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Article

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Global Business & Finance Review (GBFR)

Provided in Cooperation with: People & Global Business Association (P&GBA), Seoul

Suggested Citation: Moon, Joonho (2024) : Moderating effect of gross domestic production on the association between share ownership of CEO and strategic risk-taking of airlines, Global Business & Finance Review (GBFR), ISSN 2384-1648, People & Global Business Association (P&GBA), Seoul, Vol. 29, Iss. 5, pp. 103-111, https://doi.org/10.17549/gbfr.2024.29.5.103

This Version is available at: https://hdl.handle.net/10419/306002

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GLOBAL BUSINESS & FINANCE REVIEW, Volume. 29 Issue. 5 (JUNE 2024), 103-111 pISSN 1088-6931/eISSN 2384-1648 | Https://doi.org/10.17549/gbfr.2024.29.5.103 © 2024 People and Global Business Association

GLOBAL BUSINESS & FINANCE REVIEW

www.gbfrjournal.org for financial sustainability and people-centered global business

Moderating effect of gross domestic production on the association between share ownership of CEO and strategic risk-taking of airlines

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ABSTRACT

Purpose: The purpose of this research is to examine the moderating effect of gross domestic product on the relationship between share ownership and strategic risk-taking of airlines. Theoretical foundation of this work is upper echelon theory and contingency theory.

Design/methodology/approach: The sample of this work is publicly traded airlines in the US stock market: NASDAQ, AMEX, and NYSE. For data collection, this work employed Annual 10-K, Bureau of economic analysis, Compustat, and Execucomp using SIC code 4512. 15 airlines were used and the study period is 1999-2019. For testing the research hypotheses, this study implemented multiple linear regression analysis.

Findings: The results indicated that gross domestic product positively moderates the relationship between share ownership of CEO and strategic risk-taking of airlines.

Research limitations/implications: The practical implication of this work is for the information provision of shareholders and potential investors for airline stocks.

Originality/value: This research is worthy by elucidating the moderating effect of gross domestic product regarding top managers' decision making domain.

Keywords: Airline, Chief executive officer, Share ownership, Gross domestic product, and Strategic risk-taking

I. Introduction

Businesses take risks for gaining more sales; however, taking risk is likely to cause the loss of business (Luo & Jackson, 2012). Numerous scholars thus have investigated the characteristics of strategic risk-taking because it is associated with the fate of organization (Chatterjee & Hambrick, 2011; Lee & Tang, 2010; Kreiser et al., 2013; Seo & Sharma,

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2018; Martino et al., 2020). Such numerous prior works indicates that it is worthwhile to investigate the characteristics of strategic risk-taking of business. This work thus chooses strategic risk-taking as the main attribute.

Previous studies documented that top managers are very influential on the direction of organization, and such aspect could be applied to the case of airlines (Carraher, 2006; Hambrick, 2007; Lee & Moon, 2016; Jing & Moon, 2021). Extant literature also contended that compensation encourages top managers to work as varied manners (Kish-Gephart & Campbell, 2015; Lee et al., 2016; Tulcanaza Prieto & Lee, 2019;

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Received: Jan. 16, 2024; Revised: Feb. 27, 2024; Accepted: Mar. 7, 2024

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Connelly et al., 2020). Namely, top managers' risktaking behaviors appeared as different manners depending on the feature of compensation package. Among compensation pieces, it is debatable about the effect of share ownership for taking risk in strategic decision making whether it encourages top managers to take risk more or not (Wright et al. 2007; Alessandri & Seth, 2014; Lee et al., 2016). In order to answer the question, this research aims to investigate the effect of share ownership. Moreover, this research adopts chief executive officer (CEO) as research target considering the fact that many studies used CEOs for investigation due to their power in organization (Chatterjee & Hambrick, 2011; Lee & Tang, 2010; Kreiser et al., 2013; Lee & Moon, 2016; Seo & Sharma, 2018). It indicates that CEO is worthy to investigate.

Scholars argued that airlines business are very sensitive to the macro-economic condition because the demand of travel using airlines are sensitive to the economic condition (Hätty & Hollmeier, 2003; Grosche et al., 2007; Sobieralski, 2020). It suggests that airlines business is strongly influenced by macro-economic indicator because travel is not essential goods for living. Prior studies also stated that gross domestic product is a representative indicator of economic condition (Coscieme et al., 2020; Rana et al., 2020). Indeed, researchers have focused on gross domestic product index to inspect the financial attributes of airlines (Lee & Moon, 2016; Jing & Moon, 2021). This study thus employs gross domestic product as the main element to scrutinize the top managers' effect on strategic risk taking. Moreover, previous studies alleged that individual decision making is strongly influenced by the external condition in accordance with contingency theory (Luthans & Stewart, 1977; Tarter & Hoy, 1998; Islam & Hu, 2012). By integrating the rational of prior studies (Tarter & Hoy, 1998; Islam & Hu, 2012; Lee & Moon, 2016; Jing & Moon, 2021), this research presumes that top managers' decision is likely to be varied depending on economic condition, and such aspect could become the cue of resolving the problems about the impact of share ownership.

