Does Macroeconomic and Firm Specific Factors drive Corporate Profitability? New Evidence from Pakistan

Babar Nawaz

Government College of Management Sciences, Haripur, Pakistan babarnawaz471@gmail.com

Zia ur Rehman

Department of Management Sciences, University of Haripur, Pakistan

Asad Khan

Department of Management Sciences, University of Haripur, Pakistan asadkhan@uoh.edu.pk

Corresponding: zia.rehman@uoh.edu.pk

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A B S T R A C T

The aim of the paper is to analyze the impact of macroeconomic and firm specific factors on corporate profitability. Data for the period 2010-2019 is collected from listed Pakistani firms. Findings of the study reveal that corporate profitability is significantly and positively influenced by firm size and liquidity whereas corporate profitability is significantly and negatively influenced by leverage. GDP affects EPS positively but its impact on ROE and ROA is negative. Exchange rate also has a negative impact on corporate profitability. Real interest has a strong negative effect on ROA but on EPS and ROE, the effect is insignificant. Real interest has a strong negative effect on ROA but on ROE and EPS the effect is insignificant.

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INTRODUCTION

One of the most critical questions pertaining to corporate profitability that generated and continues to generate interest from the researchers is whether corporate profitability is influenced by the external environment and firm specific factors or not. In empirical studies we find two common approaches i.e., the systems theory and the resource-based theory that have been used to measure the factors that affect corporate profitability. The systems theory focuses on a firm's external environment and argues that the microenvironment of the firm affects corporate profitability. The resource-based theory, on the other hand, argues that internal factors or resources play an important role and drive firm competitiveness, thus leading to an increase in firm profitability. From the strategic perspective, Porter (1997) considered that external factors are more important as compared to internal factors. Porter (1997) was of the view that internal sources related decisions should be made only once results on external analysis are available to the management. However, empirical evidence suggests that firm's specific factors are more influential in explaining impact on corporate profitability than external factors (Makhija, 2003). Nevertheless, despite these empirical findings, researchers are still attracted towards analyzing the influence of external factors primarily since management has no control over the external environment therefore, managers are unable to manage and predict with reasonable accuracy the impact of external factors on corporate profitability.

Moreover, globalization and integration of financial markets have further increased firm exposure to external shocks thus making things more challenging and complex for managers to manage.

Furthermore, firm survival and its growth depends on the interaction of firm specific (internal) and macroeconomic (external) factors. Managers try to find the right mix between external factors and internal factors that will maximize the earnings of the firm. In regard, managers continuously scan the external environment for opportunities and threats and plan their internal resources in such a way that will help in exploiting opportunities and avoid threats. In empirical studies, we find mixed evidence on firm specific factor's impact on firm profitability (Ghareli & Mohammadi, 2016; Kalam & Utsho, 2020). In these studies, various internal factors have been identified; firm size, (Malik, 2011); firm age, (Swiss, 2008); leverage, (Mule & Mukras, 2015); liquidity, (Dogan, 2013). At the same time, many empirical studies were aimed at analyzing macroeconomic factors influence on firm's profitability. In these studies, different macroeconomic factors were used. These included GDP growth rate (Kanwal & Nadeem, 2013; Owoputi et al., 2014; Rani & Zergaw, 2017), exchange rates (Owoputi et al., 2014; Rani & Zergaw, 2017) and interest rates (Kanwal & Nadeem, 2013; Riaz & Mehar, 2013; Owoputi, et al., 2014).

Therefore, considering the importance of external factors and firm specific factors in determining firm profitability and the mixed results reported in earlier empirical studies, additional evidence particularly related to developing countries is needed to explore the interaction of macroeconomic factors and firm specific with corporate profitability. Moreover, the external factors which are beyond the control of the firm change quickly presenting numerous challenges for the management to adjust and respond to these changes. Therefore, the study aims to measure firm specific and macroeconomic factor's impact on corporate profitability in non-financial listed firms of Pakistan.

