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How financial performance influences investment in sustainable development initiatives in the airline industry: The moderation role of state-ownership

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Abstract

This study aims to broaden the research on the influence of financial performance (FP) on sustainable development activities proxied by environmental, social, and governance (ESG) disclosure in the airline industry. In addition, we examine the moderating effect of state-ownership on the FP-ESG relationship. Based on data collected from 36 airlines worldwide for the period 2008–2019, we found that ESG is negatively and significantly influenced by FP. This result implies that the willingness of airlines to contribute to ESG initiatives is diminished when economic conditions are favorable. State-ownership moderates the relationship between FP and ESG such that the negative relationship is weaker in presence of state shares. Our findings help to disentangle the roles of FP in its contribution to sustainability and are valuable in better understanding the topic in airline context. Also, our results have some important implications for how industry practitioners may act more effectively in the managerial social decision process and provide insights to assist investors who are considering eco-investing in the airline industry.

KEYWORDS

airline industry, environmental, social, and governance, financial performance, state-ownership, sustainable development

1 | INTRODUCTION

A total of 17 United Nations Sustainable Development Goals (SDGs) were proposed by representatives from more than 150 countries in 2015 leading to so called “United Nation's 2030 agenda for Sustainable Development” as corporation framework for “shift the world on to a sustainable and resilient path”. Collectively, the SDGs require governments, corporations, and organizations to incorporate sustainability initiatives in their management practices. This led the stakeholders and investors to eagerly demand the development and adaptation of SDGs in addition to typical financial rewards when

making business and investment decisions. The trend seems to be more popular with the outbreak of the Covid-19 pandemic, where stakeholders and institutional investors are shifting their focus from profit-making to sustainable and ethical means of investing. Consequently, sustainable development strategies have been gradually adapted to every type of business seeking an efficient and responsible environment to show their commitment to stakeholders' benefits and maximize their wealth. However, despite that business is the key factor to meet SDGs, the feasibility of this scenario needs the detailed measurement and effective management of both financial and sustainability risks in investment portfolio (Folqué et al., 2021; Rivera

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et al., 2017). This has made companies to re-visit the concept of financial performance as business model drivers and also re-evaluate the balance between profitability and sustainability at their business strategy (Bryson & Lombardi, 2009). As for the airline industry, the awareness of sustainability issues and climate change is increased since the industry is under considerable public pressure to allocate more resources and contribute more to sustainable development initiatives due to their extremely large environmental footprint (Kim et al., 2020). In response, 38% of the top 100 airlines now publish a corporate sustainability report—this includes six airlines who disclose their contribution to corporate sustainability in their annual report (Heeres et al., 2018). Such a reports are quite critical in showing firm's effective communication of their commitment and performance on sustainability issues (Jadoon et al., 2020). However, there is disparity to report corporate commitment to SDGs. Corporate social responsibility (CSR), environmental, social, and governance (ESG), GRI, and sustainable performance have been used interchangeably (Do-Prado et al., 2020). Most of these companies and stakeholders now consider the ESG disclosure as business community version of incorporating sustainable development practice into daily practices of organizations to better identify strategic opportunities and meet competitive challenges which will eventually integrate with SDGs. ESG criteria have also been used for addressing the increasing concern of the stakeholders (Sharma et al., 2020). For a business, by involving the stakeholders into the business, corporations could exit hazardous business, bear less liability and reduce the life-cycle cost of products, and provide the limited resources or leadership in assuming rules or standards representing companies' own policies (Moon, 2007). This study uses the ESG disclosure as a proxy of sustainable development and corporate stakeholder commitment.

The presence of sustainable development standards can impact the financial status of the firm. On this basis, an increasing number of studies are focusing on the topic and attempting to provide managerial insights for handling the issue better. However, these studies mostly reflect the impact of ESG implementation on firms' financial performance, and research on the determinants of corporate sustainability has received insufficient attention (Chih et al., 2010). Empirical studies have shown that sustainability activism varies across firms, whole industries, and over time (Gray et al., 1996; Reverte, 2009). In this regard, a firm's financial performance, risk, size, ownership, and industry specific characteristics are highlighted among the possible determinants (Crisóstomo & de Freire, 2015). Also, Cormier et al., (2005) argued that a firm's sustainability disclosure is subject to a range of characteristics influencing the cost and benefits of implementing these standards and its evolution in a broader context. Among these characteristics, a review by Garde-Sanchez et al., (2018) underlined the necessity for advances in sustainability issues in state-owned enterprises (SOEs), given their importance as economic drivers in the market. Some studies (Backx et al., 2002; López-Bonilla & López-Bonilla, 2008) shed light on the influence of ownership structure on airline performance. However, to the best of our knowledge, no study specifically considers the role of ownership in the sustainability approach of the airline industry. In the light of these factors,

the objectives of this study are twofold. First, we investigate the influence of FP as the main factor together with firm-related characteristics of size and age on sustainability measure. Second, this study further explores the moderation effect of SOE on the relationship between FP and ESG disclosure.

This article contributes to both the theoretical and managerial aspects of the literature. First, from a theoretical perspective, we provide additional empirical evidence for the role played by FP and SOE on ESG. In addition, following the relevance of ownership structure in the implementation of ESG (Moneva et al., 2020), the current study offers some insights on the factors which are influential in mediating the FP-ESG association for airline industry. Second, from a managerial standpoint, given that firms in the tourism industry make significantly more investment in sustainability than other industries (Singal, 2014), our research adds value by indicating how the business and society fields might make progress on ESG. This study offers useful insights for airline industry practitioners to better understand the influence of various factors in relation to sustainability practices and to improve the managerial social decision process. Furthermore, it provides useful information for assessing the sustainability of airlines to investors considering eco-investing in the industry.

The structure of this study is as follow: Section 2 briefly reviews the conceptual background of the research and develops the hypotheses; Section 3 describes the design of the sample, variables, and econometric approach; Section 4 provides the estimation results. A Discussion and Concluding Remarks are given in Section 5. Finally, Section 6 considers the implications and future avenues for research.

