Scientific Journal of Silesian University of Technology. Series Transport
Zeszyty Naukowe Politechniki Śląskiej. Seria Transport

Volume 129 **2025**

p-ISSN: 0209-3324

e-ISSN: 2450-1549

DOI: https://doi.org/10.20858/sjsutst.2025.129.7

Journal homepage: http://sjsutst.polsl.pl

Article citation information:
Kiracı, K., Yaşar, M., Asker, V. Determinants of capital structure in aircraft leasing firms: Theoretical and empirical perspectives. *Scientific Journal of Silesian University of Technology. Series Transport*. 2025, **129**, 115-130. ISSN: 0209-3324.
DOI: https://doi.org/10.20858/sjsutst.2025.129.7

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DETERMINANTS OF CAPITAL STRUCTURE IN AIRCRAFT LEASING FIRMS: THEORETICAL AND EMPIRICAL PERSPECTIVES

Summary. The aviation industry encompasses a variety of stakeholders. In recent years, the growing reliance of airlines on leased aircraft has elevated leasing companies to a critical position within the sector. Despite their importance, the capital structure of leasing companies remains an underexplored area in the aviation literature. This study is a pioneering effort to investigate both the theoretical and empirical aspects of leasing companies' capital structure. Using panel data analysis, the research examines the capital structure behavior of these companies over the period from 2013 to 2023. Six different models are developed to provide a more in-depth analysis of the effects of short-term and long-term financing decisions on the capital structure. The findings generally indicate that the financing behavior of leasing companies is in line with the pecking order theory, which suggests seeking internal financing before seeking external debt or equity.

Keywords: leasing, capital structure, panel data, pecking order theory, trade-off theory

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1. INTRODUCTION

The air transportation industry is widely recognized as one of the most capital-intensive sectors. To manage and reduce capital expenditures, airlines employ various financial strategies, the most prominent of which is leasing aircraft instead of purchasing them outright. This approach not only supports a more flexible and resilient capital structure but also contributes to mitigating financial risk. Empirical evidence suggests that aircraft leasing plays a significant role in enhancing the financial stability of airlines (Oum, Zhang, & Zhang, 2000). Over the past few decades, the air transport sector has shifted significantly from a model in which airlines owned the entirety of their fleets to one in which a substantial proportion of aircraft are leased. Since the establishment of the first aircraft leasing company in the 1970s, the industry has undergone considerable structural transformation. While leased aircraft accounted for less than 5% of the global fleet in the 1980s, this figure surpassed 50% by 2020 Wandelt et al. (2023) The primary motivation behind aircraft leasing is to lower borrowing costs and to enhance organizational flexibility. European-based airlines engage in leasing activities not only to optimize their workforce allocation but also to reduce operational costs through the outsourcing of specific services. For instance, carriers such as Air Baltic, Finnair, and Lufthansa maintain extensive contractual arrangements with leasing firms. Given that aircraft leasing represents a strategic effort to balance high capital expenditures and limited financial resources with the need for both operational and financial flexibility, leasing decisions are often embedded in complex strategic planning processes (Gavazza, 2011). Therefore, aircraft leasing is one of the important long-term strategic investment decisions for the airline industry.

Although the demand for aircraft leasing by airlines has generally followed an upward trajectory over the past three decades, fluctuations have been observed periodically. In particular, during times of crisis, leasing activities tend to decline, and airlines may opt to return aircraft acquired through optional lease agreements. Such developments impose additional costs and elevate financial risks for leasing companies. Considering the severe impact of the COVID-19 pandemic on the air transport sector Shortall et al. (2021) a decline in aircraft leasing activity was observed during the 2020–2021 period compared to 2019, as expected. However, leasing activity rebounded rapidly in 2022 and beyond, even surpassing pre-pandemic levels by 2024. There are three potential factors that may explain this upward trend. First, aircraft leasing fees have become more favorable compared to the pre-pandemic period. Second, as the air transport industry began to recover in 2022 and thereafter, airlines demonstrated a renewed willingness to expand capacity (Wandelt et al. 2023) Third, acquiring new aircraft directly from manufacturers entails a higher long-term borrowing cost, while leasing offers a lower-cost alternative to meet growing capacity needs (Bourjade, Huc, & Muller-Vibes, 2017).

