

## Determinants of Dividend Payout Policies: Evidence from Airline Industry

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### Abstract

The goal of this research is to uncover the financial factors that influence airline dividend payment policies. The panel data analysis method was used to analyze the financial data of 16 airlines from 2009 to 2018. In the study, the dividend payout of the airlines was used as the dependent variable. The independent variables of the study were determined as firm size, leverage ratio, tangible fixed assets, profitability level, market value, liquidity ratio, and corporate cash availability. The findings of the study reveal that in the airline industry, there is a strong link between corporate cash holdings and dividend payments. According to the findings, increased corporate cash availability results in a significant increase in dividend payments.

**Keywords:** Dividend payout policy, Airline industry, Panel data analysis, Financial determinants

### 1. Introduction

Dividend Payout policy is one of the most important issues in corporate finance and has an impact on various stakeholders such as managers and lenders. Studies on dividend payout policy focus on two critical issues. The first is about whether the dividend payout policy affects the value of the firm. The second is about the factors that determine the dividend payout policy [1]. The widespread belief that there is a positive relationship between dividend payout and firm value was reversed by the “Irrelevance Theory” put forward by Miller and Modigliani [2]. According to the Irrelevance Theory, in a perfectly competitive market, profit does not affect company value. In perfect capital market conditions, no transaction costs, no bankruptcy costs, rational investors, no taxes, no asymmetric information among investors,

and the availability of investment opportunities allow dividend payout to not affect company value [3]. Therefore, the value of the company is possible by investing the accumulated earnings of the company in projects with higher returns [4].

Companies can use the income they earn to buy assets for their operations. It can invest in the stock market or securities. In addition, it can be distributed to the shareholders to pay off their debts or in the form of cash dividends. Certain issues become important if the company decides to distribute its income to its shareholders. Determining the rate at which the after-tax income will be distributed to the shareholders is related to whether the distribution will be transferred to the shareholders as a cash dividend or by repurchasing some shares, and how stable the distribution should

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be [5]. Despite many academic studies, uncertainty about the dividend payout policy continues. However, academic studies on dividend payout policy reveal theories such as irrelevance theory [2], signaling theory [6], bird in the hand theory [7], agency cost theory [8], [9], and tax clientele [10] caused it [11]. These theories have allowed a multifaceted study of dividend policy and firm behavior in the finance literature.

Dividend payout policy is related to companies and plays an important role in the financial decisions of the company. Therefore, it is extremely important to examine the factors that encourage managers to make dividend decisions [11]. In this study, we focused on the factors that determine dividend payout policy in the airline industry. Although there is immense literature on dividend payout policy in the literature, there is a limited number of studies examining this issue in the aviation industry. In addition, how dividend policy works in the aviation industry and revealing the determinants of dividend policy is vital for investors. Therefore, we expect this study to contribute to the literature in terms of revealing the dividend payout policy determinants and guiding investors.

The continuation of the work on determinants of dividend payout policies in the airline industry was organized as follows. In the second section, we included studies in the literature. In the third section, the method of the study was introduced. In the fourth section, the results of the empirical analysis were evaluated. The last section contains the results of the study.

## **2. Literature Review**

Studies on experimental Dividend payout policy are based on the irrelevance theory put forward by Miller and Modigliani [2]. Subsequently, the empirical literature [12]–[15] has developed supporting irrelevance theory. Over time, the behavior of many companies dealing with dividend payout policy in different industries [1], [16] and countries [3], [5], [17]–[19] was analyzed.

Recent studies on dividend payout policy address this issue from different perspectives. etc; Wu et al., [20] analyzed the impact of ownership on dividend payout policy for family firms in the context of corporate ownership structure. Miller et al., [21], on the other hand, examined the effect of

payout decisions in the context of monitoring debtors for the family firm, institutional investors, and market preferences. (Kim et al., [22] investigated the impact of R&D on dividend payout policy in firms with financial constraints. Ding et al., [23] analyzed the correlation between dividend payout and CEO and CFO equity compensation across the firm lifecycle. Feng et al., [24] examined the firm's exposure to risk and dividend payment policies under an environment of uncertainty.

The dividend payout has been examined in recent academic studies in the context of legal, that is, shareholder litigation rights [25]. Empirical studies have been carried out [26] on liquidity extraction through dividends in times of crisis, where CEO debt policy is analyzed within the context of market structure and dividend payout policy. In addition, there are studies in the literature about oil shocks and dividend payout policy [27] and how dividend payout policy is affected in an environment of political uncertainty [28].

