-sided test. The analysis was recalculated directly from the reported financial-statement values to prevent rounding from affecting the test.

Reliability and Limitations of the Design

The use of audited public filings improves traceability because another researcher can obtain the same reported values and repeat the calculations. Consistent definitions were applied across all years. However, the design contains only ten observations from one company. It does not control for sales growth, product cycles, interest rates, taxation, share repurchases, or other factors that may influence profitability and the balance sheet at the same time. The regression is therefore an association test rather than a causal model.

Results:

Table 2 presents the annual values used in the analysis. Apple's leverage ratio increased from 58.91% in 2015 to 84.40% in 2024. The highest leverage ratio was 85.64% in 2022. Return on assets did not increase smoothly throughout the period. It fell to 13.87% in 2017, then rose sharply after 2020 and reached a high of 28.36% in 2022.

Table 2 Annual financial data and calculated ratios

Fiscal year	Total assets	Total liabilities	Net income	Leverage	ROA
2015	290,479	171,124	53,394	58.91%	20.45%
2016	321,686	193,437	45,687	60.13%	14.93%
2017	375,319	241,272	48,351	64.28%	13.87%
2018	365,725	258,578	59,531	70.70%	16.07%
2019	338,516	248,028	55,256	73.27%	15.69%
2020	323,888	258,549	57,411	79.83%	17.33%
2021	351,002	287,912	94,680	82.03%	28.06%
2022	352,755	302,083	99,803	85.64%	28.36%
2023	352,583	290,437	96,995	82.37%	27.50%
2024	364,980	308,030	93,736	84.40%	26.13%

Note. Amounts are in USD millions. ROA uses average total assets. Source: SEC Companyfacts and Apple Form 10-K filings (SEC, n.d.; Apple Inc., 2024).

The descriptive statistics in Table 3 show an average leverage ratio of 74.16% and an average return on assets of 20.84%. Leverage varied by 10.21 percentage points around its mean, while return on assets varied by 6.02 percentage points. The ranges show that both measures changed enough during the decade to support a meaningful within-company comparison.

Table 3 Descriptive statistics

Variable	Mean	Standard deviation	Minimum	Maximum
Leverage ratio	74.16%	10.21%	58.91%	85.64%
Return on assets	20.84%	6.02%	13.87%	28.36%

Note. Ten annual observations were included for each variable.

The Pearson correlation between leverage and return on assets was 0.743, indicating a strong positive linear association. The corresponding p-value was .014, which is below the 5% threshold. The null hypothesis of no linear association is therefore rejected for this sample.

Table 4 Correlation and regression results

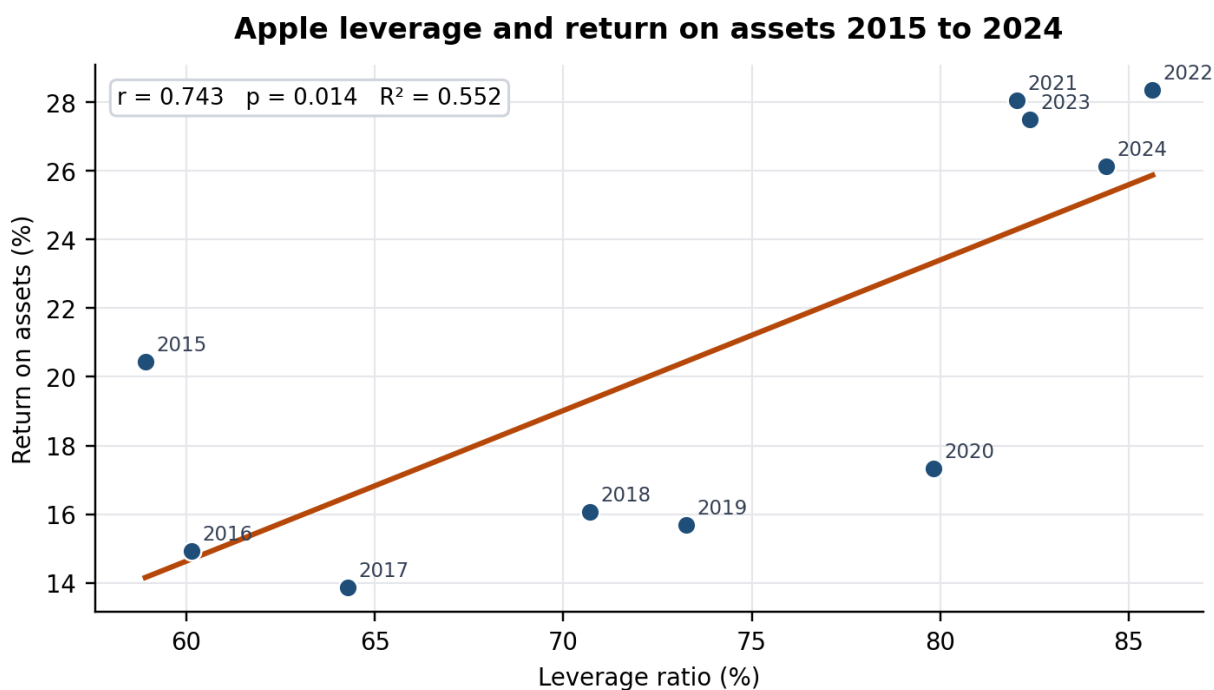
Statistic	Estimate	Meaning
Pearson correlation	0.743	Strong positive association
Regression slope	0.438	Positive leverage coefficient