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All things considered, the purpose of this work is to attest the moderating effect of gross domestic product on the relationship between share ownership of CEOs and strategic risk-taking in the domain of airlines business. Even though numerous studies have explored the influence of CEO share ownership, sparse studies have examined the moderating effect of gross domestic product to identify the impact of stock ownership. Such a research gap leads this work to inspect the moderating role of gross domestic product. Also, this research contributes to the literature by scrutinizing the effect of share ownership depending on the economic condition in case of airlines. Based on the results, this research is to present the implication for airlines, aiming for shareholders and potential investors of airlines.

II. Review of Literature and Hypotheses Development

A. Strategic Risk-Taking

Strategic risk-taking is a degree of uncertainty for business to gain higher amount of return in the future by postponing current gain and economic utility (Lee & Moon, 2016; Seo & Sharma, 2018; Martino et al., 2020). Because of no pain and no gain, businesses take risk for business, and top managers are very essential person in this stage due to their authority for decision making (Chatterjee & Hambrick, 2011; Lee & Tang, 2010; Kreiser et al., 2013). In addition, Charness and Jackson (2009) alleged that responsibility is critical piece in strategic risk-taking because it contains the likelihood of loss. Many studies scrutinized the characteristics of strategic risk-taking. For instance, Lee and Tang (2010) and Chatterjee and Hambrick (2011) selected strategic risk-taking as dependent variable to ensure the effect of top managers. Seo and Sharma (2018) explored the determinants of strategic risk-taking of restaurant. Moreover, Lee and Moon (2016) examined the antecedents of strategic risk-taking of airlines by exploring top managers. Given the review of literature, it can be inferred that strategic risk-taking was commonly used as dependent variable.

B. CEO Share Ownership

Upper echelon theory claimed that CEOs are powerful person in organization, and they are authorized for the decision making (Chuang et al., 2009; Ting et al., 2015). Scholars also alleged that top managers including CEOs is an important person in organization because the fate of organization is determined by the decision making of top managers (Hiebl, 2014; Yamak et al., 2014; Abatecola & Cristofaro, 2020). Upper echelon theory claimed that top managers are responsible for the fate of organization because they have a power, and CEO is a representative person regarding previous works (Hambrick, 2007; Kish-Gephart & Campbell, 2015; Lee et al., 2016; Connelly et al., 2020). Plus, extant literature addressed that top managers such as CEOs are imperative for strategic risk-taking because they have a power in their group (Ozkan, 2011; Kish-Gephart & Campbell, 2015; Benischke et al., 2019).

Scholars also argued that compensation is an instrument to encourage top managers to work more because financial gain becomes a motivation (Ting et al., 2015; Lee et al., 2016; Benischke et al., 2019). Share ownership refers to the value of stock granted to top managers as a sort of compensation (Tan et al., 2001; Alessandri & Seth, 2014; Lee et al., 2016). As a piece of compensation, prior studies addressed that granting adequate share ownership leads top managers to administrate business better because they desire to increase their value of shares (Mehran et al., 1999; Kim & Lu, 2011; Oh et al., 2011; Lee et al., 2016). Previous research also showed that share ownership makes top managers more conservative (Lee et al., 2016). In contrast, scholars unveiled that share ownership caused higher level of risk-taking of top managers (Wright et al., 2007). It can be inferred that it is controversial about the role of share

ownership for taking risk in the decision making of top managers. Given the review of literature, this research proposes the following hypothesis:

H1: Share ownership significantly affects the strategic risk-taking.