According to the CAPA database, at least 50% of the global commercial aircraft fleet is leased (CAPA, 2024). This highlights the critical role that leasing companies play in the air transport sector. The presence of numerous leasing firms worldwide, combined with the fact that 53% of leased aircraft are owned by the 15 largest lessors, has made the leasing market increasingly competitive. This heightened competition enables airlines to secure lease agreements at more favorable rates (Marintseva & Athousaki, 2024). Consequently, leasing companies are engaged in intense rivalry, which makes analyzing their capital structures particularly crucial.

Numerous studies in the literature have investigated the determinants of corporate capital structure. For instance, Kiracı & Aydın (2018) examined the factors influencing the capital structure of traditional airlines, drawing on prominent capital structure theories. Ramli et al.,

(2019) analyzed the impact of capital structure determinants on the financial performance of firms in Indonesia and Malaysia. Kiracı & Asker (2020) explored the capital structure determinants of airlines that are members of strategic alliances, employing panel data analysis. Sikveland et al. (2022) studied how geographical concentration and seasonality affect capital structure decisions in the accommodation industry using fixed-effects panel regression. Rehan et al. (2023) investigated the capital structure determinants of firms operating across various sectors in Malaysia. Zhao & Zhang (2024) analyzed the relationship between ESG performance and capital structure in Chinese firms, with a particular focus on equity and debt financing. Lastly, Ashraf et al. (2025) assessed the impact of the COVID-19 pandemic on the capital structure decisions of tourism and accommodation enterprises.

Numerous studies in the literature have explored various aspects of aircraft leasing companies. Some have focused on the legal challenges associated with leasing agreements, emphasizing the complexity of drafting such contracts (Kuhle et al. 2021; Jackson et al., 2023). Others have examined the leading companies and countries with the highest volumes of leased aircraft (Karunakaran et al., 2021; Lin et al. 2022). Research has also highlighted the significance of leasing for specific markets or airlines (Bowyer & Davis, 2012; Richardson et al. 2014), as well as its influence on fleet planning strategies (Chen et al. 2018; Şafak et al. 2022). More recently, studies have addressed the impacts of the COVID-19 pandemic on the aircraft leasing sector, including the risks that have emerged (Kiracı & Asker, 2020; Güngör, 2022; Deveci et al. 2022). However, the determinants of the capital structure of aircraft leasing companies have received limited attention. This study addresses this gap by analyzing the financial factors that influence capital structure decisions in the sector.

The remainder of the article is organized as follows. Section 2 reviews the existing literature, while Section 3 outlines the theoretical background. Section 4 describes the methods and data employed in the study, followed by Section 5, which presents the research model. Section 6 discusses the findings, and the final section provides the discussion and conclusion.

2. THEORETICAL FRAMEWORK

There are several theories that attempt to explain capital structure, among which the Modigliani & Miller (1958) theory is considered a pioneering framework. This theory posits that a firm's value depends on the ability of its assets to generate value, regardless of whether the capital is sourced internally or externally. Modigliani and Miller argued that firms should maximize their use of debt to benefit from the tax shield on interest payments, thereby reducing their overall tax burden. In other words, the greater the proportion of debt in a firm's capital structure, the higher its value, due to the tax deductibility of interest expenses. This theory has been fundamental in shaping our understanding of the relationship between capital structure and firm value. Subsequently, the theory was revised to incorporate corporate taxes (Modigliani & Miller, 1963) emphasizing that the tax advantage of debt arises from the deductibility of interest expenses.

Another important theory that explains capital structure is the trade-off theory, which gained prominence following debates around the Modigliani-Miller theorem (Javed & Jahanzeb, 2012). This theory originated as an extension of the Modigliani-Miller framework when corporate taxes were introduced, highlighting the benefit of debt as it provides a tax shield on earnings. According to the trade-off theory, firm managers evaluate and weigh the various costs and benefits associated with different leverage options. It is generally assumed that firms seek an optimal leverage level where the marginal benefits of debt, such as tax savings, balance

the marginal costs, such as financial distress (Ahmadimousaabad et al., 2013). The trade-off theory posits that a firm faces bankruptcy and agency costs in exchange for the tax benefits derived from debt usage. Bankruptcy costs arise when the perceived probability of default is greater than zero. These costs include liquidation costs, which represent the loss in value resulting from the sale of the firm's net assets, and distress costs, which are incurred when stakeholders believe the firm may cease operations. According to the trade-off theory, firms aim to maintain an optimal or target debt ratio that balances these costs and benefits (Jalilvand & Harris, 1984).

