



The impact of macroeconomic variables on Pakistan stock market (PSX) (Case study of top-rated companies of (PSX))

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Abstract

The stock market plays a critical role in the economy by mobilizing resources and converting them into productive investments, establishing a significant relationship with macroeconomic variables. Various studies have shown that fluctuations in macroeconomic factors, such as aggregate consumption, inflation, interest rates, and exchange rates, reflect in stock market movements. This research focuses on the impact of macroeconomic variables on the Pakistan Stock Exchange (PSX), specifically analyzing top-rated companies. Previous studies in the U.S., Japan, and Bangladesh have demonstrated the influence of industrial production, bond rates, and inflation on stock markets, showing a direct link between economic indicators and market performance. In Pakistan, remittances play a crucial role in the economy, contributing significantly to economic growth and, consequently, influencing the stock market. The State Bank of Pakistan reported record remittance inflows in 2010-2011, highlighting their importance to the country's financial health. This study aims to examine how key macroeconomic factors, including GDP, remittances, inflation, and interest rates, affect the PSX, using insights from both local and international research. Understanding these relationships will provide valuable information for investors and policymakers in predicting stock market trends.

Key words: macroeconomic variables, stock market, remittances,



Introduction

Stock market plays as a vital role in the economy because it mobilize resources and converted them in the product investment. Therefore it has very significant relationship to the economy. It has been observed in various studies that any variation in the macroeconomics factors reflect in the stock market movements. Particularly changes in the aggregate consumption investment or level of inflation, changes in the interest rate, or variation in the exchange rate, fluctuation in the economic growth always produce reflection and impact in the stock market further changes in the national economy and changes in the laws and regulations of the nations. Ross (1976), Chen et al. (1986), made studies in the U.S market and find out their changes in industrial production change in interest rate always effect the stock market. Mukherjee and Naka (1995), work in the Japanese stock market and found the six macroeconomic elements effects the stock market include exchange rate, inflation rate, Government bond rate, industrial production fluctuation, Nishat and Saghir (1991), Ahmed (1999) in Bangladesh, found in their studies that both are unidirectional similarly, Mukherjee (1988) in India GDP leads to the stock market in majority in stock.

The GDP is most popular measurement and indicator used to find out the general condition of the national economy, it is a composition of private and public consumption investment Government expanding and net exports. The other method is GDP calculation on the basis of income. There are various method of measuring GDP, one is the sum of total consumption of the nation and the other is threw production and investment, but in this study measurement of GDP is not under discussion.it is a basic significant indicator to measure the condition of the economy as economic growth, GDP increases and as economy moves.

Impact of remittances on developing economy and stock market

In economic variables the GDP is the most important variables especially in developing countries like Pakistan. In developing countries, few developing countries' economies highly based on the inflow of remittances. Pakistan included in similar line of countries whose economy is widely dependent on remittances. As the inflow of remittances increase the economy of Pakistan is boom which will effect on the stock market as well.

Importance of remittances from last two decades has increased in the developing countries.world Bank (2012) reported that the remittances to developing economies has accounted 381 billion dollar with 11.7% growth rate and World Bank also forecast the flow of remittances to developing world is expected 8%, 10%, and 10.7% in 2013, 2014 and 2015



respectively. State Bank of Pakistan (2011) reported, the remittances sent to Pakistani immigrant workers first time crossed \$11 in the fiscal year 2010-2011 which is highest amount in any fiscal year in the history of Pakistan. Shahbaz and Amir (2009) examined the determinant of worker's remittances for Pakistan. Qayum et al. (2008), analyses the impact of the remittances on economic growth and poverty. They used the annual data of Pakistan from 1973 to 2007. Murkherjee and Naka (1995) applied the Johnson cointegration in vector error correction model and found that the Japanese stock market are effected on six variables of the macroeconomics

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|--------------------|------------------------------------|
| (1) exchange rate | (4) industrial production |
| (2) money supply | (5) short term market bonds |
| (3) inflation rate | (6) long term Government bond etc. |

Literature Review

Mayasmai and Koh (2000), Naseem (2019), Kwon and Cheung and Ng (1998), all made researches on macroeconomics variables on Singapore stock market, Korean stock market, Italy, Canada, Germany Japan and U.S stock market in respectively. In Singapore stock market found that five variables of macroeconomics are highly influenced the stock market while in Korean stock market does not found sensitivity in this regard Canada, Japan, Italy Germany and U.S are influenced by important macroeconomics variables such as real consumption, real money supply, real GNP and change in oil prices. Few studies were made on New Zealand, Australia stock market that these markets are not very sensitive in this regard.

Baranidharan, S., Dhivya, N., & Alex, A. (2021) discussed about Empirical Relationship of Macroeconomic Variables and Stock Prices: Dhingra, K., & Kapil, S. (2021) studied about Impact of Macroeconomic Variables on Stock Market. Fama and Gibbon (1982), Mundell (1963) and Tobin (1965), Fama (1991), believes that inflation, real returns on capital investment returns on Bills are negatively corelated with stock market. Geske and Roll (1983), Fama (1981), and Lee (1992), found in the US stock market that inflation rate is put negative impact on stock market and the economic activities (Increase in GDP) produce positive results to stock. Darrat (1990), examination shows the effect of monetary and fiscal policy on stock market in canadian stock market he said that budget deficit long term rates of bonds, interest rates, and industrial production effects the stock market. Chen, Roll and Ross (1986), Najand and Rahman (1991), Schwert (1989), all found macroeconomic variables and stock markets. French et al. (1987), Allenand Jagtianti (1997), Bulmash and Trivoli (1991),



Mukherjee and Naka (1995), Achsani and Strohe (2002), Ajayi and Mougoue (1996), Chen (1991), Chen, Roll and Ross (1986), Hamoa (1988), Poon and Taylor (1991), they all study the various stock market including U.S Canada U.K and mention that the macroeconomics variables influences the stock markets they also mention that increase in GDP and economic activities always produce positive results on stock. Shin (1999), Leigh (1997), Fung and Lie (1990), Gjerde and Saettem (1999), Achsani and Strohe (2002), Chen et al. (1986), some of them work on Norway, Indonesia, Taiwan, Korea, stock markets and reach on the conclusion that stock prices and inflation rate relationship are ambiguous while there is strong positive relationship between GDP and money supply.

