



## STRATEGICALLY DETERMINANTS THE IMPACT OF MACROECONOMIC FACTORS ON PHARMACEUTICAL COMPANIES PROFITABILITY IN BANGLADESH

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### AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration between both authors. Author MSI designed the study, performed the statistical analysis, wrote the protocol, wrote the first draft of the manuscript and managed the literature searches. Author MS managed the analyses of the study. Both authors read and approved the final manuscript.

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### ABSTRACT

This study has empirically investigated the impact of macroeconomic factors on the performance of the pharmaceutical company's profitability in Bangladesh. Data have been collected from four pharmaceutical companies in Bangladesh from the year 2000-2018. For analysis of data SPSS 22 has been used, and different statistical tools have used like, Descriptive Statistics, ANOVA, Regression, etc. Macroeconomic factors measured by Gross Domestic Product (GDP), Inflation rate (INF), Interest rate (IR), and Real exchange rate (RER), while company performance is indicated by Return on Asset (ROA). For this study, ROA has been selected as a Dependent variable and Gross Domestic Product (GDP) Inflation rate (INF), Interest rate (INT) and Real exchange rate (RER) selected as independent variables. 'Multiple Linear Regression' has been used to examine the degree of the relationship of macroeconomics factors towards the company's performance. The results conclude that there has a positive relationship between GDP, INF, and RER with ROA but their relations are not statically significant. In the meantime, there is a significant negative correlation between INT and ROA as the p-value is less than the key level. Inflation rate which has been used as the substitute of macroeconomic variable, conversely influence on firm profitability and macroeconomic variable i.e., GDP growth rate has a positive consequence on the firm profitability.

**Keywords:** Return on Assets (ROA); Gross Domestic Product (GDP); Real Exchange Rate (RER); inflation rate; interest rate; multiple linear regression.

### 1. INTRODUCTION

Production of pharmaceuticals is now one of the major capital-demanding white-collar manufactures in our country, which has grown incredibly over the past few decades. It is also the biggest ingredient developed technology sector within Bangladesh that has an immense role in the economic enlargement of

the country. Bangladesh is one of the most flourishing countries in reaching the Millennium Development Goals (MDGs). Consequently, Bangladesh is on the path to develop approaches and action taking for reaching aspirations of the Sustainable Development Goals (SDGs). 'Good Health and Well-being' is one of the key goals of SDGs that directly includes pharmaceuticals.

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Undoubtedly the pharmaceutical industry plays an important role in achieving this goal. A country Macroeconomic factors can impact directly or indirectly the profitability of pharmaceutical industries. The present study aims to explore that how Gross Domestic Product (GDP), Inflation rate (INF), Interest rate (IR), and Real exchange rate (RER) and Return on Asset (ROA) impact pharmaceutical industries profitability in Bangladesh. We have captured four selected renowned pharmaceutical companies and tried to compute the connection between profitability and four macroeconomic variables. This Study only shows macroeconomic factors and illustrates their impact or influences; either negative or positive on the industry profitability.

## 2. LITERATURE REVIEW

In this paper, we have studied the determinants impact of Macroeconomic factors on Pharmaceutical Companies' Profitability in Bangladesh. In the precedent literature, we can come across many studies on the profitability of the other industries both at the national and international levels. Following, In Malaysia for the year 1996-2015, insurance company's profitability has been affected by macroeconomic factors like Gross Domestic Product (GDP), and Interest rate (IR) & Consumer Price Index (CPI). The study has found that CPI and GDP negatively correlate to Return on Asset (ROA) significantly on the other have Interest rate negatively correlate with ROA [1].

Dewi et al. [2] this paper shows, Indonesia is fast moving consumer goods profitability that influence by macroeconomic factors. Their study shows that inflation rate, exchange rate and unemployment rate have insignificantly influence on Return on Asset (ROA). Their partial t-test shows only Gross Domestic Product (GDP) is statistically significance impact on ROA over the period of 1998-2016. Islam [3] have found that Bangladesh has huge impact of macroeconomics factor in import expenditure 1971-2018. There was a positive relation between import expenditure and interest rate. He has used different types of statistical tests like Johansen test for co-integration, Augmented Dickey-Fuller (ADF), Error Correction Model (ECM), CUSUM, and CUSUM square test. Azizi & Hossen Inabdi [4] have found that two dimensions of Perceptual map include: the focus of mission elements and focus of the mission. Iranian companies have placed on the quarter of support, and Turkish and American companies placed on the quarter of the market. Indian companies

are placed on the quarter of output and input market.