2 | LITERATURE AND HYPOTHESES DEVELOPMENT

2.1 | SDGs in the airline industry

Airline industry is frequently considered for its contribution to sustainable development (Daley, 2009). This is due to the fact that air transport benefits the society in bridging people and places and assists in achieving Millennium Development Goals by improving human well-being. The necessity to address current sustainability challenges has given an important role to corporate governance in making decisions about ESG disclosure (Hossain & Reaz, 2007; Lagasio & Cucari, 2019). The trend is to react to the rising demand for information by adjusting the semantics in regard to the non-financial operation of companies. As a result, following the several internationally promoted frameworks—such as SDGs, global reporting initiative (GRI) and sustainability reporting guidelines (SRG)—ESG has been introduced into the investment process as an analytical tool for assessing a firm's state of sustainability (Hill, 2020). It is also increasingly considered by investors, academia, and industry practitioners (Folqué et al., 2021). The aviation industry is considered to be one of the most challenging industries in terms of environmental and sustainability issues (McManners, 2016a). Airplanes generate the main greenhouse gas, carbon dioxide, and directly discharge it into the air. According to

an air transport action group report, flights emitted around 895 (915) million tons of CO₂ in 2018 (2019), which is roughly 2% of man-made carbon emissions (ATAG, 2018). With this in mind, the awareness of climate change and sustainability has steadily increased and airlines, and other industries, began to launch ESG initiatives (Cowper-Smith & de Grosbois, 2011). Overall, the issue is crucial and is urgent for airlines because the business perspective for these firms is polarized between making progress in the sustainability dimension and managing the alliance with government, industry counterparts, and passengers (Daley, 2010; McManners, 2016b).

2.2 | SDGs and firm business strategy

The degree to which firms include sustainable development goals, and how much they are committed to create value for different stakeholders (employees, consumers, communities, etc.) in their strategies shows the possibility to connect business and society (Lopez, 2020). From this perspective, firms may choose either a traditional profit maximizing approach or take a transformational position by integrating their expectations through the SDGs strategy. Companies which embrace the SDGs and implement them into their business strategy are mindful of their need to develop specific activities and programs based on their commitments to improve the relationship and create an engagement with their interest group (Cole & Chicksen, 2018). It means that companies through making fundamental changes in consumption and production patterns including introducing technologies, innovations, social and environmental projects can create a positive impact in different areas where firms are involved (Assembly, 2015). Therefore, the SDGs appear as management innovation idea to “mash-up” sustainability with business strategy. Now that it has been more than three decades since the initial formulation of sustainability idea by the World Commission on Environment and Development (WCED) report known as “Our Common Future” or “Brundtland Report” in 1987, we see its convergence and overlap with business strategy. This change of perspective was also remarked in the literature by developing theories to justify integrating sustainability innovations into business strategy. Notably, stakeholder theory focuses on the relationship between a firm and all involved bodies in its business domain including customers, investors, community, and so forth. Stakeholders are “any group or individual who can affect or is affected by the achievement of firm’s objectives including stockholders, creditors, employees, customers, suppliers, public interest groups, and governmental bodies” (Freeman, 1984; Roberts, 1992). If an organization manages to successfully satisfy the demands of its stakeholders, the organizational sustainability will be achieved. By supporting this, as Garvare and Johansson (2010) noted “Global sustainability will be promoted if organizational sustainability is achieved without compromising the ability of interested parties to meet their need, both present and future”. This way, market success could be obtained via satisfying stakeholders’ expectations, investment in building an internal knowledge base and innovative system, promoting sustainability in business operations, and development of a win-win business strategy

aligning firm operations to support objectives and activities. In turn, regardless of the strategy corporation takes, surviving in the business demands the use of all firm resources to assist this end (Taylor & Oinas, 2006). Therefore, addressing the stakeholder benefits and managing the association with them could strengthen effectiveness of its decision and strategies (Amaeshi & Crane, 2006).

To sum up, a emphasizing the needs of all types of stakeholders and build an organizational atmosphere to enhance the transparency and stakeholders’ awareness in regard with sustainable development issues together with sustain employees’ development and empowerment are the main characteristic of a sustainable organization.

2.3 | FP and ESG

Within the current literature, two separate research lines study the ESG-FP association. One is related to the consequences of management decisions in relation to sustainability initiatives for firm’s FP and value, while the other discusses whether it is FP or value that drive ESG implementation. For the first orientation, a growing number of studies argue that involvement in ESG has financial implications for the firm (e.g., Lee et al., 2013; Okafor et al., 2021; Singh & Misra, 2021; Tanin et al., 2019; Weber, 2017; Yu & Huo, 2019; Zeidan & Spitzbeck, 2015). For the second orientation (related to the discussion whether FP is a key driver or main barrier of sustainability activities), the empirical evidence is very limited (Moneva et al., 2020; Singal, 2014), especially in the airline industry. Waddock and Graves (1997) proposed the slack resources theory (SRT) as a benchmark for this argument. They argued that firms with higher FP are likely to have more funds to invest in ESG practices. Conversely, lower FP limits a firm’s capability to dedicate resources to ESGs. Therefore, the availability of slack resources would result in higher sustainability performance arising from the allocation of these funds, and consequently, higher FP should result in better ESG.

In addition, the resource-based view is that ESG is seen as one of a firm’s competitive advantage tools. These resources are any assets that a firm employs which help it achieve its goals or good performance in its key success factors (Barrutia & Echebarria, 2015; Bryson et al., 2007). From this perspective, a firm’s sources of competitive advantages are a set of tangible, and intangible, basic resources such as high quality and committed employees, acceptance in the community, and reduced risk exposure which work together coherently to enable the organization to attain its goals (Barrutia & Echebarria, 2015; Godfrey, 2005). In a rational market, disclosure of ESG pillar scores may give firms a competitive advantage (Lourenço et al., 2012; Porter & Kramer, 2006; Xie et al., 2019). Empirically, the idea is supported by certain studies (Gamerschlag et al., 2010; Haniffa & Cooke, 2005; Lim et al., 2007; Singal, 2014), however, other studies argue that higher FP leads to a lower commitment to sustainability issues practices (Moneva et al., 2020). Therefore, findings on this stream are also inconclusive.