Irfan (2011), Khalid et al. (2011), Shahbaz and Amir (2009), Qayum et al. (2008), there studies describe the remittances in Pakistan economy and GDP is very important because the remittances one of the main biggest source of the (FDI) and it produce direct impact on GDP and economic growth that is also and important factor in Pakistan for prices changes, exchange rate and stock market. Karagoz (2009) studied Turkey and find that the remittances is not putting positive influence on economic growth in Turkey due to the reason that the third generation of immigrant outside They are not interested to send money to the native country because they are interested to invest in the western Europe. (Mazhar and Junaid, 2013), It is also found in the studies when the economy of the native country boom the inflow of remittances enhance. According to world bank Pakistan 7th largest country in the world whose most important source of FDI is GDP Rashid Hussain, Ghulam Abbas Anjum, (2014) mention that foreign remittances is the economic back bone of Pakistan and put highly impact on GDP and economic growth as well as on prices of the consumer item.

(Iqbal and Sattar, 2005), [Calaro (2008); Jongwanich (2007); Stark and Lucas (1988); Taylor (1992); Gupta et al. (2009)]. However, they said that the remittances put positive impact on economic growth but reduce the efforts and hardworking of the labour force in native company which damage the economic growth .(Burney,1987; Arif, 1999; Adams,1998; Burki,1991; Kozel and Alderman,1990; Amjad,1986; (Naseem, 2004). Siddidui and Kemal (2006) they studies Pakistan economy and found that the remittances is most important source of foreign exchange earnings and it has very close impact on the reducing poverty during 2002 to 2007 the remittances from U.S increase 1075\$ million to 6000\$ million dollar which produce very positive impact on the economic growth GDP. Jongwanich (2007), Burgess and Vikram (2005), Catrinescu et al (2006), Fayissa and Nsiah (2008), Iqbal and Sattar (2005), Adams and Page (2005), Lucas (2005), they studies showed that the



remittances has very strong positive and significant relationship with GDP, reduction in poverty and increasing in industrial growth.

Muhammad Javid, Umaima Arif, Dr. Abdul Qayyum, (2012), their studies shows that remittances have very effective and strong significant relationship with the economic growth and GDP in Pakistan.

(Paranavithana, 2014), (Cohen 2011, Maimbo and Ratha 2005), said that remittances is the most importance source of FDI from last two decades as per the UN data 232 million peoples immigrants which is 3.2% of world population the remittances flow in developing countries is 404\$ billion in 2013. And the growth in the immigrants 8.4% expected as per World Bank this is very important element in the portfolio equity and private debts. They have found positive significant relationship between economic growth industrial development and remittances. Mahmud (2003), Ali (1981), . Ahmed (2010), worked on Bangladesh India and Sri Lanka and found that the multiplier effect of remittances increase the economical growth and GDP. Shapan Chandra Majumder Zhang Donghui, (2016) made studies on the Bangladesh economy and found the long run positive relationship between economic growth and remittances.

Change in stock prices usually due to the fluctuation in macroeconomics variables. Nishat and Saghir (1991) Mookerjee (1988), found causal relationship in India that GDP leads stocks price in India.

The Johansen cointegration has identified that stock market and GDP long run equilibrium relationship. Stijn Van Nieuwerburgh, Frans Buelens, Ludo Cuyvers (2005), mentioned that strong relationship found in the economic growth and stock market as economic growth enhances it reflect on the stock market. They explained the role of financial intermediaries (including stock market) the collection in composition of capital is not possible. The intermediaries' covers shocks of financial losses threw providing diversities to the financial investors. (Stiglitz (1985) and Levine (1997), (Diamond (1984)and Boyd and Prescott (1986), all believes during their separate researches financial intermediaries has vital source provide monitory liquidity on easier condition and nominal cost to the business people they also made heavy and expensive researchers to provide and promote the good invest opportunity. Beside these acts stock market provide strong corporate control on the companies, they also mobilize small savings towards main stream of investment. Townsend (1979), argued stock market provide specialization on the investment on the smaller cost and formed systematic continuity system for business research and development.



Stark and Lucas (1988), Mankiw, Romer, and Weil (1992), Barro (1991), Levine and Renelt 1992, levine and zervos 1993, Fischer 1993, Easterly and Rebelo (1993), Bruno and Easterly (1995), Dollar (1992), levine and Zervos, 1994, they said and conclude the researcher there is a close link between the long run economic growth and stock market development index, they also said the rate of inflation and Government spending policy also produce impact on stock market. Levine and zervos 1994, found in their investigation there is strong positive significant correlation between stock market and development GDP growth, the level of significant P-value (0.05) in every case where the Governmental consumption ration the rate of inflation, and black market exchange rate is included or not both cases the correlation significant is not change. Demirguc-kunt and levine (1996), during his research find out that the correlation in every case between economic GDP growth is positive and significant correlation in every manner.

(Mishkin, 2001; Greenwood and Smith (1997), Holmstrom and Tirole(1998), Obstfeld (1994a; b), Levine, 1991), during their investigation they found the close relationship between economic development. The higher level of liquidity is not only the cause to increases the economic growth also enhance the dividend ratio and ROE which create the bullish activities in the stock market. Economic growth (increase in GDP) also provide high liquidity which provide the opportunity to the investors to change their assets into cash. Atje and Jovanovich (1993), Levine and Zervos (1993,1998), Rousseau and Wachtel (2000) and Beck and Levine (2004), Levine and Zervos (1995) and Demirguc-Kunt (1994), during their investigation they found strong positive correlation between stock market and GDP growth. They have also found stock market and banking sector development can boost the growth in economic development.

Shahbaz et al. (2008), made in investigation on the Pakistan stock market and GDP growth found that their positive strong correction between stock market growth and economic development of GDP.

Mian Sajid Nazir, Muhammad Musarat Nawaz and Usman Javed Gilani, (2010), found that in Pakistan the increase the stock market volume and growth put positive effect on GDP because Pakistan economy there is great impact on FDI and its creates lot of liquidity in the economy as well as push the demand in the market threw multiplier effect in the economy the growth rate of economical development increases. They also found strong relationship between GDP and stock market as GDP increase also stock market upward. Christopher Gan*, Minsoo Lee**, Hua Hwa Au Yong***, Jun Zhang (2006), made in investigation in



New zeland stock market and found that five important variables which influenced the stock market in 157 monthly observations that includes consumer price index (CPI) exchange rate, GDP, Interest rate, and they found that these elements influenced the variation in stock market.

Research Methodology

These samples of 32 top companies of stock market from 2008 to 2017, their stock price correlation is measure with yearly GDP basis. For measuring correlation the SPSS software is used. In the stock market registered public limited companies (32) out of them 32 companies awarded by stock exchange every year is included in the study remaining public limited companies is not included in the study due to the reasons due to the many companies not regularly functioning few of them financial issues various companies are not disclosing clear and real financial data.