A limited number of studies have been done in the literature on the dividend payout policy in the airline industry. Moon et al., [29] focused on dividend payments and share repurchases. The findings showed that financial variables such as financial leverage, cash holdings, and firm size affect share repurchase. Another study is on the dividend payout policy of travel and entertainment companies in Western Europe [30]. According to the results, in addition to the traditional dividend payout policy, financial determinants such as capital intensity, intangibility, leverage rate, and tax rate affected the payout decision. The limited number of studies in the literature makes it necessary to examine this issue using up-to-date data on the dividend payout decision. In this study, we examined the dividend payout policy of large-scale airlines in the world with a large data set. Therefore, we think that it is original and will contribute to the literature.

## **3. Data Set and Method**

In this study, we focused on the financial factors that determine the dividend payout. We analyzed the factors affecting dividend payout policy in the airline industry using the panel data analysis method. We benefited from the studies in the literature both in the determination of the variables and in the determination of the appropriate analysis

method. In the study, we analyzed the 2009-2018 financial data of 16 airlines. The list of analyzed airlines is attached. To ignore the impact of the

Covid-19 pandemic, we did not include data for 2019 and beyond. The details of the financial data we used in the study are given in table 1.

**Table 1.** Dependent and independent variables

Variable	Abbreviation	Calculation	Reference
Dividend Payout	PAYOUT	Dividends Per Share/ Earnings Per Share	[16], [31], [3]
Firm Size	SIZE	Log (Total Asset)	[11], [20], [32], [33]
Leverage	DEBT	Total Debt/Total Asset	[20], [32]–[34]
Tangibility	TANG	Property, Plant & Equip/Total Asset	[1], [35]
Profitability	PROF	EBIT/Total Asset	[20], [32], [34]
MV/A	MVTA	Market Value/ Total Asset	[28], [31]
Liquidity	LIQ	Current Asset/Current Liability	[16], [20], [32], [36]
Cash holding	CASH	Cash/Total Assets	[31], [19], [3]

While determining the variables in Table 1, we benefited from the articles in the literature. In the study, we employed dividend payout as the dependent variable. We found the dependent variable by proportioning dividends per share to earnings per share. The independent variables used in the study are in the table above. The model we created in the study is as follows.

$$PAYOUT_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 DEBT_{it} + \beta_3 TANG_{it} + \beta_4 PROF_{it} + \beta_5 MVTA_{it} + \beta_6 LIQ_{it} + \beta_7 CASH_{it} + \epsilon_{it} \quad (1.1)$$

PAYOUT is the dependent variable in the model.  $\beta$  is the slope parameter. The subscript  $i$  denotes units, that is, airlines. The  $t$  subscript shows time, that is, quarterly data.

We used panel data analysis as a method in the study. Panel data analysis includes periodic and unitary data of the variables. In this respect, it provides an advantage in financial analysis. In

general, the panel data model is shown in the figure below.

$$Y_{it} = \alpha_{it} + \beta_{it}X_{it} + \epsilon_{it} \quad (1.2)$$

Before applying panel data analysis, various pretests (cross-section dependency testing, unit root testing, and Heteroscedasticity etc.) pre-tests should be applied on the data. Therefore, after unit root tests, cross-section dependency tests, model determination tests, varying variance, and autocorrelation tests are performed, the model is estimated.

#### 4. Findings

In this study, financial factors affecting airlines' dividend payout policy were analyzed. In the study, we used dividend payout as the dependent variable, firm size, leverage, tangibility, profitability, market value, liquidity, and cash holdings as the independent variables. The descriptive statistics of the variables we used in the study are as follows.

