Journal of law social and management sciences 4 (1) 27-40, 2025

Journal home page: https://jlsms.org/index.php/jlsms

Open Access

ISSN:2959-3867

Impact Assessment of Macroeconomic Variables on the KSE-100 Index: An Empirical Study of Pakistan's Stock Exchange

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Abstract: This study analyzes how macroeconomic elements affect the KSE-100 Index in Pakistan through a short and long-term evaluation using Autoregressive Distributed Lag (ARDL) methodology. Monthly data collected from the State Bank of Pakistan and World Bank resources from July 2009 to June 2024 demonstrates how interest rate, exchange rate, inflation, FDI, GDP and unemployment rate affect KSE-100 Index performance. Research results show that both elevated interest rates and inflationary pressures cause KSE-100 Index declines due to their adverse effect on stock market performance. The positive correlation between FDI and GDP shows that market investment together with economic expansion increases the stock market. The research shows investors strictly need stable macroeconomic environments for maintaining market confidence while directing investments. The analysis offers important findings to investors along with policymakers who need to implement stable economic policies to boost financial market expansion. Frictionless stakeholder decision-making supports economic growth and further strengthens Pakistan's stock market through complete knowledge of these relationships.

Key Words: *KSE-100 Index, Macroeconomic Variables, Stock Market Performance, ARDL Model*

INTRODUCTION

The study on the stock market performance and macroeconomic variables represents an important field for emerging economies such as Pakistan. Pakistan Stock Exchange (PSX) has demonstrated meaningful growth its investors align in lesser numbers than participants from regional markets. The investor base in Pakistan stands significantly lower than other regional markets such as Bangladesh, India, Iran and Malaysia (Naqvi, 2014). The performance of KSE-100 Index is a vital indicator that shows market direction as well as economic conditions of the largest companies listed in the exchange. The study analyzes the various effects of key macroeconomic indicators like interest rates as well as exchange rates, inflation, FDI, GDP and unemployment on the KSE-100 Index. The market elements influence both investor sentiments and corporate earnings along with market performance results. The cost of capital falls under interest rates while exchange rates determine trade competitiveness and inflation reduces purchasing power and GDP growth increases stock values.

Research findings indicate stock market development demonstrates positive effects on economic growth according to (Atje and Jovanovic, 1993) and (Levine and Zervos, 1996). Influences of macroeconomic variables on stock market performance since different studies produced contrasting results about inflation together with exchange rates and FDI (Huybens and Smith, 1999; Boyd *et al.*, 2001; Phylaktis and Ravazzolo, 2005). The Pakistan Stock Exchange (PSX) shares similar sensitivity patterns with other emerging markets because it responds strongly to macroeconomic elements including interest rate, exchange rate, inflation, FDI, GDP and unemployment rates. The particular influence of these variables on the KSE-100 Index does not receive sufficient academic focus in research studies.

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Objectives

The objective of the study involves examining both the relationship strength and characteristics between the KSE-100 index and its selected macroeconomic variables. Specifically, the study aims to:

- This analysis evaluates which selected macroeconomic variables cause changes in the KSE-100 index's performance levels.
- The research evaluates the direction together with intensity between the KSE-100 index and its relationship to macroeconomic indicators.
- An evaluation exists regarding how interest rates fluctuate alongside inflation rates and exchange rate volatility as well as foreign direct investment (FDI) and GDP growth and unemployment affects the KSE-100 index.
- The findings dictate investment-related advice for both investors and financial analysts and economic policymakers to strengthen their investment approaches and policy frameworks.

Theoretical Framework

The research on the KSE-100 Index with the reference to its link with the macroeconomic factors can be grounded in some of the important theories and concepts of economy. The following selected variables will be explained by the help of this framework in the purpose of the knowledge of the relations between these variables.

Starting with the 'Interest Rate Theory' which examines the effect of changes in interest rate on investment and expenditure like change in price for each stock. When interest rates increase, the cost of financing increases, as do the costs of equities; the KSE-100 index is smaller when earnings are smaller.

Following the 'Exchange Rate Theory' that specifically deal with the effect of the change in the value of currency has on the earnings of the business for those deals with exports and imports of goods. Firms' overseas sales can improve with a declining currency value, thus leading to high export revenues; nevertheless, it may lead to high import costs for firms, putting stock returns at risk.

'Inflation Theory' makes it easier assisting in the determination of how varying inflation rates affect the stocks. These in turn reduce the buying ability of the consumer and decreased revenue to the businesses because of high levels of inflation. This theory helps in understanding the stated negative relationship between on one hand and the KSE-100 index.