To measure the correlation between GDP and ROE in the companies under study the above mention methods applied.

Hypothesis

- H_0 : The stock prices are not directly correlated to Gross domestic product (GDP) country.
- H_1 : stock prices are directly correlated to Gross domestic product (GDP) of the country.
- H_0 : There is no correlation between GDP and ROE.
- H_2 : There is correlation between GDP and ROE.

Findings

We tested the both hypothesis H_1 & H_2 on the basis of correlation between GDP and Stock price as well as GDP and ROE and at the end of the study, 32 top stock companies of Pakistan stock market it found that graph of GDP is the increasing steadily upwards, similarly the graph of remittances is also moving upwards steadily. The impact on the companies under study it found that stock price graph moving upwards as GDP moves upwards. And the graph of remittances also moving upward because the in foreign direct investment (FDI) the biggest source is remittances. It is also found that there was great fluctuation in exchange rate, CPI rate as interest rate the trend of stock prices of the companies as under upwards in correlation with the GDP. The companies OGDC, Atlas Honda, Indus Motors, PPL, Dawood her cullies, Pakistan Cables, Century papers, Pakistan PSO, Shell Pakistan, Colligate Pakistan, Nestle Pakistan, Fauji Fertilizer Bin Qasim, Attock petroleum, POL, Hub power, Crecent steel,



Sanofi aventis, national refinery, Rafhan maize, uniliever, Fauji fertilizer, Alghazi tractors, there share price goes upwards and it shows that the effect of inflation and fluctuation in exchange rate unable to put significant impact on top listed companies stokes. It also providing evidence that the financial ratios of companies as greater impact on the stoke price specially dividend ratio EPS, current ratio ect. The impact of GDP also effect on the companies stocks price but in Pakistani economy in the period under study the GDP and remittances both are increasing steadily consequently, it can be presume that the other macrocosmic variables are not putting sufficient influence on price of the stocks of the listed companies. It is also find that above mention facts are corrected with the long term period in short period no doubt the other macroeconomic variables effect the price stock price of top ranking companies in Pakistan stock exchange. Which can be easily determinant by the graphic presentation. Treat corporation, Pakistan refinery, clover Pakistan, fauji fertilizer company that their stock prices unable move upward. And beside increasing national GDP these stocks prices goes downward. It is further prevent that the other factors specially the micro factor related with the industry and company are more strongly effect directly on the stock price in compression of macroeconomic factor excluding GDP. In the study to find out the correlation of ROE and GDP directly it is found that in 32 companies 17 companies graph shows positive progress and correlation between GDP and ROE. Three companies graph shows no clear relationship found within the ROE and GDP as GDP increases the ROE is not increases with the same relation. There is negative correlation found between ROE and GDP in five companies therefore, the Hypothesis consider to the reach at the level of acceptance that the hypothesis are:

H₁: stock prices are directly correlated to Gross domestic product (GDP) of the country.

That it is find and identified that the (H1) hypothesis reached at the level of acceptance due to sufficient evidences in this regard. And null hypothesis is rejected

H₂: There is correlation between GDP and ROE.

That it is find and identified that the (H2) hypothesis reached at the level of acceptance due to sufficient evidences in this regard. And null hypothesis is rejected

Limitations

This study included all the important variables of macroeconomics but from 2008 to 2017 there is found change in CPI index during the period under study and change in interest rate

but for this study there is known fact that in Pakistan economy is developing economy and there is high importance GDP, (Remittances) so in this condition that determinant the real impact of GDP and remittances we consider other factors which fluctuating during the period of this study silent. Whereas the CPI index slowly fluctuate from (10.2 to 5.5) and interest rate also fluctuated during the period of study the impact of CPI is not directly affect the stock market until and unless the fluctuation is very fast. Slow fluctuation in CPI psychologically unable to influence the investor perception for the trading in stock market. Although the interest rate directly related to the investment process that here we consider it silent. In this study the concentration is put in the GDP variations and it is presumed that all the other factors are constant. It is further mentioning here worth that the remittances as per various studies is one of the most important element of the economy in Pakistan included in those developing countries in which economies major source of income is based on remittances as well as acquiring foreign exchange major portion is also remittances therefore the remittances portion separately discuss with GDP.

Gpaphical presentation of increasing GDP with relation of the average stock price

