DETERMINANTS OF THE PERFORMANCE OF TRACTOR INDUSTRY IN PAKISTAN – A CASE STUDY OF MILLAT TRACTOR

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ABSTRACT

Tractor Industry in Pakistan is an important part of Pakistan Automobile Industry. It contributes substantially along with the entire automobile industry to the economic development of the country in terms of GDP, Employment, and Foreign Direct Investment. The study aims at finding out the macroeconomic variables which significantly influence the performance of tractor industry in Pakistan. For this purpose, Millat Tractor has been selected as a sample. The impact of seven macroeconomic variables has been examined on the five dependent variables of the firm. The regression analysis reveals that all of the dependent variables are significantly influenced by one or more macroeconomic variables except Return on Equity. Consumption Rate is the most frequent predictor which influences three dependent variables. Hence it is concluded that the performance of Tractors Industry is significantly, though partially, influenced by macroeconomic factors.

Key words: *Tractor Industry, Macroeconomic Variables, Performance, GNI, Unemployment*

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1. INTRODUCTION

Automobile industry is one of the key sectors for economic development of a country. It generates many economic activities that play a vital role in the economic growth. Pakistan is a developing economy and it does not have a very strong industrial base. The automobile sector in the country is not very stable to support the economy to a desired extent. Therefore, this is necessary to take the measures in order to strengthen the sector and enable it to provide assistance to the growth and development of the economy.

The automobile industry in Pakistan produces a wide range of vehicles. The tractor, however, is considered to be one of the least important vehicles in the industry. On the other hand, the farm tractors are inevitable for the growth and development of agriculture sector in the country. So, it is of utmost importance to address the performance of tractor industry and fine out the factors which influence it.

The performance of original equipment manufacturers is influenced by many social, economic, political and technological factors. However, economic environment plays the most significant part in influencing the performance of industry. The most dominant factors are macroeconomic determinants which include per capita income, inflation, unemployment, discount rate, consumption rate, foreign direct investment and rate of exchange. All of them collectively influence the profitability and sales of the firms.

The objective of this study is to find out the macroeconomic determinants of the performance of Farm Tractor Industry of Pakistan from 1995 to 2010.

2. REVIEW OF LITERATURE

The review of literature is presented in following three segments.

2.1 Performance Measurement

Performance is defined as "a state of competitiveness of the organization, reached through a level of efficiency and productivity which ensures a sustainable market presence". (Boulescu, M., Ghi, M. Mare, V. 2002).

There are many approached to performance measurement and Key Performance Indicators approach is considered to be the best one. This method helps the organization to define and measure the progress in order to achieve goals and mission (Reh, 2005).

The scope of the study is limited to key financial indicators to measure the performance and the most significant measures are Sales Volume, Annual Profit and Return on Assets (ROA), Return on Equity (ROE) and Net Profit Margin (NPM)

Delmar et al (2003) explained various performance measures and recommended that if only one indicator had to be chosen as a measure of firm growth, the preferred one should be sales. Further, as Barkham et. al (1996) explained, sales is also the indicator favoured by entrepreneurs themselves.

Rasiah (2010) was in favour of profitability ratios and he considered Return on Assets as one of the most important ratio. He stated that higher the ROA, better the firm's profit. Berger and Humphrey (1997) also advocated the use of profitability by using this ratio considering it to be a good standard. Rushdi and Tennant (2003) also mentioned that ROA is helpful in measuring the performance and profitability.

Return on Equity (ROE) is another significant profitability ratio in order to measure the corporate financial performance (Rappaport 1986:31). Monteiro (2006:3) claimed that the ratio was very important from investors' view point. Ugur Z. (2006) considered this ratio as an inevitable measure for profitability.

Net Profit Margin is also a vital ratio that depicts how much profit is generated on each unit of money invested in sales. Where Sales is the sales revenue and Net Profit is the income derived after all the costs and expenses from sales revenue.

2.2 Determinants of the performance

Macroeconomic variables influence the profitability and sales of firms to a great extent. For instance, growth in Gross National Income may result in rise in sale volume of a firm; inflation causes rise or fall in profits; unemployment may generate variations in sales volume, Foreign Direct Investment may improve the returns on investments and so on.

