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EFFECT OF MACROECONOMIC FACTORS ON FIRMS' ROA: A COMPARATIVE SECTORIAL ANALYSIS FROM PAKISTAN
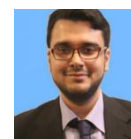
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ABSTRACT

The effect of firm level factors or industry specific determinants on company performance has been worked on in Pakistan but the researches are mainly focused on textile industries and to an extent agro food industry. This study has been conducted on the effect of macroeconomic factors on firm performance in Pakistan with the focus being on seven industries. 10-year data of 5 companies each in 7 industries in Pakistan (35 companies) was collected through the financial reports, from their official websites. Seven industries were selected the Sugar, Textile, Garments, Automotive, Food, Ceramics and Cement industries. The effect of macro-economic factors like Inflation Rate, Real Effective Exchange Rate, Foreign direct investment and Unemployment Rate, as well as Unit Labor Cost, were assessed on Return on Assets for each industry using separate regressions. The results indicated that inflation was a significant factor in sugar industry whereas labor unit cost and exchange rate significantly contributed to textile industry firm performance. Garment and auto industry firm performance were heavily influenced by inflation and unemployment. Lastly food and cement industry ROA were greatly influence by rate of exchange and FDI. Whereas these macroeconomic factors had very little impact on Ceramic industry. These results can assist managers, company auditors, lenders, and regulatory bodies to identify businesses that will be affected by macroeconomic changes and use this information to improve future performance.

Contribution/ Originality: This study is one of very few studies which have investigated the impact of macroeconomic variables on firm's ROA across different industries in Pakistan. Previous studies, who have studied effect of macroeconomic factors on ROA have mainly focused their work on textile and food industries, this study sheds light to this subject across multiple different industries.

1. INTRODUCTION

1.1. Background to the Study

The organization that brings together resources, produces goods, and offers services and sell them to customer through market in order to earn profit is referred to as firm. The goal of the firm is to increase its worth and earn more and more profit. Better financial performance is the way to satisfy the investors, which implies that company is either moving towards growth or slump. There are many factors that are used to judged financial performance. These factors are customer's satisfaction, employee satisfaction, firm size, profitability, social performance, environmental performance and increase in market value (Haider et al., 2018).

Depending on the nature of the industry, different ratios are used to measure the financial health of a firm. These ratios are: return on assets, return on equity, sale, revenue, growth, profit margin, stock prices, liquidity ratio, dividend payout ratio, cash flow ratio and inventory turnover ratio (James *et al.*, 2008).

The study of performance of entire economy is called macro economy. This macro economy has influence on all organizations present in any particular economy. The number of macroeconomic variables that influence the performance of a firm are more than 30, some directly influence the performance of a firm and some indirectly influence the performance of a firm (Haider *et al.*, 2018).

The leading macroeconomic indicators are building permits, retail sales, inventory levels, activities of manufacturing firms, conditions of housing markets and start-up businesses levels. Lagging macroeconomic indicators are gross domestic product, exchange rate, inflation rate, unemployment level, consumer price index, interest rate, balance of trade, corporate profits, strength of home currency and the commodities worth with respect the United States dollar (Poudel, 2017).

It has been proved worldwide that there is a significant relationship between performance of a firm and exchange rate, interest rate, inflation rate and GDP volatility (Poudel, 2017). These are the major macroeconomic variables that impact the performance of a firm: money supply, real activity, goods price, interest rate, exchange rate, political risks, oil prices, unemployment, domestic consumption, imports, trade deficits, budget deficits, the trade sector, imports, real wage and regional stock market indices.

The macroeconomic as well as microeconomic variables impact the performance of a business. It is necessary for a business to be alert regarding these factors in order to minimize their impact on profitability. Some microeconomics factors can be easily controlled and the influence of these are easily controllable and projected. These microeconomic factors are production factors and demand but various macroeconomics variables cannot be controlled, the examples of these macroeconomics variables are unemployment and corporation tax (Broadstock *et al.*, 2011).

1.2. Problem Statement

Since 2013, Pakistan's exports have been consistently declining. Pakistan is now going through extremely poor level of export performance, with trade deficit in billions of dollar. According to Ministry of Commerce reports, the net worth of the exports of the country were US $25.11 billion in 2013 and this figure is moving toward downward trend and there is no improvement in this figure. In the beginning of finanical year 2015-2016, the exports of the country were around US $25 billion but after six months, it reached to US $20.44 billion (Khan and Khan, 2019). According to reports of Ministry of Commerce, the exports were less than US$20.44 billion at the end of 2018. On the other hand, the imports of the country are constantly increasing. In the financial year 2013-14, the imports of the country were United States $44 billions. In the beginning of financial year 2015-2016, it reached United States $44.95 billion and it reached United States $47 billion at the end of this year (Khan and Khan, 2019).

The major exports of Pakistan includes textile, leather and rice but their trend has been decreasing because of many factor such as energy shortage, boosting in input prices, loadsheding, politicial instability, lot of taxes, competition at the global level and political leaders corruption. Rice, leather and textile accounts for more than 70% of the export of the country, therefore, it is impossible to attain the target if the import of these three products will be less (Khan and Khan, 2019).

Pakistan is unable to improve its share at the global level and it only exports to already accessible markets in China, United States and United Arab Emirates. The exports in the European Union and Afghanistan have reduced in the last four years as the government has not been showing interest in these markets.

The Ministry of Commerce said the main factors due to which the export of Pakistan is decreasing are raise in energy tariff, increase in interest rates, surging corporate taxes, high duties rates, taxes and surcharges on exports. Moreover, there is not much utilization of installed capacity in this region (Khan and Khan, 2019).

The economic experts suggests that Pakistan's export is declining because the economies of many countries have slowed down and the international export has also declined 3.3%. Furthermore, FTA(Free Trade Agreements) are negatively impacting the emports of Pakistan and these agreements are in favour of other counteries which are under agreement. Currently, Pakistan is in FTA with Sri Lanka, Malaysia and China but these countries are getting benefit from Pakistan because of these FTAs and these FTAs are not in favour of Pakistan.