Figure 1

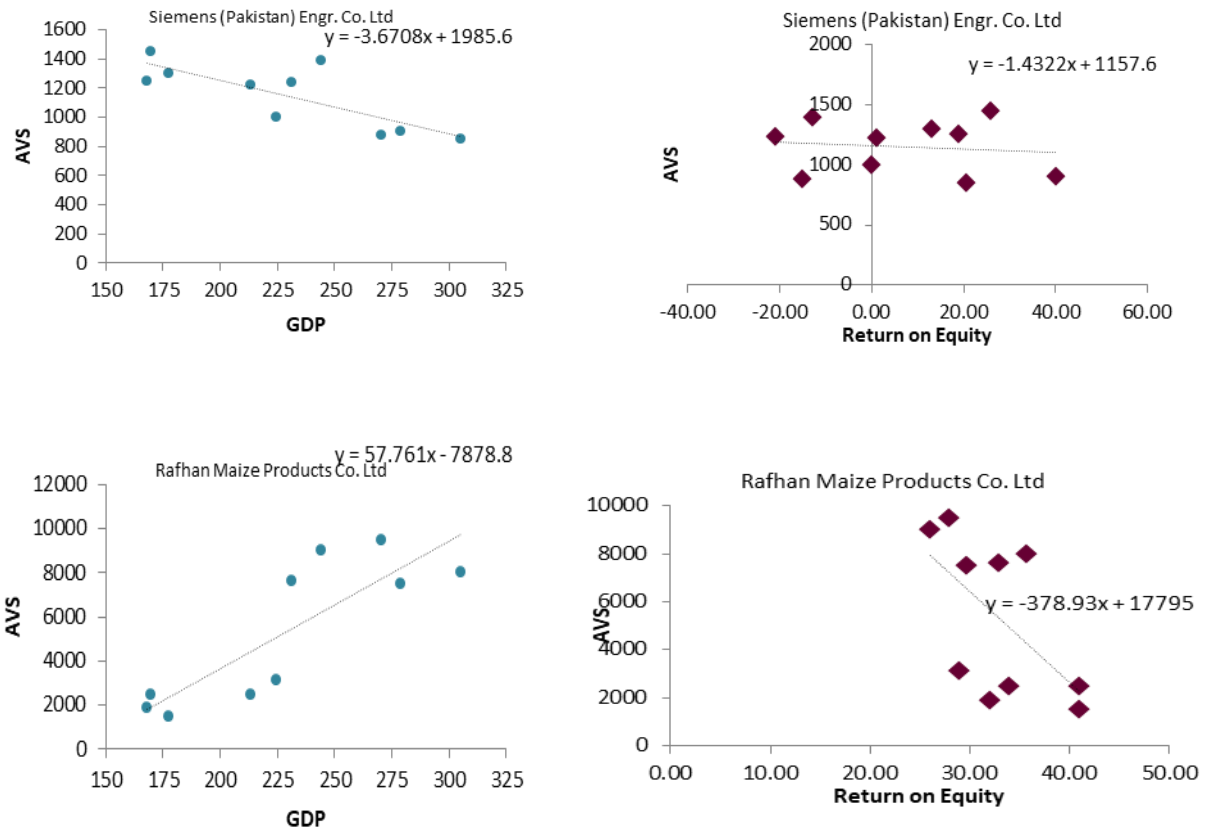
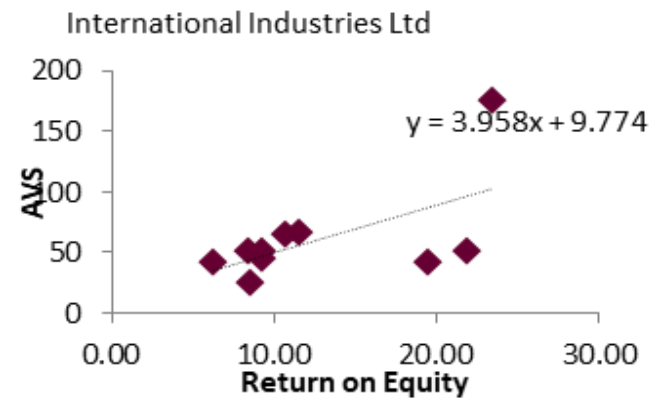
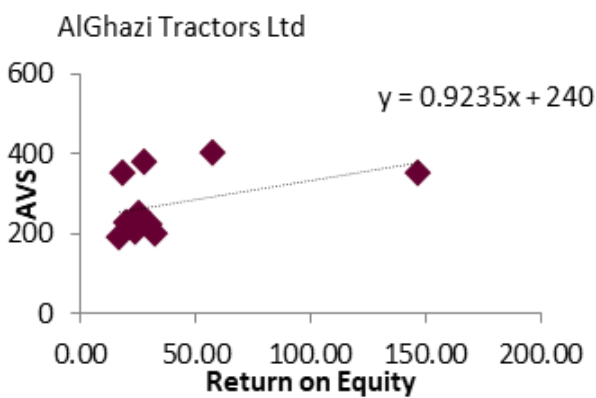
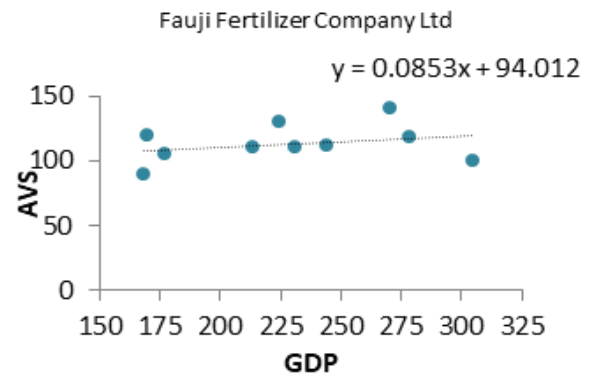
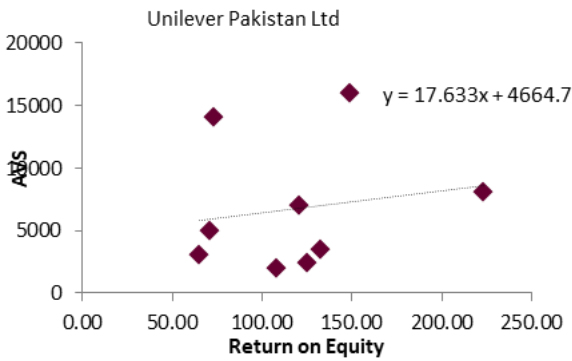
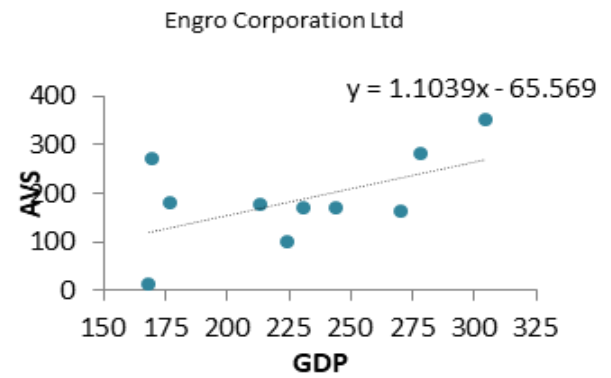
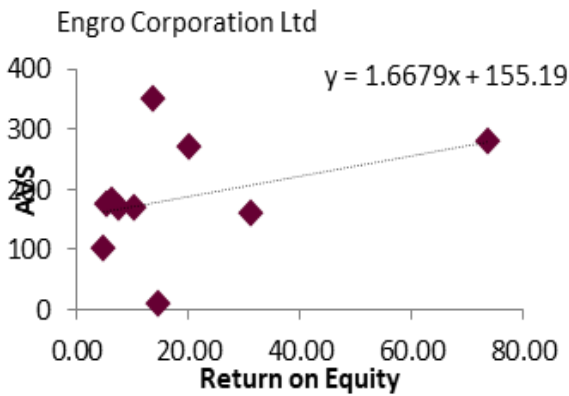
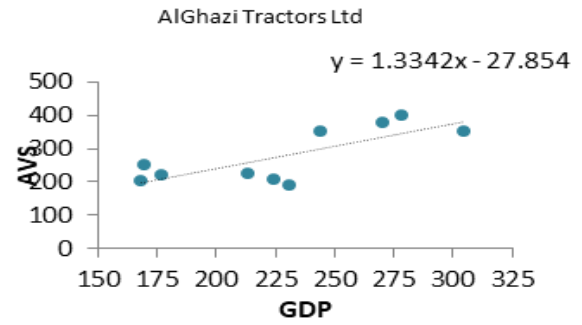
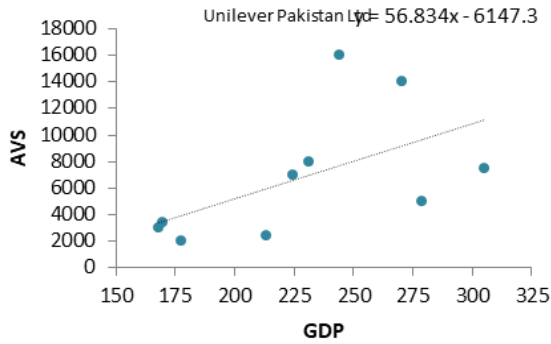
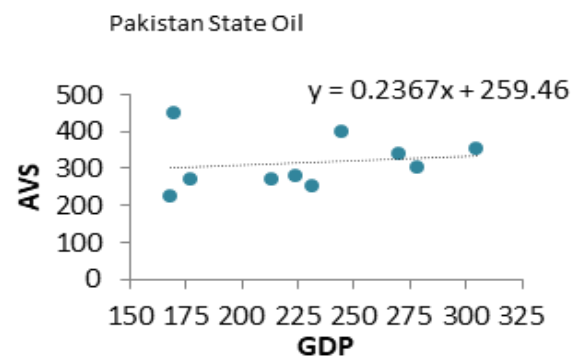
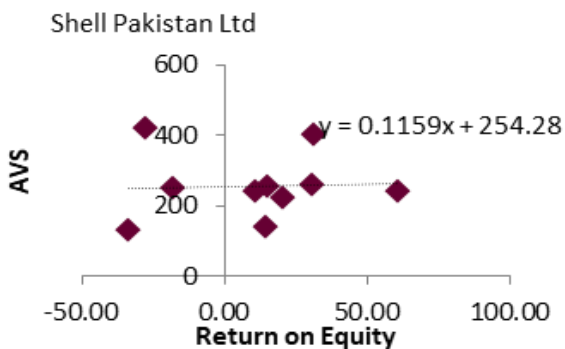
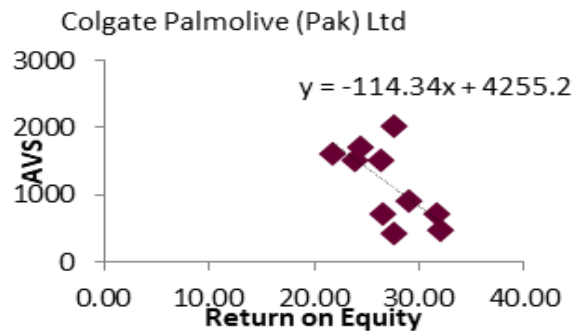
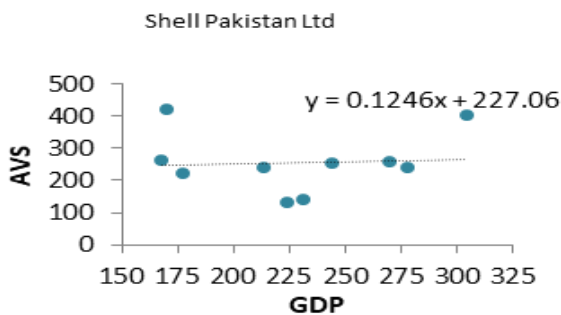
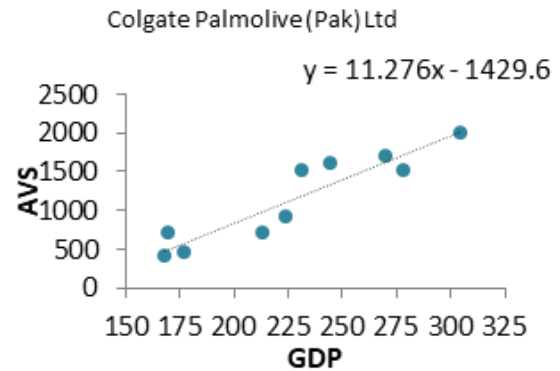
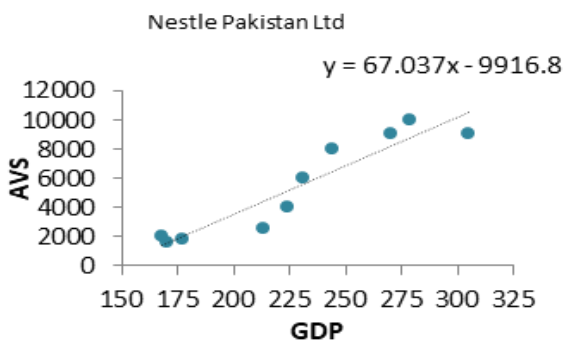
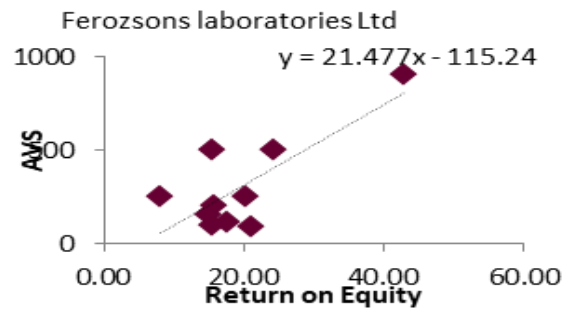
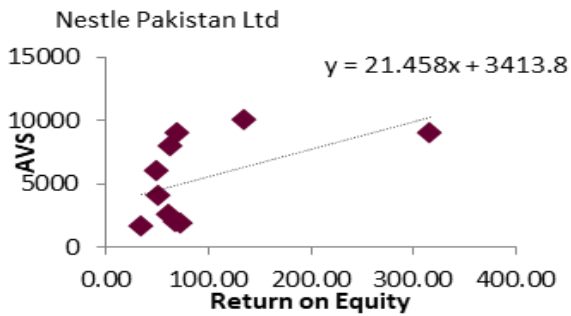
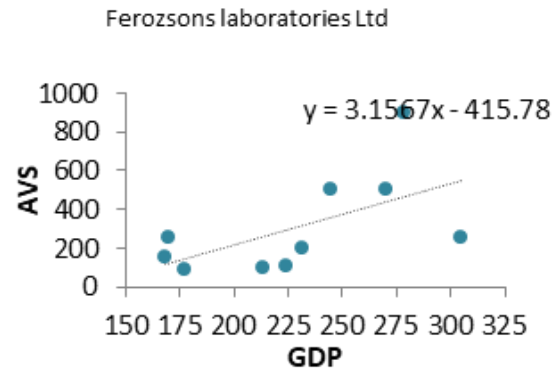
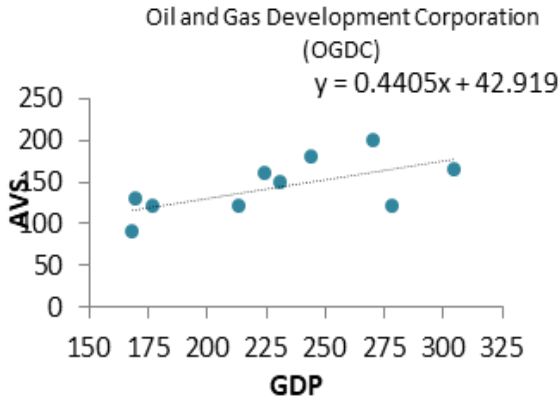
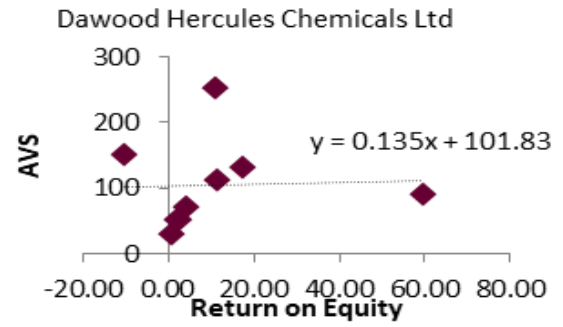
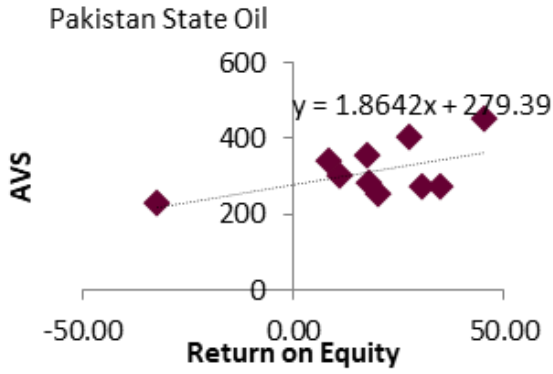