Shahabudin (2009) stated that many macroeconomic variables such as level of income, rate of interest and rate of unemployment had significant influence on car sales as well as on profit. Benabou (1992) also derived that inflation and markup had a small but significant negative impact on markup. Ganley and Salmon (1997) conducted a research in the UK in order to find out the effects of monetary policy on the output of industries. They concluded that manufacturing output declined sharply and rapidly in response to contracting monetary policy. Hayo and Uhlenbrock (1999) revealed that increase in interest rate had a negative correlation

with output of nonferrous metal, chemical, iron, steel, electrical engineering and office machinery related industries. However, the impact of monetary policy varies from one industry to another due to size of firms, nature of industry and reliance on foreign elements (Ganley and Salmon 1997). Krugman (1987) also established that the depreciation in the vallue of importer's currency may raise the exports if the goods have greater elasticity of demand. However, if the degree of elasticity is low, the deprecation would have no significant impact on export sales. This is a natural phenomenon that a rise in consumption expenditures reflects a rise in aggregate demand for goods and services. As a result, the sales revenue goes up due to a rise in quantity sold and price level. Consumption expenditures affect the sales of a firm and an upsurge in consumption gives birth to price hike due to expansion in demand. So, it also influences the profits and profitability of firms in general. In addition to this, many researchers have attempted to find out the impact of foreign direct investment on performance of industries. Blomström and Kokko (1997) established empirically that FDI increases productivity and growth of the firms in the host countries. Alfaro (2003) also analyzed the cross-country data for the period 1981-1999 and drew mixed response.

2.3 Tractor Industry in Pakistan

There are two firms which produce tractors in the country and they are Millat Tractor and Al-Ghazi Tractor. Millat Tractor was formed in 1964 to market Massey Ferguson (MF) Tractors in Pakistan. In 1967, it established a plant to assemble the tractors which were imported in semi-knocked down conditions (Millat Tractors, 2010).

Al-Ghazi Tractors was incorporated in 1983 in Punjab. It plant is situated in Dera Ghazi Khan. It is engaged in the production of manufacture New Holland tractors and generators in collaboration with Fiat New Holland. Al-Futtaim Group of Dubai took over the control of the company in 1991 by acquiring 50% of the total equity. By the end of 2010, the company had the 43% market share whereas 57% market share was captured by Milat Tractor.

3. RESEARCH METHODOLOGY

The research is primarily a quantitative and causal in nature. Its primary objective is to find out the factors that influence the performance of tractor industry in Pakistan from 1995 to 2010. The independent variables include GNI per capita, inflation rate, unemployment rate, interest rate, consumption rate, foreign direct investment and rate of exchange. The performance

of the firm is represented by Annual Sales, Annual Profit, Return on Assets, Return on Equity and Net Profit Margin.

3.1. Population and Sample

The population consists of two firms i.e. Millat Tractors and Al-Ghazi Tractors and as per purposive sampling method, Millat Tractor has been selected for analysis.

3.2 Hypothesis

The following hypothesis is established.

Ho: Per Capita Gross National Income, Discount rate, Inflation rate, Exchange rate, Unemployment rate, Consumption rate or Foreign Direct Investment have no effect on the performance of tractor industry in Pakistan.

H1: Per Capita Gross National Income, Discount rate, Inflation rate, Exchange rate, Unemployment rate, Consumption rate or Foreign Direct Investment have a significant effect on the Performance of tractor industry in Pakistan.

3.3. Sources of Data

The sources of data include the official publications of official agencies which are Karachi Stock Exchange and State Bank of Pakistan. In addition this, the other sources of data are the recognized agencies of automobile industry, annual reports of the companies and research journals.

3.4. Plan for Data Analysis

A detailed statistical analysis using Regression technique is conducted in order to find out the cause and effect relationships between the variables. The multiple or single variable linear regression models are used to carry on the research. In order to run a regression analysis, the software SPSS 17 is used.

