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Ownership structure and financial performance

Evidence from the airline industry

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ABSTRACT:

The purpose of this study is to find evidence on whether a certain type of ownership structure allows for better financial performance and value creation measured by Return on Assets and Tobin's Q. By studying the ownership structures of globally listed airlines from 2010 to 2019, a comprehensive examination of the connection between ownership structure and financial performance has been obtained. In the airline sector, the large shareholders are mainly states, institutional investors and corporations. In particular, this thesis seeks to determine whether the general theory that state-owned companies perform worse than privately owned holds true in the airline sector.

Many previous studies have found a connection between ownership structure and financial performance. However, less research has been done in the field of airline industry and its characteristic forms of ownership. The airline industry is expanding quickly and has undergone significant reforms and privatization throughout its history, making it an interesting research subject from the perspective of ownership structures.

The primary findings of this thesis reveal that airlines with state as its largest owner have performed worse than other ownership structures in average. Investment Advisor ownership category consisting mainly of hedge funds and mutual funds have performed best from all the airlines in the research data, measured by Tobin's Q and ROA. However, a surprising finding is that a small portion of airlines with institutional investor, more specifically a pension fund or insurance company as the largest owner, have not performed better than state-owned ones. The examination has also been carried out by dividing the entire research period of 2010-2019 into two halves, comparing the years after the financial crisis with the latter stronger period of expansion in the stock markets. The performance of the various ownership structures did not differ significantly throughout the course of the time periods. However, all ownership structure types have performed better in the latter half of the time period as measured by Tobin's Q, of which Investment Advisor category has the strongest positive development.

KEYWORDS: Ownership structure, Agency theory, Airline industry, Financial performance, Tobin's Q, ROA

VAASAN YLIOPISTO**Laskentatoimen ja rahoituksen yksikkö**

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TIIVISTELMÄ:

Tämän tutkielman tarkoituksena on selvittää mahdollistaako tietynlainen omistusrakenne yrityksen parempaan taloudelliseen suoriutumiseen ja arvon luontiin. Tutkimalla vuosien 2010 ja 2019 välillä maailmanlaajuisesti pörssiin listattujen lentoyhtiöiden omistusrakenteita, on saatu kattava kuva omistusrakenteen vaikutuksesta taloudelliseen menestymiseen. Lentoyhtiöiden suurimpia omistajia ovat pääasiassa valtiot, institutionaaliset sijoittajat, sekä toiset yhtiöt. Nämä pääomistajatahot toimivat vertailukategorioina myöskin tässä tutkielmassa. Erityisesti tämä tutkielma haluaa haastaa yleisen teorian valtio-omisteisten yhtiöiden huonommasta suoriutuvuudesta, sekä löytää vastauksen pitääkö se paikkansa myös lentoliikenne toimialalla. Taloudellisen menestymisen mittareina on käytetty pääoman tuottoastetta (ROA) ja Tobinin Q:ta. Aiemmissa aiheen tutkimuksissa nämä taloudellisen suoriutumisen mittarit ovat osoittautuneet erinomaisesti kuvaamaan operationaalisen toiminnan tehokkuuden, sekä markkina-arvon kehityksen.

Aiempi tutkimus omistusrakenteiden ja taloudellisen suoriutumisen yhteydestä on kattavaa ja keskittyy vahvasti analysoimaan sen syitä Agenttiteorian kautta. Monet aiemmat tutkimukset ovatkin löytäneet yhteyden yhtiöiden omistusrakenteella ja taloudellisella suoriutumisella. Lentoyhtiöitä ja niiden ominaisia omistusmuotoja on kuitenkin tutkittu huomattavasti vähemmän. Lentoliikenneala on nopeasti kasvanut ala, joka on historiansa aikana läpikäynyt merkittäviä uudistuksia sääntelyn ja yksityistämisen kautta. Tämä tekee kyseisestä toimialasta erityisen mielenkiintoisen tutkimuskohteen omistusrakenteiden näkökulmasta.

Tämän tutkielman pääasialliset havainnot osoittavat, että lentoyhtiöt joiden suurimpana omistajana on valtio ovat menestyneet muita omistusrakenteita keskimäärin huonommin. Institutionaalsiin sijoittajiin sisältyvä Investment Advisor omistusrakenneluokka, joka koostuu lähinnä hedge- ja sijoitusrahastoista, on suoriutunut parhaiten tutkimusaineiston lentoyhtiöistä Tobinin Q:lla ja ROA:lla mitattuna. Yllättävänä havaintona kuitenkin on, että pieni osa lentoyhtiöistä joiden suurin omistaja on myöskin institutionaalinen sijoittaja, tarkemmin eläkevakuutusyhtiö tai vakuutusyhtiö, ei ole menestynyt paremmin kuin valtion omisteiset verrokkit. Tutkimus on toteutettu lisäksi jakamalla koko tutkimusjakso, vuodet 2010-2019, kahteen puolikkaaseen vertaamalla alkupuoliskon finanssi kriisin jälkeisiä vuosia jälkipuoliskon vahvempaan nousukauteen pörssimarkkinoilla. Aikapuoliskojen välillä ei löydy kuitenkaan merkittävää eroa omistusrakenteiden välisessä suoriutumisessa. Kaikki omistusrakenneluokat ovat suoriutuneet jälkimmäisellä puoliskolla paremmin Tobinin Q:lla mitattuna, joista Investment advisor suurimmalla positiivisella kehityksellä.

AVAINSANAT: Ownership structure, Agency theory, Airline industry, Financial performance, Tobin's Q, ROA

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1 INTRODUCTION

The airline industry is rapidly growing and has seen major reforms during its lifetime. History has shown that the air transport industry doubles its market value every 15 years. This development has been strongly influenced by changes in government regulations and in ownership structures made possible by privatization. Previously, the more heavily regulated and predominately state-owned airline sector has become more open, enabling growth and a greater variety of ownership structures.

Fundamental to the financial discussion are the sources and drivers of the company's value creation. Ownership structure can be significant factor to influence the firm value and performance. The literature on the topic is largely based on the agent theory, which illustrates and investigates the conflict of interests between owners and managers. The agent problem arises when the objectives of the company's managers do not align with the shareholders', which can be due to a lack of monitoring or incentives, causing a loss of value creation for the shareholders (Jensen & Meckling, 1976). The agent problem also extends between the interests of large and small shareholders. The large shareholder which is often a state, institutional investor, corporation or the founding family has greater influence and power on the business operations and influencing the management. The interests of these large owners can be political, self-serving, in line with another company's business strategy, or otherwise deviating from pure profit maximization, which can harm the small owner's value creation (Villalonga & Amit, 2006).

Traditionally, previous literature such as Schleifer (1998), Backx et al. (2002) and Wei and Varela (2003) has leaned towards examining the worse performance of companies with state ownership compared to those privately owned. The market-based competition and the capitalist incentive of private ownership to innovate and develop creates the ultimate basis for this view (Schleifer, 1998). Conclusions in the existing literature comparing airline ownership structures are similar but not consistent, for instance in mixed-ownership airlines where the amount of state ownership is relatively low (Lardy,

2019). Therefore the initial assumption in this thesis is still that airlines with state ownership are inferior in financial performance and value creation.

The aviation sector, is not so widely studied in financial literature despite the large size, importance and topical aspects of it. Furthermore, the effects of the industry reforms were only truly recognized in the second decade of the twenty-first century, with interest in this field has continuing to increase. In addition, due to the fast pace of changes in the industry, it is appropriate to constantly update observations. This thesis aims to create a comprehensive perspective on the ownership structures and financial performance in airline industry, as well as an answer to whether the findings of previous studies still hold true in this field.

1.1 Purpose of the study and research gap

The number of previous studies on ownership structures and firm performance relation is comprehensive, but not always consistent with their results. This gives an excellent opportunity for further examination and a broad spectrum of foundation for the research hypotheses. The ultimate purpose of this study is to find evidence on whether a certain type of ownership structure allows for better financial performance and value creation, as well as to challenge the results of previous studies. Airlines in this thesis are divided into four categories according to the largest shareholder of the company as follows: state, corporation, investment advisor and pension & insurance. The objective is to determine whether differences in financial performances measured by ROA and Tobin's Q can be found on these different ownership structures. If differences in financial performance is found between different ownership structures, the aim is also to determine which factors affect them. It is also possible that there is no statistically significant relation found between the different ownership structures and financial performance or causes found for the variation.

The underlying aim of this thesis is to fill the gap in the literature by investigating the effects of ownership structures of airlines across a broad market. Previous studies in this

field of research are generally outdated data wise or focused on a smaller market, such as single country or continent. The literature review section of this thesis provides a more thorough examination of those studies. To that extent, this study aims to fill the research gap by thoroughly examining the topic utilizing established and proven methods, taking the airline industry into a broader examination with updated data. The results of this thesis can also serve as a practical source of information for investors. Considering the potential impact of the ownership structure on the investment returns, the findings of this thesis can serve as a valuable information for individuals making investments in the aviation industry.

1.2 Research hypotheses

Prior studies have found that ownership structure generally has a connection with the company's financial performance. Several studies on family firms such as Anderson and Reeb (2003), Maury (2006) and Martikainen, Nikkinen and Vähämaa (2009) have concluded that family ownership has a significant positive impact on the company's financial performance and efficiency when compared to companies with other type of controlling shareholders. Additionally Elyasiani and Jia (2010) found that Institutional ownership has positive relationship between firm performance. Same applies in corporate ownership. Fee et al. (2006) and Allen and Phillips (2000) found corporate ownership brings a range of positive effects for firm performance and value creation. The question of whether the same assumptions hold true for the airline industry is particularly intriguing because less studies has been done explicitly for this industry. Consequently, the following is the initial research hypothesis:

H0: There is no difference in airlines' financial performance among different ownership structures.

H1: There is significant difference in airlines' financial performance among different ownership structures.