The 'Foreign Direct Investment Theory', provide importance of foreign investments as well as focal to market and development or economic growth. By the possession FDI possesses capital, technology and expertise thus affecting market returns and the KSE-100 index growth.

With reference to GDP Growth, the framework is inclined to the idea that an expanding economy tends to provide higher corporate returns and stock market returns. Hence it will be meaningful to establish the relationships of the GDP growth and the KSE-100 index.

'Labour market theory' of advanced economies – It relates employment rate to levels of economic activity and tendency to consume. Low employment also creates a feeling of exposure to economic instability, public with less employment; they less likely to spend hence are likely to show less participation by their funds in the stocks market thus put a negative pressure on KSE-100 index.

The framework also comprises the 'Short-Run and Long-Run Dynamics Theory' which investigates the near-term and postponed impact on stock market performance of macroeconomic factors. Therefore it is important to understand these dynamic to evaluate the pace that the KSE-100 index changes in response to economy.

Finally, the study will utilize 'Time-Series Analysis Theory' which is important when evaluating properties of the selected variables. The application of the econometric test of stationarity for the variables in this analysis will establish the degree of trends in the variables on which the ARDL model will be based upon.

The present theoretical foundation draws together several economic theories and constructs to analyses the link between macroeconomic variables and the KSE-100 index. It is useful in that it forms a framework of your research aims and objectives and coordinates your analysis and interpretation of results.

Literature Review

A review of literature shows that previous studies have analyzed the effects of monetary policy on stock performance in countries of diverse development levels, including developed, emerging, and transitional, utilizing different econometric technique and data sources. For instance, (Okpara, 2010) performed an empirical research of the Nigerian stock market through Two-Stage Least Squares (2SLS) and Vector Error Correction Model (VECM) and Forecast Error Decomposition Analysis. The research results established monetary policy instruments as significant factors in stock market returns over the long run since they directly influence investor actions and market value. The findings apply directly to Pakistan's stock market because similar monetary policy changes would affect KSE-100 index performance.

The study by (Muktadir al- Mukit, 2013) analyzed Bangladesh's monetary policy variables through cointegration and Granger causality testing while studying repo rate and money supply alongside inflation and Treasury bills. His research showed that market index values increased with money supply and inflation factors and Treasury bills but experienced negative changes when the repo rate changed. The research implies that monetary policies intended to expand financial conditions will promote stock market expansion just as the Pakistani stock market demonstrated.

The stock market experiences changes due to different macroeconomic factors that affect both investor sentiment and financial resource movement along with market equilibrium. (Zare, 2017) examined macroeconomic impact on the Iranian stock exchange through the application of an autoregressive distributed lag (ARDL) model. A research study demonstrated that higher interest rates create adverse effects on stock market performance because they diminish both corporate success and investor participation levels. Stock market returns receive bullish effects from domestic credit as well as foreign exchange rates and inflation which indicate that expansionary economic conditions and enhanced liquidity enhance market performance. The stock market of Pakistan could show parallel statistical relationships. (Gachunga and Kuso, 2019) demonstrated through statistical analysis that macroeconomic variables shared a long-term relationship with stock market activity in Kenya. Research data demonstrated that stock values decreased with higher supply of currency yet the exchange rates along with short-term interest rate increased market performance. These findings reveal the expansive relationship between market liquidity and currency values coupled with financial market behaviors which predict frameworks operating on KSE-100 index.

Economic fluctuations of exchange rates strongly affect stock market performance especially in emerging economies which need substantial foreign investments for growth. A negative relationship exists between exchange rates and stock returns in Pakistan based on (Khan et al, 2012). Foreign investors lose interest in Pakistani investments after the rupee strengthens because their domestic currency values become less profitable. The stock market of Pakistan reacts intensively to changes in exchange rate volatility. A short- term negative relationship existed between exchange rates and stock prices according to the research analysis conducted by (Bahmani-Oskooee and Saha, 2015) in the U.S. stock market. Exchange rate shocks have shown conflicting effects on stock prices during the long-term analysis based on economic situations and market structures according to their study. The behavior of stock prices in Pakistan relative to interest rate received investigation from (Chang and Rajput, 2018) through their ARDL model study. The research team discovered negative relationships between interest rate and stock prices both in the short-term and long-term perspectives yet the short-term effect proved stronger.