The economy of Pakistan is not doing well from the last few years due to various economic challenges. The uncertain political and economic environment makes it difficult for firms to make long term decisions that will increase the profitability of the firm. Moreover, the energy crisis, poor law and order situation, increase in production cost, raw material costs, lack in R& D in product improvement and processes and modern equipment has further aggravated the situation. Considering the prevailing economic environment, it will be interesting to see how macroeconomic factors and firm specific affect factors corporate profitability.

LITERATURE REVIEW

Macroeconomic Factors/Corporate profitability relationship

The macroenvironment of a firm refers to an environment where all firms operate within it but they have no control over external conditions and forces (Taher et al., 2010). As firm has no control over its external environment therefore, firms evaluate changes occurring in the external environment before making long term decisions. Evidence from empirical studies suggests that changes in macroeconomic factors do affect the value of financial assets (Fosu et al., 2014).

Many empirical studies concluded that macroeconomic factors significantly affect firm earnings (Issah & Antwi, 2017; Mwangi & Wekesa, 2017). In a study on Nigerian firms, Owolabi (2017) found an insignificant impact of real interest rate and exchange rate on firm profitability. Moreover, while analyzing Kenyian firms from the energy and petroleum sector, Rao (2016) found strong negative impact of interest rates on corporate profitability whereas the impact of GDP growth rate and exchange rate was insignificant. In a study on Kenyian Banks, Otambo (2016) found negative impact of interest rates and exchanges rates on corporate profitability whereas GDP positively influenced corporate profitability.

Gado (2015) found that real interest rate and exchange rate have a negative impact on firm profitability. Murungi (2014) found significant influence of GDP and interest rate on firm profitability whereas the relationship was insignificant as far as exchange rates are concerned. Studies from (Acaravci & Calim, 2012; Hidayati, 2014) found positive influence of exchange rates on corporate profitability whereas Chan et al. (2002) found weak relation between exchange rates and corporate profitability. On the other hand, studies from (Inyiama & Ozouli, 2014; Kelilume, 2016) found negative impact of exchange rates on corporate profitability.

Firm Specific Factors and Corporate profitability

While focusing on firm specific factors, Kuntluru et al. (2008) found out that firm profitability is negatively influenced by leverage whereas the impact of firm size was positive. Meanwhile, Ali and Fatima (2021) found positive impact of leverage on corporate profitability. In study involving 961 Australian firms, Stierwald (2010) found significant impact of FS on corporate profitability. Pathirawasam (2011) also found significant effects of internal (firm specific) factors on profitability. In another study Pratheepan (2014) analyzed manufacturing firms in Sri lanka and found strong positive effect of firm size on firm profitability whereas the impact of leverage and liquidity was insignificant. Bhutta and Hassan (2014) found significant negative impact of FS (size) on firm profitability. Blazkova and Dvoulety (2018) analyzed Czech food processing firms and concluded that FS positively affects profitability whereas the relationship is negative between leverage and profitability. An exploratory study on insurance firm's eight Asian firms by Zainudin et al. (2018) concluded that liquidity has weak impact on profitability whereas firm size significantly affects firm profitability. In study on Portuguese firms, Vieira, Neves and Dias (2019) concluded that in terms of corporate profitability measured through market variable, firm specific factors are not significant to be explained. They further explained that the sentiment of the investors and insider ownership are more effective in explaining corporate profitability. Studies from Dakic et al. (2019) and Hintosova et al. (2020) also found significant impact of internal factors on corporate profitability. On the other hand, Kalam and Utsho (2020) found mixed results with respect to internal factors impact on corporate profitability. In a study on Nigerian firms Dioha et al. (2018) concluded that leverage and firm size significantly affect profitability whereas liquidity was insignificantly related to profitability.

To conclude, as we can see mixed results from the review of empirical studies which further emphasizes the need for further studies, the following hypotheses are proposed based on literature review particularly pertaining to developing countries.