The trade-off theory asserts that firms are incentivized to use debt to benefit from debt tax shields. Thus, it can be argued that firms have an incentive to incur debt because generating annual profits enables them to take advantage of these tax shields (Serrasqueiro & Caetano, 2015). According to several studies (DeAngelo & Masulis, 1980; Fama & French, 2002; López-Gracia & Sogorb-Mira, 2008) a positive relationship is expected between the effective tax rate and the level of debt.

According to DeAngelo & Masulis (1980) non-debt tax shields – such as depreciation deductions and investment tax credits – can serve as substitutes for the tax benefits provided by debt. Consequently, firms with higher levels of non-debt tax shields are expected to carry lower levels of debt compared to those with lower levels of such shields. The trade-off theory thus predicts a negative relationship between non-debt tax shields and debt. The pecking order theory of capital structure is one of the most influential approaches to explaining corporate leverage (Frank & Goyal, 2003). According to Myers (1984) firms prefer to finance their operations primarily through internal resources due to the adverse selection problem. When external financing is necessary, debt instruments – which typically involve lower costs stemming from information asymmetry – are preferred over equity issuance. As a result, equity issuance is used infrequently. The strength of the pecking order theory largely lies in its ability to explain firms' external financing behaviors (Myers, 2001) further notes that the proportion of external financing in total capital formation remains limited, with equity issuances constituting only a small fraction, and most external financing being raised through debt.

The pecking order theory also has implications for the maturity and priority of debt. According to the theory, firms should prefer securities with lower information costs before resorting to those with higher information costs. In this context, short-term debt should be used before long-term debt, and capital leases and secured debt should be preferred over unsecured debt (Frank & Goyal, 2003). Moreover, since the pecking order theory does not explain broad patterns in corporate finance, it is more appropriate to examine narrower subsets of firms. According to the theory, financing behavior is driven by adverse selection costs, and it should perform best among firms that face particularly severe adverse selection problems. Small firms with high-growth rates are generally considered to experience significant information asymmetries (Frank & Goyal, 2003)

Pecking order theory suggests that firms follow a specific hierarchy of capital preferences when financing their business activities (Myers & Majluf, 1984). Due to information asymmetries between firms and potential investors, companies prefer to use internal funds first, then debt, and lastly equity (Myers & Majluf, 1984). This behavior implies that firms can mitigate information asymmetry by relying on retained earnings rather than issuing new securities to finance investment opportunities. As the information gap between insiders and external investors widens, equity financing becomes increasingly costly. Therefore, firms facing high levels of information asymmetry are more likely to choose debt to avoid selling equity at undervalued prices. Developments that dilute the capital structure, such as the issuance of new equity, may lead to a decline in the firm's stock price (Chen & Chen, 2011).

3. LITERATURE REVIEW

The determinants of capital structure decisions have long been debated in the literature and are known to vary based on contextual factors such as industry, country, and period. While the Trade-Off Theory and the Pecking Order Theory provide the main theoretical frameworks for understanding these decisions, empirical evidence suggests that the relevance of each theory may vary depending on specific contextual conditions.

While studies such as Güner (2016) and Matias & Serrasqueiro (2017) suggest that the Pecking Order Theory is more explanatory, the study by Kiracı & Aydın (2018) indicates that both the Trade-Off Theory and the Pecking Order Theory may be valid for different types of debt within the same industry. Conversely, studies such as Yildirim et al. (2018), compare the capital structure determinants of Shari'ah-compliant (SC) and non-compliant (SNC) firms using data from seven countries and industries. Results show that key determinants affect SC and SNC firms differently, and the influence varies by the leverage measure used. Profitability, firm size, growth, and tangibility show mixed effects. The findings suggest that Pecking Order Theory explains book leverage better, while Trade-Off Theory fits market leverage.