The general assumption is that state-owned companies perform worse than those that are entirely privately owned. The theory that state-owned businesses perform worse than privately owned ones has been frequently explored in studies on state ownership such as Boardman and Vining (1989), Shleifer (1998), La porta et al. (1999) and Boubakri et al. (2018). Privatization of several sectors during the last decades provides a good opportunity to compare the success of state-owned and other forms of ownership. In addition to be considered is that states' role as the company owner has often strengthened during economic down turns and replaced by private ownership during periods of high economic activity. Thus, state ownership has seen reciprocal movement in both directions. Based on prior theories, it is expected that the airline industry is not an exception. Worth noting is that the characteristics of airline industry can significantly influence the impact of the ownership structure compared to other industries. Thereby, the following is the second research hypothesis:

H2: State ownership negatively influences airline's financial performance.

1.3 Structure of the thesis

The structure of the thesis is as follows. Chapter One reviews and provides an outline of the earlier studies that are most interesting and relevant to the subject of this thesis. In Chapter Two, theoretical background through agent theory is reviewed. Chapter Four introduces the various ownership types that are examined in this thesis. At the conclusion of this chapter distinctive characteristics of the airline industry are reviewed by analyzing the historical development of regulation and privatization. Chapter Five examines the properties of the thesis data and the variables used in the empirical research. At the end of this chapter, methodology, including descriptive statistics and the regression model are introduced. Regression results are represented in Chapter Six, first from the entire research period of 2010-2019 and then from 2010-2014 and 2015- 2019. Chapter Seven concludes and offers remarks regarding the thesis, along with suggestions on how this thesis' subject can be expanded in future academic research.

2 LITERATURE REVIEW

Several studies have found a connection between a company's financial performance and ownership structure that are reviewed in this chapter. This thesis focuses on examining the airline industry, which ownership structure's effect on financial performance has not been studied very extensively, such as the effect of family ownership. The objective is to analyze and utilize the findings and research methods from a broad spectrum of prior studies examining ownership structures. This chapter reviews the most interesting and relevant previous studies that are most relevant to this thesis. Prior literature is reviewed in this chapter, starting with studies that have been highly recognized based on their findings and research methods, serving as a foundation for several more recent studies. Toward the end of the chapter, a selection of more recent and aviation-industry-specific studies are reviewed.

2.1 Family, institutional and CEO ownership

Anderson and Reeb (2003) conducted one of the first large-scale database studies of the relationship between ownership structure and financial performance of US-listed companies from the perspective of family-owned businesses. Their study has served as the foundation for many subsequent studies on the topic, and this thesis is also based in many respects on the research methods of their study. Their study used the S&P 500 index companies from 1992 to 1999 as a data. Due to regulations and the difficulty in comparing financial key figures, financial institutions have been excluded from the data, as is appropriate in such studies. In total, their data includes 403 companies. The financial performance of companies are measured by Tobin's Q and the rate of return on assets (ROA). Explanatory variables used in the study included the size of the company, growth opportunities, risk, debt and the company's age. (Anderson & Reeb, 2003.)

Anderson's and Reeb's (2003) research results show that family companies perform better than other companies when measuring performance with both Tobin's Q and return on assets (ROA). Based on their findings it appears that the financial performance

of a company is enhanced when its ownership is concentrated within a single family. However, if the shareholding exceeds 30%, the effect on the company's success begins to decrease. Therefore, overly concentrated ownership can be a disadvantage, although, according to the study, family-owned businesses perform better on average than companies that are not classified as family companies.

Cornett et al. (2007) studied the relationship between institutional investor and company operational performance. Institutional owners are taking a more active role as shareholders in companies, putting pressure on the management to operate in the best interests of the shareholders. They examine whether institutional investors have an impact on operating cash flow returns and how institutional investors' oversight of corporate governance interacts with it. Their research data covers S&P 100 companies between years 1993 and 2000. Institutional investor ownership data for the period is gathered from the CDA Spectrum data base. As a measure of financial performance they use cash flow ROA, more specifically industry-adjusted ROA (IAROA). According to authors cash flow ROA is most relevant measure in their study because it is focused on the current performance. Unlike cash flow ROA, for example, Tobins' Q detects growth opportunities and expectations based on market value, which can cause distortions for companies with very high expectations (Cornett et al., 2007). In addition, the authors purpose is primarily to study operational performance. Thus, using multivariate regression, the annual industry adjusted cash flow ROA is a function of various ownership and governance variables.

Von Lilienfeld-Toal and Ruenzi (2014) studied the ownership structure from the perspective of the CEO's share of ownership and the company's market value. Their research focuses on corporations where the CEO owns a significant portion of the shares. As a research method, they have created a portfolio consisting companies where the CEOs have a large share of the company's shares. Since the pioneering work by Berle and Means (1932), it has been frequently noted that managers' interests are not necessary well aligned with the shareholders. Manager's and owner's agent problem often arises

when the Manager does not have an ownership stake. However, they find evidence that a small number of S&P 1500 companies CEOs voluntarily own more than 5% of the company's stock. These companies have been selected for their comparison portfolio, whose performance they compare with other companies with small or none CEO ownership in the index. The findings of Von Lilienfeld-Toal and Ruenzi (2014) study indicate that firms with higher managerial ownership generate higher stock market returns than those with lower managerial ownership.

According to their findings, an institutional investor's ownership has a positive impact on the cash flow returns of the company. Their results suggest that higher institutional ownership percentages increase operating cash flow returns. However, it is noted that the positive effect on the number of institutional owners and cash flow returns is only for pressure sensitive institutional investors, which do not have a business relationship with the firm. (Cornett et al., 2007.)

2.2 State ownership

Boubakri, Cosset and Guedhami (2009) studied the effect of privatization on financial performance from a panel of 189 firms in strategic industries. Their research covers the period of 1984 to 2002 and the companies represented in the data are from 39 different countries. Their purpose is to investigate whether the transition from state ownership to private ownership has had a positive effect on the companies' financial performance. The companies in their research data are from a wide range of sectors, including financial, mining, steel, telecommunications, transportation, utilities, and oil sectors. The research data has been collected from the World Bank's extensive privatization transactions database and Privatization Barometer database. Companies that previously operated in a communist country have been excluded from the study. They have collected financial information from financial statements Worldscope Disclosure, Compustat (Global Vantage), Moody's International, and Economatica. The data has been collected from three years prior privatization and from five years after it.

In their study, Boubakri et. al. (2009) use profitability (net income to sales, ROS), operating efficiency (net income per employee, NIEFF), investment spending (capital expenditures to sales, CESA), employment (number of employees), and leverage as measures of financial performance (total debt divided by total assets). The research has been carried out using univariate and multivariate analysis using financial performance measures from the years before and after privatization. The results of their research show that after privatization companies are more successful in terms of profitability and by achieving better operational efficiency. An interesting observation in their research is that even after complete privatization, the state can continue to influence the company years after, despite having no ownership stake in the company. This is done by appointing politicians or bureaucrats on the boards of newly-privatized firms. Boubakri et. al. (2009) mention that as a common method, the state may have kept relatively large control over the company in the form of golden shares, especially in Finland and Malaysia, even after privatization. Golden shares gives its shareholder veto power over changes to the company's operations and financial decisions.

As a perspective from the banking sector. Davydov (2018) studies the impact of state ownership in the banking sector from 2005 to 2011. The research data includes 348 banks in the Russian banking sector, which is very much connected to state ownership. The primary focus of the research is lending behavior in the time during the financial crisis. The study is divided into parts that investigate the impact of the ownership structure of banks on the growth of loan granting, interest rates on loans, state intervention in the operations of banks during the financial crisis, and the impact of state ownership on bank capitalization. As noted in Davydov's (2019) study, the previous literature on state ownership in banks has generally led to underperformance compared to private ownership. This is consistent with studies conducted in other sectors on the effect of state ownership on efficiency (La Porta et al, 1999). The most important findings of Davydov's (2018) study can be considered that state-owned banks reduced lending and raised interest rates less than privately-owned banks during the financial

crisis. This can be interpreted as an action by state ownership to stimulate the financial sector in a challenging economic climate.

Recent studies on mixed ownership such as Musacchio et al. (2015), Huang and Xiao (2018), Lazzarini and Musacchio (2018) and Boubakri et al. (2018) have studied and compared financial performance between fully state-owned (state as majority owner), the state as minority owner or principal owner (i.e. mixed ownership), and fully privately owned companies. Their findings consistently show that mixed ownership can be advantageous compared to fully privately owned and state-owned rivals.

Boubakri et al. (2018) studied 955 Asian companies from 2006 to 2010. The subject of the study is the effect of state ownership on the company's market value. The viewpoint represents the investor's perspective on the valuation of state ownership. Thus, the market to book value of asset functions as a variable for firm value. As an ownership structure variable, they monitor state ownership with two dummy variables, if the largest owner is the state and if the second largest owner is the state. In the definition of ownership, authors have chosen ultimate ownership, as opposed to direct ownership. According to the authors, ultimate ownership gives a better definition of the dimensions of state ownership in the company.

Boubakri et al. (2018) research reveals that state-owned companies have a higher market value compared to non-state-owned companies. However, the results show that the direction is not linear in the state-ownership relationship. When state ownership exceeds 50%, the market value begins to decline. The reasons for the positive effect of state ownership in the eyes of investors are suggested to be the company's easier access to financing, but also the belief in a bailout in a crisis situation. As a further observation, the authors state the legal environment, according to which state ownership results in a higher valuation in countries with better legal protection of investor and a more balanced government in general.

Similarly, Lazzarini and Musacchio (2018) studied 477 large listed companies in 66 countries between 1997 and 2012. They assume that state owned companies pursue political and social goals that traditionally lead to poorer financial performance. However, the secure status and benefits provided by state-owned companies put them on equal level or even ahead of privately owned companies. Measured by ROA and Tobin's Q, their results show that companies with state ownership do not perform worse than fully privately owned companies.

As an explanation, the benefit of smaller state ownership is more effective monitoring and a more even distribution of ownership. In fact, a more evenly distributed share of ownership reduces agency costs because it is more difficult for a single large owner to use power for personal gain when there are multiple large owners monitoring. These results mirror also Maury's and Pajuste's (2005) findings regarding Finnish listed firms. Their research results show that equal distribution of large owners has a positive effect on the value of the company.