 H_1 Firm size positively affects corporate profitability H_2 Liquidity positively affects corporate profitability H_3 Leverage negatively affects corporate profitability H_4 GDP positively affects corporate profitability H_5 Exchange rate negatively affects corporate profitability H_6 Real Interest rate negtively affects corporate profitability

DATA AND METHODOLOGY

Since the aim of the study is to measure the effect of macroeconomic factors (GDP, RIR, EXR) and firm specific factors (leverage, firm size, liquidity) on corporate profitability (ROA, ROE, EPS), therefore, panel data regression is used. Data is collected from annual reports, State bank of Pakistan database and World Bank database. Data is collected for the period 2010-2019.

Currently, 467 firms are listed in Pakistan Stock exchange. Only those firms are considered that remain listed throughout the study period and for whom data was available for the entire study period. The final sample is comprised of 279 firms considering the above-mentioned two conditionalities.

Theoretical Framework

The theoretical framework of the study is given below.

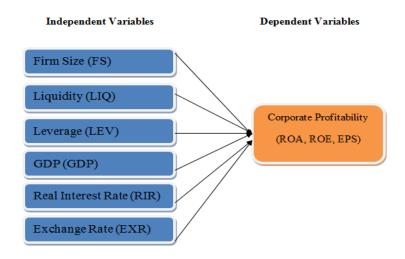


Table 1: Variable Measurement

Nature	Variable	Formula
	Return on Assets (ROA)	Net income/total assets *100
Dependent Variable	Return on Equity (ROE)	PAT/Equity * 100
	Earnings per share (EPS)	PAT/ No of Common Shares
Firm's Specific Factors (Independent Variables)	Firm Size (FS)	Natural Log of Total Assets
	Liquidity (LIQ)	Current Assets/Current Liabilities
	Leverage (LEV)	Proportion of total debts to total assets
Macroeconomic Factors (Independent Variables)	GDP growth rate (GDP)	Annual change in GDP
	Real Interest Rate (RIR)	Nominal interest rate minus inflation rate
	Annual exchange rate (EXR)	Average annual exchange rate

Model

The basic econometric model is as follows.

Corporate profitability:

$$= \alpha_0 + \beta_1 RIR_{it} + \beta_2 EXR_{it} + \beta_3 GDP_{it} + \beta_4 FS_{it} + \beta_5 LEV_{it} + \beta_6 LIQ_{it} + \mu_{it}$$

Sub-models

$$ROA_{it} = \alpha_0 + \beta_1 RIR_{it} + \beta_2 EXR_{it} + \beta_3 GDP_{it} + \beta_4 FS_{it} + \beta_5 LEV_{it} + \beta_6 LIQ_{it} + \mu_{it}$$
(1)

$$ROE_{it} = \alpha_0 + \beta_1 RIR_{it} + \beta_2 EXR_{it} + \beta_3 GDP_{it} + \beta_4 FS_{it} + \beta_5 LEV_{it} + \beta_6 LIQ_{it} + \mu_{it}$$
 (2)

$$EPS_{it} = \alpha_0 + \beta_1 RIR_{it} + \beta_2 EXR_{it} + \beta_3 GDP_{it} + \beta_4 FS_{it} + \beta_5 LEV_{it} + \beta_6 LIQ_{it} + \mu_{it}$$
(3)

In the above equation α_o is used as constant. β_{1-6} is the coefficients of variables, 'i' means ith firm at time 't'. Variables are denoted as; RIR (real interest rate), EXR (exchange rate), GDP (gross domestic product), FS (firm size), LEV (leverage), LIQ (leverage), ROE (return on equity), EPS (earnings per share) and ROA (return on assets).

Panel data regression is used in this study to measure the impact of firm specific and macroeconomic factors on corporate profitability. In panel data we have two models i.e., random effects and fixed effects. In order avoid model selection bias, Hausman (1978) test is used. The results from the Hausman test given in Table 2 suggest that for all three models a fixed effects model is more appropriate.