4. DATA ANALYSIS AND FINDINGS

In order to conduct a detailed analysis, the correlation analysis is obtained by using the software and the results are as follows:

Table 1: Correlation Analysis

		GNI	IR	ER	DR	UR	CR	FDI
Sales	Pearson Correlation	.972**	.550*	.841**	-.232	-.352	.721**	.325
	Sig. (2-tailed)	.000	.034	.000	.405	.199	.002	.236

	N	15	15	15	15	15	15	15
Profit	Pearson Correlation	.928**	.552*	.803**	-.124	-.368	.745**	.224
	Sig. (2-tailed)	.000	.033	.000	.660	.177	.001	.423
	N	15	15	15	15	15	15	15
ROA	Pearson Correlation	.602*	.292	.436	-.022	-.277	.514	-.146
	Sig. (2-tailed)	.018	.291	.104	.938	.317	.050	.603
	N	15	15	15	15	15	15	15
ROE	Pearson Correlation	.656**	.233	.596*	-.009	-.285	.571*	-.107
	Sig. (2-tailed)	.008	.403	.019	.975	.304	.026	.705
	N	15	15	15	15	15	15	15
NPM	Pearson Correlation	.922**	.508	.843**	-.254	-.273	.622*	.330
	Sig. (2-tailed)	.000	.053	.000	.362	.326	.013	.230
	N	15	15	15	15	15	15	15

4.1 Impact of Macroeconomic factors on Annual Sales

The Correlation analysis showed that there were four variables which had significant correlation with the annual sales and they included GNI (r= .972), Inflation Rate (r=.55), Exchange Rate (r=.841) and Consumption Rate (r=.721). The multiple regression model based on these four variables was not valid due to high p value of Exchange Rate (p= .906) and Consumption Rate (p=.053). Therefore, a multiple regression model based on three independent variables was found fit whose results are shown as under.

Table 2: Model Summary for Sales

Model Variables	R	R Square	Adj. R	F	B0 (Const.)	B1 (GNI)	B2 (IR)	B3 (CR)
GNI, IR, CR	.984	.969	.960	113.127	-48160.09	.229	-271.458	572.784
t-statistics					-2.651	12.486	-2.682	2.570
Sig				.000	.023	.000	.021	.026
St. Error	1078				18165	.018	101	223
VIF						1.999	2.972	3.593

AS = -48160 + 0.229 GNI – 271.458 IR + 572.784 CR

In this equation, As= Annual Sales; GNI = Per Capita Gross National Income; IR= Inflation Rate; CR= Consumption Rate. The selected variables affected the sales substantially by causing 96% variations at F (3, 11)=113.127, p=.000. A one million rise in GNP (B1=.229, t=12.486, p=.000) was likely to raise annual sales by Rs. 0.229 million if all other factors were kept constant. It means that increase in per capita income was channelized towards buying of

Tractors of the firm. Further, one percent increase in IR (B2= -271, t= -2.682, p= .021) would reduce the sales by Rs.271 million provided all other factors were constant. The rationale behind this was that the agriculturists were negatively affected by high rate of inflation and they had less amount of disposable income to spend on the purchase of tractors. Finally, if other factors were constant, a one percent rise in CR (B3= 573, t=2.57, p=.026) would increase the sales by Rs. 573 million. This upsurge in total consumption was also directed towards the agriculture activities including more buying of tractors and sale of the firm went up.

4.2 Impact of Macroeconomic factors on Annual Profit

There were again four factors which had significant correlation with profit and they included GNI (r= .928), Inflation Rate (r=.552), Exchange Rate (r=.803) and Consumption Rate (r= .745). The multiple regression model with all these variables contained the same problem of insignificant p value for GNI (p= .195), IR 9p= .979) and ER (p= .489). Therefore, another valid multiple regression model was selected which is as follows:

Table 3: Model Summary for Profit

Model Variables	R	R Square	Adj. R	F	B0 (Const.)	B1 (CR)	B2 (ER)
CR, ER	.943	.890	.872	48.56	-11876.5	124.56	32.272
t-statistics					-6.010	5.173	6.050
Sig				.000	.000	.000	.000
St. Error	207				1975	24	5.33
VIF						1.139	1.139

AP = -11876.57 + 124.561 CR + 32.272 ER

In this equation, AP= Annual Profit; ER= Exchange Rate and CR= Consumption Rate. So, the model based upon two variables brought about a significant variations in the annual profit by 89% at F (2, 12) = 48.568, p=.000. The high value of F with significant p value reflected that the model is fit for interpreting the Annual Profit of Millat Tractors. Both consumption rate (B1=125, t=5.173, p=.000) and exchange rate (B2=32, t=6.05, p=.000) had positive effect on the annual profit. The per unit rise in consumption rate would likely to increase the profit by Rs. 124 million which means that high consumption rate generated greater demand for tractors. As a result, sales revenue raised profit of the firm. Similarly, a one unit rise in Exchange rate was supposed to raise the profit by Rs. 32 million that depicted that upsurge in ER did not increase

the cost of production more than the rise in revenue. Therefore, the profit increased as Exchange Rate went up.