1.3. Gap Analysis

Many researches have been conducted in other countries which have focused on impact of macroeconomic variables on the entire country's economic performance (Sharma *et al.*, 2011; Panga and Modak, 2014; Oshodi, 2018). The majority of these researches concentrate on the financial markets of the developed countries, which do not suffer from the inefficiency problems in developing countries. Similarly studies conducted in Pakistan have majorly focused on the impact of macroeconomic variables on economic development rather than focusing their research on several companies and focusing on several industries (Hunjra *et al.*, 2014; Kibria *et al.*, 2014; Khan *et al.*, 2017). The correlation between macroeconomic variables and firm performance have been conducted by variety of studies (Caird and Emanuel, 1981; Ali *et al.*, 1992; Clare and Thomas, 1994; McNamara and Duncan, 1995; Mansor and Hassanuddeen, 2003; Kandir, 2008; Stock and Watson, 2008; Broadstock *et al.*, 2011; Barakat *et al.*, 2016) but these studies did not address the impact of macroeconomic variables on any particular industry.

There were few industry specific studies like (Bhutta and Hasan, 2013; Haider *et al.*, 2018) focusing on automobile, food, and banking sectors of Pakistan respectively.

The goal of the study is to do a comparative analysis of different industries with respect to how their performance got effected from macroeconomic variables in Pakistan. We already knew the effect of macroeconomic factors on firms' performance in overall and industry specific context, but how these individual effects can be compared to get a meaningful picture, has still not been worked on. Hence, this study will focus on seven various industries with five companies in each industry, and the impact of macro-economic factors will be used to explain the performance of the companies' exports across seven different industries in Pakistan. It will also be useful to see which industries the macroeconomic indicators affect the most, when it comes to company performance.

1.4. Research Objectives

The goal of the study is to study the effect of macroeconomic variables on firm performance in Pakistan. The effect of firm level factors or industry specific determinants on export performance has been worked on in Pakistan but the researches are mainly focused on textile industries and to an extent agro food industry. This study will focus on seven various industries with five companies in each industry, and the impact of macro economic factors will be used to explain the performance of the companies' exports across seven different industries in Pakistan. It will also be useful to see which industries the macroeconomic indicators affect the most, when it comes to company performance. The independent variables taken in this study are 1. Inflation Rate, 2. Real Effective Exchange Rate, 3. Foreign Direct Investment, 4. Unit Labour Cost, and 5. Unemployment Rate. Whereas dependent variable was ROA. 10-year data of 5 companies each in 7 industries in Pakistan (35 companies) were taken and was analyzed using Correlation and Regression methodology.

1.5. Research Question

The above evidences raise several questions: Is there any association between potential macroeconomic variables and performance of a firm? Is the projection of future earnings of a firm can based on absolute values instead of financial statement variables? These questions prompted researchers to anticipate the instrumental performance of a firm to be measured by rate of return on assets (ROA). The ROA of a firm assess economic policy of government measured by macroeconomic indicators and basic performance level of business.

1.6. Significance

Generally, contraction, expansion and recession period are experienced in business and economic cycles. The expansion starts again after the recession and vice versa. To know the impact of economic and business cycles across time, economics experts all over the world have developed models, however, they are unable to eliminate cycle and economies are still falling into crisis. One such example is the global financial crisis in Latin America, East Asia and Russia in 2017 (Issah and Antwi, 2017). The real need is to instead focus on industry level to find how each industry got affected differently, and to give focus stimulus accordingly. The research will help us understand which macro economic factors affect which industry postively or negatively in Pakistan, and which macro economic factors is detrimental for the the growth of a particular industry in Pakistan, and which macroeconomic factors could improve productivity of a particular industry. Similarly, which industries are positively or negatively affected by macro economic variables.

2. LITERATURE REVIEW

The study by Issah and Antwi (2017) in the UK found that real GDP and exchange rate were significant. Otambo (2016) in Kenya also reported that GDP positively affected ROA but interest rates and exchange rates negatively affected ROA; inflation rates were also not significant. Owolabi (2017) in Nigeria showed that inflation, interest rate and exchange rate had no significant effect on ROA. Similarly, Gado (2015) in Nigeria found a positive effect for inflation while exchange and interest rate had negative effects. This is in line with research of Rao (2016) in Nairobi who reported a significant negative effect of interest rate on financial performance. But the GDP growth and inflation rate were not significant. Contrary to this, Enyioko (2012) found that interest rate has not affected performance of banks significantly. In Pakistan, the study by Bhutta and Hasan (2013) on firms listed on the food sector of Karachi Stock Market reported a significant negative relationship between size and profitability, and a positive insignificant relationship between food inflation and profitability. Studies conducted on other sectors also show similar and mixed findings. Kaguri (2013) on a sample of life insurance companies in Kenya found that size, leverage and liquidity were statistically significant, similarly the studies in Ethiopia, Mehari and Aemiro (2013) and the studies in Pakistan, Sumaira and Amjad (2013) revealed similar results regarding size and leverage, while liquidity was insignificant. However the study by Bist *et al.* (2017) in Nepal that showed that leverage had a positive and significant effect; but size and liquidity were negative and insignificant. Sambasivam and Ayele (2013) in Ethiopia, which presented profitability as ROA, found that leverage and liquidity were significant and negative. Therefore, jointly macroeconomic factors and firm characteristics interact to determine firm performance. This supports the study by Izedonmi and Abdullahi (2011) that the extent to which a factor affected a particular sector varies from one sector to another.

Studies such as Riaz and Mehar (2013) reported the significant microeconomic variables were size and total debt to total assets in Pakistan and reported a significant impact of asset size and interest rate on ROE; and interest rate had a significant impact on ROA. Kanwal and Nadeem (2013) found that there is a strong positive relationship of real interest rate with ROA, ROE and EM. Second, real GDP is found to have an insignificant positive effect on ROA, but an insignificant negative impact on ROE and EM. Inflation rate, on the other hand, has a negative link with all three profitability measures. Mirza and Javed (2013) in Pakistan found that inflation was significant but negative, leverage was significant and positive, firm size was significant and positive, while liquidity was significant but negative. Ghareli and Mohammadi (2016) probed the impact of macroeconomic factors and elements of firms on quality of financial reporting in Iran. The factors for macroeconomics were exchange rate, inflation rate, interest rate and gross domestic product. The characteristics of entities were comprised of working capital, size of entity and financial leverage. They selected ninety-one entities which were listed over Tehran Stock Market from the years 2005 to 2013. They found positive and considerable results for exchange rate, interest rate and leverage but

interestingly the gross domestic product was unfavorable and important. Further, the rate of inflation was unfavorable but no material. The firm size was also not considerable.