Table 2: Hausman Test (Test Summary- Cross Section Random)

Dependent Variable	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
ROA (Model I)	13.91	6	0.003	
ROE (Model II)	16.57	6	0.001	
EPS (Model III)	16.47	6	0.001	

RESULT AND DISCUSSION

Descriptive Statistics

From table 3 we can see that the average ROA and ROE 6.3% and 3.9% respectively whereas the average EPS is 2.9 rupees per share. The average real interest rate is 4.1% whereas the average exchange rate is 105 rupees per one US dollar. The average leverage is 51%. Moreover, standard deviations of ROA and EXR show that these variables are more volatile as compared to other variables.

Table 3: Descriptive Statistics

Variables	Mean	Median	Max	Min	Std Dev	Skewness
ROA	6.305	4.720	67.590	-160.300	11.520	-0.760
ROE	3.421	3.070	7.130	-4.610	1.944	0.182
EPS	2.940	2.630	6.820	-4.610	2.214	-0.044
FS	13612371	4464285	88016062	289357	1.712	0.025
LIQ	0.214	0.170	5.760	-10.490	0.957	-2.513
LEV	0.517	0.530	0.842	0.000	0.208	-0.146
GDP	3.959	4.670	5.840	0.990	1.607	-0.615
RIR	4.179	4.360	8.320	-4.370	3.275	-1.480
EXR	105.271	102.770	150.040	85.190	17.945	1.345

Correlation Analysis:

Correlational analysis of the variables is given below.

Table 4: Correlation Analysis

	ROA	ROE	EPS	FS	LIQ	LEV	GDP	RIR	EXR
ROA	1								_
ROE	.524**	1							
EPS	.412**	.249**	1						
FS	078**	.024	.043*	1					
LIQ	001	.008	.001	015	1				
LEV	237**	050**	110**	.080**	225**	1			
GDP	044*	044*	.011	.014	.020	089**	1		
RIR	079**	070**	014	.031	.007	070**	.484**	1	
EXR	105**	091**	.027	.096**	.022	010	116**	.232**	1

^{*} Significant at 0.10, ** Significant at 0.05, *** Significance at 0.01

The above table shows the relationship between variables and their significance. From the above table we can see that multicollinearity is not an issue here.

Regression analysis

In order to measure macroeconomic and firm specific factors impact on corporate profitability, panel regression model (fixed effects) is used. From Table 5 we can see that among firm specific factors liquidity affects corporate profitability significantly and positively in all three models which means that increase in liquidity increases corporate profitability. Empirical studies by Dogan (2013) and Mohammad and Usman (2016) also found positive affect of liquidity on ROA. Leverage on the other hand, has a strong negative impact on corporate profitability in all three models. The inverse relationship between leverage and corporate profitability indicates that as the firm increases the proportion of external financing (debt) in its financing mix, its performance declines. A possible explanation for this phenomenon can be that an increase in leverage increases the fixed cost of the firm thus increasing the riskiness of the firm. The last firm-specific factor, i.e., firm size, has a significant negative impact on corporate profitability in Model I and Model II whereas the impact is positive in Model III but the relationship is a weak one. The firm size results pertaining to its impact on corporate profitability in Model I and Model II are surprising as generally and theoretically it is believed that increase in firm size will lead to increase in corporate profitability which is not the case here. Among many explanations, one possible explanation for this can be that during the last few years, Pakistan economy was not doing well, interest rates were high and the economic growth rates during these years were not that promising which could have an impact on corporate profitability.

Furthermore, when firms grow inefficiencies can increase as it becomes difficult at times to manage the organization. Moreover, the increase in leverage could have led to an increase in firm size but the increase in riskiness as a result of an increase in borrowing could have affected corporate profitability. As the interest rates were high, the returns from these invested borrowed funds were not that high due to unstable economic environment which could have impacted corporate profitability.