**Table 2.** Descriptive statistics

Variable	PAYOUT	DEBT	SIZE	TANG	PROF	MVTA	LIQ	CASH
Mean	0.2796	0.3924	6.8575	0.6188	0.0560	0.0004	0.8607	0.1397
Median	0.2574	0.4066	6.8937	0.6091	0.0516	0.0003	0.8389	0.1407
Maximum	7.9550	0.7936	7.6455	0.8847	0.2166	0.0013	2.7879	0.3401
Minimum	-8.2927	0.0426	5.2269	0.2986	-0.0446	0.0000	0.2026	0.0144
Std. Dev.	1.0124	0.1570	0.5823	0.1391	0.0401	0.0002	0.4290	0.0671
Skewness	-1.0929	-0.224	-0.7490	-0.0076	0.3415	1.4654	1.4803	0.1869
Kurtosis	54.298	2.9317	2.7761	2.4035	4.0981	5.8054	7.1086	2.6005
Jarque-Bera	17575	1.3759	15.295	2.3735	11.149	109.73	170.97	1.9956
Probability	0.0000	0.5026	0.0005	0.3052	0.0038	0.0000	0.0000	0.3687
Sum	44.741	62.789	1097.2	99.002	8.952	0.061	137.712	22.345
Sum Sq. Dev.	162.980	3.917	53.907	3.075	0.255	0.000	29.267	0.715
Observations	160	160	160	160	160	160	160	160

Table 2 contains descriptive statistics. The payout value of airlines is approximately 0.28 on average. The leverage level, which is the ratio of total liabilities to total assets, is 0.39 on average. The firm's profitability level is around 0.05 on

average. The profitability level is maximum of 0.21 and minimum of -0.04. This means that some airlines have negative EBIT in some periods. In airlines, the average liquidity is 0.86. This value is

close to the industry average. Cash holding in airlines is around 0.13 on average.

**Table 3.** Correlation matrix

	SIZE	d_DEBT	TANG	PROF	MVTA	LIQ	CASH
<b>SIZE</b>	1						
<b>D_DEBT</b>	-0.0170	1					
<b>TANG</b>	0.0753	0.0687	1				
<b>PROF</b>	-0.4185	-0.4963	-0.0835	1			
<b>MVTA</b>	-0.1785	0.0131	-0.0352	0.2183	1		
<b>LIQ</b>	-0.1242	-0.0496	-0.3463	0.0098	0.0906	1	
<b>CASH</b>	-0.2402	0.0150	-0.5613	0.1625	0.3014	0.5579	1

There should be no relationship between independent variables. For this, the correlation coefficients between the independent variables were examined to test the multicollinearity assumption. A high correlation coefficient between variables (0.80

and above) causes a multicollinearity problem. The correlation coefficient between the variables used in the study is low. Therefore, there is no multicollinearity problem.

**Table 4.** Cross-sectional dependence test

Variable	Test	Statistic	Prob.
<b>PAYOUT</b>	LM1 (Breusch, Pagan 1980)	140.71	0.0952
	LM2 (Pesaran 2004 CDIm)	0.304	0.7613
	Bias-adjusted CD test	-0.585	0.5585
	LM (Pesaran 2004 CD)	-1.058	0.2900
<b>SIZE</b>	LM1 (Breusch, Pagan 1980)	563.32	0.0000
	LM2 (Pesaran 2004 CDIm)	27.583	0.0000
	Bias-adjusted CD test	26.694	0.0000
	LM (Pesaran 2004 CD)	21.355	0.0000
<b>DEBT</b>	LM1 (Breusch, Pagan 1980)	327.33	0.0000
	LM2 (Pesaran 2004 CDIm)	12.351	0.0000
	Bias-adjusted CD test	11.462	0.0000
	LM (Pesaran 2004 CD)	0.733	0.4637
<b>TANG</b>	LM1 (Breusch, Pagan 1980)	413.12	0.0000
	LM2 (Pesaran 2004 CDIm)	17.888	0.0000
	Bias-adjusted CD test	16.999	0.0000
	LM (Pesaran 2004 CD)	0.953	0.3404
<b>PROF</b>	LM1 (Breusch, Pagan 1980)	182.95	0.0002
	LM2 (Pesaran 2004 CDIm)	3.031	0.0024
	Bias-adjusted CD test	2.142	0.0322
	LM (Pesaran 2004 CD)	0.762	0.4459
<b>MVTA</b>	LM1 (Breusch, Pagan 1980)	224.35	0.0000
	LM2 (Pesaran 2004 CDIm)	5.703	0.0000
	Bias-adjusted CD test	4.814	0.0000
	LM (Pesaran 2004 CD)	5.605	0.0000
<b>LIQ</b>	LM1 (Breusch, Pagan 1980)	213.36	0.0000
	LM2 (Pesaran 2004 CDIm)	4.994	0.0000
	Bias-adjusted CD test	4.105	0.0000
	LM (Pesaran 2004 CD)	7.545	0.0000
<b>CASH</b>	LM1 (Breusch, Pagan 1980)	239.69	0.0000
	LM2 (Pesaran 2004 CDIm)	6.693	0.0000
	Bias-adjusted CD test	5.804	0.0000
	LM (Pesaran 2004 CD)	5.865	0.0000