Specifically, Charles (2012) in Nigeria reported inflation rate and exchange rate had negative effect on the performance of manufacturing sector. In other African countries such as Kenya, the study by Murungi (2014) on a sample of insurance firms found that interest rate and GDP had significant effects on performance, while inflation and exchange rates were not statistically significant. This is contrary to the study by Kiganda (2014) conducted in Kenya but with a focus on Equity Bank, which reported that real GDP, inflation and exchange rate had insignificant effect on profitability. Similarly, Kandir (2008) investigating the effect of macroeconomic factors on stock returns in Turkey revealed similar results. The analysis of firm characteristics showed that firm size, leverage and liquidity had positive and significant effect. Chandrapala and Knápková (2013) in Czech Republic found that firm size has a significant positive impact on ROA. However, contrary to the present study, they found that debt ratio had significant negative impact on ROA.

Njoroge (2013) studied the correlation among rate of interest and entity's performance for listed business industries in New York Stock Exchange from the year 2008 to year 2013. The outcomes of the investigation represented a favorable but insignificant association among rate of interest and equity returns. Similarly, Elly and Oriwo (2012) examined the correlation among macroeconomic variables on New York Stock Exchange index and found that there is an unfavorable and considerable association among ninety-one Treasury bill rates as well as stock returns. Further, the relationship was inversely affected which was significant among inflation rate and stock return.

Maghyereh (2012) observed the association among the Jordanian stock prices as well as macroeconomic variables chosen for the longer period of time in his study. The study was used Johansen and Juselus (2001) co-integration analysis along with the monthly time series data available for the duration, from January 1987 to December 2000. He observed that macroeconomic variables were replicated in stock prices.

Ozcam (1997) inspected the effect of 7 macroeconomic variables on return of asset at Istanbul Stock Exchange. The study applied APT where it used a regression model by testing and implementing two step methodologies. The examination disclosed that there was an outstanding correlation among coefficient of betas against anticipated macroeconomic variables and return on assets.

Kairuthi (2014) looked over the impact of inflation and interest rate over return of stock market which was listed at New York Stock Exchange. He revealed that there was an unfavorable inverse correlation among inflation rate and return on stock. Moreover, the relationship was favorable and significant among rate of interest, spot exchange rate and returns on stock. Zulfiqar and Din (2015) observed the association among macroeconomic indicator and entity's performance relevant to textile companies in Pakistan. The study found favorable immaterial association among inflation rate and entity's performance.

3. THEORETICAL FRAMEWORK
3.1. Operational Definitions
3.1.1. Inflation Rate

Jhingan (2002) described inflation as a constant increase in the general level of price. It can assess in numerous ways. Nonetheless, two frequently used evaluations are the GDP Deflator or a CPI indicator. Higher prices are apt to lessen aggregate buyer's spending leading to a reduction in GDP. However, in this situation, inflation itself is not negative; swiftly increasing the rates of inflation indicates the likelihood of poor macroeconomic health (Akers, 2014).

In various studies, results showed that inflation rate was significantly related with the profitability firms, studies such as Riaz and Mehar (2013) suggested significant relationship between inflation rate and profitability of commercial banks, with ROA and Inflation rate being significantly correlated. In another study, the impact of

inflation was studied on the performance of the financial sector through the GMM methodology, the results indicated significant relationship between inflation rate and returns on assets (Boyd *et al.*, 2001). Haider *et al.* (2018) also learned in his research that there was significant relationship between inflation rate and firm's ROA. Which suggests Inflation rate is strongly linked to firm's ROA.

3.1.2. Exchange Rate

As noted by Harvey (2012) exchange rate is the value to two currencies relative to one another. It is the denotation of value of one currency in terms of another currency. It is the value at which currency of one country might be replaced to the currency of a different country. It can be either fixed or floating. Fixed exchange rates are determined by central banks of a country. However, the mechanism of market demand and supply are determined by floating exchange rates. There are number of factors that influence exchange rates such as interest rates, inflation rate, balance of trade, political constancy, domestic accords, and common condition of economy and features of good governance.

Exchange rate is affected by a number of factors including interest rates, inflation rate, balance of trade, political constancy, domestic accords and features of good governance. However the exchange rate that measures financial condition has a significant and positive relationship with a firm's ROA (Issah and Antwi, 2017). A strong link between exchange rate and ROA was also observed in the study by Kandir (2008) however in some cases fluctuations in exchange rate can lead to a negative relationship between ROA and exchange rate (Mansor and Hassanuddeen, 2003).

3.1.3. Foreign Direct Investment

Foreign direct investment (FDI) is an investment in a business by an investor from another country for which the foreign investor has control over the company purchased. FDI implies that the investor exerts a significant degree of influence on the management of the enterprise resident in the other economy (Murungi, 2014). Any factors that impact the economy in general, such as removal of foreign investment restrictions, will cause changes in the stock market and its relation to the economic factors, which in turn will affect performance of the companies, (Kumar and Puja, 2012).

3.1.4. Unemployment Rate

Macroeconomic variables such as the unemployment rates, and corporation tax rate are beyond the control of an organization, therefore, the need for businesses to predict the heterogeneous effect of these macroeconomic variables on future corporate performances (Broadstock *et al.*, 2011). Macroeconomic variables such as the unemployment rates are unpredictable and cannot be controller by an organization, therefore there is a need for companies to predict the effect of this variable on company performance, which is measured by ROA.

Unemployment rates, based on several conducted researches, had a positive relationship and significant relationship with firm's ROA. Issah and Antwi (2017) concluded in their study that Unemployment rate had a positive relationship with ROA, across several industries. The findings of Gjerde and Saettem (1999) also show a positive linkage between return on assets and unemployment rates. Unemployment Rate also has an unpredictability factor which makes it important to measure its effect on firm's ROA.