2.3 Airline industry

Backx, Carney and Gedajlovic (2002) studied the effect of ownership structures on the financial performance of international airlines. They created a model of airline ownership structures that classify airlines as private, mixed, or state-owned. They state in their research that there is no previous literature or direct guideline to divide airline ownership into these three categories. They also state that in the mixed mode category, even a small state share can have a big impact on the company's operations, for example when using the right of veto. For this reason, the necessity of mixed class can also be questioned, although the authors of the study have seen it as a necessary differentiator for airlines where the majority owner is the state (more than 50%). They have classified airlines where the ownership group is 99% private parties as completely private sector airlines. State-owned category, they have set the condition that the state owns 95% or more of the airline. The private sector holds between 6% and 98% of the voting or control shares of airlines in a mixed mode ownership category. Their research data thus

includes 109 private ownership, 72 state ownership and 69 mixed ownership data samples per company year. The research period spans the years 1993 to 1997; consequently, 50 airlines in total are investigated in their data.

The research of Backx, Carney and Gedajlovic (2002) use an OLS regression model where state and mixed mode airlines are regressed with eight different dependent variables, with the private sector acting as a baseline condition. As dependent variables, they use: Return on sales, ROA, average amount of revenue generated by each company employee, Non-direct Personnel as Proportion of Total Personnel, Passenger Service Expense rate, Passenger Load- Factor and Aircraft Utilization. They also employed a control variable for domestic competition. According to their example, an airline with a monopoly position in its home country can choose the best airport locations. They control the size of the airline using the natural log of total assets. In addition, they use the airline's ICAO code to determine which region the airline is from.

Their main findings are that public sector and mixed ownership airlines generally have lower profit levels and weaker ROA than private sector airlines. They have also observed lower staff efficiency and less intensive use of aircrafts in state and mixed mode airlines. In addition, they find that state and mixed airlines have a smaller ratio of in-flight employees compared to the entire staff, which suggests that the number of non-flying personnel is not as efficiently organized as in privately owned airlines. The results are distributed in their research in such a way that fully state-owned companies have performed the worst when measured by all their dependent variables. Mixed mode ownership airlines are positioned between fully state owned and fully privately owned.

One of the challenging aspects of Backx, Carney, and Gedajlovic (2002) research has been the difficulty of collecting data of non-listed airlines and fully state-owned airlines, for which financial information can be difficult to manually obtain. Several airline-specific key figures contribute to the study's importance. Their research results corresponded to the researchers' hypotheses, also giving a beneficial assumptions to this thesis. However,

the competitive situation and the airline industry may have changed considerably considering that their research was done 20 years ago.

Chen S. J., Chen M. H. and Wei (2017) studied the effect of state ownership on financial performance. The subject of the study was Chinese listed airlines from 1994 to 2011. During the research period, the pace of privatization of state-owned companies in China has quickened, and opportunities have emerged for the establishment of new privately owned airlines. China is, therefore, an ideal market for comparing the efficiency between state and private ownership. Profitability, Tobin's Q, solvency, and operating efficiency have been used as measures of financial performance in their study. The growth rate of Gross Domestic Product, size and SARS outbreak impact have been used as control variables.

The pattern of cross-sectional and time-series variation for six airline companies listed on the Shanghai Stock Exchange and the Shenzhen Stock Exchange has been determined through a panel regression analysis. Their regression results reveal a U-shaped relationships between state ownership and financial performance. Based on their results, state ownership has a negative relationship with financial performance, although only up to a certain point. As a result of using a percentage of state ownership in their regression, they have been able to determine that when state ownership exceeds a certain threshold, it becomes less negative compared to companies with full state or private ownership. In conclusion, the authors of the study argued that partial privatization is not beneficial in terms of financial performance, and instead ownership should be either wholly private or state-owned.

State ownership is almost universally associated with worse performance compared to private ownership, yet prior literature shows that private ownership does not automatically provide stronger performance. In conclusion, it can be argued that mixed ownership might give an opportunity to benefit from the best of both features in private and public ownership. Primarily because the dominant private shareholder is capable of

choosing goals other than value maximization also. The fear of takeover is perhaps one of the biggest performance incentives for managers in the private sector, whereas in the public sector it is not working as effectively. It serves as both a control measure and a motivator for managers who are not maximizing the value of the company.

Table 1 Summary of literature review

Authors	Data	Result
Anderson and Reeb (2003)	403 S&P 500 firms from years between 1992-1999	Family firms have 10% higher Tobin's Q and 6.65% higher ROA on average.
Backx, Carney, and Gedajlovic (2002)	50 airlines from years between 1993 - 1997	State and mixed ownership airlines have lower profit lever and weaker ROA than privately owned.
Chen S. J., Chen M. H. and Wei (2017)	6 airlines listed on the Shanghai Stock Exchange and the Shenzhen Stock Exchange from years 1994 to 2011	U-shaped negative relationships between state ownership and financial performance
Boubakri, Cosset and Guedhami (2009)	189 firms in strategic industries from 39 countries that have been privatized between years 1984 - 2002	After privatization companies are more successful in terms of profitability and by achieving better operational efficiency.
Von Lilienfeld-Toal and Ruenzi (2014)	CEO ownership in S&P 1500 companies.	Annual abnormal returns from management ownership range from 4% to 10%.
Davydov (2018)	348 bank in the Russian banking sector	State-owned banks reduced lending and raised interest rates less than privately-owned banks during the financial crisis.
Cornett, Marcus, Saunders and Tehranian (2007)	S&P 100 firms from years 1993- 2000	Higher institutional ownership percentages increase operating cash flow returns.
Lazzarini and Musacchio (2018)	477 large listed companies in 66 countries from years 1997- 2012	State owned companies do not perform worse than fully privately owned measured by ROA and Tobin's Q
Boubakri, El Ghouli, Guedhami and Megginson (2018)	1101 firms from Asian countries over the years 2006- 2010	State-owned companies have a higher market value compared to non-state owned companies. However market value begins to decline when state ownership exceeds 50%.

3 THEORETICAL BACKGROUND

3.1 Agency theory

The majority of studies on ownership structure and firm performance reflect their hypotheses and observations on agency theory. Agency theory in general examines the effects of separated management and ownership, in which the owners of a company do not manage it themselves but instead employ agents. This is especially evident in large listed companies with highly dispersed ownership (Fama & Jensen, 1983).

One of the first to study ownership structure's effect on company's financial performance were Berle and Means (1932) who introduced agency theory across a broad spectrum of research papers. However, as this theory separates all other frictions regarding ownership features (except the one between managers and owners, and major and minor shareholders) it is important to reflect on a broader spectrum of ownership variables used later in the empirical part of this thesis.

Jensen's and Meckling's (1976) model on agency costs and ownership structure holds a central role in the literature of modern corporate governance. The agency costs were defined by Jensen and Meckling (1976) as the sum of the principal's monitoring costs, the agent's commitment costs, and the residual loss. Monitoring costs are a result of the principal monitoring the agent's activities using resources to control them with various operating requirements or restrictions. Commitment costs or bonding costs are incurred from compensations and payments arranged by the principal to the agent so that he does not act against the principal's interest. In other words, enabling a motivational arrangement for the mutual benefit of agent and principal. Residual costs are the portion of difference that is still considered to remain between the benefit of the principal and the agent, even if monitoring and commitment procedures are employed. According to Jensen's and Meckling's (1976) model of agency costs, agents still make some decisions

that are not completely in accordance with the principal's expectations, despite positive actions that prevent residual costs from being incurred. On the other hand, the costs of commitment and reward systems are also excluded from the shareholders' profits. In addition, the maintenance of control systems and monitoring of the management's activities is an additional cost for the owners as well. Jensen and Meckling (1976) also found that agency costs are positively correlated with company size, indicating that the larger the company, the higher the agency costs are. In summary, the Jensen and Meckling (1976) theory in agency costs show that ownership and management should be combined in a balance where the interests of both agent's and principal's meet and expenses are minimized.

Fama and Jensen (1983) examined the effects of ownership and control separation. They argue that the top management of the company should not bear a substantial portion of the financial consequences of their decisions. According to their research sharing the decision process among the agents of the organization is important for the survival of the organization when important decisions need to be made. However, the benefits of separating ownership and control depend on the characteristics and size of the company. According to the research, the separation of ownership and control would not be as effective in small companies and organizations where decision-making and control roles could be effectively concentrated on a small number of agents. In more complex and larger organizations the benefits relative to the agency costs resulting from the separation of ownership and control were seen as particularly effective.

3.1.1 Agency problem between small and large shareholder

Agency theory also gives rise to another theory of conflicts between minor and majority owner, which finds expression as Agent Theory II embraced by Villalonga and Amit (2006). As a continuation, the aforementioned theory emerged from findings of Jensen's and Meckling's (1976), Fama and Jensen (1983), Shleifer and Vishny (1997) studies in currently recognized Type I agency problem. The Type II agency problem is also

particularly relevant for this thesis since it is examining the largest's owner's influence on the company's operations and performance. Type II agency theory suggests that large shareholders are able to use their power for their own interests, and this can lead to disadvantage and loss of value for smaller shareholders.

The majority of research on the large owner's and small owner's agent problem has focused on family companies, however the issue has also been examined when the largest owner is an institution, another company, or state. Depending on the type of owner, the reasons for the largest owner's actions that negatively affect the minority owner can vary considerably. In family companies, when a family member has a large ownership share, there is a risk that power in the company is used for personal gain, rather than to maximize value, resulting in a loss for the minority owner. Another company as the owner also brings the interests of another company or companies into the competition. Another company, as the main owner, can exercise power in the company, improving the position of its other companies, and does not always seek to maximize value, weakening the value of minority owners. In other words, ownership arrangements between multiple companies can result in decisions that intentionally reduce the value of one company in order to maximize the value of others.