C. Gross Domestic Product and Airlines

Gross domestic product is the value of production in a nation's economy (England, 1998; Konchitchki & Patatoukas, 2014). Gross domestic product is an economic indicator and larger gross domestic product means better economic condition (Coscieme et al., 2020; Rana et al., 2020). In addition, scholars claimed that economic condition is influential attribute on airline businesses (Guzhva & Pagiavlas, 2004; Lee et al., 2013; Xu et al., 2021). Additionally, prior studies addressed that gross domestic product was employed for economic condition to explore the business characteristics of airlines (Hätty & Hollmeier, 2003; Grosche et al., 2007; Sobieralski, 2020). It can be inferred that gross economic condition is a critical attribute in the domain of airline business, and many studies documented that airlines management is very sensitive to the economic condition because customers reduce travel first during in recession (Bussem, 2002; Saif et al., 2013; Mahtani & Garg, 2018). In fact, Morgan et al. (2015) used gross domestic product as the moderating variable.

Given the characteristics of gross domestic product and share ownership, top managers are likely to take more risk under the better economic condition because the likelihood of success is higher in case of better economic condition. Therefore, top managers are likely to take more risk for elevating their value of stock in case of better economic condition. However, top managers' behavior is likely to become conservative under the worse economic circumstance for the value of stocks. It implied that share ownership is likely to lead top managers' strategic decision as varied manner up to the economic condition. Indeed, previous studies contended that business condition on the argument of contingency theory (Azma & Mansfield, 1981; Grinyer et al., 1986; Childs et al., 2022). According to contingency theory, individuals' decision making is varied depending on their circumstance (Tarter &Hoy, 1998; Araral,2020; Safari &Saleh, 2020). Additionally, Baird and Thomas (1985) documented that strategic risk-taking of business is differentiated by the situation by applying the argument of contingency theory. All things considered, it is anticipated that CEOs possessing share ownership take are likely to take risk in strategic decision making because the likelihood of success is higher, which results in the elevation of their stock value. Regarding the literature review, this study proposes the following research hypothesis:

H2: Gross domestic product significantly moderates the relationship between share ownership and strategic risk-taking.

III. Method

A. Research Model

Figure 1 is the research model. Share ownership is the independent variable of this work. Also, strategic risk-taking is the dependent variable. Gross domestic product exerts the moderating effect on the relationship between share ownership and strategic risk-taking.

B. Data Collection and Illustration of Variables

The sample of this work are publicly traded on the US stock market: American Stock Exchange (AMEX), National Association of Securities Dealers Automated Quotations (NASDAQ), and New York Stock Exchange (NYSE). This research employed diverse information sources: Annual report 10-K, Compustat, and Execucomp using standard industry classification (SIC) code 4512. Moreover, U.S. Bureau of Economic Analysis (BEA) (https://www.bea.gov/) was used for macro-economic information. The data is panel data which consists of both multiple companies and years (Wooldridge, 2009). The study period was 1999-2019; the number of airlines was 15. The number of valid observation was 221 for data analysis. It suggests that the data was unbalance panel that all participants' information is not presented in all study periods (Wooldridge, 2009).

Table 1 exhibits the measurement of variables. Strategic risk-taking is measured by the sum of capital investment, acquisition investment, and long-term liabilities. Share ownership (SH) is the value of stock granted to CEO. The unit of gross domestic product (GD) is billion US dollars. The measurement of liquidity (LQ) is current assets over current liabilities. Size (SZ) is measured by total assets. Debt ratio (DB) is measured by total liabilities is divided by total assets. The measurement of return on assets (RO) is net income over total assets. The unit of oil price (OI) is US dollar per barrel. Low cost carrier is measured using binary variable (0 = non low cost carrier, 1 = low cost carrier).



Figure 1. Research model

Table 1. Description of variables

Variable	Measurement
Strategic risk-taking (SR)	capital investment + acquisition investment + long-term liabilities
Share ownership (SH)	value of share possessed by CEO (unit: thousand USD)
Gross domestic product (GD)	gross domestic product (unit: billions of USD)
Liquidity (LQ)	current assets/current liabilities
Size (SZ)	total assets
Debt ratio (DB)	total liabilities /total assets
Return on assets (RO)	net income/total assets
Oil price (OI)	oil price (unit: USD/barrel)
Low cost carrier (LC)	0 = non low cost carrier, 1 = low cost carrier

Note: USD denotes US dollars

Table 2. Descriptive statistics (n = 221)

Variable	Mean	SD	Minimum	Maximum
SR	9293.68	11257.14	24.38	46398
SH	967.25	1575.432	-13.53	10783.28
GD	14.25	3.33	9.63	21.40
LQ	1.14	0.70	0.34	4.41
SZ	13793.98	15989.26	170.08	64532
DB	0.78	0.24	0.28	2.32
RO	0.01	0.12	-1.09	0.90
OI	58.24	29.69	18.6	110.63
LC	0.29	0.45	0	1