3.1.5. Unit Labor Cost

Unit labor costs are defined as the ratio of a worker's total compensation, or money-wage (i.e., the nominal wage rate plus all other labor-related costs including services, social security, life insurance and more) to labor productivity (Felipe and Kumar, 2011) Unit labor costs (ULC) measure the average cost of labor per unit of output and are calculated as the ratio of total labor costs to real output. Unit labor costs show how much output an

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economy receives relative to wages, or labor cost per unit of output (OECD, 2007). Growing unit labor cost puts the burden of adjustment on the workers. Profit rates could also grow (fall) faster (slower) than capital productivity with a subsequent increase in unit capital costs, hence also reducing competitiveness.

Issah and Antwi (2017) indicated that unit labor cost was among the most significant variables that impacted a firm's ROA. Fluctuations or increase in Unit Labor Cost may affect Profit Rates and Capital Productivity and unit labor cost also reflects income distribution between labor and capital, which suggests that ULC has effect on aggregate demand, hence it has macroeconomic implications.

Figure 1 indicates all the independent variables; Inflation Rate, Real Effective Exchange Rate, Foreign Direct Investment, Unit Labor Cost and Unemployment Rate linked to the Dependent Variable; Company Performance/ROA.
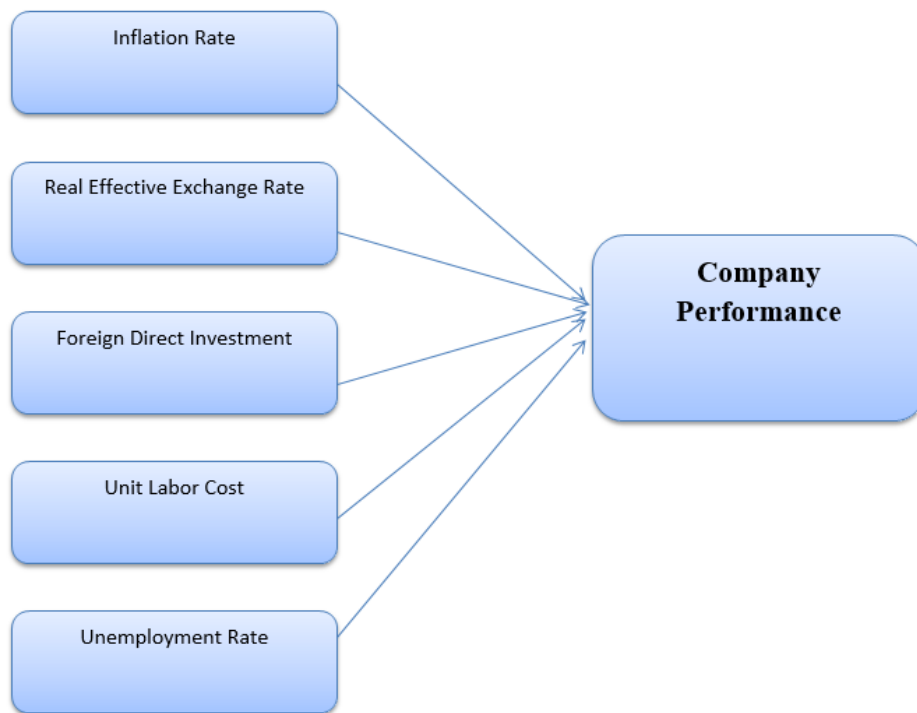

Figure-1. Theoretical framework.

3.2. Industry Analysis

Figure 2 and Figure 3 below show the graphical trend analysis of the study variables company wise and year wise. Table 1 below also shows the list of companies industry wise along with their respective market cap.

Automobile Industry: During the 10-year period under study and among different industries, in terms of automobile industry, the return on assets of this sector companies' showed (Egbunike, 2018) an increasing trend over the last 4 years from 2014 to 2018, before this period the return was declined in 2009 to 2013 due to high cost of debt and inflation.

Cement and Ceramics Industry: The return on assets of cement industry in the last 10 years remained a little volatile, along with the auto industry. In terms of ceramics industry, the return on assets is lower during the last 8 years 2008-2017, but it was at all-time high and reached the highest level in 2009 and 2018 respectively.

Food Industry: In terms of food industry, the return on assets is showing increasing and decreasing trend over the periods, despite increasing and decreasing trend in return on assets. The returns in the last 10 years were higher in 2012 at 22.5% and were lower in 2009 but the return on assets were record lowest in 2009 9%.

Textile and Sugar Industry: In terms of sugar and textile, return on assets of both were lower during the last 10 years 2009-2018, but were at higher side in 2011 these years, as the inflation and interest rates reach to the

highest level in 2011 respectively. Since 2014 the inflation has been decreasing as well interest rate which indicates decreasing trend. In addition to this inflation was increasing since 2009 to 2013 as shown in the graph, due to which we saw an increasing trend in interest rate. The labor cost per unit in the last 10 years is increasing and decreasing at the same time the labor cost is remain stable and is now lowest compare to last 10-year trend.