Given that SRT provides convincing justification for the FP-ESG association, agency theory is also applied to explain the relationship

from a different perspective. It emphasizes managerial opportunism in contributing to sustainability activities for their own personal agenda, egocentricity, and desire to be known as philanthropists (Benabou & Tirole, 2010). Thus, there is a need to monitor and control managers to ensure that shareholders' interests are met (de-Villiers & Dimes, 2021; Jensen & Meckling, 1976). Managers could increase or decrease sustainability investments depending on the state of a firm's financial returns (Makni et al., 2009). The theory suggests that strong corporate governance mechanisms better align the interests of managers and shareholders and improve a firm's FP (Grove et al., 2011). Conversely, firms will be less likely to contribute to sustainability practices if they are suffering from weak financial performance (Waddock & Graves, 1997).

Taken together, despite their differences in objectives, the above theories complement each other and signal that a firm's FP offers virtuous justifications for its participation in ESG because it is impossible to carry out these activities without available funds. To validate the above theoretical claims and empirical findings, we hypothesize the relationship between FP-ESG as follows:

H1. For airlines, financial performance positively influences ESG.

2.4 | The role of government and ESG

It is argued that sustainability initiatives are better managed by governments due to their superior ability to handle these issues (Gillan et al., 2021). Particularly, considering their commitment as public agents, governments are motivated to implement ESG investing to avoid financial risks resulting from investment in poor environmental and governance performance, going beyond mere financial return in providing for a country's population and addressing concerns related to long-term benefits for future generations (Hill, 2020). Among the public sector group of organizations, SOEs deserve special attention (Garde-Sanchez et al., (2018)). In the airline industry, despite deregulation, some 70 major airlines are still fully or partially controlled by the governments at the beginning of third millennium (Doganis, 2001). The vast majority of these state-owned airlines suffer from what has been known as "distressed state airline syndrome" which is a political and organizational malady due to the issues such as substantial losses (e.g., large accumulated debts, undercapitalized and indirect subsidies), bureaucratic management, poor service quality, and so forth. (Doganis, 2001).

The state of implementation of sustainability initiatives in SOEs is reflected in academia. The positive view, derived from legitimacy theory, argues that state intervention has a positive impact on the ESG disclosure level. On this basis, political legitimacy is among the necessary factors for a firm's survival and it is achieved by adhering to the government policy (Marquis and Qian, 2014; Wang et al., 2018). Therefore, in places where sustainability reporting is mandated by the government, publishing the ESG performance is a source of legitimacy for a firm. Cai et al., (2017) find empirical evidence for increased

sustainability disclosure among Chinese state-owned companies. Wang et al., (2018), as another example, studied how political intervention influences the ESG disclosure score and find that SOEs are more likely to report their score than are their private counterparts. In addition to the direct effect of SOE on ESG, it has been shown that public ownership also can moderate the FP-ESG relationship (e.g., Eforis & Uang, 2015; Long et al., 2020; Peng & Yang, 2014).

To complete the argument about sustainability in state-owned firms, it is worth commenting on the positive SOE-FP linkage. Shleifer and Vishny (1997) argue that state ownership is the efficient way to avoid problems such as monopoly power, externalities, and distributional challenges by controlling the firm's decision-making and enhancing efficiency. Le and Chizema (2011) also highlighted the positive SOE-FP relationship due to financial support and administrative support from the state. State ownership, when firm operate in high debt and equity ratio environment, can function as additional governance mechanism to alleviate negative impact of debt and may moderately benefit to firm performance (Le & O'Brien, 2010). This characteristic is matched with the airline industry since it is considered as capital-intensive industry. Therefore, based on the above argument, we propose the positive association between both fully and partially state-ownership structure and sustainability disclosure. In addition, we also project that state ownership plays a positive role in the FP-ESG linkage.

H2. For airlines, state-ownership has a positive relationship with ESG.

H3. For airlines, governmental controls (or having more than 50 percent ownership by state) are likely to contribute more in ESG scores.

H4. For airlines, state-ownership positively moderates the effect of financial performance on ESG.

2.5 | Firm's size, age, and ESG

Size is a critical factor helping the company to manage risks arising from becoming dependent on suppliers (Davis & Cobb, 2010). For example, a firm's executives may increase its size, leading to a rise in compensation measures and assisting in paving the way to adopt risk-avoidance strategies (Jung et al., 2016). Also, larger-size firms have the ability and slack resources to minimize supply chain disruption challenges by executing buffering strategies (Bode et al., 2011). Based on the slack resource theory, larger companies are considered to take advantage of economies of scale to increase FP (Gelles & Mitchell, 1996; Zott & Amit, 2007). So, size is relevant to a firm's sustainability performance. Larger firms enjoy more available resources than do their smaller counterparts (D'Amato & Falivena, 2020; Gupta, 1969), and so they are able to invest more in sustainability projects. In addition, bigger firms are expected to have a well-defined strategy and goals to monitor their business, consequently, should be

better equipped to handle sustainability projects. Based on these assertions, the following hypothesis is proposed for size:

H5. For airlines, firm size positively influences ESG.

Age is also likely to act as an intervening variable influencing the sustainability activities of the firm and must be taken into account in empirical studies since it represents some aspects of stakeholder power, strategic standpoint, and economic performance (Roberts, 1992). He argued that, over the course of the time as a firm matures, its reputation and background in sustainability participation makes it become entrenched. Therefore, it is directly tied into these initiatives and any withdrawal from its community commitments will be very costly, raising doubts about sponsorship and society engagement among its stakeholders (Moore, 2001). On this basis, younger firms are less concerned about their public and social image and are more concentrated on financial performance. Consequently, this group of firms are expected to prefer profitability to sustainability-related initiatives (Peloza, 2006; Yang & Baasandorj, 2017). This argument leads us to propose the H6 as follows:

H6. For airlines, firm age positively influences ESG.

3 | RESEARCH METHODOLOGY

3.1 | Data collection

The data were retrieved from two sources. First, we started the inquiry with the Thompson-Reuters Eikon platform. In regard to the ESG data, this database collects publicly reported information and publishes a combination of 10 relevant data points, reflecting the firm's sustainability activities, in the form of an ESG score. While retrieving these data, we discovered that not all firm-year observations were available because those airlines started to implement sustainability standards in different years. We selected 2008–2019 as the longest possible period and found 36 ESG-rated airlines whose number of observations ranged from 4 (JetBlue) to 12 (Lufthansa) years. Additionally, due to missing data for financial variables, we referred to airlines' official annual reports as the second data source to fill in as many missing values as possible. Before estimating the models, we checked the distribution of explanatory and control variables for normality. We detect outliers and remove them from the dataset. The final dataset consisted of 432 observations in the form of unbalanced panel data for the 36 sampled airlines (see Appendix A).