Institutional investors such as insurance companies or pensions and mutual funds are often the largest owners in companies. For instance, one objective of a pension insurance company may be to encourage the board of directors to make adopt business strategies that carry less risk. Notwithstanding, this may result in a loss for the minority owner when the larger profits made possible by higher risks are not realized. On the other hand, hedge funds (who are also institutional owners) might aim for higher profits and expect management to take on more risk. When the state is the largest shareholder, there is a wide number of factors that could weaken minority shareholders. The most prominent examples are political factors, regulation, risk aversion, and bureaucracy in decision-making. However, if the largest shareholder is a large institutional investor or another company the personal benefits brought by the major ownership are distributed

equally to the large shareholder group, reducing the likelihood of the value for small shareholders being weakened. In this case, the motivation or desire to monitor managers is also limited.

The Villalonga's and Amit's (2006) study conclude that the previously experienced agency problem between owners and managers is more present in institutions and companies, while Agency problem II is a more common problem in family businesses. The aforementioned study concludes that the previously encountered agency problem between owners and managers (Agency problem I) is more prevalent in institutions and businesses, whereas Agency problem II is more prevalent in family businesses.

4 OWNERSHIP TYPES AND AIRLINE INDUSTRY

For the purpose of this thesis, it is essential to understand and shed light on the characteristics of the airline industry and the factors that have influenced it. Throughout history the ownership structures in the airline industry has been strongly influenced by regulation, political issues. There are a several industry-specific aspects associated with the operational activities of airlines, which cannot be fully controlled in a quantitative analysis but can be accounted, based on prior literature and information reported by industry operators.

The airline industry is a highly cyclical industry. Over the course of history, the airline industry has also been strongly affected by wars, natural phenomena, terrorism and outbreak of infectious diseases such as epidemics and pandemics. The Asian Economic Crisis in 1998, the 9/11 terrorist attack in 2001, the SARS epidemic in 2003, the 2008 financial crisis, and the COVID-19 pandemic that began in 2020 have been the most significant negative factors affecting the air transport industry over the past three decades (ICAO, 2021). Consequently, it is crucial that this thesis identifies the historical impacts of the aforementioned factors on airline operations, as well as their subsequent effects on ownership structures and financial performance.

4.1 State vs. private ownership

Traditionally, governments regulate businesses and provide essential services and goods for citizens. Consequently, the state has been viewed as a necessary owner in situations where it is considered socially beneficial. However, governments also have shareholdings in a variety of publicly-traded companies that operate on competitive markets. Examples of these include air transport, the energy sector, rail transport and shipyard industry. The aforementioned industries are often considered strategically important to the national defense, so that the state must take a controlling interest. (Vickers & Yarrow 1991.)

There are numerous reasons for state ownership and these vary by industry and nation. According to Shleifer (1998) a number of state-owned companies are remnants of the economic ideologies of 1930s and 1940s period where private ownership was generally considered incapable of implementing socially beneficial activities. However, following the end of the Second World War western economies experienced a rapid transition to privatization and the capitalist incentive of private ownership to innovate and develop the economy has been recognized. Shleifer (1998) also views that corruption and politicization in state ownership as a detriment, arguing that a number of security and basic services would be more efficiently performed by the private sector.

La Porta de Silanes and Shleifer (1999) analyzed the ownership structures of companies in 27 wealthy nations to develop an overview of ownership concentration and ownership structures around the world. Their results show that for countries with lower per capita income in slowly emerging markets, ownership is often more concentrated in one entity such as the state. This is largely due to the fact that privatization is still in its early stages in a number of emerging market economies. A significant amount of studies has concluded that state-owned companies perform worse financially than privately owned ones. Boardman and Vining (1989) were among the ones to gather a substantial amount of empirical evidence to reach this conclusion.

4.2 Institutional ownership

Institutional ownership is a term used to describe ownership in a particular company held by large organizations, such as foundations, insurance companies, mutual funds, and financial institutions. It is common for institutional investors to prioritize returns above or in line with their own strategy. Institutional investors typically manage very large investment portfolios, so it is easy for them to diversify holdings. As a result, they are willing to take on a high amount of risk in terms of their own investment goals. For these shareholders the goal of owning a share is to increase return on investment: the investment, for instance, has no strategic value or other non-financial objective. (Cornett, et. al. 2007.)

According to agency theory, a large individual investor can monitor their own interests better which will result in lower agency costs. Consequently, companies with a large institution as the largest owner should perform financially better than other companies with decentralized ownership. A substantial shareholding also gives institutional owners a good chance to affect the board's and the company's management's decisions since they have a significant voting power. Additionally, it has been suggested that institutional owners would be more long-term investors, providing the management of the company with a better opportunity to plan operations independently for the long-term. (Elyasiani & Jia, 2010; Cornett, et. al. 2007.)

Elyasiani and Jia (2010) studied how institutional ownership affected the company's financial performance. They found that stable institutional owners had a positive impact on the company they owned. In their study, they measured the institutional owner's holding term and the change in ownership share. They found that a consistent ownership stake and long term holding has a positive effect on the company's valuation. In addition to influencing management's activities, investor confidence among small owners increases when the institutional principal owner has remained. Institutional investors are therefore considered to give confidence in the eyes of the market because they are assumed to have more inside information about the company's operations.

4.3 Corporate ownership

Companies frequently take ownership in other companies, meaning they own long-term block equity in the target company. Ownership arrangements between corporations are interesting because they can provide parties with business agreements such as alliances and joint ventures, resulting in possible synergies and scale advantages. Compared to institutional owners who are generally more passive investors for whom return is the most important. Corporation ownership is often driven by strategic business development and increasing market share.

Allen and Phillips (2000) studied how publicly listed U.S. corporations operating and investment performance changed after non-financial corporations acquired significant equity positions. They found that ownership between companies has a considerable beneficial impact on the stock price of the company being acquired, particularly when it results in an alliance, joint venture, or other product cooperation. Their findings are especially emphasized in companies that manufacture products and that invest heavily in product development.

Fee, Hadlock, and Thomas (2006) study corporation equity block holdings from the perspective of the supplier as one of the common objectives for ownership relations between companies is the aim to expand cooperation with the supplier. According to their findings it is common to sell production assets to a customer, but it is less common to sell a smaller ownership stake to a customer company for production-related reasons. Equity ownership is much more common when the supplier company exercises a lot research & development work, as also stated in the Allen and Phillips (2000) study. Referring to the fact that equity stakes are a safer option when it comes to intangible capital contracts because they better protect the client company's interests. In addition, Fee, Hadlock and Thomas (2006) found that the ownership relations between the customer company and the supplier company are long and persist longer than other cooperation agreements. As a result, the primary motivation for corporate ownership may differ by industry, but the prevailing reasons are to seek strategic benefits, operational efficiency or expansion.

4.4 History of regulations and privatization impacting ownerships

Regulations and government control have been major factors helping to determine ownership and operations in the history of airline industry. The wave of privatization in the airline sector can be seen to have started in the United States. In 1978 President Jimmy Carter, who signed the Airline Deregulation Act, started the privatization process. This act ultimately led to the separation of the Civil Aeronautics Board (CAB), which regulated U.S. airlines as a public asset, controlling where they could fly and how much

they could charge for tickets. Since ticket prices were regulated by the government before deregulation, airlines' only option was to compete with service experience. This time period is commonly referred to as the "golden age of aviation," when mostly only wealthy businessmen could afford to travel by air which was seen as glamorous and exciting. Many airlines, especially those that were not prepared to respond with major changes to their business model, found it impossible to compete in the new world of free markets. (Sinha, 2019; Button, 2009.)

Following the implementation of deregulation, many of the new airlines encountered challenges, including financial instability, which frequently led to bankruptcy. State control and regulation was long believed to be necessary in Europe, and troubles in the United States seemed to strengthen that claim. One European nation, however, saw this as an opportunity. The United Kingdom focused on the advantages of privatization, having been long dissatisfied of weak performance by its own and other European airlines. In response, the British government began reform its domestic aviation by privatizing the British Airways in 1987 and easing bilateral air agreements with numerous significant member nations. Since then EU has undergone numerous reforms and deregulations. One of the last major legislations being that any European carrier could provide service on any European route starting on April 1, 1997. These reforms in Europe and the US are generally seen as having generated significant economic benefits and served as a catalyst for the global aviation industry for further deregulation and privatizations. (Button 2009.)

The effects of privatization and deregulation have also led to more unexpected phenomena. Baik, Kwak and Lee (2011) studied the earning management dynamics after the 1978 deregulation in U.S. Between 1964 and 2006, they analyzed U.S airlines' operations before and after deregulation. Deregulation drastically increased the level of competition that allowed for first time a true entrepreneurship in this sector. In the management of both new and existing airlines, there was a growing demand for managers with ability to manage business and investment strategies, as opposed to post-

deregulation when these positions were mainly about managing regulatory processes. Consequently, they discovered that the new competitive environment and pressure might push managers to implement income-increasing earnings management. Based on Baik, et al. (2011) results, earnings management was at its peak three years after deregulation, but decreased considerably after that.

5 DATA AND METHODOLOGY

This chapter covers the content and properties of the data, as well as the characteristics and functions of the variables used in this thesis. The last three sections of this chapter covers descriptive statistics and the methods as well as the regression model of how this study is carried out using the data and variables.

5.1 Data

Data used in this study includes financial information of publicly listed airlines around the world. One of the criteria for the airlines to be included in the study sample, is that they operate international scheduled flights. This allows the exclusion of the smallest airlines and provides a more equal comparison. In addition, the airlines must have operated between years 2010 and 2019, as well reliable comparable financial information must be reliably available.

The data for this thesis has been obtained from the Orbis database, which is a global company information database provided by Bureau van Dijk. Orbis provides comprehensive and reliable financial information, such as key financial figures and financial ratios, as well as shareholder information. This database is widely recognized offering highly relevant company information, ensuring the high quality results for this thesis. The second most important source of information has been financial statements and lists of owners of airlines, to the extent if that information have not been accessible through the Orbis database. This was the case in some airline's shareholder information and age of the company.