## 3. OBJECTIVES

The broad objective of this study is to find the impact of selected macroeconomic factors on Pharmaceutical Companies' profitability throughout 2000-2018 in Bangladesh. We are looking forward to some specific objectives to finding out a broad objective. The specific objectives are:

- To look at the impact of interest rate on the Pharmaceutical industry's profitability in Bangladesh.
- To identify the impact of the country's overall GDP on the Pharmaceutical industry's profitability in Bangladesh.
- To explore the influence of the Interest rate on the Pharmaceutical industry's profitability in Bangladesh.
- To find out the impact of the real exchange rate on the Pharmaceutical industry's profitability in Bangladesh.

## 4. METHODOLOGY

This study is based on secondary data. This study does not deal with any primary sources of data. Paper has used different types of sources for collecting data, such as the Bangladesh Bureau of Statistics, the central bank of Bangladesh (Bangladesh Bank), Pharmaceutical Company annual reports and different Journals, etc. The Paper has been used, Inflation rate, real exchange rate, GDP (Gross Domestic Product) growth rate, and Interest rate as independent variables and Return on Assets as the dependent variable. For this study, we have used 19 years' time-series data (2000-2018). To examining data, SPSS (Statistical Package for Social Science) 22 version has been used. To finding out the paper goals by different types of the test had been applied, like descriptive statistics, Pearson Correlation of Coefficient, venova Multiple Linear Regression. For the availability of data, we have selected four pharmaceutical companies, Square Pharmaceutical Company Limited, ACI Limited, Beximco Pharmaceutical Company Limited, and Reneta Pharmaceutical Company Limited in Bangladesh.

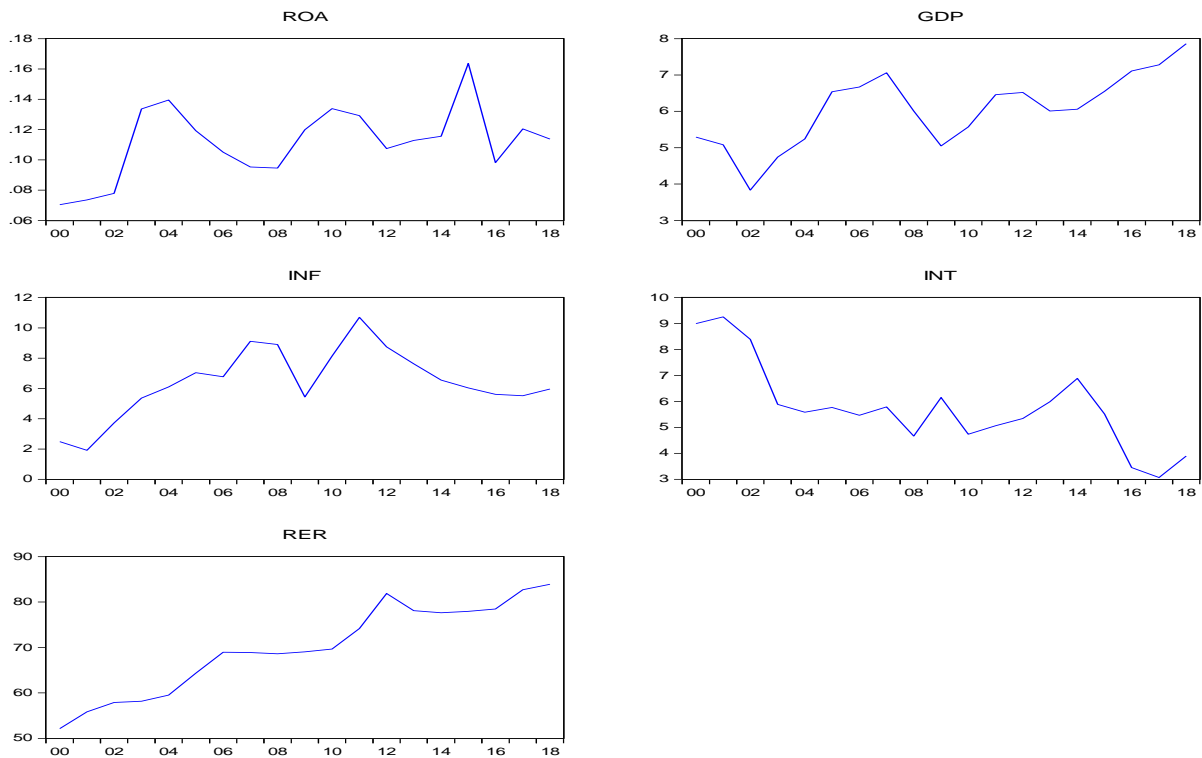
The descriptive statistic result is showing that gross domestic product (GDP) growth rate, Inflation rate, interest rate and real exchange rate are asymmetrically distributed. Table 1 also shows positive Kurtosis meaning that all variables' distribution is peaked in this paper.