3.2 | Main variables

ESG is used as a dependent variable. It is measured as a score ranging from 0 to 100 based on a firm's performance on the ESG dimensions. Although a firm's participation level in these three sub-factors could be different (Duque-Grisales & Aguilera-Caracuel, 2019), we consider

the overall ESG score as being representative for the sampled firms. To estimate the determinants of ESG, we used four main independent variables: FP, SOE, age, and size. Following the related literature (e.g., Lahouel et al., 2019; Lee et al., 2013; Yang & Baasandorj, 2017), we use Tobin's Q (TQ) to represent financial performance. This variable is considered as fulfillment of the economic activities of the firm and measured by accounting indicators (e.g., return-on-assets, return-on-equity, net profit, and so forth. (Mucharreira et al., 2019). Different formulations of TQ have been noted in the literature but, as pointed out by Pruitt and Chung (1994), the yields tend to be similar. Empirically, we follow the approach of Aksoy et al., (2020) who measure TQ as the (sum of market value and total debt minus current assets) over total assets.

Next, the study considers state ownership as the second ESG-determinant. We introduced the SOE which is computed using a dummy variable that assumes the value "1" if the state has a share in its ownership. Then, to pursue the significance of totally controlled shares by states, we defined another binary variable where "1" indicates whether a respective government holds at least 50% of the shares of an airline and "0" otherwise.

We also interpret the results for the two firm-level characteristics of size and age (the third and fourth variables) since the literature have suggested them as important factors regarding sustainability-related decisions. Firm size has been studied in works by Yang & Baasandorj, 2017; Lee et al., (2013), and Ding et al., (2016). While different proxies have been used for size, following Lee et al., (2013), we used the natural log of total assets. Finally, a firm's age has been utilized as the last independent variable. It has been used as an important factor for sustainability decision-making, for example, D'Amato and Falivena (2020); Yang and Baasandorj (2017) among others. We consider the year the airline started doing business as the basis for calculating its age.

3.3 | Control variables

The set of control variables incorporated in our analysis are profitability, leverage, dividend, and type-of-airline. Return-on-assets (ROA) is a proxy for a firm's operating profitability. It is measured as the company's operating profit (prior to financing costs) divided by total assets. Firm with higher profitability are expected to have more chances to invest in sustainability initiatives (Kim & Lee, 2020; Waddock & Graves, 1997). Leverage is another control variable widely proposed in literature to control the capital structure of firms (Kraus & Litzenberger, 1973). According to Artiach et al., (2010) the level of debt reflects the importance of financial stakeholders for a firm. Debtors as capital providers are an influential group of stakeholders and managers are likely to prioritize their concerns. Higher leverage can lead to neglecting the concerns of less powerful claimants. So, a negative sign is expected for the leverage coefficient. Consistent with Lee et al., (2013) and Yang and Baasandorj (2017), we use the debt ratio (defined as total liabilities over total assets) for a firm's leverage. Dividends are considered as an illustrative channel for conveying

Var.	TQ	ESG	Lev	ROA	Div	Size	Age
Mean	0.58	47.52	0.74	0.04	0.19	18,23	40.31
Med.	0.53	47.60	0.75	0.03	0.04	15,50	44
Max	4.11	88.91	2.40	1.09	3.29	64,52	100
Min	-0.89	6.81	0.00	-0.42	0.00	5,09	0.00
SD	0.51	18.81	0.22	0.10	0.33	14,11	25.67
Skew.	2.14	-0.28	0.72	4.90	4.26	0.91	0.23
Kurt.	11.5	-0.89	11	51.06	28.45	0.29	-1.08

TABLE 1 Descriptive statistics

wealth to shareholders, as well as signaling a firm's financial status to investors (Moon et al., 2015). So we expect a positive relationship between performance and dividends. Flag-carrier is also introduced as control variable when considering the airline type (Gollnick & Schmitt, 2016) since the majority of state-owned airlines are flag-carriers for their respective countries. A dummy variable is introduced when the airline is a flag-carrier for its state. It is measured as a binary variable where "1" designates a flag-carrier ("0" otherwise). The complete set of variables used in this study can be found in Appendix B.

3.4 | Regression models

Two panel models are proposed as main effects (Equation 1) and interaction model (Equation 2) to test the statistical relationship between variables. In Model 1, we investigate how ESG is influenced by FP, SOE and firm-level characteristics of age and size. In Model 2, we test the moderating role of state ownership in the FP-ESG association where the interaction term between TQ and ESG is included. The study conducts descriptive and correlation analysis to explore the properties of the variables and uses econometric techniques to formulate the regression equation to test the hypotheses.

Model 1:

$$ESG_{it} = \alpha + \beta_1 TQ_{it} + \beta_2 ROA_{it} + \beta_3 Lev_{it} + \beta_4 Div_{it} + \beta_5 Size_{it} + \beta_6 Age_{it} + \beta_7 Flag_{it} + \beta_8 SOE_{it} + \beta_9 SOE(pct)_{it} + \epsilon_{it} \quad (1)$$

Model 2:

$$ESG_{it} = \alpha + \beta_1 TQ_{it} + \beta_2 ROA_{it} + \beta_3 Lev_{it} + \beta_4 Div_{it} + \beta_5 Size_{it} + \beta_6 Age_{it} + \beta_7 Flag_{it} + \beta_8 SOE_{it} + \beta_9 TQ * SOE_{it} + \epsilon_{it} \quad (2)$$

We apply two tests to detect the best fit predictor for each model based on Torres-reyna (2010). First, Breusch-Pagan's multiplier test (LM-test) allows us to select between Pooled-OLS or Panel-Data estimation. Second, if panel effects exist, the Hausman Test selects between Fixed-effects or Random-effects models. Results showing p -value of less than 0.0001 support the choice of fixed-effects for Model 1. However, since the model includes a number of time-invariant binary variables (such as carrier type) or which change slightly (e.g., state ownership), in the standard panel data framework the estimation can be carried out using the least-square dummy

variable (LSDV) with a fixed-effect approach (Heshmati et al., 2018). Equation 2 produces an F -statistic of 1.0857 with a p -value of .42. This suggests a pooled-OLS model. The result of diagnostic tests for both models can be found in Appendix C.