The final research material consists of 82 airlines. Companies from which sufficient data was not available or one of the previously mentioned criteria was not met, have been excluded from the data. The data has been gathered in an Excel file, and its compatibility and comparability has been confirmed. It is also worth noting that, although the

companies in this study operate in different parts of the world and are listed on different stock exchanges, the reporting of the air transport industry is well harmonized.

Previous studies on the effect of ownership structures on financial performance have often focused on either one country or continent, even when examining a certain industry. However, when companies from broader geographical area are examined, a larger sample is obtained. Although requirement of being publicly listed, performing international flights and the time of establishment limit the number of companies considerably in this study as well.

The research period of this study took place between years 2010 and 2019, giving a long-term view for comparison. Thus, the dataset includes 820 observations per variable from the years 2010 to 2019. Additionally, this time period examined by dividing it to two periods. In the first half of this period, the economy, and especially the tourism and air transport industry is still recovering from recession caused by the 2008 financial crisis. The effects on tourism and air traffic after the 2008 financial crisis were far-reaching, causing reforms in the airline industry. The recovery of the travel industry and air traffic has therefore been relatively slow, and according to some studies, tourism and airline industry did not fully recovered to the pre-financial crisis level until 2014. In the latter half of the study period economy has expanded quickly, and the tourism together with airline industry has seen particularly rapid expansion. (Franke & John, 2011; Jean & Lohman, 2016.)

5.2 Variables

5.2.1 Measures of financial performance

Tobin's Q

Tobin's Q is widely used as a measurement in studies defining the relationship between ownership and financial performance. It is determined by dividing the current market

value of the company to its current replacement value. In practice this mean dividing company's market value by its' total assets. This is also how Tobin's Q is calculated for the companies examined in this thesis. Tobin's Q was brought to the public by James Tobin, who hypothesized that the market value of all companies on the stock market should roughly equal their replacement costs assets. It is regarded a reliable estimate for evaluating the performance of a company. A company is considered undervalued in respect to its total assets replacement cost if Tobin's Q is less than 1. If the result is more than 1, the company appears to be overvalued relative to its total asset replacement cost. (Tobin, 1969; Villalonga & Amit, 2006.)

$$Tobin's\ Q = \frac{Total\ Market\ Value\ of\ Company}{Total\ Asset\ Value\ of\ Company} \quad (1)$$

Where,

Total market value = market share price multiplied by outstanding shares

Total Asset Value of Company = book value of total assets

Return on Assets (ROA)

The return on assets (ROA) describes how much return the company gets on its capital. The financial ratio can be calculated by dividing the company's profit to its book value, indicating how profitable a company is in relation to its total assets. In this thesis, two different definitions are used to calculate the return on assets. The first formula calculates the ratio of the company's net profit to the book value, and the second one compares earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets. EBITDA can be utilized to track and compare a company's core profitability regardless of depreciation estimates or financing decisions.

$$ROA = \frac{Net\ Income\ or\ EBITDA}{Book\ Vale\ of\ Total\ Assets} \quad (2)$$

Where,

Net Income = Total Revenue - Operating Expenses - Other Business Expenses - Taxes - Interest on Debt + Other Income

EBITDA = Net Income + Taxes + Interest Expense + Depreciation & Amortization Total assets include both current and fixed company assets.

ROA is the optimal financial ratio used for the purpose of this thesis because it compares companies in the same industry. The functionality of ROA is challenging when comparing different industries whose business requires different amounts of capital. For instance in the air transportation industry, a substantial amount of capital is tied up in fleet and equipment, whereas in software and consultancy, the primary asset is intangible.

Accordingly, the financial performance measures can be summarized as follows. Tobin's Q is a forward-looking financial performance indicator that incorporates investors' expectations of the company and can reflect information about the company that cannot be detected by financial statement analysis alone. Again, ROA is reflected from past financial statement data. In practice, ROA gives investors an idea of how effective the company is in generating returns for investments. Higher ROA value indicates that the company is able to earn more money with a smaller investment. Together, these measures provide excellent indicators of the company's financial performance.

5.2.2 Ownership variables

The ownership structures and category of largest shareholders have been ascertained from Orbis database and shareholder information records provided by the airline companies. With the aid of shareholder information the owner with the highest percentage of ownership and the most voting power is regarded as the principal or majority owner.

In this thesis, the key parameters are ownership structure variables which can be used to classify airlines according to their largest shareholders. The largest shareowners of the companies examined in this study fall into four categories: state, corporation, investment advisor, and pension & insurance. These categories are commonly used to define the ownership categories in publicly listed companies. Naturally, there are additional categories, but the airlines in this study fall into these four. One of the main interests of this thesis is to examine the airlines' performance with state-ownership compared to privately owned ones. Fully privately owned airlines include the corporation, investment advisor, and pension & insurance categories. These three ownership categories can also therefore be considered privately owned compared to the state ownership category. Table 1 shows the owner definitions and examples of companies within each category.

Table 2. Ownership types, definitions and examples

Ownership variable	Definition	Example airlines
State	State or government agency	Finnair Oyj, Air France KLM, Thai Airlines
Corporation	corporation, cooperation, or a holding company	easyJet PLC, Korean Air Lines, Pegasus Air
Investment Advisor	hedge fund or mutual fund	United Airlines, Norwegian Air Shuttle, Ryan Air
Pension & Insurance	pension fund or insurance company	Iceland Air, Utair, Alliance Airlines

The definition of the ownership structure variables in the data and for the regression has been implemented using dummy variables. In practice, the company receives a value of 1 if it belongs to the respective ownership category, and a value of 0 if it does not.

5.2.3 Control variables

In addition to the financial performance and ownership variables, three control variables have been included in the regression model to explain their variation. The variables were

selected primarily based on prior research examining the relationship between ownership structure and financial performance (Anderson & Reeb, 2003). Accordingly, the control variables are the company's debt, size, and age.

Long term debt to total assets

The level of a company's debt (or leverage) is determined by dividing its long-term debt by its total assets. This provides an easily comparable ratio for determining the level of debt and leverage. In light of previous research, it is assumed that the level of debt has a negative impact in large scale. However, optimized leverage enhances the use of capital and thus financial performance, consequently low leverage can also be disadvantageous to financial performance.

Size

It is important to consider company size in any comparison because the sample for this study includes airlines of varying sizes. The size of airline is determined by their total assets. In previous literature in the same field, the size of the company defined by total assets has proven to a good metric for describing the company's growth, and revealing its impact on the company's financial performance. Even more precisely, the natural log of (LN) total assets is employed in regression analysis.

Age

The age of the company is described by the natural log of the years since the company was founded. The ages of the companies may vary considerably, with the oldest being more than 100 years old and the youngest less than 20 years old. With the help of the natural logarithm these large variations can be formed to correlate more closely, thereby improving the regression model's explanatory power.

5.3 Descriptive statistics

In this chapter the content and properties of the data are reviewed in more detail. The first diagram below shows the distribution of ownership structures among the airlines examined in this thesis. It can be seen that corporate ownership type predominates over 50% of the airlines, with nearly one-fourth of the sample's airlines under state ownership. The third largest ownership type is Investment Advisor which constitutes 18 %. Investment Advisor ownership type includes hedge funds, mutual funds and various investment companies and financial services corporation. The share of pension fund and insurance ownership type remains relatively small in the thesis sample. Although pension funds and insurance companies hold a substantial capital share in airline companies, they are often not the largest owners.

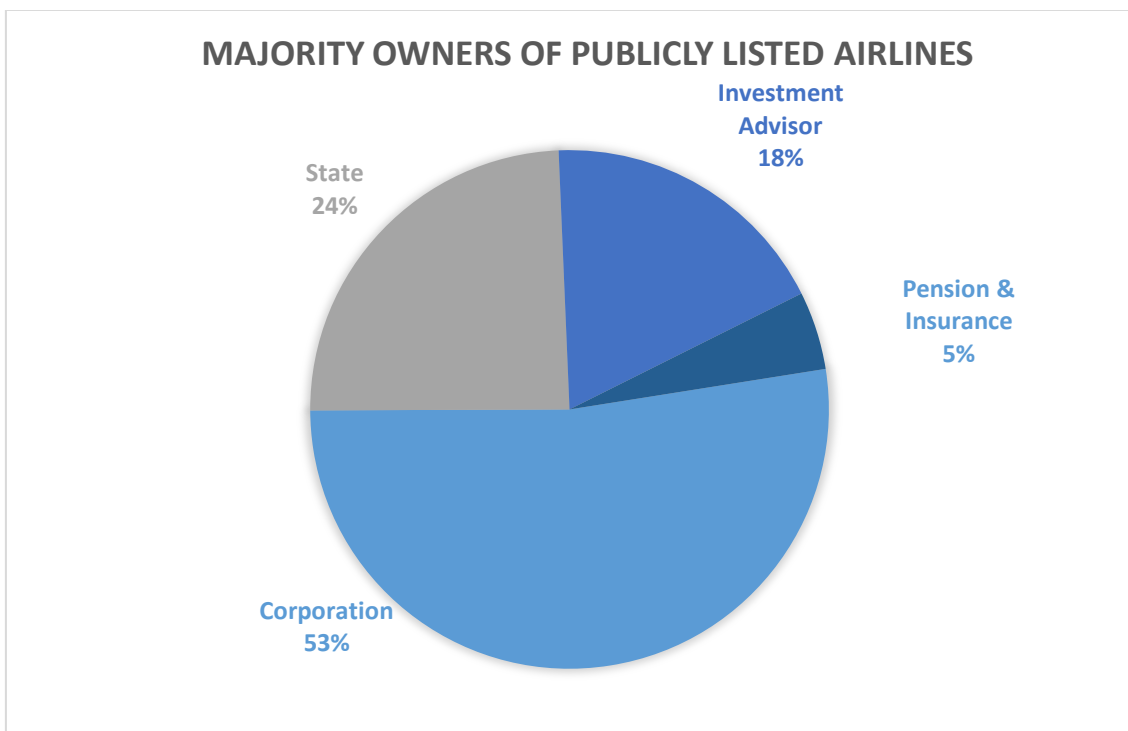


Figure 1. Ownership distribution.