Table 5: Regression Analysis

	Model I	Model II	Model III
Variables	DV = ROA	DV = ROE	DV = EPS
\boldsymbol{C}	39.200***	7.468***	-0.136
FS	-1.260**	-0.342***	0.136
LIQ	0.696**	0.134**	0.187***
LEV	-12.947***	-2.041***	-1.994***
GDP	-0.312***	-0.012	0.018
RIR	-0.270***	0.006	-0.009
EXR	-0.047***	-0.002	-0.001
R-Square	0.546	0.2968	0.2965
F-Statistics	10.616***	3.718***	3.712***
Durbin Watson	1.652	1.775	1.75

As far as macroeconomic variable's impact on corporate profitability, we can see from Table 5 that all macroeconomic variables (GDP, RIR, EXR) have a significant negative impact on corporate profitability in Model I only whereas they have weak relationship with corporate profitability in Model II and Model III. Surprisingly, GDP has an inverse impact on corporate profitability in Model I and Model II. Theoretically, GDP should have positively influenced corporate profitability because with growth in GDP, there are more opportunities for firms to exploit and increase their earnings, but it is not the case here. One possible explanation for this can be that during this time economic growth rates in Pakistan remained low and although there was positive but increase in inflation, raw material prices, import restrictions etc. could have a detrimental effect on corporate profitability. RIR also negatively influences corporate profitability in Model I and Model III and for Model I it is significant. Rise in interest rates not only increases cost of financing for the firm but it also increases the riskiness of the organization. Lastly, exchange rates have a negative effect on corporate profitability across all three models, but the impact is significant only for Model I. Increase in exchange rates means fall in value of local currency which has a negative impact of corporate profitability. The negative impact of exchange rates is understandable as Pakistan is predominantly an importing country and with increase in exchange rates out imports become dearer which increase not the cost of inputs but since we are an oil importing country and most of power generation is done through furnace oil therefore, increases the cost power generation and electricity prices thus increasing the cost of production. Empirical studies by Allayannis and Ofek (2001) and Inyiama and Ozouli (2014) also found negative impact of exchange rates and real interest rates on ROA.

CONCLUSION AND POLICY IMPLICATION

The aim of the paper is to analyze the impact of macroeconomic and firm specific factors on corporate profitability. Data for the period 2010-2019 is collected from listed Pakistani firms. Findings of the study reveal that corporate profitability is significantly and positively influenced by firm size and liquidity whereas corporate profitability is significantly and negatively influenced by leverage. GDP affects EPS positively but its impact on ROE and ROA is negative. Exchange rate also has a negative impact on corporate profitability. Real interest has a strong negative effect on ROA but on EPS and ROE, the effect is insignificant. Real interest has a strong negative effect on ROA but on ROE and EPS the effect is insignificant.

For managers this study is important as it provides valuable information about the behavior and impact of these factors on corporate profitability. The macroeconomic environment is constantly changing and it's up to the managers how to efficiently exploit opportunities available in the external environment. Businesses can make long term decisions which will enhance corporate profitability only if the macroeconomic environment remains stable. Therefore, it is important that policy makers must ensure to provide a stable and conducive environment where firms can take long term investment and financing decisions that will maximize the wealth of shareholders.

As far as the contribution of the study is concerned, this study contributes to empirical literature by providing more recent evidence of selected variables (macroeconomic and firm-specific) on corporate profitability. The macroeconomic environment constantly changes; therefore, it is imperative to analyze the behavior of these macroeconomic factors and how will they impact corporate profitability. Moreover, the extended duration of the study (ten years), is sufficient to capture any changes in the internal environment as well as external environment. Thirdly, further insights are provided into corporate profitability and its determinants and the individual influences of macroeconomic and firm specific factors on corporate profitability. Lastly, knowing the potential impact of these factors, managers and potential investors will be able to forecast the firm's future performance.

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