Some studies move beyond general theoretical frameworks and instead emphasize sector-specific dynamics. For example, Capobianco & Fernandes (2004) and Fernandes & Capobianco (2001) highlight that airlines can maintain stable performance despite high levels of debt, and that management quality plays a critical role in this resilience. In contrast, Guzhva & Pagiavlas (2003) argue that poor debt management strategies can significantly increase financial risk. These findings suggest that even within the aviation industry, capital structure decisions cannot be explained by a single model alone.

Inter-sectoral differences also represent an important area of discussion. Tang & Jang (2007), for instance, compared the software and accommodation sectors and demonstrated that the effects of fixed assets and growth opportunities on debt decisions vary by industry. Similarly, Sikveland et al. (2022) found that seasonality and geographic concentration influence debt structures within the accommodation sector. Pacheco & Tavares (2015) argue that the Pecking Order Theory provides a better explanation for capital structure decisions in the shoe industry. In the context of the Norwegian salmon farming sector, Sikveland & Zhang (2020) show that profitability is negatively associated with both short-term and total debt, while liquidity has a positive effect on profitability.

Orlova et al. (2020) argue that capital structure decisions involve not only preferences between debt and equity, but also the diversity of debt sources and access to financial markets. Barrachina-Fernández & Sogorb-Mira (2024) further confirm inter-sectoral heterogeneity by showing that corporate hedging strategies and commodity prices influence capital structure decisions in the oil and gas sector.

Regional and national differences constitute another frequently emphasized area of divergence in the literature. Studies such as Jõeveer (2013), Mateev et al. (2013), and Proença et al. (2014) reveal that the capital structures of firms in regions such as Eastern Europe and Portugal are influenced by country-specific economic and institutional factors. Kayo & Kimura (2011) and Vo (2017) have also shown that country-level determinants exert indirect but significant effects on corporate financial decisions. Conversely, studies such as Kahya et al. (2020) highlight that firm-level factors play a more dominant role in companies operating under Islamic finance principles. Zhang & Liu (2017) examined the relationship between Total Factor Productivity (TFP) and leverage in unlisted Chinese firms, finding that TFP is positively associated with leverage in private and foreign-owned firms. Moreover, the impact of TFP on

both formal and informal leverage becomes stronger under conditions of financial constraints and within challenging institutional environments.

Periods of financial crisis and economic shocks also challenge the validity of traditional assumptions regarding capital structure. Studies such as Moradi & Paulet (2019) and Proença et al. (2014) demonstrate that debt ratios tend to decline, and firms adopt more financially prudent behaviors during times of crisis. Similarly, Ashraf et al. (2025) report that the COVID-19 pandemic led to increased leverage in capital restructuring, particularly among small and publicly listed firms. In contrast, Touil & Mamoghli (2020) highlight the importance of political stability in mitigating bankruptcy costs and reducing information asymmetries.

Recently, new variables such as ESG factors, governance structure, and individual characteristics of directors have been increasingly incorporated into the capital structure literature. Zhao & Zhang (2024) demonstrate that ESG performance significantly influences capital structure decisions. Halford et al. (2024) find that the bargaining power of labor unions affects firms' leverage, while Tripathi et al. (2024) reveal that the relationship between board size and leverage has an impact on firm value. Le et al. (2025) show that the CEO's age, education, and tenure influence the alignment with optimal capital structure. Additionally, Krystyniak & Staneva (2024) report that firms with female CFOs exhibit similar risk preferences to those with male CFOs, suggesting that traditional gender-based assumptions should be reconsidered.

Differences in empirical methodologies also contribute to the diversity of findings in the literature. For instance, Chang et al. (2009) employed the MIMIC model, Ramli et al. (2019) utilized PLS-SEM, Bilgin & Dinc (2019) applied the fractional regression model, Handoo & Sharma (2014) used traditional regression analysis, Duguleană et al. (2024) adopted the GMM approach, while Rehan et al. (2023) combined MRA, ARDL, panel data techniques, and GMM in their analysis. The use of different models can lead to varying effects of the same variables. Furthermore, several studies specifically focus on the aviation sector, emphasizing the influence of sectoral dynamics on capital structure decisions. For example, Ramírez-Orellana et al. (2025) contend that governance practices and leasing standards help reduce the cost of capital, whereas Li & Islam (2019) highlight the role of sector-specific factors in shaping corporate capital structure.