In Table 4, the presence of cross-sectional dependence between the Series was investigated with the Breusch-Pagan (1980) LM test, Pesaran (2004) CD and CDlm tests, and Bias-adjusted CD tests. According to the results of the cross-sectional dependence analysis, the probability value of the PAYOUT variable is greater than 0.05, which is considered the critical value. Therefore, there is no

cross-section dependency problem in the PAYOUT variable. For other variables, there is the problem of cross-section dependency. First-generation panel unit root tests were applied to test the stationarity of the PAYOUT variable. For other variables, second-generation panel unit root tests were applied to test the stationarity.

**Table 5.** First-generation panel unit root test

	Levin-Lin-Chu unit-root test			
	Constant		Constant and trend	
	Statistic	Prob.	Statistic	Prob.
PAYOUT	-4.6036	0.0000	-5.0287	0.0000
	<b>Im, Pesaran and Shin W-stat</b>			
	Constant		Constant and trend	
	Statistic	Prob.	Statistic	Prob.
	-3.5037	0.0002	-3.7327	0.0001
	<b>ADF - Fisher unit-root test</b>			
	Constant		Constant and trend	
	Statistic	Prob.	Statistic	Prob.
	63.9989	0.0007	45.9556	0.0525
	<b>PP - Fisher unit-root test</b>			
	Constant		Constant and trend	
	Statistic	Prob.	Statistic	Prob.
88.4724	0.0000	93.4102	0.0000	

Table 5 contains the results of first-generation panel unit root tests. The test results showed that the

PAYOUT variable was stationary at the level.

**Table 6.** Hadri & Kurozumi (2012) panel unit root test

Variable		Constant		Constant and trend	
		Statistic	Prob.	Statistic	Prob.
SIZE	ZA_spac	-2.6606	[0.9961]	-2.1349	[0.9836]
	ZA_la	-2.2199	[0.9868]	-2.4690	[0.9932]
DEBT	ZA_spac	4.0139	[0.0000]	-1.2967	[0.9026]
	ZA_la	5.0314	[0.0000]	-0.0329	[0.5131]
D_DEBT	ZA_spac	1.2109	[0.1130]	0.4726	[0.3183]
	ZA_la	1.2852	[0.0994]	0.6347	[0.2628]
TANG	ZA_spac	-2.8546	[0.9978]	-2.1092	[0.9825]
	ZA_la	-2.6801	[0.9963]	-1.5497	[0.9394]
PROF	ZA_spac	-0.7305	[0.7674]	-1.3577	[0.9127]
	ZA_la	2.2137	[0.0134]	-0.0039	[0.5016]
MVTA	ZA_spac	-0.0831	[0.5331]	0.0243	[0.5097]
	ZA_la	0.4093	[0.3412]	1.3673	[0.0858]
LIQ	ZA_spac	-2.1204	[0.9830]	-0.9783	[0.8360]
	ZA_la	-3.5173	[0.9998]	-2.7050	[0.9966]
CASH	ZA_spac	-2.7251	[0.9968]	-2.5572	[0.9947]
	ZA_la	-2.8869	[0.9981]	-3.4384	[0.9997]

In Table 6, the second generation panel unit root test Hadri & Kurozumi (2012) was applied. All variables except the DEBT variable are stationary at the level. The DEBT variable became stationary at

the first difference. Therefore, we used the first difference of the DEBT variable in the analysis. We used the other variables level values.

**Table 7.** Model determination results

	F-test		LM Test	
	Statistic	Prob.	Statistic	Prob.
<b>Cross-section F</b>	1.3380	0.1916	0.2351	0.6278
<b>Period F</b>	1.2948	0.2533	0.0612	0.8046
<b>Cross-Section/Period F</b>	1.3204	0.1704	0.2963	0.5862

Table 7 has pattern determination test results. The results of the F test and LM test revealed that the classical model is more suitable against fixed effects and random-effects models. We used the classical model, namely the pooled model, as the model.