Different empirical research has shown how various macroeconomic factors relate to stock market performance. Foreign trade activities influenced Korea's stock market more significantly than interest rate and inflation changes according to (Kwon and Shin, 1999). Economies which primarily depend on exports such as Pakistan show evidence that their stock markets tend to respond according to their trading success along with worldwide market demand patterns. (Nasseh and Strauss, 2000) revealed that interest rate brought positive results for stock prices within the short term while the relationship evolved from the first analysis period to the subsequent time frame. The results indicate a two-sided dynamic pattern in which monetary policy influences the stock market over different periods therefore Pakistan's stock market might show varying reactions based on interest rate duration. (El-Masry and Badr, 2020) on the Egyptian stock market established a powerful relationship between currency exchange rate fluctuations and stock market indices that existed before the 2011 revolution. The revolutionary period in Egypt showed declining stock market sensitivity to foreign exchange movements because political stability and economic control become key factors which determine exchange rate effects on the stock market. The research results hold value for Pakistan because its market volatility frequently results from political instability.

The external economic conditions along with the financial policies make substantial influence over stock market movements. Such factors as economic stability alongside controlled inflation rate and interest policies directly affect investor attitudes as well as business profitability. According to (Paddy, 1992) stock market expansion depends on the existence of a stable macroeconomic environment. Positive economic indicators that include low inflation along with a stable exchange rate together with increased GDP represent fundamental factors that boost corporate profitability which increases investor confidence while expanding stock market operations. (Atje and Jovanovic, 1993) confirmed that economic growth has a positive influence on the advancement of stock markets. The stock market development enhances Pakistan's economic structure by supporting better capital allocation and performance improvement. (Levine and Zervos, 1996) encompassed 41 countries to prove stock market development fuels long-term economic growth despite accounting for initial GDP settings and human capital formation. Pakistan's economic advancement requires a strong KSE-100 index stock market for sustainable growth. (Harris, 1997) stock market development supports economic growth in developed economies yet generates lower effects on developing nations. Further investigation is needed to evaluate the stock market's role in long-term economic development because of existing uncertainties.

The stock market shows substantial reaction to interest rate and exchange rate along with inflation which in turn modifies corporate earnings together with investment patterns and market perceptions. (Khan et al, 2012) investigated Pakistan's stock market performance regarding interest rate, exchange rate and inflation revealed a negative exchange rate effect on stock return values. According to their research findings foreign investors highly react to currency movements because a rising Pakistani rupee rate decreases their earnings when they exchange Pakistani currency into foreign currencies. Policy decision-makers who want to maintain foreign equity investments in Pakistan's equity market should consider this behavior. (Suriani et al, 2015) together with (Hunjra et al, 2014) demonstrated that exchange rate show no significant impact on stock prices in Pakistan's market setting. The inconsistent findings demonstrate that other economic elements at home and abroad serve to reduce the rate at which exchange rate affect stock market returns within Pakistan. (Flannery and Protopapadkis, 2002) analyzed stock return responses to macroeconomic announcements by focusing on labor market figures and monetary supply as two key demand factors. Labor market conditions together with monetary policies in Pakistan strongly influence the direction KSE-100 index movements take. (Mokerjee and Qiao, 1997) conducted research on the relationship between Singapore and Malaysia's stock prices and money supply which supported the existence of a lasting stock price to industrial production link. (Ibrahim and Aziz, 2003) has revealed positive long-term integration between stock prices and macroeconomic data. The available evidence indicates Pakistan's stock market shares a connection with general economic production measures.

FDI impacts stock market trends because it provides capital flow and maintains economic balance alongside corporate development. Investor confidence is subject to change when economic uncertainties and macroeconomic policies emerge. (Brada et al, 2006) examined FDI in seven European transition economies to discover that high inflation rate along with declining GDP combined with increasing joblessness deterred foreign direct investments. The conditions existing in Pakistan could influence both FDI inflow numbers and subsequent stock market operational results. (Boateng et al, 2015) revealed that real GDP functions as a positive FDI determiner while inflation and unemployment as well as interest rate create negative impacts on foreign direct investment. The stable condition of macroeconomic factors serves as a crucial factor for Pakistan to attract foreign investment into its stock market. (Kahouli and Maktouf, 2015) established that FDI receive positive impact from both GDP size and development of infrastructure and human capital base. Pakistan needs to focus on developing its targeted areas for more FDI influx since this investment boost will lead to improved stock market liquidity and enhanced performance. (Elfakhani and Mackie, 2015) on BRICS economies revealed that FDI mainly depends on political stability and education levels instead of economic factors. The research indicates Pakistan's stock market experiences effects from economic policies as well as governance stability and institutional stability.