Another interesting factor is the geographical location of the airline in the sample and their distribution in different regions. In Figure 2 the companies are divided according to

geographical region, with corresponding percentage from the whole data sample. From Figure 2 we can see that the majority of the airlines in the study's sample are located in Asia, Europe and North America. By far the largest number of airlines are in Asia. This is largely explained by the fact that East Asian region of the sample includes airlines from China, Japan, South Korea, Taiwan, and Hong Kong, where there is a large population and a high level of economic development. The total population of these countries is approximately 1.65 billion, which is more than half of Europe's population. Another important region in Asia is South East Asia, where the growth of small low-cost airlines in particular has been significant (Chow & Kong, 2010). The examined airlines in South East Asia are located in Singapore, Indonesia, Philippines, Vietnam and Myanmar. South Asia, which includes India and Pakistan, accounts for the smallest proportion of the airlines on the Asian continent. Lastly, Africa, Middle East and Oceania account for the smallest portion of airlines in the data. Airlines from African region in the data are from Tanzania, Kenya and Mauritius. Middle East region includes airlines from Kuwait and Israel. Finally, the Oceanian airlines are from Australia and New Zealand.

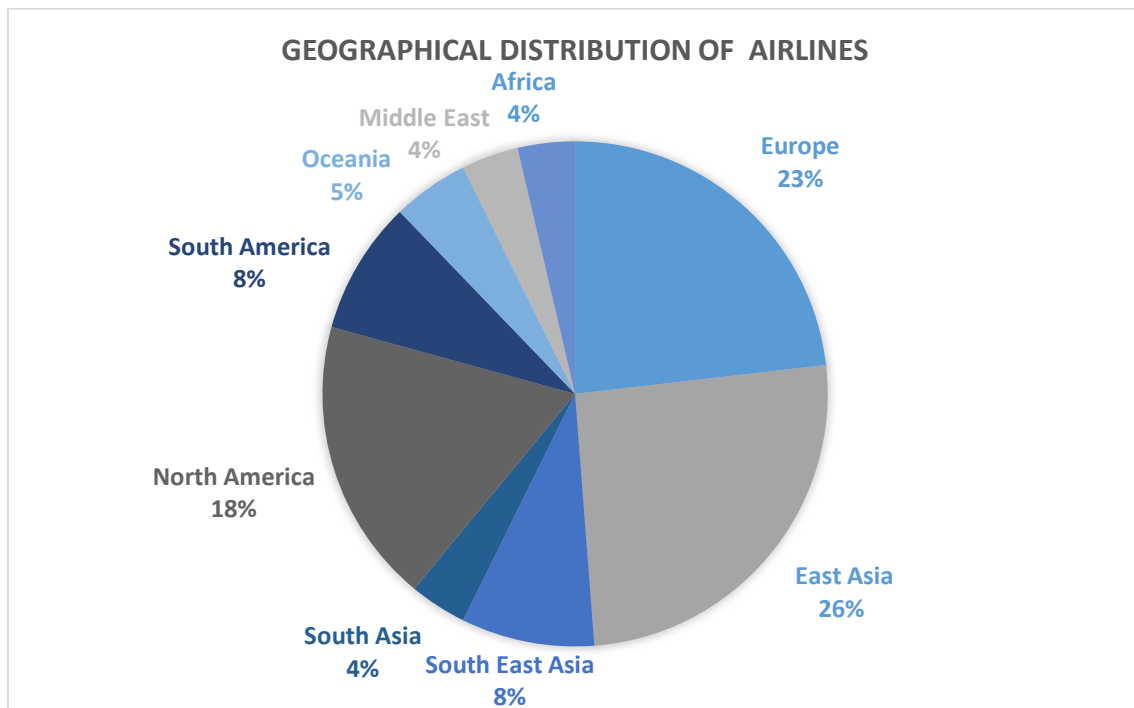


Figure 2 Geographical distribution of airline companies in the data.

Notable also is the distribution of ownership structures across regions. Table 3 presents the percentage distribution of ownership structures in different regions. Europe, East Asia, and North America, where the majority of the airlines in the study are located, have a highly variable ratio of ownership structures, as shown in Table 3. In Europe, there is a relatively even ratio of all owner types, however, the corporation category is the most prevalent. The pension & insurance category exists only in Europe and Oceania. East Asia has a significant number of state-owned airlines in terms of quantity, but the corporation ownership type still has the largest proportional share.

Table 3 Distribution of ownership structures in the regions.

	State	Corporation	Investment Advisor	Pension & Insurance
Europe	32 %	42 %	16 %	11 %
East Asia	19 %	76 %	5 %	0 %
South Asia	57 %	29 %	14 %	0 %
South East Asia	33 %	33 %	33 %	0 %
North America	7 %	40 %	53 %	0 %
South America	0 %	86 %	14 %	0 %
Africa	67 %	33 %	0 %	0 %
Middle East	33 %	67 %	0 %	0 %
Oceania	25 %	25 %	25 %	25 %

In South East Asia and Africa state ownership is by far the most prevalent form of ownership. This may be due to the limited number of comparable airlines from these regions included in the data and the fact that the most established airlines are typically state-owned in these regions. In North America, the share of state ownership is small, and as an exception compared to other regions, investment advisor has the largest share.

South America is the only region where no state ownership airlines have been included in this study.

The variables and key figures of the airline companies are the most important factor when analyzing financial performance. The averages, medians, maximums, and minimums of the variables and key figures examined in this thesis are presented in Table 4. This table is divided into five sections, for all companies, state, corporation, investment advisor and pension & insurance. These figures provide an illustrative description of the companies included in the data, allowing to compare the various ownership structure types prior the actual regression analysis.

Table 4 shows that the largest variation in between minimum and maximum values are in the corporation ownership type; companies in this owner class are also younger than in other owner type classes. In the state ownership category, there are again clearly older companies. The companies in the state, corporation and investment advisor ownership categories are overall very close in size, measured by total assets. There are, however, statistically larger airlines in the Investment Advisor ownership class based on total assets. In terms of average value, pension & insurance category companies are the smallest of the group. Unexpectedly, in the category of state ownership, airlines appear to be most indebted measured by long term debt to total assets, however difference is very close to airlines in corporation ownership class. The investment advisor ownership class has the highest average financial performance across all metrics, and the lowest average level of debt.

Table 4 Statistical properties

All companies					
	Mean	Median	St.dev.	Max	Min
Tobin's Q	0,48	0,37	0,44	3,64	0,05
ROA (net) %	2,51	3,12	8,33	31,09	-64,14
ROA (EBITDA) %	3,66	4,34	9,27	58,38	-67,85
Long term debt/ Total assets %	0,31	0,30	0,20	1,36	0,00
LN Total assets (thousands \$)	14,83	14,93	1,67	17,98	10,83
Age	42	31	29	18	10

STATE					
	Mean	Median	St.dev.	Max	Min
Tobin's Q	0,27	0,19	0,24	1,71	0,05
ROA (net) %	-0,13	1,28	7,50	17,16	-43,05
ROA (EBITDA) %	0,39	1,69	8,00	18,38	-43,04
Long term debt/ Total assets %	0,32	0,29	0,26	1,36	0,00
LN Total assets (thousands \$)	15,50	15,45	1,45	17,69	11,70
Age	61	63	22	100	24

CORPORATION					
	Mean	Median	St.dev.	Max	Min
Tobin's Q	0,52	0,41	0,45	3,64	0,09
ROA (net) %	3,37	4,16	8,36	31,09	-51,59
ROA (EBITDA) %	4,74	5,48	9,39	58,38	-51,43
Long term debt/ Total assets %	0,31	0,33	0,19	1,32	0,00
LN Total assets (thousands \$)	14,33	14,24	1,66	17,92	10,83
Age	29	20	24	100	10

INVESTMENT ADVISOR					
	Mean	Median	St.dev.	Max	Min
Tobin's Q	0,68	0,55	0,52	3,45	0,15
ROA (net) %	4,18	4,34	6,86	20,17	-43,02
ROA (EBITDA) %	5,62	5,57	7,76	23,92	-33,25
Long term debt/ Total assets %	0,27	0,27	0,13	0,76	0,01
LN Total assets (thousands \$)	15,66	15,74	1,44	17,98	11,74
Age	55	47	34	99	12

PENSION & INSURANCE					
	Mean	Median	St.dev.	Max	Min
Tobin's Q	0,42	0,28	0,30	1,41	0,19
ROA (net) %	0,21	1,92	12,74	11,72	-64,14
ROA (EBITDA) %	1,05	3,48	14,41	17,14	-67,85
Long term debt/ Total assets %	0,32	0,29	0,17	0,75	0,06
LN Total assets (thousands \$)	13,75	14,10	0,98	15,15	12,04
Age	42	34	28	82	17

Table 5 compares the averages of key figures in the research data between privately owned (Corporation, investment advisor and pension & insurance) and state-owned airlines.

Table 5 Mean values comparison, state ownership and non-stated ownership

	State	Non-state	Difference
Tobin's Q	0,27	0,55	-0,28
ROA (net) %	-0,13	3,36	-3,49
ROA (EBITDA) %	0,39	4,72	-4,33
Long term debt/ Total assets %	0,32	0,30	+0,02
LN Total assets (thousands \$)	15,50	14,62	+0,88
Age	60,50	36,39	-24,11

From Table 5, it can be seen that Tobin's Q, ROA net and ROA EBITDA of state-owned airlines are lower, meaning worse financial performance compared to privately owned airlines. The long-term debt of state-owned airlines in relation to total assets is also higher, which suggests that even with a higher leverage more efficient financial performance has not been achieved than in privately owned airlines. State-owned airlines are on average larger in terms of total assets than privately owned airlines. The latest observation is that state-owned airlines are on average 24 years older than their privately owned counterparts.

When analyzing the functionality and validity of empirical research data, it is crucial to determine the connection between variables. Correlation coefficient is a statistical method for determining relation between variables in a regression. It is used to ensure that there is no high level of correlation between variables that would make the results unbiased. The purpose is to ensure that none of the variables have a too high or perfect correlation. The result of a perfect correlation between variables would be 1. The correlations between variables in the data are shown in Table 6 below.