Garments Industry: In terms of garments industry, the return on assets were higher in 2013 and 2014, it was also on higher side in 2009 and 2010 whereas it is now declining since 2015. The interest rates and inflation, both were lower during the last 4 years 2015-2018, but were at higher side before these years, as the inflation and interest rates reached the highest level in 2009 and 2010 respectively. Since then inflation and interest rate have been decreasing also indicating decreasing trend. In terms of unemployment percentage which recorded stable trend over the last 10 years period, this indicate the three were no major economic turnaround which would have affected unemployment. The foreign direct investment in the last 10 years is showing an increasing trend during last 10 years. In terms of 2018 foreign direct investment were record highest as it was the CPEC affect. In past foreign direct investment were not much higher, it remains stable respectively. Since the inflation and interest rates were decreasing and due to government support scheme related to business this all attracts FDI in recent years.
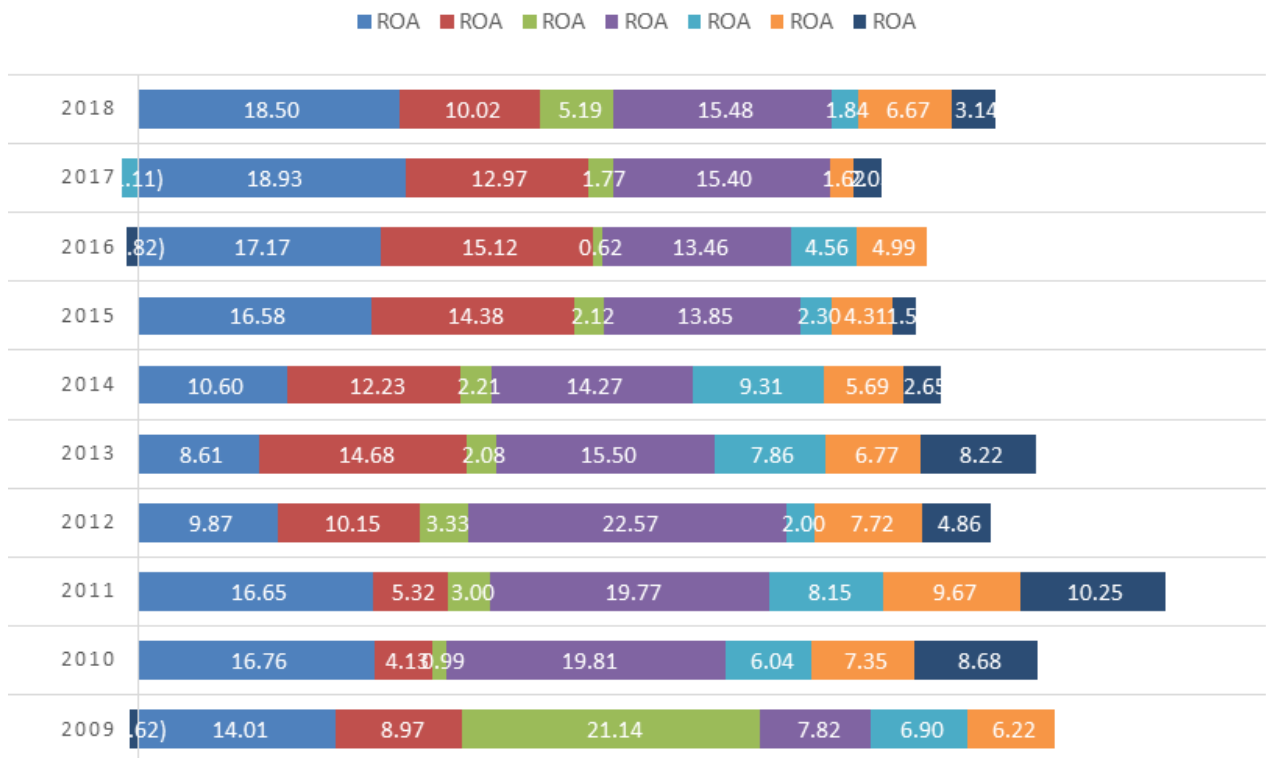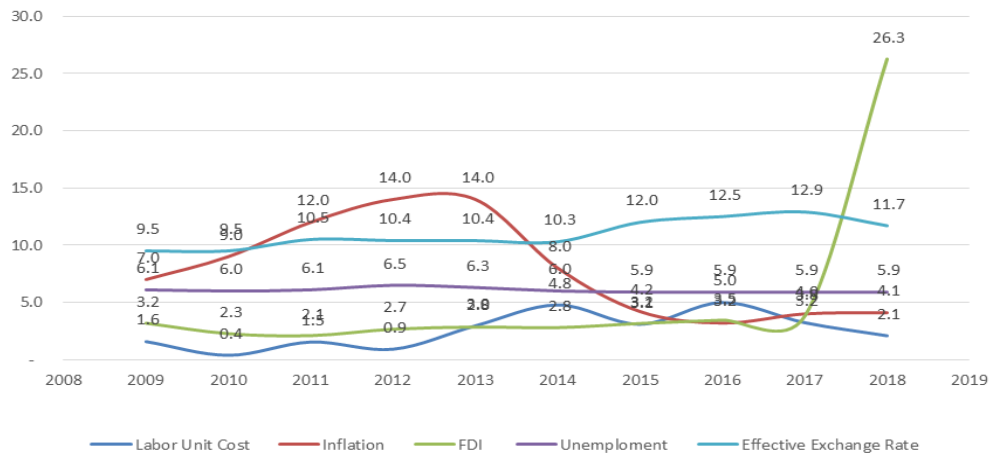

Figure-2. Return on assets (2009-2018).

Figure-3. Macroeconomic factors from 2009-2018.

Table-1. Market cap of companies.

Sugar Industry (Companies)	Market Cap (Rs.)
Faran Sugar Mills	1.37 Billion
Habib Sugar Mills	5.56 Billion
Al Noor Sugar Mills	0.981 Billion
Premier Sugar Mills	0.56 Billion
JDW Sugar Mills	19.73 Billion
Textile Industry (Companies)	
Aruj Garment Accessories	0.16 Billion
Gul Ahmed Textile Mills Ltd	15.13 Billion
Liberty Mills Ltd	6.6 Billion
Tri-Star Polyester Ltd.	0.49 Billion
Kashmir Polytex Ltd.	0.006 Billion
Garment Industry (Companies)	
Glamour Textile Mills Ltd.	1.73 Billion
Zephyr Textiles	0.44 Billion
Gadoon Textile Mills Ltd.	5.12 Billion
Sapphire Textile Mills	16.17 Billion
Mahmood Textile Mills Ltd	5.32 Billion
Auto Industry (Companies)	
Ghani Automobile Industries Ltd.	0.24 Billion
HinoPak Motors	6.10 Billion
Millat Tractors Ltd	34.50 Billion
Al-Ghazi Tractors Ltd.	22.33 Billion
Agri Auto Industries Ltd	4.32 Billion
Food Industry (Companies)	
National Foods Ltd	26.57 Billion
Nestle Pakistan Ltd	290 Billion
Unilever Pakistan Foods Ltd	43.95 Billion
Dalda Foods	4.10 Billion
Clover Pakistan Ltd	2.34 Billion
Ceramics Industry (Companies)	
Karam Ceramics Ltd	0.50 Billion
Premier Ceramics Ltd	0.30 Billion
Shabbir Tiles and Ceramics Ltd	2.65 Billion
Frontier Ceramics Ltd	0.38 Billion
Agriauto Industries Ltd	4.32 Billion
Cement Industry (Companies)	
Fauji Cement Company Ltd.	21.91 Billion
Lucky Cement Ltd.	129.31 Billion
Attock Cement Pakistan Ltd.	13.20 Billion
Dewan Cement	3.98 Billion
Pioneer Cement Ltd.	7.20 Billion

3.3. Methodology

3.3.1. Data

The historical data of 10 years of 5 companies each in 7 industries in Pakistan (35 companies) and ROA will be used to measure the DV of firm performance. Ten-year data of Pakistan; Inflation Rate, Real Effective Exchange Rate, Foreign Direct Investment, Unit Labor Cost and Unemployment Rate were gathered for IVs. Data will be analyzed through regression on each industry average and regression company wise for each industry.