4 | EMPIRICAL ANALYSIS AND RESULTS

4.1 | Descriptive analysis

Summary statistics for the research variables are presented in Table 1. The ESG score theoretically can be 100, but the actual maximum is 88.91 (mean value 47.52), which indicates that the ESG for our full sample of airlines has a less than average relative score. Another notable feature for ESG is the high standard deviation for the sampled airlines which means that airlines have different sustainability performances. TQ is distributed between -0.89 and 4.11, with a mean and standard deviation of 0.58 and 0.51. The high measure for the sampled firms indicated that the studied airlines' replacement costs are greater than the value of their assets. Return-on-assets (ROA) is relatively low with a mean value of 0.04, implying an inefficient performance by the sampled firms in converting the invested capital into operating profit.

4.2 | Correlation analysis

Many robustness tests have been proposed before executing panel regression analysis. This is due to the problems that plague these models such as outliers (biasing the slope of regression) and autocorrelation. To identify potential endogeneity, we calculated the correlation matrix and variance inflation factor (VIF) for the main model. The correlation coefficient measures the strength and direction of a linear relationship between two variables. Table 2 summarizes the correlation matrix of the variables employed. It can be seen that the absolute values for all variables are under 0.5, indicating the absence of a significant relationship between some variables. As for the VIF, it can be seen from Table 3 that, since all values are smaller than 10, our data do not suffer from multicollinearity. We also applied the Pesaran-CD test to check the cross-sectional dependence in panels. The p -value of .07 confirms that the residuals are not correlated across entities.

TABLE 2 Correlation matrix

	ESG	TQ	ROA	Div	Size	Lev	Age
ESG	1	–	–	–	–	–	–
TQ	–0.36 (1.62e-11)	1	–	–	–	–	–
ROA	–0.2 (3.66e-4)	0.24 (1.10e-6)	1	–	–	–	–
Div.	–0.15 (1.25e-2)	0.064 (2.37e-1)	0.06 (0.272)	1	–	–	–
Size	0.48 (6.39e-20)	–0.23 (1.79e-06)	–0.072 (0.153)	–0.16 (2.08e-3)	1	–	–
Lev.	0.43 (1.8e-15)	–0.26 (3.39e-08)	–0.16 (0.0013)	–0.32 (9.51e-10)	0.32 (1.22e-11)	1	–
Age	0.22 (9.31e-5)	–0.16 (1.18e-3)	–0.06 (0.233)	–0.061 (2.52e-1)	0.14 (5.01e-3)	0.14 (4.15e-3)	1

TABLE 3 Variance inflation factor

Full panel									
TQ	ROA	Lev	Div	Size	Age	Flag	SOE	SOE (pct)	
1.06	1.15	1.24	1.04	1.25	1.42	1.53	1.44	1.17	

TABLE 4 Empirical results for the regression analysis

Variable	Model 1 (full panel with dummies)			Model 2 (interaction effect)		
	Coeff.	t-value	p-value	Coeff.	t-value	p-value
TQ	–1.3436	–2.004	.045886**	.966080	0.7529	.4519700
ROA	0.6238	0.112	.910957	–10.930923	–0.9226	.3568369
Lev	–5.2907	–1.515	.130676	30.166716	4.9779	9.904e-07***
Div	2.7128	2.058	.040359**	3.622349	1.2632	.2073042
Size	0.7522	0.872	.383999	–1.186154	–1.1495	.2511036
Age	1.3476	11.379	<2e-16***	.015670	0.3303	.7413375
Flag	–50.9899	–6.425	4.50e-10***	–10.251715	–4.0629	5.931e-05***
SOE	–22.0734	–6.690	9.29e-11***	7.892236	2.1304	.0338065**
SOE (pct)	–0.9440	–0.317	.751491			
TQ*SOE				5.621842	1.8136	.0705622*
Model	Fixed effects			Pooling		
Adj. R ²	0.25			0.11		

*p-value <.1. **p-value <.05. ***p-value <.01.

4.3 | Empirical results

Table 4 present the results for H1 to H6. From the main model (Equation 1), we found that a firm's financial performance has a negative impact on ESG. This effect is statistically significant with a *p*-value of .04 implying that, contrary to our prediction, H1 is actually rejected with 5% significance. While both return and sustainability engagement are important, our findings suggest that airlines should not seek both simultaneously. The coefficient for the effect of SOE on the sustainability measure is negative and significant (*p*-value <.01). Therefore, H2 is rejected, suggesting that state-owned airlines did not appear to conduct ESG initiatives. The same is true for fully controlled airlines (SOEpct) but the magnitude of changes in ESG score for this group is lower (–0.9440).

Consistent with former investigations on sustainability initiatives, we find that firm age is a significant predictor of the extent of

ESG engagement. The variable positively influences ESG with a coefficient of 1.3 (*p*-value <.01). Therefore, H6 gains support. Firm size is also positive, but non-significant, in the main model. This means that sustainability hypothesis (H5) gains support for this variable as well. Considering control variables, the effect of dividends produces a statistically significant result. The finding is consistent with the view that high dividend payout firms are more likely to disclose ESG scores. Consistent with the literature, the coefficient for leverage is negative (although non-significant). It is commonly observed that air transport industry has high degree of financial leverage since airlines may use great amounts of long-term debts to finance the tangible assets (Gritta et al., 2006). Therefore, debt-holders become a crucial group of stakeholders of the firm so that the management teams may prioritize their concerns to creditors rather than implementing costly ESG initiatives. Thus, higher levels of financial leverage can lead to less contribution in ESG activities

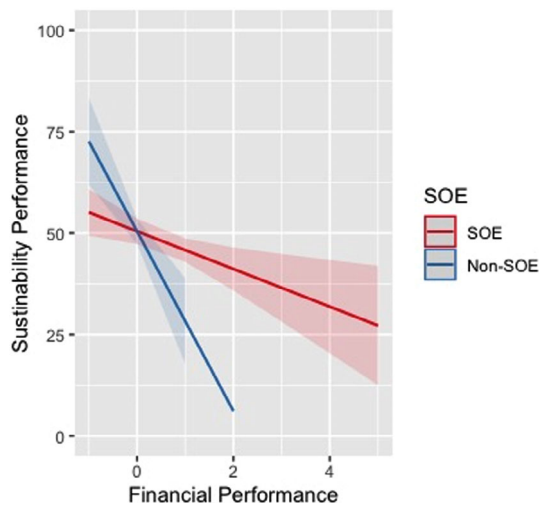


FIGURE 1 Interaction plot [Colour figure can be viewed at wileyonlinelibrary.com]

for the airline industry. However, when the interaction term is added, it becomes highly positive and significant which means that highly leveraged state-owned firms, are more likely to consider ESG disclosure to address claims from all investors.