4. DATA AND METHODOLOGY

Panel data is a type of data commonly used in estimating economic variables. Since panel data analysis provides more observations compared to cross-sectional or time series data, it enhances the efficiency of econometric estimation (Hsiao, 2014). Panel data consist of *N* cross-sectional units observed over *T* time periods. The indices *i* and *t* denote the individual units and time periods, respectively (Tatoğlu, 2013). In linear panel data models, where the dependent variable is represented by *Y* and the independent variables by *X*, *i* refers to the cross-sectional unit (i = 1, ..., *N*), and *t* indicates the time period (t = 1, ..., *T*). The model can be expressed as: $Y_{it} = \alpha_{it} + \beta_{it}X_{it} + \varepsilon_{it}$

In this study, the capital structure data of 12 aircraft leasing companies over the period 2013-2023 were analyzed using panel data methods. The data were obtained from Thomson Reuters Refinitiv. Detailed information on the variables used in the analysis is presented in Table 1.

Tab. 1

Dependent and independent variables

Dependent	TDR	Total debt/ total assets
	LDR	Long term debt/total assets
	TDC	Total debt/total capital
	SDC	Short-term debt & current port/total capital
	LDC	Long-term debt/total capital
Independent	ETA	Ebit/total assets
	FTA	Property, plant & equip net/total assets
	TS	Depreciation and depletion/total assets
	FS	Log (total assets)
	CTA	Cash/total capital
	ITA	Operating income/total assets

In this study, five models were developed to assess the impact of debt structure on firm financial indicators within the framework of capital structure theories. Six models were constructed using the following dependent variables: total debt/total assets, long-term debt/total assets, total debt/total capital, short-term debt & current portion/total capital, and long-term debt/total capital. The independent variables included EBIT/total assets, property, plant, and equipment net/total assets, depreciation and depletion/total assets, log (total assets), cash/total capital, and operating income/total assets. Panel regression analysis was employed to test the hypotheses. However, to obtain more precise and robust results, previous studies have emphasized the importance of using robust estimation techniques rather than solely relying on fixed or random effects models. Robust models also effectively address issues of heterogeneity and correlation. The following panel regression models were tested:

$$\mathrm{TDR}_{it} = \beta_0 + \beta_1\mathrm{ETA}_{it} + \beta_2\mathrm{FTA}_{it} + \beta_3\mathrm{TS}_{it} + \beta_4\mathrm{FS}_{it} + \beta_5\mathrm{CTA}_{it} + \beta_6\mathrm{ITA}_{it} + \varepsilon_{it} \quad (1.1)$$

$$\mathrm{LDR}_{it} = \beta_0 + \beta_1\mathrm{ETA}_{it} + \beta_2\mathrm{FTA}_{it} + \beta_3\mathrm{TS}_{it} + \beta_4\mathrm{FS}_{it} + \beta_5\mathrm{CTA}_{it} + \beta_6\mathrm{ITA}_{it} + \varepsilon_{it} \quad (1.2)$$

$$\mathrm{TCD}_{it} = \beta_0 + \beta_1\mathrm{ETA}_{it} + \beta_2\mathrm{FTA}_{it} + \beta_3\mathrm{TS}_{it} + \beta_4\mathrm{FS}_{it} + \beta_5\mathrm{CTA}_{it} + \beta_6\mathrm{ITA}_{it} + \varepsilon_{it} \quad (1.3)$$

$$\mathrm{SDC}_{it} = \beta_0 + \beta_1\mathrm{ETA}_{it} + \beta_2\mathrm{FTA}_{it} + \beta_3\mathrm{TS}_{it} + \beta_4\mathrm{FS}_{it} + \beta_5\mathrm{CTA}_{it} + \beta_6\mathrm{ITA}_{it} + \varepsilon_{it} \quad (1.4)$$

$$\mathrm{LDC}_{it} = \beta_0 + \beta_1\mathrm{ETA}_{it} + \beta_2\mathrm{FTA}_{it} + \beta_3\mathrm{TS}_{it} + \beta_4\mathrm{FS}_{it} + \beta_5\mathrm{CTA}_{it} + \beta_6\mathrm{ITA}_{it} + \varepsilon_{it} \quad (1.5)$$

In the models, β_0 represents the intercept term, which is the constant of the model. The subscript *i* denotes the individual aircraft leasing companies, while *t* corresponds to the annual time periods. The hypotheses of the study were tested using panel regression analysis. The Hausman test results strongly support the appropriateness of the random effects model. Additionally, heteroscedasticity and autocorrelation test results indicated the need to address these issues using robust estimation techniques. Consequently, the study reports results from both random effects and fixed effects models to demonstrate the sensitivity and stability of the estimated coefficients. Furthermore, robust regression analysis results are also presented to ensure the reliability of the findings.