Table 6 The correlation coefficient matrix of regression data

	STATE	CRPRT	INVST	PNSN & INS	TOBIN'S Q	ROA EBITDA	ROA Net	Debt/TA	LN TA	LN AGE
STATE	1									
CRPRT	-0,596	1								
INVST	-0,269	-0,497	1							
PNSN & INS	-0,129	-0,238	-0,107	1						
TOBIN'S Q	-0,269	0,095	0,209	-0,058	1					
ROA EBITDA	-0,200	0,123	0,100	-0,064	0,445	1				
ROA Net	-0,180	0,109	0,095	-0,063	0,400	0,946	1			
Debt/TA	0,000	0,069	-0,084	-0,008	-0,140	-0,160	0,159	1		
LN TA	0,227	-0,313	0,233	-0,146	-0,248	-0,029	0,010	-0,158	1	
LN AGE	0,285	-0,419	0,200	0,046	-0,227	-0,086	0,055	-0,118	0,393	1

Excluding ROA net and ROA EBITDA correlation, the table shows that all results are below 0,6 and largely very close to 0. ROA net and ROA EBITDA measure financial performance in almost the same manner, so a strong correlation between them is natural. However, this does not pose a problem for regression, as regressions are conducted independently for each financial performance indicator (ROA net, ROA EBITDA, and Tobin's Q). Thus, it is safe to conclude that there is no multicollinearity in the data that could potentially distort the results of the regression model.

From the results of the correlation coefficient matrix, it can be observed that the state ownership dummy variable is negatively correlated with all three measures of financial performance variables. Conversely, the private ownership dummy variables, INVST and CRPRT, are positively correlated. PNS & INS dummy variable is negatively correlated with the financial performance indicators, but significantly less than the state ownership dummy. The negative correlations in the correlation analysis with these variables may indicate that state-owned airlines perform worse than the majority of privately owned airlines. In addition, airlines that have state or investment advisor as largest owner appear to be larger than other companies in the ownership categories, as their correlations are oppositely negative and positive with the total asset variable.

5.4 Methodology and regression model

The methodology of this thesis is based on Anderson's and Reeb's (2003) research, which examines the relationship between the ownership structure and financial performance as well as the factors that affect it. Similarly, aim of this thesis is to find out how different principal and majority owners, affect the financial performance of airlines. The aim is to determine whether there is a statistically significant difference in financial performance between different ownership types by using regression model. Additionally, with the aid of control variables the aim is to determine the factors that influence financial performance. The regression model has been formulated using rate of return on assets and market value based a key figure Tobin's Q as measures of financial performance. Measures of financial performances are regressed individually. Tobin's Q is used as an explanatory variable in one model while the rate of return on assets is used in the other. Additionally, there are two different definitions for the rate of return on assets. The definition of one model uses the companies' net income, while the definition of the other model uses the companies' EBITDA profit figures. Although measured in slightly different ways, both variables reflect the performance of the companies. The different principal and majority owner types are defined by binary dummy variables, in addition there are three control variables in the model.

Accordingly, in model 3 the regressions are carried out independently with three distinct financial performance indicators, four ownership dummy variables, and three control variables in the defined time periods. In model 4, the regressions have been performed with the same three different measures of financial performance, using only one dummy variable STATE against the rest of privately owned airlines as a uniform group and the same three control variables in the defined time periods.

$$Performance_{it} = \beta_1 + \beta_2 CORP_{it} + \beta_3 INV_{it} + \beta_4 PNSN\&INS_{it} + \beta_5 SIZE_{it} + \beta_6 DEBT_{it} + \beta_7 AGE_{it} + \varepsilon_{it} \quad (3)$$

$$Performance_{it} = \beta_1 + \beta_2 STATE_{it} + \beta_3 SIZE_{it} + \beta_4 DEBT_{it} + \beta_5 AGE_{it} + \varepsilon_{it} \quad (4)$$

,where

Performance = Tobin's Q and Return on assets using EBITDA or using net income

STATE = Dummy variable which gets a value of 1 if it is in state ownership category and the value 0, if it is not in the state ownership category

CORP = Dummy variable which gets a value of 1 if it is corporate ownership category and the value 0, if it is not in a corporate ownership category

INV = Dummy variable which gets a value of 1 if it is an investment advisor ownership category, and the value 0 if it is not in an investment advisor ownership category

PNSN&INS = Dummy variable, which gets a value of 1 if it is in pension & insurance ownership category, and the value 0 if it is not in the pension & insurance ownership category

SIZE = Natural log of book value of total assets

DEBT = Long term debt divided by total assets

AGE = Natural log of airlines' age

ε = Error term

it = Company i and time period t

6 EMPIRICAL RESULTS

The findings of the regression are used to determine whether different ownership types affect the financial performance of the airline. If an effect is detected and the performance of different ownership types differs with others, it is further determined whether it is positive or negative. The aim is to analyze and evaluate the results obtained with the statistical test utilizing previous information and previous studies on the subject. The controlling variables in the regression model also helps to find other possible factors impacting the financial performance.

6.1 Regression results

The tables below have compiled the results of the regression model from years 2010-2019. The results are reported in two different tables, first in Table 7 non-state-owned companies are each a separate benchmark, while in Table 8 state-owned airlines are compared to all non-state-owned ownership types. The result coefficients are presented at the top, followed by the t-values in parentheses and stars indicating significance. Estimation of each regression has been performed using Huber White's Sandwich corrected standard error estimates to eliminate heteroskedasticity (Anderson & Reeb 2003).

In Table 7 the horizontal line presents dependent variables Tobin's Q and the rate of return on capital using EBITDA and net profit. For these three dependent variables, the regressions have been compiled in the horizontal rows for four different owner types as an independent variable, and the control variables debt, size and age of the company, listed in the left column.

The results show that with both measures of financial performance, measured by Tobin's Q and ROA, when the largest owner is a company or an investment advisor, its financial performance is better than if the largest owner is a state. The findings mentioned above are also statistically significant. Surprisingly, it can also be observed that when the largest

owner is a pension fund or insurance company it performs slightly weaker compared to state ownership and other ownership types when measured by Tobin's Q. In terms of ROA (EBITDA and Net), the pension & insurance dummy variables' performance is comparable to that of other privately owned airlines being slightly higher than state-owned ones. However, the results regarding pension & insurance dummy are not statistically significant. Thus, based on these results, it is possible to reject the null hypothesis and accept the first research hypothesis, as there is a significant difference between the financial performance of airlines with different ownerships structures.

Table 7 Results 2010- 2019

	Tobin's Q	ROA (EBITDA)	ROA (Net Income)
Intercept	1,772 (12,508) ***	5,892 (1,736) *	2,757 (0,892)
Corporation	0,110 (4,070) ***	3,909 (5,567) ***	3,371 (5,184) ***
Investment Advisor	0,395 (9,259) ***	4,927 (6,289) ***	4,053 (5,631) ***
Pension & Insurance	-0,047 (-0,852)	0,306 0,126	0,183 (0,85)
LT debt/ total assets	-0,260 (-3,192) ***	-5,045 (-2,373) **	-4,396 (-2,158)
LN total assets	-0,068 (-7,901) ***	-0,088 (-0,399)	-0,025 (0,122)
LN firm age	-0,095 (-5,845) ***	-0,645 (-1,744) *	-0,275 (-0,814)
Adjusted R square	0,211	0,077	0,066

The first row is the coefficient of the variable and the number in parenthesis presents t- statistics. Significance 1% (***) 5% (**) 10%(*).

The results show that measured by Tobin's Q and ROA (EBITDA and Net), higher ratio of debt to total assets has a negative effect on the financial performance of airlines. Meaning that the airline's financial performance declines as its debt increases. The results of debt on the company's performance are statistically significant with Tobin's Q and ROA (EBITDA).

The airlines' size, defined by total assets, has a negative effect on the financial performance measured by Tobin's Q and ROA (EBITDA and Net). Result with Tobin's Q on company's size is significant. However results showing the effects on size measured by ROA (EBITDA and Net) are marginal and not statistically significant. Surprisingly as the age of the airline increases, it has a statistically significant negative effect on the financial performance, measures by both Tobin's Q and ROA (EBITDA and Net). Goodness of fit in the regression models measured by adjusted R square are adequate especially for Tobin's Q, 21%. Adjusted R-square on both ROA measures are much lower at 7,7% and 6,6%.

Table 8 2010 -2019 state vs non-state ownership.

	Tobin's Q	ROA (EBITDA)	ROA (Net Income)
Intercept	1,584 (12,158) ***	7,948 (2,506) **	4,683 (1,624) *
State	-0,197 (-8,01) ***	-4,022 (-6,266) ***	-3,396 (-5,761) ***
LT debt/ total assets	-0,266 (-3,194) ***	-5,026 (-2,336) **	-4,373 (-2,127)
LN total assets	-0,049 (-5,744) ***	0,049 (0,230)	0,085 (0,421)
LN firm age	-0,049 (-5,744) ***	-0,689 (1,927) *	-0,337 (-1,074)
Adjusted R square	0,151	0,058	0,058

Table 8 compares the financial performance of state-owned and non-state-owned companies more directly with the same dependent variables Tobin's Q and ROA (EBITDA and net). The objective is to compare non-state owned airlines as a larger sample to obtain a clearer understanding of the differences between airlines which largest owner is state and fully privately owned.

The results of Table 8 confirms that airlines which largest owner is state perform financially worse than privately owned, measured by Tobin's Q and ROA (EBITDA and net). The results are also statistically significant. Thus, we can accept the second research hypothesis, i.e. that state ownership negatively influences airline's financial performance. Equally, it can be seen that the amount of debt and the age of the company have a negative effect on the airlines' financial performance. Measured by Tobin's Q the size variable shows a slightly negative effect, whereas measured by ROA (EBITDA and Net), the results show a slightly positive effect. This is understandable due to the fact that ROA indicator focuses more on the past accounting data, while Tobin's Q on the basis of the future outlook and market value of the company. It is therefore not uncommon for these two measurements of financial performance to deliver contradictory results. Results for the size variable are statistically significant only measured by Tobin's Q.