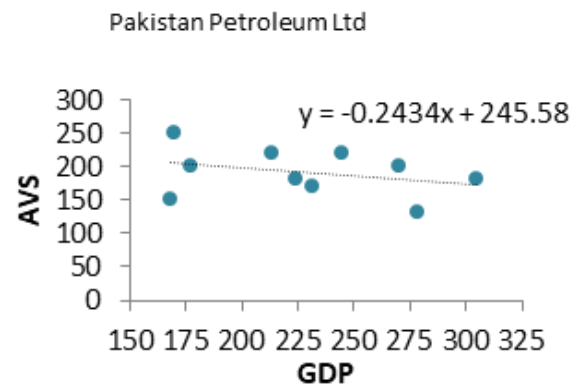
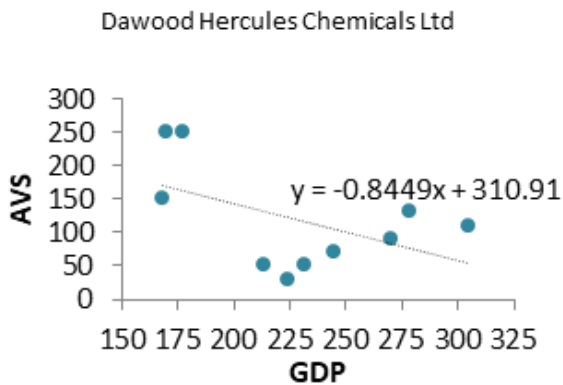
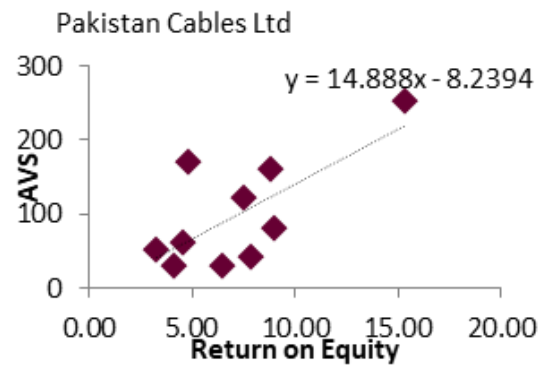
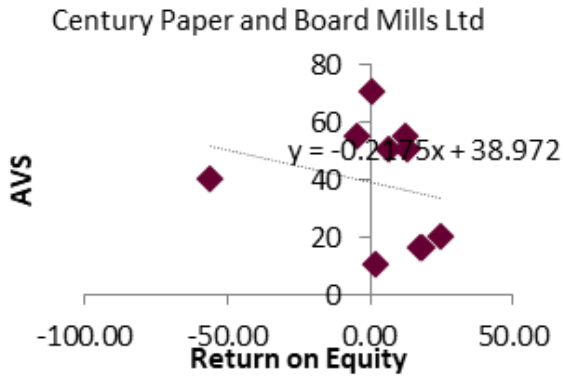
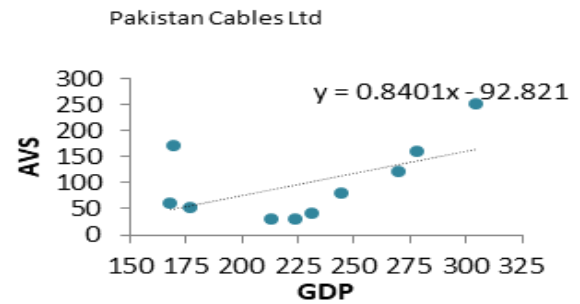
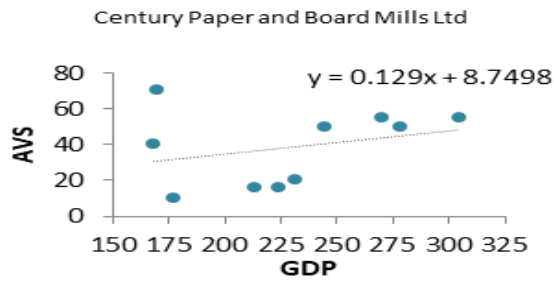
Figure 2