To test the moderating effect of state-owned airlines, we added the interaction term between TQ and SOE. This resulted in the slope of TQ becoming positive but not significantly different from zero (p -value = .45 > .1), while the interaction term became positive and had a significant impact on the dependent variable (t -value = 1.81; p -value < .1). Therefore, Hypothesis 4 gains support. Accordingly, we conclude that the SOE factor moderated the relationship between sustainability measures and financial performance. These results are in line with the argument that the relationship between ESG disclosure and financial performance may be influenced by the ownership structure of the firm in such a way that non-state-owned companies may not benefit from higher financial performance as much as do their state-owned counterparts. This finding is innovative since the relationship is rarely investigated, and it can be considered as a major contribution to the literature. Thus, SOEs are able to respond better to their shareholders for the implementation of ESG initiatives by achieving higher financial performance. A summary of the regression results is provided in Table 4.

Also, given the estimated results for the interaction model, in Figure 1, we plot the marginal effect of being state-owned (SOEs) or non-state-owned (non-SOEs) on the relationship between FP and ESG. We see that the negative slope of two lines suggest that the FP is negatively associated with the ESG. However, the red line (SOEs) and the blue line (non-SOEs) are not parallel. It means that having the same FP, the level of ESG participation is different according to the type of ownership. The slope for non-SOEs (blue line) is steeper than the SOEs (red line) indicating that the negative association is weaker in the state-owned airlines. Therefore, state-ownership positively moderates the FP-ESG association.

5 | DISCUSSION AND CONCLUSION

Sustainable development strategies are gradually becoming a paradigm change in the businesses. Thus, it is not only about to decelerate harmful climate side-effects of doing business, but it should also benefit stakeholders across the business. The main purpose of this article is to investigate how airlines' FP, SOE (fully and partially), size, and age influence the ESG performance of airlines, and the moderating effect of state-ownership on this ESG-FP association. We employed data from 36 airlines retrieved from Eikon for the years 2008–2019. Our empirical results suggest that a firm's FP negatively and significantly affects its ESG disclosure.

The negative impact of FP on ESG implies that, when an airline makes excess returns, it may give low priority to implementing an ESG agenda. In other words, this negative link may indicate that the higher cost of improving its ESG score will be seen to decrease financial performance. Overall, the finding confirms the view that more sustainable firms tend to experience lower profits, which hurt stakeholder wealth, and consequently they have fewer available resources to increase investment in ESG (Makni et al., 2009). Because the firm does not consider the ESG activities as either a revenue generator or a value driver, it consequently tends to focus less on sustainability issues such as reducing emissions, protecting human rights, increasing diversity of board, and protecting shareholder rights. Increased engagement in sustainability initiatives not only does not result in financial return maximization, but also is associated with reduced FP. This may affect the investors perception of the degree of success of an airline since they assume its TQ is a sign of its returns and a valuation which gives an expectation for share ownership. As for the firm itself, higher profitability and earning prospects are related to lower participation in sustainability initiatives. Consistent with the recent study by Moneva et al., 2020 for a group of tourism-related industries including airlines, our finding refutes the SRT argument indicating that an airline's willingness to contribute in ESG initiatives is not determined by FP. The results are also in line with Sun et al., (2019) and Chen et al., (2018) who argue that FP seems to be a secondary factor in the ESG decision. However, this is not consistent with the study by Singal (2014) which predicted that investment-grade firms in the tourism industry are likely to contribute more to sustainability practices than their financially weaker counterparts.

Our findings for state ownership are twofold: first, our main effect model shows that having state shares (both partially/fully state-shares) in its shareholder structure is negatively and significantly (although not for fully state-owned) correlated with a firm's sustainability performance. This means that, when state shares in an airline increases, its engagement in ESG initiatives tends to decrease. These results contradict the sustainability viewpoint which assumes that state-owned firms consider ESG reporting as a strategic instrument for improving the efficiency of their transactions with shareholders which, in this case, is to obtain legitimacy to satisfy investor expectations (Argento et al., 2019). This supports the view that many financially distressed airlines are suffering from poor service quality, both in the air and on the ground, due to ethical and organizational

problems such as maladministration, insufficient staff, and strong unions (López-Bonilla & López-Bonilla, 2008). Another possible reason for this is that the sampled airlines are located within different countries having different regulation systems which either do (or do not) require them to report their sustainability performance.

Second, the results show that state ownership positively and significantly moderates the ESG-FP relationship. This is consistent with the view that state ownership could play a key role in sustainability participation of the firm (Zu & Song, 2009). This is also in line with the argument that state intervention had a positive influence on the ESG disclosure level of firms (Cai et al., 2017; Wang et al., 2018). Based on the view, in comparison with non-state-owned firms, SOEs could achieve higher FP levels. Thus, the SOEs could better meet the shareholder expectation of participation in sustainability initiatives while having a reasonable FP level. The finding, however, is inconsistent with that of recently conducted study by Long et al., (2020) which, for a set of Chinese listed firms, finds that corporate sustainability influences FP more positively in non-state-owned firms than it does in state-owned ones. In addition, Peng and Yang (2014) found that ownership concentration plays a critical monitoring role in the ESG-FP association which is contrary to our empirical results.

In addition, the current study reveals that both firm size and age (even though the size factor was not significant), are relevant factors for ESG participation. This is consistent with the sustainability hypothesis claiming that larger (Garde-Sanchez et al., (2018); Udayasankar, 2008) and older (D'Amato & Falivena, 2020) firms tend to participate more in ESG and vice versa.

The current article contributes to the literature by providing augmenting the limited empirical studies on factors that drive sustainability for airlines. It, therefore, assists in the advancement of sustainability initiatives influencers in airline literature by providing empirical evidence in this context. These approaches have discussed the relevancy of implementing sustainability for firms across industries. Executives and managers could benefit from these results to allocate available resources to ESG activities through adopting more efficient and rigorous approaches.