Table 8 includes heteroscedasticity and autocorrelation. In both heteroscedasticity and autocorrelation tests, the probe value is greater than 0.05, which is considered the critical value. Therefore, there is no heteroscedasticity and autocorrelation problem in the model

**Table 8.** Heteroscedasticity and autocorrelation tests results

Heteroscedasticity tests		
Test Type	Statistic	Prob.
White Test	18.31	0.9909
BP/CW Chi2(1)	37.86	0.0000
BP/CW F(1, 147)	1.280	0.2593
BP/CW Chi2(1) N*R2	1.290	0.2562
Autocorrelation test		
Test Type	Statistic	Prob.
Wooldridge (2002)	1.646	0.219

**Table 9.** Panel data analysis classical model estimation results

PAYOUT	Coef.	Std.Err.	t	P> t	[95% Conf. Interval]	
<b>SIZE</b>	-0.03547	0.17108	-0.21	0.836	-0.37379	0.30286
<b>d_DEBT</b>	-1.11474	1.76600	-0.63	0.529	-4.60711	2.37764
<b>TANG</b>	0.78728	0.75167	1.05	0.297	-0.69920	2.27376
<b>PROF</b>	-1.63556	2.86344	-0.57	0.569	-7.29818	4.02706
<b>MVTA</b>	372.906	380.216	0.98	0.328	-378.990	1124.81
<b>LIQ</b>	-0.10559	0.25498	-0.41	0.679	-0.60983	0.39865
<b>CASH</b>	3.63619	1.93859	1.88	0.063	-0.19749	7.46987
<b>_cons</b>	-0.43246	1.46014	-0.30	0.768	-3.31998	2.45505
Number of obs = 144		F(7, 136) = 1.00		R-squared = 0.0489		
Number of Groups: 16		Prob > F = 0.4349		Periods included: 9		

Table 9 presents the financial factors that affect the airline's dividend payout. Financial variables other than cash holding are not significant. There is a significant relationship between the cash holding variable and dividend payout policy. Cash holding has a positive impact on dividend payout policy. Therefore, as airlines' cash holdings increase, the dividend payout increases. Investors and shareholders can consider the cash holding factor when following the airline dividend payout policy.

### 5. Conclusion

Dividend payout policies has become critical for all industries, not just the airline industry. Investors, shareholders, and those planning to invest in the company follow the companies' dividend payout policy. Financial theories regarding the dividend payout policy suggest that the market value of the company is affected by it. In other words, how companies plan to use the income can be effective

in determining the value of their shares. Airlines can use this income to continue operations and invest in intangible assets such as aircraft.

In the publication of this, he can invest in securities by buying stocks, corporate or government bonds. Airlines can use the income they have to pay their debts and interest on the debt. Another use of income can be distributed to shareholders in the form of cash dividends. A few considerations become important if the company decides to distribute its income to its shareholders. First, the proportion of after-tax income to be distributed to shareholders needs to be determined. Second, it should be determined whether the distribution will be made as a cash dividend or by repurchasing some shares. Finally, the dividend is about how stable the distribution should be. All of these factors can affect the investment in the airline and its share market value. Therefore, in this study, we focused on the dividend payout policy in the airline industry.

In this study, we focused on the financial factors that affect dividend payout policy in the airline industry. In the study, we analyzed the 2009-2018 financial data of 16 airlines. To ignore the effect of the Covid-19 pandemic, we did not include data for 2019 and beyond. We used panel data analysis in the study. The study's findings show a significant relationship between cash holding and dividend payout policy. As airlines' cash holdings increases, the dividend payout increases. Therefore, the airline may consider the cash holding factor when following the dividend payout policy. In future studies, the effect of dividend payout policy can be analyzed according to the business model. In addition, it can be analyzed how the dividend payout policy has changed from the airline industry during the Covid-19 period.

**Ethical Approval**

Not applicable

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**Appendix****Table:** Airline List

<b>ID</b>	<b>AIRLINE</b>	<b>ID</b>	<b>AIRLINE</b>
1	AEROFLOT	9	SHANDONG AIRLINES
2	AIR CHINA	10	COMAIR
3	AIR NEW ZEALAND	11	COPA HOLDINGS
4	ANA HOLDINGS	12	LUFTHANSA
5	AVIANCA	13	ICELANDAIR
6	CATHAY PACIFIC AIR	14	LATAM AIRLINES
7	CHINA SOUTHERN AIR	15	SINGAPORE AIRLINES
8	HAINAN AIRLINES	16	SKYWEST