The data of this research was collected from various sources. The 10 year data of all the 35 companies across seven industries was gathered from their financial reports which were available on their official websites. Additional information for the company data was gathered from the official website of the Pakistan stock exchange (www.psx.com) and https://pkfinance.info/. Data for the macro economic factors was gathered from different websites including www.statista.com and trading economics.

3.3.2. GMM Methodology

The generalized method of moments (GMM) is a statistical method based on regression analysis that combines observed economic data with the information in population moment conditions to produce estimates of the unknown parameters of this economic model. GMM estimators makes assumptions about variables moments for determination of an objective function which provide us with population moment conditions. We use the data to compute the analogous sample moment conditions. In the generalized method of moments (GMM), we have more sample moment conditions than we have parameters (Wooldridge, 1999).

4. RESULTS

4.1. Descriptive Statistics

Table-2. Descriptive statistics.

Variable	Industry	Mean	Max	Min	Std
Return on Assets	Automobile	0.15	0.19	0.09	0.04
	Cement	0.11	0.15	0.04	0.04
	Ceramics	0.04	0.21	0.01	0.06
	Food	0.16	0.23	0.08	0.04
	Garments	0.05	0.09	(0.01)	0.03
	Sugar	0.06	0.10	0.02	0.02
	Textile	0.04	0.10	(0.01)	0.04
Labor Cost	Automobile	2.88	3.50	1.00	1.30
	Cement	2.78	3.00	1.30	1.50
	Ceramics	2.56	3.60	0.40	2.00
	Food	3.50	4.60	0.29	1.67
	Garments	1.98	2.66	0.66	1.77
	Sugar	2.50	2.67	0.40	1.44
	Textile	1.65	3.77	0.44	1.66
Inflation	All	0.08	0.14	0.03	0.04
FDI	Automobile	6.50	19.88	1.20	2.40
	Cement	9.80	14.50	1.00	4.50
	Ceramics	2.00	4.00	0.40	5.60
	Food	7.80	9.00	0.50	3.60
	Garments	4.30	5.60	0.70	2.10
	Sugar	2.50	4.50	0.20	1.70
	Textile	3.50	5.60	0.10	1.44
Unemployment	Automobile	0.06	0.07	0.04	0.02
	Cement	0.04	0.05	0.03	0.02
	Ceramics	0.04	0.06	0.03	0.01
	Food	0.06	0.07	0.05	0.01
	Garments	0.05	0.08	0.04	0.02
	Sugar	0.06	0.07	0.03	0.02
	Textile	0.04	0.05	0.02	0.04
Exchange Rate	All	109.70	129.00	95.00	11.62

The results from Table 2 indicate that ROA had a mean of 0.09 and standard deviation of 0.06 during the study period. The 35 sampled firms in Pakistan recorded a maximum ROA of 0.23 and a minimum ROA of -0.01. The result from Table 2 also indicate that labor unit cost had a mean of 2.55 and standard deviation of 0.38 during the study period. The firms sampled recorded a maximum labor unit cost of 3.55 and a minimum labor unit cost of 0.38. On the average, FDI recorded a mean of 5.25 with standard deviation of 7.07. The highest FDI stood at 26.27 and minimum FDI of 2.10.

According to table 2, unemployment had a mean of 0.06 and 0.00 standard deviation. The lowest unemployment percentage of the period was 0.04 and it was recorded in 2011; while in the period under review the highest percentage of unemployment 0.07 was recorded. Exchange rate (EXR) had a mean of 109.7 respectively with a standard deviation of 11.62 in the period under review. The minimum exchange rate in the study period stood at 95 recorded in 2012 while the highest recorded 129 was in 2018, a growth in value of 36%. The inflation rate (INF) in the period under review was at a highest of 14% in 2012 and a lowest of 4% in 2016. The sampled period recorded a minimum inflation rate of 3%.

4.2. Correlation Analysis

Table-3. Correlation analysis.

Pearson correlation	Return on Assets	Labor Unit Cost	Inflation	FDI	Unemployment	Exchange Rate
Return on assets	1.00	(0.51)	(0.54)	0.35	0.41	0.49
Unit Labor Cost		1.00	0.47	(0.07)	(0.44)	0.57
Inflation			1.00	(0.37)	0.38	0.56
FDI				1.00	(0.31)	(0.26)
Unemployment					1.00	(0.53)
Eff Exchange rate						1.00

Table 3 presents the correlation matrix among the variables. It is shown that the correlations among the variables are uniformly low and moderate plus significant at level $p < 0.05$. Labor cost and inflation effect expenses and reduces profit which leads to lower return on assets, whereas foreign direct investment and exchange rate positively influence return on assets as higher exchange rate mean higher income and higher investment in assets that may also yield higher return.

4.3. Regression

The regression model takes the following equation:

$$ROA_t = c + FDI_t + Exchange_t + Inflation_t + Unemployment_t + Labor\ Cost_t + e$$

The results for the estimation are reported in Table 3.

All Models provide significant explanatory power under each type of Industry. Sugar Industry indicated ($F = 6.531$, $p < 0.021$), Textile Industry ($F = 43.781$, $p < 0.000$), Garments Industry ($F = 9.021$, $p < 0.002$), Auto Industry ($F = 11.891$, $p < 0.011$), Food Industry ($F = 14.56$, $p < 0.012$), Ceramics Industry ($F = 8.177$, $p < 0.001$) and Cement Industry ($F = 10.981$, $p < 0.031$). The R^2 values of 0.713 and the adjusted R^2 of 36% which explains variations in the dependent variables for Model Sugar Industry, indicate considerable aggregate explanatory power for the estimated models. The same can be said for Textile Industry ($R^2 = 0.92$, Adjusted $R^2 = 89\%$), Garments Industry ($R^2 = 0.90$, Adjusted $R^2 = 82\%$), Auto Industry ($R^2 = 0.93$, Adjusted $R^2 = 86\%$), Food Industry ($R^2 = 0.76$, Adjusted $R^2 = 56\%$), Ceramics Industry ($R^2 = 0.60$, Adjusted $R^2 = 46\%$) and Cement Industry ($R^2 = 0.83$, Adjusted $R^2 = 63\%$).

