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# Performance of Firms and Economics Measures in Pakistan

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**Abstract**

**Performance of Firms and Economics Measures in Pakistan is studied in this paper, For this research the population has been taken from the chemical sector of Pakistan and from 36 companies we have selected eight chemical companies of Pakistan and we have compiled last 11 years data of these companies from (2006-2016). We have taken randomly eight chemical companies of Pakistan for our research. Dependent Variable is Sales and Independent Variables areForeign exchange reserves, exports and imports. The impact of imports, exports and foreign exchange reserves in regression statistics are positive and highly strong because the value is above 60% which shows that the relationship of these variables is strong. In economic measures (imports, exports and foreign exchange reserves) just performance depends on imports because only the p value of imports is less than 5%. All other independent variables have no relation with dependent variables.**

**Keywords:** Sales, Foreign exchange reserves, exports and imports

## Introduction

The economy of Pakistan is the 24th largest in the world in terms of purchasing power parity (PPP), and 43th largest in terms of nominal gross domestic product. Pakistan has a population of over 190 million (the world's 6th-largest), giving it a nominal GDP per capita of $1,429, which ranks 140th in the world. Pakistan is a developing country. The Pakistan's economy is semi

industrialized, with centre of growth along the Indus River. Primary export commodities include textiles, leather goods, sports goods, chemicals and carpets/rugs. Pakistan is currently undergoing a process of economic liberalization, including privatizing of all government corporations, aimed to attract foreign investment and decrease budget deficit. In 2014, foreign currency reserves crossed $18.4 billion which has led to stable outlook on the long term rating by standard and poor's. In 2016, BMI Research report named Pakistan as one of the ten emerging economies with a particular focus on of its manufacturing hub. In October 2016, the IMF chief Charistine Lagarde confirmed her economic assessment in Islamabad that Pakistan's economy was out of crisis. The World Bank predicts that by 2018, Pakistan's economic growth will increase to a "robust" 5.4% due to greater inflow of foreign investment, namely from the **China-Pakistan Economic Corridor**. Pakistan's industrial sector accounts for about 24% of GDP and ranks 41 in the World and 55 Worldwide in factory output and industrial sector. The share of industrial sector in the Pakistan's GDP has increased by 0.40% point in the outgoing fiscal and that of agriculture and services sector has slightly declined according to latest official survey report (Economy of Pakistan 2010). The major industries include textile, cement, fertilizer, edible oil, sugar, steel, tobacco, chemicals, machinery and food processing. The government is privatizing large-scale parastatal units, and the public sector accounts for a shrinking proportion of industrial output, while growth in overall industrial output (including the private sector) has accelerated. Government policies aim to diversify the country's industrial base and bolster export industries.

**GDP**

The gross domestic product (GDP) measures of national income and output for a given country's economy. The gross domestic product (GDP) is equal to the total expenditures for all final goods and services produced within the country in a stipulated period of time.

**GDP in Pakistan**

The Gross Domestic Product (GDP) in Pakistan was worth 271.05 billion US dollars in 2015. The GDP value of Pakistan represents 0.44% of the world economy. GDP in Pakistan averaged 63.32 USD Billion from 1960 until 2015, reaching an all time high of 271.05 USD Billion in 2015 and a record low of 3.71 USD Billion in 1960. GDP Annual Growth Rate in Pakistan averaged 4.91% from 1952 until 2015, reaching an all time high of 10.22 percent in 1954 and a record low of -1.80 percent in 1952.

**Import**

Imports are foreign goods and services that residents of a country buy. Residents include businesses and the government. It doesn't matter what the imports are or how they are sent. They can be shipped, sent by email, or even hand-carried in personal luggage on a plane. If they are produced in a foreign country and sold to domestic residents, they are imports.

**Imports of Pakistan**

In 2014 Pakistan imported $47.4B, making it if the 53rd largest importer in the world. During the last five years the imports of Pakistan have increased at an annualized rate of 7.7%, from $32.7Bin

2009 to $47.4B in 2014.

**Export**

Exports are the goods and services that are made in one country and transmitted to foreigners. It doesn't matter what the good or service is. It doesn't matter how it is sent. It can be shipped, sent by email, or hand-carried in personal luggage on a plane. If it is produced domestically and sold to someone from a foreign country, it is an export.

**Exports of Pakistan**

In 2014 Pakistan exported $28.3B, making it the 67th largest exporter in the world. During the last five years the exports of Pakistan have increased at an annualized rate of 6.9%, from $28.3B in 2014.