5. RESULTS

This section presents the descriptive statistics, correlation matrix, and regression analysis results of the models. Table 2 provides the descriptive statistics for the dependent and independent variables used in the study. The ratio of total debt to total assets ranges from a minimum of 0 to a maximum of 0.827. The ratio of total debt to total capital reaches a maximum value of 3.315, which is the highest among the debt-related variables. The ratio of long-term debt to total assets varies between 0 and 0.652, while the ratio of long-term debt to total capital ranges from 0 to 0.781. Earnings before interest and taxes (EBIT) is the only variable with negative values due to some leasing companies reporting negative earnings. The highest standard deviation is observed in firm size, measured as the natural logarithm of total assets, with a value of 16.669.

Tab. 2

Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
TDR	132	0.4448	0.2708	0.0009	0.8279
LDR	132	0.2862	0.2279	0.0000	0.6525
TDC	132	0.9600	0.6822	0.0013	3.3152
SDC	132	0.1586	0.1800	0.0000	0.6819
LDC	132	0.4870	0.2565	0.0000	0.7811
ETA	132	0.0423	0.0388	-0.0900	0.2172
FTA	132	0.3549	0.3898	0.0019	0.9845
TS	130	0.0224	0.0315	0.0004	0.2032
FS	132	16.669	2.3260	11.502	20.562
CTA	132	0.1259	0.1335	0.0135	0.6004
ITA	132	0.0429	0.0358	-0.0277	0.2425

This section of the study includes the correlation matrix of the variables and the analysis results. Table 1 shows the correlation between the variables. The presence of high correlation in panel data analysis may cause multicollinearity problems. The correlation coefficient between the variables used in the study is low, so there is no multicollinearity problem.

Tab. 3

Correlation matrix

	ETA	FTA	TS	FS	CTA	ITA
ETA	1					
FTA	0.174	1				
TS	0.105	0.634	1			
FS	-0.216	-0.245	-0.380	1		
CTA	-0.113	-0.534	-0.335	-0.061	1	
ITA	0.748	0.419	0.555	-0.482	-0.246	1

Table 4 presents the regression results of the random effects models. The findings indicate that higher firm profitability generally has a positive impact on leverage, suggesting that airlines predominantly rely on internal resources when borrowing. Tangible fixed assets positively

affect long-term debt levels; specifically, the ability to use aircraft as collateral facilitates borrowing at lower costs. The results for the tax shield (TS) proxy variable are mixed. While TS has a negative relationship with the ratio of long-term debt to total assets, it exhibits a positive effect on the ratios of total debt to capital and short-term debt to capital. These findings suggest that higher depreciation levels may substitute for long-term debt, likely due to the tax shield benefits they provide. Firm size is positively associated with debt levels, which may reflect larger firms' ability to borrow at more favorable terms. Additionally, higher cash flow appears to increase borrowing capacity by reducing firm risk, as evidenced by the positive effects observed across the models. Operating profits, however, show a significant negative effect on leverage in all models, indicating that firms with higher operating profits tend to rely less on external financing, preferring instead to fund investments through retained earnings.

Tab. 4

Random effects model regression results

Variable/Model	TDR	LDR	TDC	SDC	LDC
ETA	1.924**	1.649*	-0.182	0.275	1.356***
FTA	0.578*	0.583*	0.146	-0.005	0.492*
TS	0.394	-1.567**	4.138***	1.961*	-0.416
FS	0.026*	0.005	0.147*	0.020*	0.041*
CTA	0.858*	0.079	2.221*	0.779*	0.270***
ITA	-4.685*	-2.922*	-5.797**	-1.763**	-3.975*
cons	-0.185	0.073	-1.658*	-0.258**	-0.277***

***p < 0.1, **p < 0.05, *p < 0.01

Table 5 presents the fixed effects model regression results to evaluate the validity of the model across different specifications. The fixed effects model controls for time-invariant heterogeneity among the observations in the panel data. The results are consistent with those of the random effects model. Additionally, the Random-Effects GLS regression, which accounts for heteroskedasticity and autocorrelation inherent in the panel structure, yields results that are also consistent with the previous models. Therefore, the findings demonstrate that the model is robust across different specifications and that the observations in the sample exhibit similar relationship patterns under various panel data assumptions. Furthermore, the overall consistency reinforces the robustness of the relationships between the explanatory variables and the dependent variable.