Stock market performance heavily relies on the economic growth together with unemployment rate because both factors impact consumer spending and corporate profits while affecting investor trust. (Mohsenia and Jouzaryan, 2016) observed a negative pattern between inflation alongside unemployment which inhibited long-term economic development throughout Iran because of weak macroeconomic management practices. The country of Pakistan faces ongoing difficulties from high unemployment rate along with elevated inflation which remain steady problems across the nation. (Ozcelebi and Ozkan, 2017) involved G10 countries to validate that increased financial and economic connections result in decreased joblessness. The Pakistani stock market performance would benefit from more extensive economic reforms together with enhanced financial integration which seeks to reduce unemployment rate. (Lee and Huruta, 2019) who applied the Granger causality test in Indonesia open unemployment rate impacted GDP not vice versa. Employment- driven economic policies need to be implemented in Pakistan to support the growth of its stock market sector. These studies reflect a level of integration between macroeconomic variables and how the impacts are shifted in different environments for different stock markets.

Impact of Macroeconomic Variables on Stock Market

There is surplus evidence to suggest that there is a causal link among the macroeconomic variables and the stock market performance. It is important to understand that each of the mentioned variables operates on the market distinctively influencing investors' perception and decision making.

Interest Rates: Stock prices experience movement shifts because interest rate affect the expected returns together with investor sentiment. Most financial markets show the opposite effect between interest rate and stock prices because higher rate make borrowing more expensive while decreasing future cash flows which leads stocks to value lower.

According to (Zare and Azali, 2015) short-term interest rate exert a considerable influence on stock prices by means of the discount rate. The growing or declining interest rate create variations in investor return needs that affect how firms assign value to themselves and their stock market performance. Monetary policy decisions regarding short-term rate in Pakistan directly affect stock market performance thus making this research relevant for the nation. (Mukherjee and Naka, 1995) discovered that short-term interest rate increase in parallel with stock prices though long-term rate have a negative impact on market stocks. Stock market behavior depends strongly on nominal risk-free elements within valuation models which long-term interest rate reflect according to their argument. Analysis of stock price movements in Pakistan requires the consideration of interest rate both in the short-term and long-term.

(Bulmash and Trivoli, 1991) established through their research that in the U.S. stock prices align negatively with long-term interest rate by showing that interest rate growth drives up borrowing expenses and lowers corporate profitability triggering market downturns. The Pakistani market shows evidence to support the theory that rising interest rate creates negative force on the KSE-100 index. (Lobo, 2000) has modified interest rate because both discount rate adjustments and changes in investor predictions about future inflation levels. Monetary policy decisions heavily depend on inflation hence changes in interest rate result in indirect stock price effects through modified inflation outlooks. The examination of the KSE-100 index demands knowledge of central bank interest rate adjustments due to Pakistani inflationary pressures. (Wongbangpo and Sharma, 2002) stock markets from ASEAN nations of Indonesia, Thailand, the Philippines, Singapore, and Malaysia reacted differently to interest rate adjustments. The link between Malaysia's stock market performance and Indonesia positively correlated yet Thailand Singapore and the Philippines displayed negative relations. The connection between interest rate and stock prices depends on specific local market conditions and local economic conditions. The results suggest Pakistan must analyze its unique macroeconomic conditions because they affect how interest rate affects the KSE-100 index performance. (Rapach et al, 2005) studied 12 industrialized nations to determine that interest rate presented the strongest forecast of stock market returns. This study validates interest rate as essential stock market trend shapers which require study of their relation in Pakistan's stock exchange.

Inflation Rates: The connection between inflation and stock prices creates extensive research discussions in financial literature while diverse economic settings and time horizons show inconsistent patterns of results. In the Pakistani stock market environment inflation shapes the KSE-100 index performance through its influence on investor optimism as well as corporate profit generation and exchange market steadiness.

The research findings of (Fama, 1981) reveal a negative relationship between inflation rate increases and stock market values in the United States. Increased inflation levels make stock prices reduce because investors face increased borrowing costs and diminished purchasing power. Pakistan needs to be mindful of this pattern because inflation causes market liquidity problems and weakens investor trust. (Nelson, 1976) showed that both forecasted and un-forecasted inflation levels lead to negative stock return effects. The financial market in Pakistan experiences lower stock valuations due to heightened inflation uncertainty because investors require more premiums for risk. (Firth, 1979) on the British stock market established negative price movement in relation to inflation thus confirming that equities protect investors against inflation risk. The discovery demonstrates its applicability to Pakistan's financial market because strong inflation can reduce both stock investment and total market valuation. (Chen et al, 1986) revealed that inflation together with industrial production directly influence stock returns particularly when market movements are extreme. The conditions of macroeconomic instability in Pakistan create frequent fluctuations in stock market values.