4.3 Impact of Macroeconomic factors on ROA

GNI (r=.602) was the only macroeconomic variable which had significant correlation with Return on Assets and the following model is derived:

Table 4: Model Summary for ROA

Model Variables	R	R Square	Adj. R	F	B0 (Const.)	B1 (GNI)
GNI	.602	.363	.314	7.397	6.930	.000
t-statistics					3.816	2.720
Sig				.018	.002	.018
St Error	3.23				1.81	.000

ROA = 6.93 + 0.000GNI

In this equation, ROA= Return on Assets and GNI = Per Capita Gross National Income. The analysis presented a negligible effect of GNI (B1=.000, t= 2.72, p=.018) on ROA. So, the model failed to provide any meaningful data for interpretation and it was concluded that ROA was not affected by any of the macroeconomic factors.

4.4 Impact of Macroeconomic factors on ROE

There were three factors that had significant correlation with Return on Equity and they included GNI (r=.656), Exchange Rate (r=.596) and Consumption Rate (r=.571). However, all three variables failed to form a valid model as GNI (p=.707), ER (p=.28) and CR (p=.213) had p>.05. Therefore, single regression model was used to show the influence between the variables.

Table 5: Model Summary for ROE

Model Variables	R	R Square	Adj. R	F	B0 Const.)	B1(CR)
CR	.571	.326	.274	6.275	-161.733	2.219
t-statistics					-2.136	2.505
Sig				.026	.052	.026
St. Error	8.11				75.7	.886

ROE= -162 + 2.219 CR

ROE = -161.733 + 2.219 CR

In this equation, ROE= Return on Equity and CR = Consumption Rate. The model brought about 32.6% variations by Consumption Rate at F (1, 13)= 6.257, p=.026. According to this model, CR (B1=2.2, t=2.5, p=.026) had a positive impact on ROE and a one unit rise would raise ROE by around 2%.

4.5 Impact of Macroeconomic factors on NPM

Three variables were found significantly correlated with NPM and they included GNI (r= .922), Exchange Rate (r=.843) and Consumption Rate (r=.622). The multiple regression model based on the three variables was not valid due to the insignificant t value of GNI (p=.157) and ER (p= .383) and CR (p=.686). So, the following best fit model was obtained:

Table 6: Model Summary for NMP

Model Variables	R	R Square	Adj. R	F	B0 (Const.)	B1 (ER)	B2 (CR)
ER, CR	.912	.832	.804	29.745	-26.423	.125	.294
t-statistics					-3.226	5.644	2.950
Sig				.000	.007	.000	.012
St. Error	.855				8.19	.1	.022
VIF						1.139	1.139

NPM= -26.423 + 0.125 ER + 0.294 CR

NPM = -26.423 + .125 ER + .294 CR

In this equation, NPM= Net Profit Margin; ER = Exchange Rate and CR = Consumption Rate. The model was likely to cause substantial variations of around 83.2% in the NPM due to Exchange Rate (B1=.125, t=5.644, p=.000) and Consumption Rate (B2=.294, t=2.95, p=.012) at F (2, 12) = 29.745, p= .000. If other factors were kept constant, rise in ER by one unit would raise NPM by 0.125%. Similarly, one percent rise in CR was likely to increase NPM by 0.294% if other factors were kept unchanged.

5. CONCLUSION

The regression analysis produced the following valid models

AS = -48160 + 0.229 GNI – 271.458 IR + 572.784 CR

AP = -11876.57 + 124.561 CR + 32.272 ER

ROA = 6.93 + 0.000GNI

ROE = -162 + 2.219 CR

NPM= -26.423 + 0.125 ER + 0.294 IR

All of the dependent variables were significantly influenced by one of the macroeconomic variables except ROE. CR was the most frequent predictor which influenced three dependent variables.

As far as the hypothesis is concerned, all of the dependent variables are influenced significantly by one or more predictors except ROE. So, we reject the null hypothesis and

conclude that the performance of Tractors Industry is significantly, though partially, influenced by macroeconomic factors.

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