6 | IMPLICATIONS, LIMITATIONS, AND, FUTURE RESEARCH

This article contributes to both the wide-ranging academic debate and practice perspectives. From a theoretical viewpoint, the findings echo the existing literature on the FP-ESG association indicating that firm's FP negatively influence the implementing of ESG initiatives and "It is not easy being green". It is also among the few studies considering state ownership and its moderation effect in a research agenda to link FP- ESG. Additionally, this article focuses on the airline industry which is one of the most challenging industries in regard to sustainability. To conclude, the research theme covers a key concept with an impact on reaching SDGs by providing new findings and perspectives across the industry.

Similarly, as the main contribution of this study, executives and managers of airlines may also find these results informative considering their business strategy in facing the growing sustainability agenda and contribution to sustainable development. Notably, considering the structure of the airline industry, we set the study implications from both business strategy and public policy horizons. Given that the current business strategy of airlines is ineffective as most airline companies experience low revenues which prevents the industry from expanding, business model modification is vital to meet the sustainable development goals (Nzuva, 2020). Therefore, achieving an excess return, should not hide the long-term benefit of ESG participation and the higher cost of strengthening its shareholder commitment will be paid off by permanent benefits of sustainability. Consequently, airlines indeed do need to face pressure to address stakeholders' interest as they incur costs and public issues regarding future economic disadvantage. In such a scenario, Scholtens and Zhou (2008) argue that the corporation is advised to create an optimized model to cover both stakeholder benefits and shareholders. In this way, the cost of sustainable development activities would be offset by benefits of responsible investments with coherence between firm policies, management structure and commitments to common goods (Rivera et al., 2017). In this sense, according to McKinsey (2020), the ongoing Covid-19 pandemic has brought up a new era for the aviation industry, giving the industry the best chance to address sustainable development goals. The logic behind the claim is now that the air transport has lost its growth capacity by roughly 75 percent, it will undergo structural changes in terms of demand and degree of industry consolidation, along with unprecedented government support to rebuild itself. This transformation provides an opportunity to initiate sustainable development strategy, which may protect the industry against unforeseen events such as health crisis (e.g., current pandemic and SARS), global economic crisis (e.g., the global financial crisis in 2008) and terror attacks (e.g., the September 11 attack). Specifically, airline companies are suggested to take a multi-stakeholder approach and create a regulatory strategy to overcome the current challenges and address SDGs. In this sense, our findings provide insights for managers considering allocating available resources to ESG activities through adopting more efficient and robust approaches which consider the firm's characteristics in terms of its business model and ownership structure. Specifically, we provide evidence for airline managers that considering ESG initiatives would cost their FP. Thus, unlike the traditional investor view which considers the absolute ruling power of owners, there are increasing demands that corporate policy should be shaped in the light of an institution's social responsibilities (Coffey & Fryxell, 1991) Airline executives should make an effort to find the optimal solution to proactively engage in sustainability initiatives while not allowing their firms to financially suffer from this participation. This provides an insight to these executives on how to integrate ESG initiatives into their strategy and improve future scenarios and sustainability opportunities (and risks). This way, they would be able to control increasing market and stakeholder pressure to enclose sustainability information. For example, the success of airlines is tied to the possibility of minimizing costs as the most apparent obstacle to go green. Naturally,

incremental innovation provides a potentially better strategy by focusing on the competitive advantage and increasing eco-friendly service via encouragement of innovative products and technological development. The view is well supported by the sustainable business strategy for the sector in so called "Waypoint 2050" by (ATAG, 2020): "Aviation has a strong history of solving challenges through technological innovation. From the first forays into powered flight, to the jet engine, use of composites and 3D printing, constant improvements are part of the sector's DNA. Responding to the climate change challenge is no different". In this sense, turning to sustainable aviation fuel could be an option for industry practitioners. This is aligned with SDGs and industry characteristics because fossil fuels account for 20 to 30 percent of airline operation costs (one of the single cost items) (McKinsey, 2020). Stakeholders in the air transport industry appear to support the commercialization of sustainable and alternative fuels, which will help airlines to save costs (IATA, 2014). Also in line with stakeholder theory, a firm's ownership structure forms a part of the general strategy to link the firm with external stakeholders and could play a significant role to upgrade its reputation, legitimacy and credibility (Aksoy et al., 2020). Therefore, considering the research results that state ownership positively moderates the effect of economic performance on investment in sustainable development initiatives, it seems that improving SDGs in state-owned airlines is less costly. Accordingly, this could be translated to certain strategic business policies for this group of airlines with state shares showing their competitive advantage to proactively involved in incorporating sustainable development initiatives. This also favors the state ownership concentrated airlines to have an alignment of interests among firm stakeholders and sustainable investment. Specifically, this type of airlines with managerial governance are having access to large liquid capital markets and generate economic performance (Carney & Dostaler, 2006), thus, mitigating the risk of green investment.

In terms of the public policy of the airlines as inferred from research results, higher financial performance cannot encourage airlines to participate in sustainability initiatives, we suggest the following initiatives. Initially, it must be noted that obtained results are based on analysis of roughly one-third of the airlines listed in the Thomson Reuters Eikon database, which means that a large gap exists in term of ESG data in the sector. This is because in most countries where these airlines are headquartered, sustainability reporting is a voluntary activity. The discussion set out by suggesting that policymakers at national and international levels may consider more restricted roles in encouraging industry practitioners to seriously contribute to sustainability issues. In particular, the desire for policy change is more in demand for air transport as a sustainability-sensitive industry, because not issuing sustainability performance might create information asymmetry between airline's principals and agents (Karaman et al., 2018), which can be reduced by sustainability reports as an "information bridge" (Luo et al., 2015). Given the ample long-term benefits of sustainability reporting such as its internal contribution to agenda setting, staff motivation, better liability management, as well as external reputational maximizing implication