According to (Lee and Brahmasrene, 2018) research that studied the stock prices decline at Korea Stock Exchange due to inflation in the short term yet this impact does not persist. Short-term inflation shocks in Pakistan seem to create brief downturns in the market while long-term impacts remain minimal. Using the Granger causality test on Indian, Japanese and Chinese stock markets (Megaravalli & Sampagnaro, 2018) established that inflation had no statistical co-integrative link to stock price movements. The evidence shows that inflation controls short-term market activities yet demonstrates insignificant power in longer-term stock market predictions. (Kaul, 1987) examined the roots of inflationary effects on equity value calculations by indicating that greater inflation leads to rising nominal risk-free rate and policy rate. Pakistan's stock market requires attention to inflationary forces which impact central bank decisions as well as investor cost of capital assessment. The work of (Marshall, 1992) argues that rise of anticipated inflation causes stock prices to increase because money demand decreases while stock demand grows. Investor expectations determine how inflation affects stock prices because the relationship exists in a complex and specific manner. The findings of (Geske and Roll, 1983) confirmed that inflation generates negative stock price effects which match former study results. High inflation results in a resource diversion toward consumption items from capital markets thus producing decreased stock market activity and reduced trading volumes. (Mukherjee and Naka, 1995) studied the Japanese stock market to show that increasing inflation drives capital to depart from the country thus influencing stock index performance. Pakistan's stock market relies heavily on foreign investment but the importance of this factor changes in relation to inflation rate.

Exchange Rates: Different economic examinations of stock price and exchange rate relationships yield various outcomes because of country-specific and time-specific factors. The KSE-100 index of Pakistan experiences substantial effects from exchange rate movements because these changes alter investor activity and foreign investment patterns and corporate monetary gains. (Aggarwal, 1981) initiated comprehensive research into stock exchange relationships in the U.S. through analyzing 1974-1978 monthly price and rate data. Approximately a positive correlation existed between currency appreciation and rising stock prices according to his research. Financial experts can utilize this information to predict currency movement effects on emerging economy stock markets including Pakistan.

The study conducted by (Rahman and Uddin, 2009) examined the link between stock prices and exchange rate in Bangladesh, India, and Pakistan through Johansen cointegration and Granger causality analysis from 2003 to 2008. Analysis showed stock price movements do not share a persistent relationship with exchange rate changes nor do they cause each other thus information between markets exists unaffected. Research shows that market forces in Pakistan generate unpredictable results regarding exchange rate influence on stock prices. (Khan et al, 2012) applied their research to the Pakistani stock market to confirm that exchange rate variations both on short-term and long term periods produce significant impacts on stock market performance. The study presents factual evidence about how exchange rate affects stock prices in Pakistan to make it important for understanding the KSE-100 index. (Abdalla and Murinde, 1997) evaluated three emerging economies Pakistan and India and Korea and showed exchange rate impact stock market values in these markets. The studies demonstrate that market fluctuations of foreign exchange create direct effects on the equity valuation processes within developing economies through investor sentiment combined with capital flow dynamics. Exchange rate volatility in Zambia caused (Sichoongwe, 2016) to reveal that market investors became less likely to participate in stock market trading because of high currency fluctuations. The high level of exchange rate instability in Pakistan jeopardizes foreign investments and triggers market confidence concerns.

(Moussa and Delhoumi, 2021) investigated exchange rate variations in five MENA countries and established an asymmetric stock price response where markets reacted differently to these fluctuations. The assessment of exchange rate impact on Pakistan's stock market requires attention to localized market elements because they influence the relationship dynamics between exchange rate and stock prices. Stock returns from the Shenzhen Stock Exchange experienced negative effects when the Chinese Yuan appreciated according to (Khan et al, 2019). The researchers strengthen the general supposition that currency appreciation reduces export business competitiveness leading to lower stock market prices. The researched concept shows potential impact on Pakistani export-driven businesses because currency appreciation might decrease their market competitiveness.