Note: SD stands for standard deviation, Strategic risk-taking (SR): capital investment + acquisition investment + long-term liabilities, Share ownership (SH): value of share possessed by CEO (unit: thousand USD), Gross domestic product (GD): gross domestic product (unit: billions of USD), Liquidity (LQ): current assets/current liabilities, Size (SZ): total assets, Debt ratio (DB): total liabilities /total assets, Return on assets (RO): net income/total assets, Oil price (OI):oil price (unit: USD/barrel), Low cost carrier (LC): 0 = non low cost carrier, 1 = low cost carrier

C. Data analysis

This research performed descriptive analysis by computing mean, standard deviation (SD), minimum, and maximum. This study also used correlation matrix. This research implemented ordinary least square regression analysis by using various as control variable, which aims to minimize the omitted variable bias for estimation. Plus, this study used GD and OI to control year effect in panel data. In order to test moderating effect, this research generated interaction variable (SH×GD), and the significant becomes the clue for the appraisal of moderating role of GD (Gujarati & Porter, 2009; Wooldridge, 2009). The dependent variable is SR, while independent variable is SH, and moderating variable is GD.

IV. Results

A. Descriptive Statistics and Correlation Matrix

Table 2 is the descriptive statistics. The mean value of SR is 9293.68, and its standard deviation is 11257.14. The mean value of SH is 967.25, with 1575 as standard deviation. Table 2 also presents the descriptive information of GD (Mean = 14.25, SD = 3.33), LQ (Mean = 1.14, SD = 0.70), SZ (Mean = 13793.98, SD = 15989.26), DB (Mean = 0.78, SD = 0.24), and RO (Mean = 0.01, SD = 0.12). Moreover, the mean values of OI and LC are 58.24 and 0.29, respectively.

Table 3 is the correlation matrix. SR negatively correlates with SH (r = -0.070, p<0.05), LQ (r = -0.435, p<0.05), RO (r = -0.183, p<0.05), and LC (r = -0.343, p<0.05), while SR positively correlates with GD (r = 0.331, p<0.05), SZ (r = 0.941, p<0.05), DB (r = 0.577, p<0.05), and OI (r = 0.238, p<0.05).

SH also positively correlates with LQ (r = 0.155, p<0.05) and LC (r = 0.344, p<0.05), whereas SH negatively correlates with DB (r = -0.144, p<0.05). GD positively correlates with OI (r = 0.652, p<0.05). Plus, SZ positively correlates with DB (r = 0.348, p<0.05) and OI (r = 0.278, p<0.05), while SZ negatively correlates with LC (r = -0.265, p<0.05).

B. Results of Hypotheses Testing

Table 4 is the results of regression analysis. The dependent variable is SR. The model is statistically significant given the F-value (p<0.05). SH (β = -1.06, p<0.05) and GD (β = -202.69, p<0.05) exerted

negative effect on SR, and SH×GD ($\beta = 0.10$, p<0.05) positively impacted on SR. LQ ($\beta = 1023.81$, p<0.05), SZ ($\beta = 0.63$, p<0.05), and DB ($\beta = 12635.41$, p<0.05) also positively affected SR, whereas RO ($\beta =$ -3106.48, p<0.05) negatively impacted on SR. Given the results, all the proposed hypotheses are supported.

V. Discussion

This study investigated the moderating effect of gross domestic product on the relationship between share ownership of CEO and strategic risk-taking

Table 3. Correlation matrix

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Variable	1	2	3	4	5	6	7	8
1.SR	1							
2.SH	-0.070^{*}	1						
3.GD	0.331*	0.039	1					
4.LQ	-0.435*	0.155^{*}	-0.255*	1				
5.SZ	0.941^{*}	-0.104	0.435^{*}	-0.459^{*}	1			
6.DB	0.577^{*}	-0.144*	-0.010	0.383^{*}	0.348^{*}	1		
7.RO	-0.183*	0.114	0.184^{*}	0.088	0.018	-0.628*	1	
8.OI	0.238^{*}	0.095	0.652^{*}	-0.095	0.278^*	0.067	0.110	1
9.LC	-0.343*	0.344^{*}	0.149^{*}	-0.069	-0.265^{*}	-0.382*	0.169^{*}	0.135*

Note: *p<0.05, Strategic risk-taking (SR): capital investment + acquisition investment + long-term liabilities, Share ownership (SH): value of share possessed by CEO (unit: thousand USD), Gross domestic product (GD): gross domestic product (unit: billions of USD), Liquidity (LQ): current assets/current liabilities, Size (SZ): total assets, Debt ratio (DB): total liabilities /total assets, Return on assets (RO): net income/total assets, Oil price (OI):oil price (unit: USD/barrel), Low cost carrier (LC): 0 = non low cost carrier, 1 = low cost carrier