(Hooper & Greenall, 2005), the study reminds of the necessity of coordinated action to develop an obligatory reporting framework that can appreciate SDGs. Indeed, as Bhattacharya and Sen (2004) suggested, at the strategic formulation of sustainability, industry practitioners need to ensure that implementation of such an activity induces a clear sense of financial returns or "doing good". In doing so, they are suggested to apply the efficient measurement models that precisely estimate the impact on a corporation's relevant stakeholders including its customers. Because the overall evaluation of consumers as source of generating value for airlines is clearly affected by a firm's sustainability record. Air transport is inherently vulnerable to sustainability criticism because of its operations (e.g., contribution to climate change by CO₂ emission, air pollution, and noise production). Therefore, practitioners need to engage high level of SDGs initiatives to appease a variety of stakeholder groups. This led to our second policy note, which is that international agencies and organizations may propose sustainable economic development strategy opportunities to airline firms to offset the cost of these shareholder initiatives. One possible solution is to work with governments to provide adequate economic support (Nzuva, 2020). Combined with mass media communicating proactive sustainable airlines to increase their visibility and reputation. Consequently, this induces loyalty and positive word of mouth among all stakeholders, and creates the competitive edge for them (Madanaguli et al., 2021). Finally, sector investors are advised to understand that rewards of green investment do not necessarily come with an immediate impact on their targeted firm but with time and from benefits of meeting SDGs.

Future research in this area may study bigger samples to compare with the sampled firms in the current study, and possibly over a longer period, to conduct richer and more in-depth empirical research. A more detailed and precise analysis of the influence of parameters considered in this study would be enlightening and perhaps suggest ways of better promoting sustainability practices in the airline industry. Another interesting avenue for future research is to separate ESG scores into its three ESG pillars and examine the topic for each component. Firms may target different types of pillar green management, leading to different levels of financial management (Yu & Huo, 2019). Finally, since in this research we have focused only on state ownership, future research can extend this to analyzing the impact of other types of ownership structure on ESG disclosure.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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APPENDIX A: SAMPLED AIRLINES A

Country/region	Company name	Stock code	Date of incorporation
Germany	Lufthansa	823212 (LHA)	January 6, 1953
Hong Kong	Pacific Airways	293	October 17, 1948
France	KLM	FR0000031122 (AIRF)	December 31, 1954
Singapore	Singapore	C6L (SIAL)	January 27, 1972
Sweden	SAS AB	SE0003366871 (SAS)	December 31, 1945
United Kingdom	Easy Jet	B7KR2P8 (EZJ)	March 23, 2000
Republic of Ireland	Ryanair	IE00BYTBXV33 (RYA)	June 4, 1996
Japan	ANA Holding Group	9202	December 26, 1952
United States	Alaska Air Group Inc	000011659109 (ALK)	March 14, 1985
Thailand	Thai Airways	THAI	March 28, 1960
Taiwan	China Airlines	2610	September 6, 1959
South Korea	Korean Air	003490	June 18, 1962
Taiwan	Eva Airways	2618	April 6, 1989
China	China Southern Airlines	600029	March 24, 1995
Brazil	Gol Transportes Aéreos	GOLL4	March 11, 2004
China	Air China	601,111	March 26, 2006
Canada	Air Canada	000008911877 (AC)	November 23, 2006
United States	JetBlue	000477143101 (JBLU)	August 23, 1998
United States	Delta Air	000247361702 (DAL)	March 15, 1967
Chile	LATAM Airlines	LTM	August 7, 1986
Panama	Copa Holdings SA	000000000000 (CPA)	May 5, 1998
United States	United Airlines	000910047109 (UAL)	December 29, 1968
Japan	Japan Airlines	9201	July 31, 1951
Turkey	Turk Hava Yollari	THYAO	January 29, 1960
Malaysia	Airasia Group	5099 (AIRA)	August 23, 2017
United Kingdom	Consolidated Airlines Group SA	B5M6XQ7 (ICAG)	December 23, 2009
Australia	Qantas	QAN	January 17, 1934
Canada	ACE Aviation	00000440P409 (ACEh)	December 13, 2007
China	China Eastern Airlines	600115	April 13, 1995
United States	SkyWest Inc	000830879102 (SKYW)	March 1, 1972
United States	Hawaiian	000419879101(HA)	April 23, 2002
New Zealand	Air New Zealand	AIR	April 25, 1940
United States	Spirit Airlines	000848577102(SAVE)	March 7, 1994
Panama	Avianca Holding	PAI69PA00017(AVT_p)	March 2, 2011
India	Interglobe Aviation	EQINDIGO (INGL)	January 12, 2004
Australia	Virgin Australia	VAH	December 29, 2000

Note: The codes in parenthesis are Refinitiv identification code (RIC) of airlines in Eikon database framework.

APPENDIX B: STUDY VARIABLES B

Variable	Definition	Description
Dependent variable		
ESG	ESG score	Thomson Reuters score for an overall company score based on its self-reported information in the environmental, social, and corporate governance pillars.
Explanatory and control variables		
TQ	Natural logarithm of Tobin's Q	Tobin's Q = market value + total debt - current assets/total assets
ROA	Return-on-assets	It measures a company's operating efficiency regardless of its financial structure.
Div	Dividend pay-out ratio	Defined as the average gross dividends-common stock over five fiscal years divided by the average of income available to common excluding extraordinary items for the sample period and is expressed as percentage.
Lev	Leverage ratio	Defined as total liabilities over total assets.
Size	Firm size	Natural logarithm of total assets.
Age	Firm's age	The number of years since company's foundation (start doing business).
SOE	State-ownership	It is computed by a binary (dummy) variable, where "1" indicates whether the airline holds a government share in its ownership structure.
SOE pct	State-ownership Percentage	It is measured by the proportion of government shares to total shares where "1" indicates whether at least 50% of the shares of an airline holds by the government and "0" otherwise.

APPENDIX C: DIAGNOSTIC TESTS C

	Pooling versus random-effects	Pooling versus fixed-effects	Fixed-effects versus random-effect	Favorable model
Model 1	Lagrange multiplier test - (Honda) for unbalanced panels p -value < 2.2e-16	F test for individual effects p -value < 2.2e-16	Hausman test p -value = 1.286e-06	Fixed-effect model
	Pooling versus random-effects	Pooling versus fixed-effects	Fixed-effects versus random effect	Favorable model
Model 2	Lagrange multiplier test - (Honda) for unbalanced panels p -value < 2.2e-16	F test for individual effects p -value = 0.4268	Hausman test p -value = 3.654e-09	Polling OLS model