Statistic	Estimate	Meaning
Intercept	-0.117	Model constant
R squared	0.552	55.2% of observed ROA variation
t statistic for slope	3.140	Test of the leverage coefficient
p value	0.014	Statistically significant at 5%
Observations	10	Fiscal years 2015 to 2024

Note. Dependent variable: return on assets. Independent variable: leverage ratio.

The regression slope was 0.438. In percentage-point terms, a one-percentage-point increase in leverage was associated with an estimated 0.438-percentage-point increase in return on assets. The slope was statistically significant, $t(8) = 3.14$, $p = .014$. The model R-squared was 0.552, so leverage was associated with 55.2% of the observed variation in return on assets. Figure 1 shows the positive fitted line and also makes clear that the observations are limited to one decade of data.

Figure 1 Relationship between leverage and return on assets



Note. Each point represents one Apple fiscal year. The line is the ordinary least squares fitted relationship.

Discussion and Conclusion:

This study examined whether Apple's financial leverage and profitability moved together between 2015 and 2024. The results answer both research questions. Leverage generally increased over the decade, while return on assets declined in the earlier years and reached its strongest levels from 2021 onward. The correlation and regression results show a statistically significant positive association between the two measures. Within this sample, higher leverage occurred in years with higher return on assets.

The finding is consistent with agency-based arguments that financial obligations can accompany more efficient use of corporate resources (Jensen & Meckling, 1976). It also resembles evidence of a positive leverage-performance relationship reported in some firm-performance studies (Berger & Udell, 2006; Margaritis & Psillaki, 2010). At the same time, it does not invalidate the pecking-order view or the negative profitability-leverage patterns found in broader samples (Frank & Goyal, 2009; Myers, 1984). Apple is an unusual company with strong cash generation, major share repurchases, and firm-specific product cycles.

The practical implication is that leverage should not be evaluated alone. Managers and investors should consider whether assets generate returns sufficient to support liabilities, whether cash flows can meet fixed commitments, and whether a higher ratio results from new borrowing, lower equity, or both. For Apple, the positive pattern shows that rising balance-sheet leverage coexisted with high profitability during much of the period. It does not show that increasing leverage would automatically improve future performance.

The main limitations are the single-company sample, ten annual observations, and the use of one explanatory variable. A common upward time pattern or omitted variables may influence both ratios. The study also uses total liabilities rather than interest-bearing debt because this definition is simple and reproducible, but it includes operating liabilities. Future research should compare Apple with other technology firms, separate debt from non-debt liabilities, test non-linear effects, and add control variables such as sales growth, cash holdings, interest expense, and share repurchases. A larger panel would allow stronger conclusions about causality and industry differences.

Finally, Financial ratios constitute only a part of a whole, sustainability and ESG must be taken into consideration (Kaspard et al., 2025) to get a better, more extensive picture about any company.

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