**Foreign Exchange Reserves**

Foreign-exchange reserves is money or other assets held by a central bank or other so that it can pay if need be its liabilities, such as the currency issued by the central bank, as well as the various bank reserves deposited with the central bank by the government and other financial institutions.

**Foreign Exchange Reserves of Pakistan**

Foreign Exchange Reserves in Pakistan increased to 24025.80 USD Million in October from 23619.40 USD Million in September of 2016. Foreign Exchange Reserves in Pakistan averaged 15117.75 USD Million from 1998 until 2016, reaching an all time high of 24025.80 USD Million in October of 2016 and a record low of 1973.60 USD Million in December of 1999.

The main objective of the study is to estimate the impact of growth in industrial sector on imports exports and foreign exchange reserves of Pakistan. The study is planned to analyze the impact of industrial sector on imports exports and foreign exchange reserves. This study includes five portions. First portion describes brief introduction about topic, objective, and organization of study. Second portion presents the review of existing literature, third portion discusses the methodology used in the paper, fourth portion gives the results and last portion concludes the Paper and gives suggestion.

## Literature Review

Commander and Nikoloski (2010) analyze whether commonly used measures of institutions have any significant, measurable impact on performance, whether of countries or firms. We look at three 'levels' of institutions and associated conjectures. The first concerns whether the political system affects performance. The second concerns whether the business and investment environment affects the performance of countries and the third concerns whether perceived business constraints directly affect the performance of firms. This paper takes a close look at how robust the relationship between institutions in which the independent variables are political regimes, components of the business environment, economic performance and democracy and the dependent variables are growth in per capita income and real GDP growth. The authors used

regression and oils estimators to explain the relationships. In this paper the results are ambiguous, In the case of political institutions; none of the explanatory variables was significant. It would appear that issues of measurement – including bias arising from subjective evaluation mis specification, complexity and non linearity are all relevant.

Hegazy and Tawfik (2010) investigate challenges facing auditing firms in designing and measuring their performance and discusses why and how the balance scorecard (BSC) could support the auditing firms overcome such challenges. Data were collected using case study approach; two auditing firms, one of the Big 4 and a medium size auditing firm with international affiliation operating in the Egyptian markets were selected. Interviews, document analysis and participant observations were used in the analysis of each firm performance measurement system. This paper aimed at answering a number of research questions. The results based on the case studies, interviews, documents analysis and observations in two Egyptian auditing firms, the performance measurement systems analysis showed that a BSC would be viable yet its application varies from large to medium size firms. .Finally, more research is needed to continue to explore the concept of coherence in performance measurement systems and in particular the BSC when such tools are implemented in auditing firms, and to examine the extent to which it could be helpful to understand the viability of applying the BSC for auditing firms.

According to Klerk (2012), Accounting has always been seen as a profession which is exact and reporting on facts which are traceable and auditable. It can be stated that accounting no longer represents the data that is needed for shareholders to make a judgment about the performance of their investments, or for auditors and regulators to determine compliance to regulations. Traditional metrics have become inadequate in today's business environment of competition, knowledge brokering and globalism. He differentiated between traditional and first class metrics and divided them into financial and non-financial components. The most important financial metrics such as EPS, earnings growth, ROA, return on sales and cash flow, should be enhanced by first class metrics measuring the economic profit of a company, such as EVA, Value based management, market value added and the balanced scorecard. Stern Stewart's approach of using the EVA is a start towards solving this problem. The main problem with the EVA approach is to determine the cost of capital, or the opportunity cost, over the lifetime of the project at hand.

Venanzi (2010) wrote in this article that the increased efficiency at the capital markets requires that capital allocation within companies become more efficient. A value based management framework that better reflects opportunities and pitfalls, is therefore necessary. Subsequently, value metrics were devised that explicitly acknowledged that both equity and debt have costs, and thus there was a need to incorporate financing risk-return into performance calculations. The dependent variables are growth rate and economic rate of return In this article the independent variablesare economic value added (EVA),the cash flow return on investment (CFROI),the shar eholder value approach (SVA).. In this paper the regression and correlation are used. The focus of this article is a review of the main value-based measures: the economic value added (EVA), the

cash flow return on investment (CFROI) and the shareholder value added (SVA). The objective is contributing to the developing dialogue on the appropriateness of different financial performance measures by reviewing their differences as well as their similarities in terms of measurement, association with market financial performance and DCF approach, implications on managerial incentives, and by highlighting their respective strengths and weaknesses.