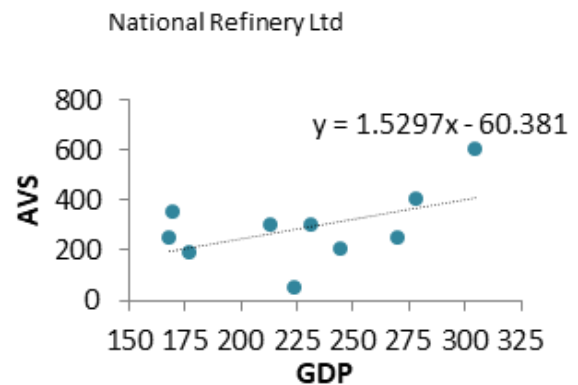
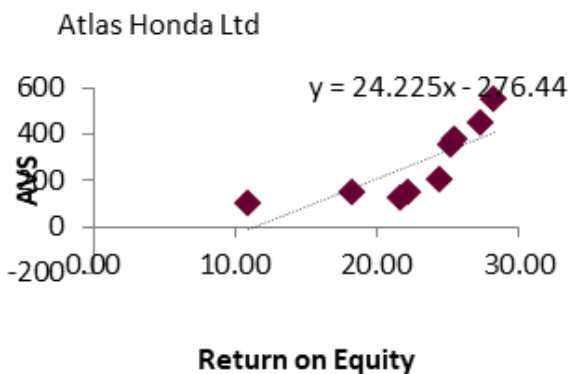
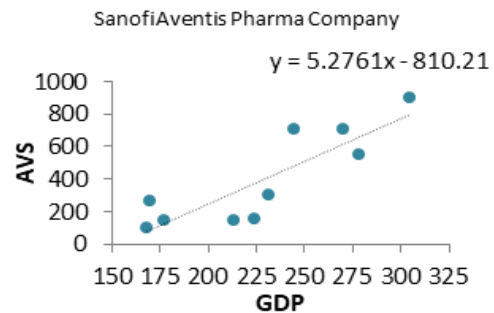
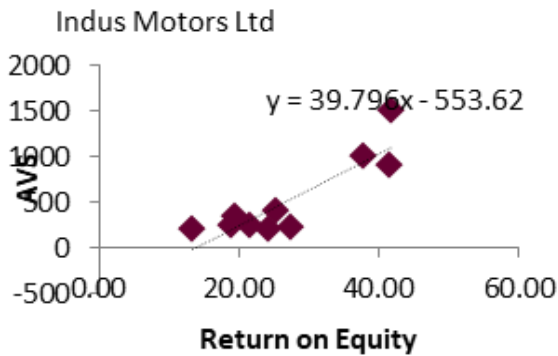
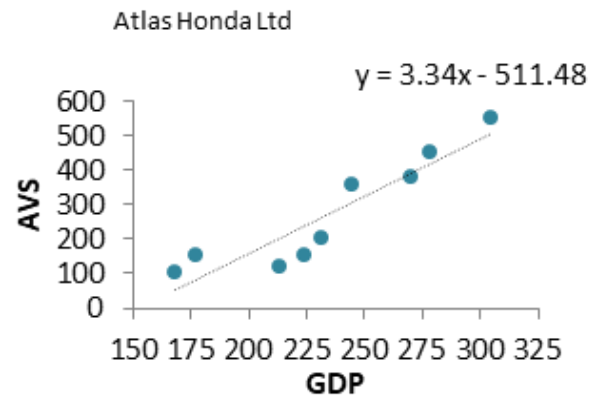
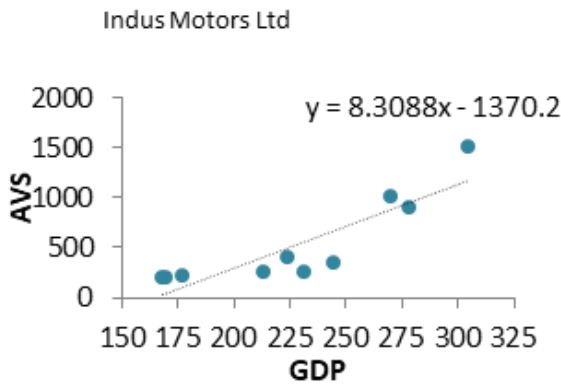
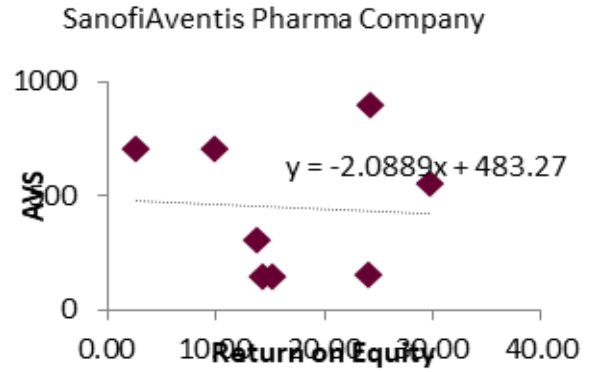
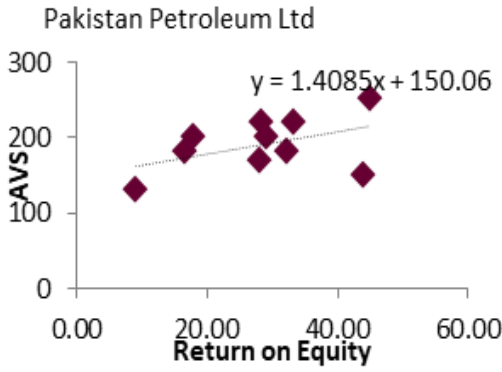