Tab. 5

Fixed effects model regression results

Variable/Model	TDR	LDR	TDC	SDC	LDC
ETA	2.039**	1.808***	-0.450	0.230	1.454***
FTA	0.576*	0.583*	0.130	-0.008	0.491*
TS	0.634	-1.581**	5.522**	2.215*	-0.354
FS	0.027*	0.043	0.158*	0.022*	0.041*
CTA	0.879*	0.694	2.376*	0.809*	0.271***
ITA	-4.818*	-3.090*	-5.583***	-1.728**	-4.099*
cons	-0.208	0.9034	-1.878*	-0.298**	-0.271

***p < 0.1, **p < 0.05, *p < 0.01

Tab. 6

Random-effects GLS regression results

Variable/Model	TDR	LDR	TDC	SDC	LDC
ETA	1.9239*	1.6489*	-0.1816	0.2749	1.3560**
FTA	0.5784*	0.5833*	0.1464***	-0.0049	0.4917*
TS	0.394	-1.5666*	4.1378**	1.9606*	-0.4157
FS	0.0258*	0.0053	0.1474*	0.0205*	0.0410*
CTA	0.8583*	0.0788	2.2206*	0.7795*	0.2701**
ITA	-4.6852*	-2.9221*	-5.7968	-1.7631**	-3.9754**
cons	-0.1851	0.0725	-1.6581*	-0.2576*	-0.2775

***p < 0.1, **p < 0.05, *p < 0.01

6. DISCUSSION

The findings of this study offer valuable insights into the determinants of capital structure decisions in aircraft leasing companies, a topic that has been relatively underexplored in the aviation finance literature. The results derived from panel data regression models of 12 aircraft leasing firms over the period 2013-2023 generally align with the Pecking Order Theory, while also providing conditional support for the Trade-Off Theory.

The positive effect of EBIT on both total and long-term debt levels suggests that firms primarily utilize internal resources and resort to borrowing only when external financing is necessary. This finding aligns with the Pecking Order Theory. However, it contrasts with the negative relationship between profitability and debt reported in some empirical studies (Mateev et al., 2013; Serghiescu & Văidean, 2014). This discrepancy may stem from the asset-intensive and capital-demanding nature of the aircraft leasing industry. The positive association between fixed tangible assets (FTA) and long-term debt supports both the Pecking Order and Trade-Off theories. This result is consistent with previous studies such as Capobianco & Fernandes (2004) and Kiracı & Aydın (2018), indicating that high-value assets like aircraft facilitate borrowing by serving as collateral. The effects of the depreciation variable (TS) vary across different debt measures. It has a negative impact on the long-term debt ratio while exhibiting a positive effect on total and short-term debt ratios. This finding aligns with the Trade-Off Theory, which posits that the tax shield effect can serve as a substitute for long-term debt. Similar observations were made by DeAngelo & Masulis (1980).

The positive relationship between firm size (FS) and debt is consistent with prior studies such as Moradi & Paulet (2019) and Vo (2017). Larger firms typically face lower perceived risk, enabling them to borrow at lower costs and thus increasing their reliance on debt. This finding aligns with both theoretical frameworks. The positive association between cash assets (CTA) and debt levels suggests that, contrary to traditional expectations, excess cash does not reduce firms' need for debt; rather, it enhances their borrowing capacity. Similar results were found by Bilgin & Dinc (2019) in their study on factoring. Moreover, the negative relationship between operating profit (ITA) and debt levels indicates that firms with higher operational income prefer to finance investments internally, resorting less to external financing. This finding fully supports the Pecking Order Theory as articulated by Frank & Goyal (2003) and Myers & Majluf (1984). When compared to other sectors such as accommodation (Sikveland et al., 2022), footwear (Pacheco & Tavares, 2015), and e-commerce (Duguleană et al., 2024), aircraft leasing companies share some common determinants of capital structure – such as

profitability and firm size – but operate under different dynamics due to their capital-intensive nature.