**Table 1. Descriptive statistics**

	ROA	GDP	INF	INT	RER
Mean	0.111754	6.048947	6.404737	5.783263	69.87842
Median	0.113722	6.060000	6.100000	5.582000	69.04000
Maximum	0.163661	7.860000	10.70000	9.257000	83.90000
Minimum	0.070385	3.830000	1.910000	3.069000	52.14000
Std. Dev.	0.023679	1.006892	2.225914	1.671086	9.792427
Skewness	0.047502	-0.305271	-0.204138	0.632440	-0.252036
Kurtosis	2.800861	2.600648	2.805091	3.007372	1.879928
Jarque-Bera	0.038540	0.421360	0.162038	1.266649	1.194348
Probability	0.980915	0.810033	0.922176	0.530824	0.550365
Sum	2.123334	114.9300	121.6900	109.8820	1327.690
Sum Sq. Dev.	0.010092	18.24898	89.18447	50.26551	1726.049
Observations	19	19	19	19	19

(Sources: Estimated)

Abbreviation: ROA: Return of Asset, GDP: Gross Domestic Product, INF: Inflation Rate, INT: Interest Rate and RER: Real Exchange Rate.



**Graph 1. Visual plot**

Graph 1 showing the trend all the variables from 2000 to 2018.

Based on Table 2, at 5% significant level, there is a weak relationship between GDP, INT and RER. There has a positive relationship between GDP, INF and RER with ROA but their relations are not statically significant. Meanwhile, there is a significant negative

relationship between INT and ROA because the p-value is a less than significant level.

Here R Square is .365 or 36.5%, which means that only 36.5% variance or fluctuation in ROA can be explain by our independent variables such as Real exchange rate, Inflation rate, Gross domestic product and interest rate jointly.

**Table 2. Pearson correlation of coefficient**

Indicates the result of Pearson Correlation of Coefficient for ROA		
Variables	Pearson correlation coefficient	p-value
GDP	.206	.398
INF	.409	.082
INT	-.523	.022
RER	.390	.099

**Table 3. Model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.604 <sup>a</sup>	.365	.184	.0213893

a. Predictors: (Constant), rer, Inf, gdp, Int

**Table 4. ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.004	4	.001	2.015	.148 <sup>a</sup>
	Residual	.006	14	.000		
	Total	.010	18			

a. Predictors: (Constant), rer, Inf, gdp, Int

b. Dependent Variable: roa

**Table 5. Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.176	.081		2.159	.049
	gdp	-.011	.008	-.451	-1.287	.219
	Inf	.002	.003	.156	.589	.566
	Int	-.008	.005	-.588	-1.665	.118
	rer	.001	.001	.223	.606	.554

a. Dependent Variable: roa

From Anova table we can see p-value is .148 or 14.8% which is greater than 5% significant value, so we can say that our F-value 2.015 is not statistically significant. So it can be said that our independent variables cannot explain our dependent variable statistically.

From multiple regression analysis we can see that GDP, Inf, Int and Rer are not statistically

## 5. FINDINGS AND DISCUSSION

The present paper examines the impact of macroeconomic factors on the performance of the pharmaceutical company's profitability in Bangladesh. Profitability is the capability of a business to utilize its capitals to make revenues in the surfeit of its expenses. After conducting the study through secondary data, the study tries to determine the connection between profitability and four independent variables. The results conclude that there

has a positive relationship between GDP, INF, and RER with ROA but their relations are not statically noteworthy.

## 6. CONCLUSION

ROA is a pointer of how well a company exploits its assets, by ascertaining how profitable a business is relative to its total assets and changes in interest rates can have both positive and negative effects on the markets. After examining the study through secondary data, the findings exposed that there is a considerable negative correlation between INT and ROA as the p-value is less than key level. Inflation rate which has been used as the substitute of macroeconomic variable, conversely influence on firm profitability and macroeconomic variable i.e., GDP growth rate has positive consequence on the firm profitability. The Pharmaceuticals industry of Bangladesh has become one of the fastest rising areas in last few years. In this study, only four scheduled

companies under the stock exchanges have been considered [5]. Accordingly, all pharmaceutical companies in Bangladesh can be measured for advance study by other researchers [6].

### **DISCLAIMER**

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

### **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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