Table-4. Regression (Industry wise).

Variables	Sugar		Textile		Garment		Auto		Food		Ceramics		Cement	
	B	Sig	B	Sig	B	Sig	B	Sig	B	Sig	B	Sig	B	Sig
Constant	0.35	0.38	1.39	0.00	0.98	0.03	0.96	0.03	0.44	0.58	-1.1	0.04	-.96	0.12
Unit Labor Cost	-.19	0.00	-.45	0.01	0.44	0.02	-.26	0.01	-.51	0.00	-.00	0.03	0.18	0.04
Inflation	0.47	0.03	-.39	0.00	0.65	0.04	-.34	0.02	-.27	0.01	-2.2	0.02	-.47	0.03
FDI	0.30	0.04	0.24	0.01	0.31	0.01	0.40	0.03	0.55	0.04	0.00	0.04	0.64	0.02
Unemployment	0.44	0.03	0.26	0.12	12.2	0.04	.50	0.01	0.10	0.49	12.5	0.02	0.57	0.04
Exchange Rate	0.21	0.07	0.45	0.01	0.22	0.09	-.34	0.01	0.57	0.01	-.50	0.06	0.55	0.02
R²	0.713		0.921		0.900		0.932		0.756		0.598		0.834	
Adj R²	0.355		0.891		0.819		0.856		0.566		0.456		0.634	
F Statistic	6.531		43.781		9.021		11.891		14.56		8.177		10.981	
Prob.	0.021		0.000		0.002		0.011		0.012		0.001		0.031	

The coefficients and the p Values of each variable entered into the equation and for each industry are presented in Table 4. Table 4 depicts that four independent variables in Model of Sugar Industry are significant at the five per cent level or better, namely; Labor Unit Cost, Inflation, FDI, and Unemployment (significant at $p < 0.05$). This indicates that these variables are a good predictor of firm performance. Table 4 illustrates that all of the independent variables were found to be statistically significantly related with ROA for Ceramics Industry. This can be explained by the fact that, the model did provide significant explanatory power ($F = 8.177$, $p < 0.001$). Table 4 illustrates that four of the independent variables Unit Labor Cost ($p < 0.05$), Inflation ($p < 0.05$), FDI ($p < 0.05$) and Exchange ($P < 0.05$) were found to be statistically significantly related with ROA for Textile Industry. Here unemployment is not significantly related with ROA. Here GDPR shows a negative relationship with the ROA. When the labor Unit Cost increases by 1 unit, holding other variables constant, Return on Asset decreased by 0.45 units edit.

Table 4 shows that four predictor variables in Model of Garment Industry are significant at $p < 0.05$. Namely; Labor Unit Cost, Inflation, FDI and unemployment. This indicates that these variables are good predictors in contributing to the model. Table 4 depicts that five of the predictor variables labor unit cost ($p < 0.05$), inflation ($p < 0.05$), FDI ($p < 0.05$), unemployment ($p < 0.05$) and exchange ($p < 0.05$) were found to be statistically significantly related with ROA for Auto Industry. Exchange shows a negative relationship with the ROA. When the exchange in real terms increased by 1 unit, holding other variable constant, ROA decreased by 0.34 units. The results of the regression presented in Table 4, shows that among the five variables, four of these variables—unit labor cost, FDI, inflation and exchange, are found to be significant based on the p-value of less than 0.05 for Food Industry, which indicates that these variables are significant in contributing to the model and in predicting the relationship between firm performance (ROA) and macroeconomic variables and Prior year ROA. Table 4 illustrates that five of the independent variables Labor Unit Cost ($p < 0.05$), Inflation ($p < 0.05$), FDI ($p < 0.05$), unemployment ($p < 0.05$) and Exchange ($P < 0.05$) were found to be statistically significantly related with ROA for Cement Industry.

Table-5. Regression (Overall Industry).

Variable	Coefficient	Std. Error	t-statistic	Probability
Constant	1.39	0.03	9.021	0.021
Unit Labor Cost	-.31	0.02	11.891	0.012
Inflation	-.24	0.04	14.56	0.031
FDI	0.29	0.01	8.17	0.018
Unemployment	0.26	0.04	10.892	0.013
Exchange Rate	0.45	0.06	6.53	0.010
R2	0.840			
Adj R2	0.812			

Table 5 presents the coefficients and the p Values of all the variables which are entered into the equation for the overall industry. Table 5 indicates that depicts that four independent variables in the overall industry are significant at the five per cent level or better, those independent variables are Labor Unit Cost, Inflation, FDI, and Unemployment Rate (significant at $p < 0.05$). However exchange rate P value is not significant at the five percent level as its significance level is 0.06 which is greater than 0.05, which indicates insignificant relationship with firm's ROA from the perspective of overall industry. Furthermore Inflation rate and unit labor cost show a significant but negative relationship with ROA for overall industry. This means that if there is a 1% increase in Unit Labor Cost, holding other variables constant, ROA will decrease by 0.031% and if there is increase of 1% in Inflation then ROA will decrease by 0.24%. If there is a 1% increase in FDI then holding other variables constant, ROA will also increase by 0.29%. And if there is a 1 percent increase in Unemployment rate, then ROA will also increase by 0.26%. The adjusted R-square shows the overall explanatory power of the variables. It shows the impact of independent macroeconomics variables on the dependent variable; Return on Assets. The value of adjusted R squared shows that there is a 81.2% change in Return on Assets due to the changes in independent macroeconomic variables.

The empirical results present a mixed picture of the effect of macroeconomic factors on firm performance. However, it is possible to observe that macroeconomic conditions have been seen to impact each of the sectors in different ways. Industry wise analysis showed that, in sugar industry exchange rate doesn't have any effect on return of assets whereas the other four independent variables labor cost, FDI, inflation and unemployment do have an effect on independent variables and the results are there in case of garment industry. The result further illustrated that in textile and food industry all variables, except unemployment are significantly related to ROA. It is also shown that Unit Labor Cost, Inflation, FDI, unemployment and exchange were found to be statistically significantly related with ROA for Cement and auto Industry.