Richard, Devinney, Yip and Johnson (2008) analyze the operationalization and measurement of performance highlights the limited effectiveness of commonly accepted measurement practices in tapping this multidimensionality. By synthesizing the literature, the foundations are laid for the improved measurement of performance in management research. In this article the dependent variable is organizational performance and the independent variables are net operating profit after tax (NOPAT), return on assets (ROA), return on capital (ROC), return on equity (ROE), return on investment (ROI), return on invested capital (ROIC), return on net assets (RONA), return on Sales (ROS), earnings per share (EPS). From a theoretical perspective, parametric approaches used in the literature are based on central tendencies. The relationship between measures and performance is also influenced by which measures the firm uses internally and how these are embedded into incentive and control systems within the firm; e.g., the firm's own key performance indicators (KPIs).

In this paper Maydeu-Olivares and Lado (2010) provides the guide lines for improving the market share, premium growth and profitability of European Union insurance firms. .The present study attempts to provide a necessarily partial model for how this impact takes place using innovation degree, innovation performance and customer loyalty as intermediate variables. The study targets the insurance industry in the European Union. The dependent variables are market orientation and economic performance. The independent variables are market share(MS), premium growth(PG), profitability(PROF), innovation degree(INNODR), innovation performance(INNPERF), customer loyalty(LOYAL). Chi-square distributions, correlation, goodness of fit, standard deviation, inter correlation, multiple correlations. The performance of the market orientation's behaviors requires complex organizational knowledge that cannot easily be imitated by competitors. Thus, we hypothesize that the satisfaction of profitable markets permits the firm to achieve a psychologically differential position that leads to brand loyalty and thus to higher profits.

Growe, DeBruine, Lee and Maldonado (2014) examine the profitability and performance measurement of U.S. regional banks during the period 1994-2011, using the generalized method of moments (GMM) estimator technique. They use bank-specific, industry-specific, and macroeconomic determinants of profitability contemporaneous with our performance indicators. They follow the accounting fundamental analysis path in explaining the bank performance. The dependent variable is bank profitability, and the independent variables are return on assets (ROA), return on equity (ROE), consumer price index (CPI) and gross domestic product (GDP). Regression and auto correlation are used to determine the bank profitability. The results show that

profitability contemporaneous with the determinants is negatively related to a measure of noninterest expenses, provisions for credit losses and measures of asset quality. Noninterest income did not relate significantly to profitability.

Gerakos and Kovrijnykh (2013) propose a parsimonious stochastic model of reported earnings that links misreporting to performance shocks. They also propose a stylized dynamic model of earnings manipulation and demonstrate that both earnings smoothing and target-beating considerations result in the same predictions of negative second-order autocorrelations. The dependent variable is earning. Autocorrelation and covariance is used to check the performance shocks and misreporting of earning. In result main analytical prediction is that misreporting leads to a negative second-order autocorrelation in the residuals from a regression of current earnings on lagged earnings. The authors specify a methodology to estimate the intensity of misreporting and to create estimates of no manipulated earnings. Their estimates of no manipulated earnings are more correlated with contemporaneous returns and have higher volatility than reported earnings.

Hansen and Wernerfelt (1989) decompose the inter-firm variance in profit rates into economic and organizational components. There are two major streams of research on the determinants of firm performance. One is based primarily upon an economic tradition, emphasizing the importance of external market factors in deter- mining firm success. The other line of research builds on the behavioral and sociological paradigm and sees organizational factors and their fit with the environment as the major determinants of success. The dependent variables are firm performance and the independent variables are growth, concentration, capital intensity, and advertising intensity. In the result the authors find that both sets of factors are significant determinants of firm perform1ance. Further findings are that the two effects are roughly independent and that organizational factors explain about twice as much variance in profit rates as economic factors.

Aulakn and Teegen(2000) develops a framework for examining the export strategies of firms from emerging economies and their performance in foreign markets. The independent variables are exports in the firms' sales growth, market shares, and competitive positions,. The dependent variable is profitability of export sales. The hypotheses were tested through ordinary least squares (OLS) regression analysis. Authors tested on a sample of firms from Brazil, Chile, and Mexico and find that cost-based strategies enhance export performance in developed country markets and differentiation strategies enhance performance in other developing countries. Adapting marketing mix variables to the specific needs of developed country markets also enhances export performance. The relationship between geo- graphical diversification and export performance is nonlinear.

Al-Matari, Al-Swidi and Fadzil (2014) reviewed the measurements that are related to the corporate governance. A close look at the literature of corporate governance and firm performance reveals that different measures have been used by them to measure the performance. They

classified those measurements into accounting-based and market-based indicators. The dependent variable is company's profitability and the independent variables are return on assets (ROA), return on equity (ROE), return on sales (ROS), profit margin (PM), earnings per share (EPS). Performance measurement has great significance in effective management of an organization and in the enhancement of the processes since only measurable things is manageable. Hence, the enhancement of the organizational performance requires some measurements to determine the impact of the level of organizational effectiveness upon business performance.