7. CONCLUSION

Capital structure decisions directly influence financing and investment choices in the aircraft leasing sector, as in many other industries. Aircraft leasing companies typically possess substantial fixed assets and require significant capital investment. Additionally, these companies must secure sufficient funds to stay abreast of technological advancements, promptly respond to customer needs and expectations, and remain competitive in an increasingly dynamic market environment. Therefore, understanding how aircraft leasing companies shape their capital structures, the factors influencing these structures, and how they achieve an optimal debt-equity balance is crucial. Within this framework, this study examines the capital structure data of 12 aircraft leasing companies over the period 2013-2023 using panel data analysis.

In this study, where the financial criteria affecting the capital structure decisions of aircraft leasing companies are examined, five different models are established in order to determine the determinants of the capital structure. In the models created by utilizing similar studies in the literature, variables measuring the leverage level of the companies are used. In this context, Total debt/total assets (Model 1), Long-term debt/total assets (Model 2), Total debt/total capital (Model 3), Short-term debt & current port/total capital (Model 4) and long-term debt/total capital (Model 5) indicators are used as dependent variables. In the study, EBIT/total assets, Property, plant & equipment /total assets, Depreciation and depletion/total assets, Log (total assets), Cash/total capital and Operating income/total assets are used as independent variables. In this direction, it is aimed to reveal the factors affecting the short- and long-term financing decisions of aircraft leasing companies.

The findings of this study indicate that the total, long-term, and short-term financing behaviors of aircraft leasing companies are quite similar. It was found that operating profitability has a positive impact on the total debt ratio. This suggests that aircraft leasing companies may prefer to utilize external financing rather than internal resources, potentially yielding more favorable outcomes. When examining the relationship between asset structure and debt structure, a positive correlation was observed between the asset structure and the long-term use of external funds. This implies that tangible fixed assets of aircraft leasing companies can serve as collateral, enabling them to borrow at a lower cost. The results concerning the tax shield effect were mixed. Specifically, the tax shield was found to have a positive effect on the ratio of total debt to capital and on the ratio of short-term debt to capital, while exhibiting a negative effect on the ratio of long-term debt to total assets. These findings suggest that higher depreciation levels are preferred as a substitute for long-term borrowing, likely due to the associated tax shield benefits. Furthermore, a positive relationship between firm size and debt structure was identified, indicating that larger aircraft leasing companies tend to borrow more in proportion to their total assets. Additionally, cash flow was found to positively influence firm leverage, suggesting that companies with higher cash flows can access more external resources. Lastly, a negative relationship between operating income and debt structure was observed, implying that aircraft leasing companies tend to rely more on equity financing for their investments.

When the findings related to aircraft leasing companies are evaluated from a theoretical perspective, it is observed that firm size, profitability, asset structure, and cash flow variables

yield results consistent with the trade-off theory. Conversely, the tax shield variable aligns with the trade-off theory only in terms of the ratio of long-term debt to total assets. Meanwhile, the operational income variable produces results that support the pecking order theory.

This study, which investigates the factors determining the capital structure of aircraft leasing companies, has certain limitations. First, the analysis was conducted on 12 aircraft leasing companies. However, the number of firms operating in the aircraft leasing sector is considerably larger. This study focused on the largest leasing companies for which uninterrupted financial data were available. Therefore, the findings are limited to the specific sample of aircraft leasing companies examined. Second, the financial data analyzed covers the period from 2013 to 2023. This timeframe was selected to optimize both the number of companies and the number of observations. Nevertheless, it should be noted that different results may emerge when alternative time periods or combinations are analyzed.

For future research, it is recommended that scholars focus on the strategies influencing the capital structure of aircraft leasing companies. The literature on this sector is still in its developmental stages. Therefore, conducting detailed analyses of these companies from various financial perspectives is crucial. Such efforts will not only contribute significantly to the existing body of knowledge but also highlight the importance of aircraft leasing companies, which are often overlooked.

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Received 30.06.2025; accepted in revised form 12.10.2025