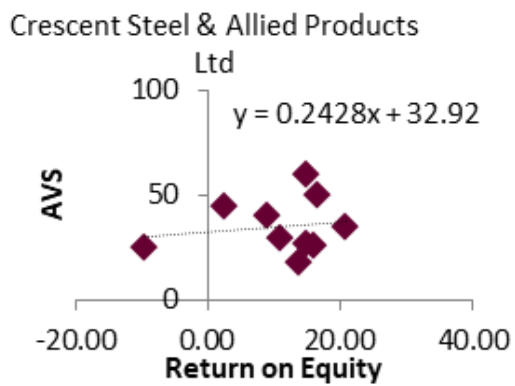
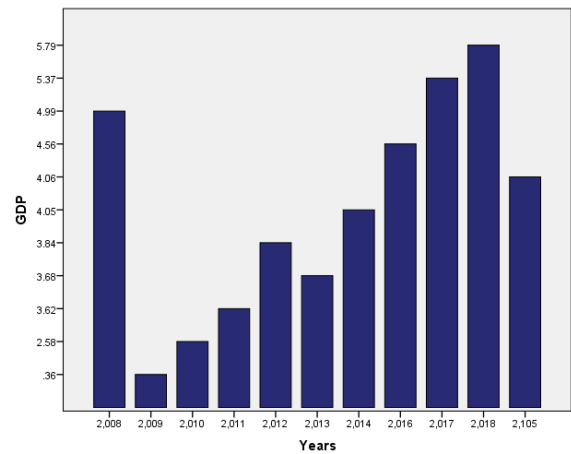
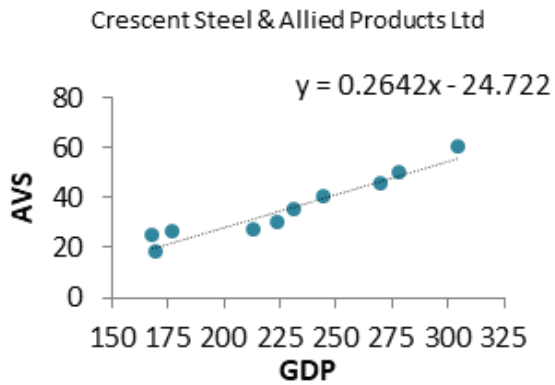
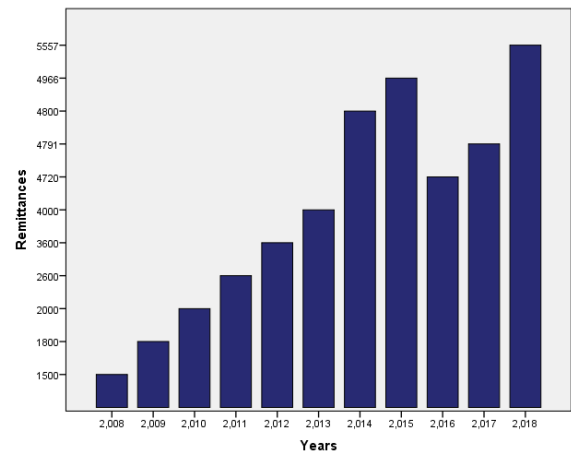
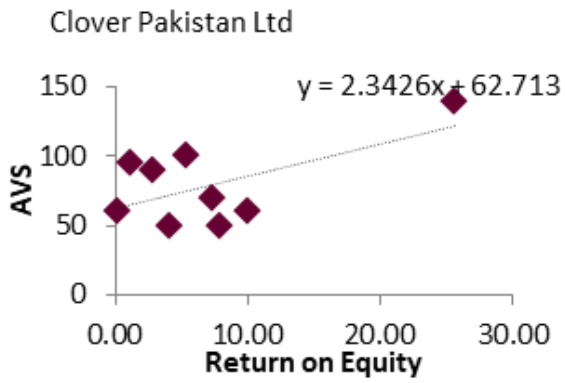
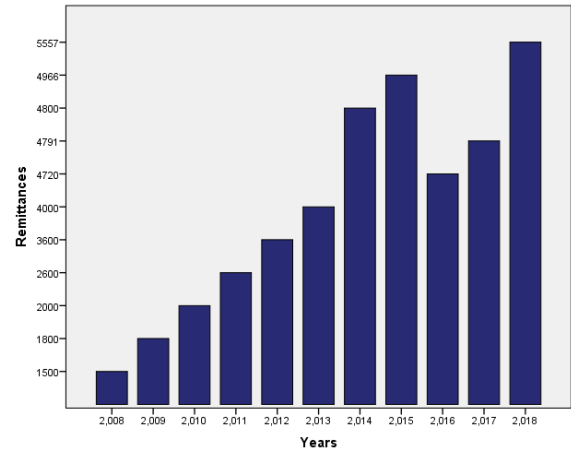
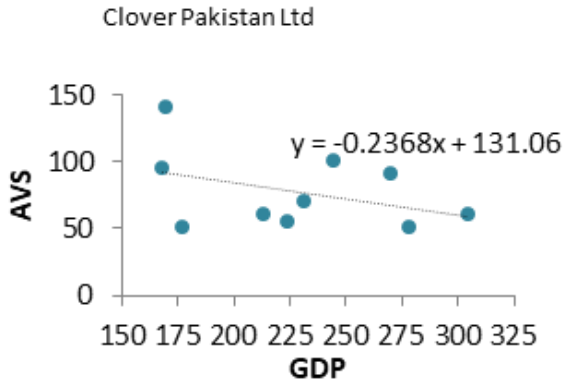