## Research Methodology

### Introduction

Research methodology shows the framework in which research data is collected, utilized and explaned in the current study. It also shows the restrictions for researcher's findings. For this research the population has been taken from the chemical sector of Pakistan and from 36 companies we have selected eight chemical companies of Pakistan and we have compiled last 11 years data of these companies from (2006-2016). We have taken randomly eight chemical companies of Pakistan for our research. The main source of gathering data as mentioned below through annual reports of these chemical companies from Pakistan Stock Exchange Listed Companies Reports. This study is descriptive, explanatory and analytical research. So, we can say that the current research is a mix of both descriptive and exploratory analysis. It is descriptive in the sense of describing what performance of firms and economic measures (import, export and foreign exchange reserves). The main aim of our research is to study the performance of firms and economic measures.

In above chapter we have discussed literature review from different articles to find out the results of our study regarding the relationship between Profit after Tax, Earning per Share and Sales of chemical industries of Pakistan and Foreign exchange reserves, exports and imports of Pakistan. This chapter will discuss the empirical finding and results of the study. This chapter also provides proves for results. On the basis of previous discussion, all obtained knowledge and practical insinuation has been applied to this chapter. To provide the probable results, different writers have discussed the impact of Foreign exchange reserves, exports and imports on Profit after Tax, Earning per Share and Sales of chemical industries. Different international and Pakistani writers used different research tools and techniques to study the relationship and interdependency of different dependent and independent variables. Many researchers used different analysis techniques to find out the answers of their research, specifications regarding the environment of Pakistan. On the basis of above discussion, this paper will use regression analysis to find out the answers of research questions and objective.

### Research Design

This research work is designed in such a way that it helps to understand performance of firms and

economic measures. The study area of this research work is chemical industries of Pakistan. Data will be gathered mainly from annual reports as generated by different chemical companies. Other different sources will also be used which includes Website of State Bank of Pakistan, Business Recorder, different Journals and through Internet. It will be a quantitative research based on secondary data. The data for this research can be analyzed using the instrument stated above and then the analysis tool through which we can get the output will be by Regression. We will use statistical tools for research results. Statistical Tools will be Regression and Correlation statistics analysis on different variables.

**Variables of Research**

A variable is defined as anything that has a quantity or quality that varies. The dependent variable is the variable a researcher is interested in. An independent variable is a variable believed to affect the dependent variable.

**Dependent Variable**

Sales

**Independent Variables**

Foreign exchange reserves, exports and imports

**Secondary Source of Data**

Secondary source of data means that the data which is already used for any other purpose. On the other hand, there is nothing regarding the data collection that has been collected from survey technique or questionnaire. The whole research based on the secondary source of data.

**Sample Selection Criteria**

Ajmair (2014) studied the relationship between economic growth and different components of industrial sector of the economy of Pakistan. The main source of gathering data as mentioned through balance sheet analysis of joint stock companies of chemical industries and using the annual data by Khidmat and Rehman (2014). Therefore this paper will also work on annually data of 11 years. Sequential series method of sampling has been used to collect the sample of this study.

**Period of the Study**

The period of study is 11 years (From 2006 to 2016) of both dependent and independent variables.

**Research Technique**

The whole study adopted the techniques of different writers; all the adopted methods used by this research have been properly referenced and cited. SPSS has been used for statistical results.

**Research Tools**

Many researchers used different analysis techniques to find out the answers of their research, specifications regarding the environment of Pakistan, different methods were taken up to the mind, there were lot of assumptions regarding different techniques. The study area of this research work is chemical industries of Pakistan. The statistical tools used in this article are regression and Correlation statistics.

**Regression Analysis**

Regression is a statistical measure used in finance, investing and other disciplines that attempts to determine the strength of the relationship between one dependent variable (usually denoted by Y) and a series of other changing variables (known as independent variables). Regression helps to understand the relationships between variables.