5. DISCUSSION

The study explored the interdependency of macroeconomic factors and firm financial performance. The study showed inflation have negative and significant effect on ROA in textile, Auto, Food, Ceramics and cement industries whereas inflation positively affect sugar and garments industries, the result are similar with the findings of Owolabi (2017) who invested the relationship of inflation with firm performance and the results indicate that inflation has negative and significant relationship, the inflation rate rise the performance will diminishing rapidly in Pakistan and Nigeria. The study also found that exchange rate had a positive and significant effect on company performance in textile, garments, food, sugar, ceramics and cement industry whereas it negatively affects auto industry. The findings are in line with the result of Owolabi (2017) and Egbunike (2018) who discovered that relationship between exchange rate and firm's performance could either be positive or negative. When the currency of the home country depreciates against major currencies, it makes exports cheaper and imports precious. Hence, domestic manufacturers can take advantage of it to export their produce assuming they do not source for most of their inputs abroad. In the case of the manufacturer, who sources for most of his inputs abroad, a depreciating currency may not have a positive impact on firm's financial performance on such firms. Furthermore, result indicate that Labor unit cost has negative and significant impact on company performance, this finding is deep-rooted with the study of Issah and Antwi (2017) who found parallel affect on company performance in UK. The study also found same result for unemployment which has positive and significant relationship with company performance in textile, food and cement industry whereas negatively impact company in Auto industry. The FDI behavior were in line with the previous studies like Rao (2016) done on Nairobi, Gado (2015) in Nigeria and Otambo (2016) in Kenya. The Overall industry model indicated that Inflation rate, Employment Rate, Foreign direct investment and Unit Labor Cost all had significant relationship with firm's Return on Assets, but the variables of Foreign direct investment and Unemployment rate only indicated a positive relationship with ROA, but inflation rate and Unit Labor cost show a negative relationship with ROA. This result is in line with and Egbunike (2018) who studied the relationship of

inflation with a firm's financial performance and results indicated that inflation had a significant and negative relationship with firm's performance. The result of Unit labor cost is also relevant to the research of Issah and Antwi (2017) who studied the impact of macroeconomic variables on firm's performance and the results of the study had similar behavior of Unit Labor cost. And although insignificant Exchange rate showed a positive relationship with Return on assets. Our results on overall industries supports Riaz and Mehar (2013); Ghareli and Mohammadi (2016) and Kanwal and Nadeem (2013) findings that reported a significant impact of inflation and exchange rate on ROA; and FDI had a significant impact on ROA. In conclusion, the effect of macroeconomic factors on performance may be sector based. This supports the study by Izedonmi and Abdullahi (2011) that the extent to which a factor affected a particular sector varies from one sector to another.

6. CONCLUSION

The aim of the paper is to examine the impact and relationship of macroeconomics factors on firm performance in Pakistan's different industries i.e. sugar, textile, garments, ceramics, auto, food and cement. The study fills the gap in literature through investigating industry wise impact analysis of macroeconomic factors simultaneously at the same time that significantly affects firm performance. In order to complete the research objective, data has been gathered from the SBP website from the period 2009 to 2018, a regression equation model was developed based on the industries categories selected i.e. sugar, textile, garments, ceramics, auto, food and cement respectively. The data used in this study is a combination of cross-sectional observations and time series. The research conducted the same analysis across all industries to establish whether macroeconomic information imposes different impact for different industries. The research finally attempted to identify and discuss the significant predictor variables and their implications for future studies. Since our study analyzed samples of data (the industry-specific sample), the conclusions are reached separately. The results of the study are promising.

In evidence, the findings in this study indicate that the identified factors i.e. labor unit cost, FDI, exchange rate, unemployment and inflation have a positive and negative relationship with the ROA, which is used as a proxy of firm performance. Based on the result of the study and firstly looking at the sugar industry, it was found that inflation, FDI and unemployment have positive influence on ROA while labor unit cost negatively affects ROA whereas exchange rate has insignificant but positive relationship with ROA. The most influential factor in sugar industry model was inflation. Secondly results show that labor unit cost and inflation have negative and FDI and exchange rate have positive influence on ROA in textile industry, whereas unemployment has insignificant but positive relationship with ROA. Besides, this labor unit cost and exchange rate was the key determinant of firm profitable performance in textile industry. Moreover, in garment industry, it was found that inflation, FDI and unemployment have positive influence on ROA while labor unit cost negatively affects ROA whereas exchange rate has insignificant but positive relationship with ROA. The most influential factor in this industry was inflation. In conjunction to this result also show that labor unit cost and inflation have negative and FDI and exchange rate have positive influence on ROA in food industry, whereas unemployment has insignificant but positive relationship with ROA. Besides, this labor unit cost and exchange rate was the key influencer on ROA in food industry. In auto and cement industry labor unit cost, FDI, exchange rate, unemployment and inflation have a positive relationship with the ROA. In terms of ceramic industry, no factor was found significant with ROA. The key factor that can influence the ROA of auto and cement industry was exchange rate and FDI.

In conclusion, the comparative industry analysis shows that each industry has unique dynamic that is why they are impacted differently by external factors. The results of the study show that the key factors that can influence the firm performance of sugar industry was inflation, labor unit cost and exchange rate was found significant contributor to firm performance in textile industry. Moreover, inflation and unemployment were the major factors affecting firm performance in garment and auto industry. Lastly food and cement industry ROA were greatly influence by exchange and FDI in food and cement industry. The reason for the different factors affects differently

on firm performance is due to the different industry and market situations and scenarios face by firms in a particular industry. On the basis of the empirical results, few implications of the study are given as follows: Firstly, to the extent that macro-economic variables are influenced by government policy, this research shows the connection between that factors and firm performance. The results of this paper provide a compelling argument that firm performance is a function of the prior year macro-economic variables and that macroeconomic variables can have impact on future firm performance measure by ROA. The results are indeed consistent with the theory and also contribute to current literature by narrowing the gap between the intuition and the empirical research on the role of macroeconomic conditions on firm performance industry specific, it also highlights in previous literatures.

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