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Conclusion and Discussion

Generally it is considered that the macroeconomic variables is high influence on the stock prices of certain economy, in this study it is examined that top 32 companies of Pakistan stock exchange and the impact of GDP the evidences showing the majority of companies are reacting as the GDP of the country is moving upward trend where also be reflecting in the stock prices but the few companies stocks were not indicating as per the GDP trends in the Pakistan economy therefore, the hypothesis is reached up to the level of acceptance as majority of companies stock price is directly correlated with GDP under the period of study but few companies due to any other reason is unable to provide evidence that their stock values directly correlated with the increase in GDP therefore, can be concluded that the microeconomic factors of the company/ industry is also very important In relation to stock price of the companies. The companies under study having strong and stable financial condition as well as very strong reputation in the society such as OGDC, Pakistan petroleum, POL, PSO, national refinery, Pakistan refinery, are Government own companies PTCL, Siemens, Unilever, Shell Pakistan are international companies and operating in various countries including Pakistan. While Indus motors, Al-Ghazi tractors, Atlas Honda, Engro corporation Dawood Hercules , Service industry, Rafhan maize are highly financially stable and repeated companies the fluctuation in the stock price of these companies in short period of time due to continuous increase in GDP as an important element and showing that in short term microcosmic factor of company/industry are more influence on stock price of the company and the investors are more putting attention for short term in the microeconomics elements such earning per share , current ratio, dividend yield ratio, etc. it is also mentioning here worth that a great portion in Pakistan is financial institutions, insurance companies, mutual funds, among this sector majority of decision makers and executive consider the long term investment due to the risk factors. So they more concentrate and pay attention on the fundamental financial stock strength and companies reputation as well as on the technical analysis which is the outcomes of the majority investors' attention towards certain stocks. In Pakistani stocks market the great number of investors believes on the rumors and information regarding the companies and invest on that information and the suggestions so this also create variation in the stocks prices in Pakistan stock market. There are various international studies put importance in the macroeconomic factors such as CPI index, Interest rate, exchange rate, GDP, change in oil prices but in Pakistan the situation little different.



The relationship between ROE and GDP is also indicating that increase in GDP in directly influence the earnings of the companies which consequently enhance the return on equity. This microeconomic reflection although vary with certain companies due to other microeconomics, managerial and financial reasons but this study is producing and unchallenged able evidence that increase in macroeconomics variables in the economy like GDP produced higher effects on the companies earnings and other financial areas.

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