The two basic types of regression are linear regression and multiple linear regression, although there are non-linear regression methods for more complicated data and analysis. Linear regression uses one independent variable to explain or predict the outcome of the dependent variable Y, while multiple regressions use two or more independent variables to predict the outcome. Regression can help predict sales for a company based on weather, previous sales, GDP growth or other conditions. The general form of each type of regression is:

Linear Regression: $Y = a + bX + u$

Multiple Regression: $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + ... + b_tX_t + u$

Where:

Y = the variable that you are trying to predict (dependent variable)

X = the variable that you are using to predict Y (independent variable)

a = the intercept

b = the slope

u = the regression residual

Regression takes a group of random variables, thought to be predicting Y, and tries to find a mathematical relationship between them. This relationship is typically in the form of a straight line (linear regression) that best approximates all the individual data points. In multiple regressions, the separate variables are differentiated by using numbers with subscript. Regression is often used to determine how many specific factors such as the price of a commodity, interest rates, particular industries or sectors influence the price movement of an asset.

Ho: there is NO positive correlation between dependent (Sales) and independent
(Foreign exchange reserves, exports and imports) variables

H1: there is positive correlation between dependent (Sales) and independent
(Foreign exchange reserves, exports and imports) variables

$\alpha = 5\%$

**Decision Criteria** = Reject Ho, if P value is less than α. Or "Accept" Ho, if P value is greater than α. The standard for analysis will depend on 95% level of significance. In results of regression if a P values is less than α. It means, if the correlation among the variables will be more than 95 than relationship will be accepted otherwise rejected. On the other hand, correlation analysis is also helpful to find out the results of the studies. Correlation analysis will clearly show the positivity or negativity of the relationship between the variable. Therefore, analyzing this situation there will be ease of understanding the result of analysis.

**Correlation**

The correlation is one of the most common and most useful statistics. A correlation is a single number that describes the degree of relationship between two variables. Let's work through an example to show you how this statistic is computed.

**Calculation of Correlation**

Now we're ready to compute the correlation value. The formula for the correlation is:

$$r = \frac{N\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{[N\Sigma x^2 - (\Sigma x)^2][N\Sigma y^2 - (\Sigma y)^2]}}$$

Where:

- $N$ = number of pairs of scores
- $\Sigma xy$ = sum of the products of paired scores
- $\Sigma x$ = sum of x scores
- $\Sigma y$ = sum of y scores
- $\Sigma x^2$ = sum of squared x scores
- $\Sigma y^2$ = sum of squared y scores

We use the symbol **r** to stand for the correlation. Through the magic of mathematics it turns out that r will always be between -1.0 and +1.0. If the correlation is negative, we have a negative relationship; if it's positive, the relationship is positive.

**Conclusion**

Many researchers used different analysis techniques to find out the answers of their research, specifications regarding the environment of Pakistan. Different methods were taken up to the mind. There were lot of assumptions regarding different techniques but Ajmair (2014) Khidmat and Rehman (2014) analysis techniques it is founded that correlation statistics regression are the best techniques to find out the results. On the basis of above discussion, this paper will use regression and correlation analysis to find out the answers of research questions and objective. All tools of analysis have same results; first regression analysis should show that there is positive relationship among the variables.

**Analysis**

In this paper we analyze the performance of industrial sector and economic measures. Simple linear regression technique is used to analyze the impact of different determinants one by one. The impact of imports, exports and foreign exchange reserves in regression statistics are positive and highly strong because the value is above 60% which shows that the relationship of these variables is strong. In economic measures (imports, exports and foreign exchange reserves) just performance depends on imports because only the p value of imports is less than 5%. All other independent variables have no relation with dependent variables.

**SUMMARY OUTPUT**

| ***Regression Statistics*** | |
|---|---|
| Multiple R | 0.948373 |
| R Square | 0.899412 |
| Adjusted R Square | 0.856303 |
| Standard Error | 532.5292 |
| Observations | 11 |

**ANOVA**

| | *Df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 3 | 17749920.01 | 5916640.002 | 20.8635 | 0.0007 |
| Residual | 7 | 1985111.619 | 283587.3741 | | |
| Total | 10 | 19735031.63 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* |
|---|---|---|---|---|---|
| Intercept | 5970.236174 | 4327.061607 | 1.37974 | 0.2101 | -4261.63867 |
| Foreign Exchange reserves | -2.291E-06 | 1.02929E-06 | -2.22710 | 0.0612 | -4.7263E-06 |
| Export | -349.092856 | 233.7158698 | -1.49360 | 0.1789 | -901.74992 |
| Import | 93.12627154 | 28.25775464 | 3.29560 | 0.0132 | 26.30729963 |

**CORRELATION**

| | *Foreign Exchange Reserves* | *Export* | *Import* | *Sales* |
|---|---|---|---|---|
| Foreign Exchange *Reserves* | 1 | | | |
| Export | -0.199 | 1 | | |
| Import | 0.0254 | -0.793 | 1 | |
| Sales | -0.200 | -0.781 | 0.903 | 1 |

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