Table 4. Results of regression analysis

Variable	Coefficient	t-value	p-value
Intercept	-7882.03	- 5.61*	0.000
SH	-1.06	-2.05*	0.042
GD	-202.69	-2.85*	0.005
SH×GD	0.10	2.93*	0.004
LQ	1023.81	3.84*	0.000
SŽ	0.63	51.37*	0.000
DB	12635.41	12.10^{*}	0.000
RO	-3106.48	-1.97*	0.050
OI	-2.14	-0.33	0.745
LC	-197.52	-0.47	0.637
F-value	655.44*		
\mathbf{R}^2	0.9672		

Note: Dependent variable: SR, *p<0.05, Strategic risk-taking (SR): capital investment + acquisition investment + long-term liabilities, Share ownership (SH): value of share possessed by CEO (unit: thousand USD), Gross domestic product (GD): gross domestic product (unit: billions of USD), Liquidity (LQ): current assets/current liabilities, Size (SZ): total assets, Debt ratio (DB): total liabilities /total assets, Return on assets (RO): net income/total assets, Oil price (OI):oil price (unit: USD/barrel), Low cost carrier (LC): 0 = non low cost carrier, 1 = low cost carrier

in the area of airline business. The main theoretical underpinning of this work is upper echelon theory which claims that the outcome of organization comes from the decision of top managers (Hambrick, 2007). The results showed that airline CEO's having share ownership took less risk under the poor economic condition, whereas CEO's possessing more ownership took more risk in the good economic condition. It can be inferred that the strategic risk-taking behavior of airline CEOs appeared as varied manners depending on the economic condition. The results also revealed that airlines took less strategic risk during the economic upturn. Namely, airlines are likely to take more strategic risk when they have tough external condition. Regarding other variables, airline took more risk if their liquidity and debt ratio are higher. Also, the results disclosed that firm size exerted positive effect on strategic risk taking of airlines. The R-square of this work is very high because airlines take more risk using their resources because resource enables business to overcome the difficulties based on the argument of resource based view (Pearson et al., 2015; Harvey & Turnbull, 2020; Kankaew et al., 2021). In addition, the results implied that airlines with better performance in book value took less strategic risk.

VI. Conclusion

A. Implications

Previous research presented mixed results about the impact of share ownership on strategic risk-taking (Wright et al., 2007; Alessandri & Seth, 2014; Lee et al., 2016). Regarding such a question, this study theoretically contributes to the literature by elucidating the relationship between share ownership, strategic risk-taking, and gross domestic product based on upper echelon theory and contingency theory. This could become the ensuring the explanatory power of contingency theory in case of the compensation of top managers in the domain of airline business. Moreover, this work sheds light on the literature by presenting the clarification for the relationship between share ownership of CEO, gross domestic product, and strategic risk-taking of airlines. Next, the results of this research also confirmed the prior studies argument that compensation functions as an instrument to control the behavior of top managers (Hambrick, 2007 Alessandri & Seth, 2014; Benischke et al., 2019). Plus, the results of this research ensured the importance of gross domestic product in case of airlines as previous research documented (Hätty & Hollmeier, 2003; Grosche et al., 2007; Sobieralski, 2020).

This study has practical implications. First, the results of this research could be used for shareholders to control the behavior of top managers. That is, if the shareholders want to take risk in the market, they can use granting amount of share ownership depending on economic condition. Also, the information could be used for investors regarding the degree of risk for airlines because this information might be able to predict the direction of top manager's decision making depending on the form of compensation and economic condition. Furthermore, the results of this work might be able to be utilized for anticipating the degree of risk using financial indicators: liquidity, debt dependency, firm size, and profit condition. For instance, if the investor values safety more in their stock portfolio, airlines with high liquidity, high debt financing, and large firm size might be considered as less attractive business to invest.

B. Suggestions for Future Research

This work has limitations. First, the sample of this research was limited to the airline business.

Future research might be able to consider more various business sectors to ensure the impact of share ownership of CEOs. Moreover, the sample of this work only consisted of American based airlines. Future research might be able to use international samples to ensure the generalizability of this study. Plus, scholars are able to consider the moderating effect of gross domestic product on top managers' characteristics in other domains because the sensitivity of business to the economic condition appeared as different manners depending on the industry. Such efforts might be able to lead scholars to understand the characteristics of top managers more.

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