6.1.1 Results from 2010-2014

Table 9 presents the regression results from the first half of the research data. The objective is to determine how the ownership structure effected financial performance during the time when recovery from the financial crisis was still partly present and the period of the so-called travelling boom and strong expansion of stock markets was not yet fully underway (ICAO, 2016).

Results from years 2010- 2014 show that the regression results are relatively similar to those in Table 7, which covers the entire time period of the study. When measured by both Tobin's Q and ROA (EBITDA and Net), airlines which largest owner is a corporation or investment advisor have outperformed state-owned airlines. Still, there are

noticeable differences in the Table 9 result during this time period compared to the entire study period in Table 7. However, not in a uniform manner with all variables. Regarding the corporation dummy variable, the result is slightly more positive in terms of Tobin's Q, but lower in terms of ROA (EBITDA and Net) compared to the results from the entire study period in Table 7. For Investment Advisor dummy variable, measured by Tobin's Q and ROA (EBITDA and Net), the results show slightly smaller positive values compared to the results in Table 7. Results regarding Corporation and Investment Advisor are statistically significant at the 1% level on all three financial performance measures.

Table 9 Results 2010- 2014

	Tobin's Q	ROA (EBITDA)	ROA (Net Income)
Intercept	1,783 (9,354) ***	6,599 (1,355)	3,124 (0,689)
Corporation	0,088 (2,365) **	4,603 (4,267) ***	3,897 (3,909) ***
Investment Advisor	0,315 (4,869) ***	3,495 (3,068) ***	3,010 (3,001) ***
Pension & Insurance	-0,083 (-1,240)	1,118 (0,268)	0,569 (0,150)
LT debt/ total assets	-0,321 (-4,679) ***	-4,176 (-1,663) *	-3,096 (-1,422)
LN total assets	-0,069 (-6,058) ***	-0,224 (-0,763)	-0,212 (0,760)
LN firm age)	-0,088 (-3,751) ***	-0,532 (-1,048)	-0,166 (0,386)
Adjusted R square	0,233	0,079	0,063

The first row is the coefficient of the variable and the number in parenthesis presents t- statistics. Significance 1% (***) 5% (**) 10%(*).

Pension & insurance dummy variable has performed slightly worse than state-owned companies in the period 2010-2014 compared to the entire study period, however, these results are not statistically significant. Compared to the results in entire study period table 7, the effects of debt are marginally less negative with Tobin's Q and slightly higher with ROA (EBITDA and Net). Regarding the effects of size and age, the results do not differ significantly from the results in table 7 from the entire study period. Similarly, the older or larger the airline is, it has a slightly negative effect on financial performance. For size and age variables, the results are statistically significant at the 1% level measured by Tobin's Q.

Pension & insurance represent the smallest proportion of private ownership structures among the airlines in the data. Although the results for the pension & insurance show slightly more negative financial performance compared to state owned it can be concluded that privately owned airlines have generally performed better than state-owned ones also in the period 2010-2014.

6.1.2 Results from 2015-2019

Table 10 contains the regression results from the latter half of the research data from years 2015-2019. In this time period, there was a sharp upswing in the economy and the travel boom was at its peak, when airlines made a lot of investments in their fleets and by expanding route destinations (ICAO, 2016).

The results for the corporation dummy in the last half of the research period show that, measured by Tobin's Q, it has performed better than in Table 7 (2010-2019) and 9 (2010-2014). Measured by ROA, corporate owned airlines have performed worse than in table 7 (2010-2019) and 9 (2010-2014). Results for the corporation dummy variable are statistically significant. Results for Investment advisor In the latter study period, show better financial performance measured by Tobin's q and ROA (EBITDA and Net),

compared to tables 7 and 9. Results regarding investment advisor are statistically significant at the 1% level.

Table 10 Results from 2015-2019

	Tobin's Q	ROA (EBITDA)	ROA (Net Income)
Intercept	1,803 (8,333) ***	6,319 (1,329) **	3,447 (0,806)
Corporation	0,127 (3,176) ***	3,158 (3,389) ***	2,787 (3,219) *
Investment Advisor	0,478 (8,450) ***	6,315 (6,051) ***	5,018 (4,916) ***
Pension & Insurance	-0,020 (-0,218)	-0,590 (-0,218)	-0,253 (-0,110)
LT debt/ total assets	-0,137 (-0,660) *	-6,688 (-1,768)	-6,841 (-1,806) ***
LN total assets	-0,071 (-5,273) ***	-0,030 (-0,088)	0,094 (0,296)
LN firm age)	-0,100 (-4,308) ***	-0,682 (1,27)	-0,633 (-1,244)
Adjusted R square	0,209	0,097	0,089

The first row is the coefficient of the variable and the number in parenthesis presents t- statistics. Significance 1% (***) 5% (**) 10%(*).

Regarding pension & insurance dummy, the results show negative financial performance measures compared to state-owned airlines measured by Tobin's Q and ROA (EBITDA and Net). This differs from the results of tables 7 (2010-2019) and 9 (2010-2014), however, these results are not statistically significant. The effect of debt in the latter time period seems to be less negative than in the tables 7 (2010-2019) and 9 (2010-2014) measured by Tobin's q and is also statistically significant. Measured by ROA, the effect of

debt is again more negative than in the results in tables 7 (2010-2019) and 9 (2010-2014), but these results are not statistically significant. Regarding the results of airlines size and age coefficient, there is no significant difference between the results in tables 7 (2010-2019) and 9 (2010-2014).

7 CONCLUSION AND REMARKS

In recent decades there have been many studies on the relationship between ownership structures and a company's financial performance. Previous literature on the effect of ownership structures on a company's financial performance has been largely guided by the agent theory and has primarily focused on family firms, institutional investors, and state ownership. However, there is considerably less literature on the airline industry. With its characteristic ownership structures, this makes for an interesting research topic, as the industry has seen extensive reforms and privatization within the last 50 years. Due to the diversity of ownership structures and the industry's generally high comparability, this has produced a favorable and interesting setting for analyzing ownership structures and financial performance. Even after the wave of privatization, a large number of airlines are still largely state-owned. In addition, various institutional owners and corporate ownerships are characteristic in the field of aviation sector.

The purpose of this thesis is to find out how the different majority and principal owners affect the financial performance of the 82 publicly listed airlines selected for the study. The data used in this thesis included airlines around the world, the ownership structures, as well as financial information, was gathered from the Orbis database and the financial statements. The airlines were divided into categories according to largest owner. Examination has been implemented by regressing each measure of financial performance using ownership structure dummy variables and control variables.

In accordance with the original research hypotheses, it can be stated from the regression results 2010-2019 that airlines with different principal owners have performed with different financial successes. The key finding is that state-owned airlines have performed financially worse than all privately owned airlines on average combined. This result accords with the original research hypothesis and are consistent with the findings of numerous earlier studies on state ownership (Shleifer, 1998; Backx et al., 2002; Chen et al. 2017). When privately owned airlines are further divided into their own categories corporate, investment advisor and pension fund & insurance, the results revealed some

interesting findings. Corporate ownership is one of the most common ownership structure among the airlines in this thesis. As Allen and Phillips (2002) and Fee, Hadlock, and Thomas (2006) found corporate ownership enables alliances and joint ventures, resulting in better financial performance. Among the privately held airlines in the data, corporate ownership airlines have performed second best.

Investment advisor and pension & insurance categories form the institutional owners in the thesis's data. The airlines in the Investment Advisor category have performed best among all the ownership categories in the data. The Investment Advisor category includes mostly hedge funds and mutual funds. Institutional owners are generally regarded passive owners, with a primary focus on maximizing returns in accordance with their investment strategy. According to the study by Elyasiani and Jia (2010), a stable and profitable institutional investor also creates Investor confidence in the company which they hold. Based on previous studies and the results of this thesis, it can be concluded that institutional investors in investment advisor category consisting of hedge funds and mutual funds demand the highest financial performance from the companies in which they are the principal owner. According to the regression results, the pension & insurance category's airlines performed the worst. However, this category contained a very small proportion of airlines from the whole data, hence the findings were not statistically significant. Pension funds and insurance companies are also institutional investors, but it is very possible that the return requirements of such institutions are lower and risk aversion is more important, and involvement in management guidance may be lesser.

In addition to the total study period of 2010-2019, the regressions were also performed for the periods 2010-2014 and 2015-2019. The results did not change significantly between the time periods, and the rankings in the different categories remained the same. However, worth noting is that all categories performed better between 2015-2019 as measured by Tobin's Q and the airlines in the investment advisor category by the largest margin. In conclusion, it can be stated that the airlines falling under the category

of Investment Advisor have performed the best during the entire study period and benefited most from the peak years of 2015 to 2019.

Examining ownership structures offers a wide range of research opportunities. In particular, the ownership structures in the airline industry are still underrepresented in the literature, which presents a special opportunity for further research. Several airlines' ownership arrangements change over time, which restricts the airlines in the data, making it difficult to conduct an analysis especially over a lengthy study period such as in this thesis. The results of this thesis are also in line with several previous studies on the topic, such as Bakx et al. (2002). The results of more recent studies focused on mixed ownership are also comparable to the results of this thesis, as the performance of the lower-performing institutional principal owners are very close to the state-owned ones, thus the superiority of private ownership cannot be taken for granted.

Further academic research can expand this study by going into greater detail on mixed ownership and examine which degree of ownership is the most optimal when debating the state-ownership. In addition, the COVID-19 pandemic has caused the absolute toughest crisis to hit the airline industry, the effects of which have not seen an ending even when this thesis was completed. The financial survival of airlines from the pandemic creates an interesting examination from the ownership perspective after the pandemic is over. Several governments started to support their state-owned airlines, while some privately owned ones have been left relying on other means of financing in the cash crisis. Utilizing the elements of this thesis, the pandemic period will therefore be an excellent way to expand this study. (Bouwer, Saxon & Wittkamp, 2021.)

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