Exchange rate movements established negative effects on U.S. stock prices within short-time periods but no sustained influence on stock prices (Bahmani-Oskooee and Saha, 2015). Currency movements seem to generate trading disruptions that affect the KSE-100 index for brief periods but these movements establish minimal influence across more extensive timescales. (Mukherjee and Naka, 1995) executed research on stock prices and exchange rate in Japan that demonstrated quick currency depreciation triggers capital inflow along with decreased trading activity. The evidence indicates that Pakistan could experience negative effects when foreign investors leave the stock market due to currency depreciation.

Foreign Direct Investment: The economic growth depends heavily on Foreign Direct Investment because it drives industrial development alongside technological advancements and labor market expansion. Research shows that FDI influences stock market performance in multiple ways because investment flows from abroad either build market confidence or create capital market problems. Knowledge about the effects of FDI on KSE-100 index helps Pakistan gauge economic stability and examine investor sentiment in the country.

The studies of (Gaston and Nelson, 2002) showed that foreign direct investment grew faster than trade throughout the previous twenty years because foreign investment became vital for economic expansion. Supplies of foreign direct investment into Pakistan have created substantial effects on stock markets through bolstering industrial production and increasing market confidence. Research by (Owusu–Nantwi and Erickson, 2019; Dinh et al, 2019) showed that developing nations benefit largely from FDI through technology transfers and capability development and industrial enlargement. KSE-100 index gains strength from corporate earnings growth that enhances investor sentiments in Pakistan. (Onakoya, 2012; Awolusi & Adeyeye, 2016; Malikane & Chitambara, 2017; Sunde, 2017; Masipa, 2018) proved that Foreign Direct Investment has a positive impact on economic growth in African states. Foreign Direct Investment has strengthened Pakistan's business activities and liquidity of its stock markets through cross-border investment flows. (Bhavan et al, 2011) determined that trade openness together with population and infrastructure served as positive factors for FDI attraction yet geographic distance displayed a negative impact and human capital showed no significant relation. The research findings hold value for Pakistan's economic context because trade liberalization together with population shifts directly affect FDI flows into the market as well as stock market movements.

(Khan and Khan, 2011) studied the cause-effect pattern between FDI and GDP in Pakistan between 1981 and 2008 and established a co-integration between the variables. Higher GDP growth rate tend to bring in FDI which subsequently modifies stock market performance according to research. (Chakraborty and Nunnenkamp, 2008) confirmed that economic expansion in Pakistan through FDI creates reciprocal growth in GDP alongside strengthened stock market growth. (Tuman and Emmert, 1999) together with (Froot and Stein, 1991) discovered that diminishing exchange rate directly promote FDI. The weakening of Pakistani currency hits foreign investors due to its effects on investment choices thus affecting market stock performance. The prolonged decline of foreign currency values leads to damage to FDI investments through diminished asset worth according to (Sung & Lapan, 2000). The understanding shows its crucial value to Pakistan because extended market exchange fluctuations push away foreign investors thus harming stock market stability.

Gross Domestic Product: The expansion of real GDP strongly affects stock prices because it generates higher corporate earnings combined with improved investor sentiments and greater stock market value. The KSE-100 index in Pakistan heavily depends on how GDP growth impacts stock market values because it affects market direction and extended investment behavior.

Stock market valuation mirrors expected real GDP expansion rate because investors base their stock evaluations on predictions about economic growth according to (Carstrom, 2002). The market behavior of Pakistan directly depends on economic indicators because they strongly influence the changes in financial values. (Alexius and Spang, 2018) illustrating how foreign market demands influence stock market movement in relation to GDP could be considered global empirical evidence. Pakistan's stock market performance depends heavily on trade openness and external demand since foreign investments together with exports serve as key factors for economic development. The profitability of companies is influenced by economic expansion through its impact on expected earnings distributions and stock price movements and dividend payments according to (Fama, 1990), (Liua and Sinclairb, 2008) and (Oskooe, 2010). The Pakistani economy benefits from robust GDP growth because it generates rising business revenues which strengthen the KSE- 100 Index performance figures.

According to (Rousseau and Vuthipadadorn, 2005) the development of the financial sector has a direct impact on economic growth. The Pakistani financial sector expansion delivers better capital availability which leads to accelerated stock market growth because businesses gain funding for their growth initiatives. (Antonios, 2010) stock market integration plays a crucial role in enhancing resource allocation together with financial stability. The integration of Pakistan's financial markets would enable better risk spreading across different assets thus drawing foreign capital while creating highly efficient stock markets. (Chandra, 2004) has supported GDP growth as a stock price driver through its positive impact on business expansion activities and consumer buying patterns and corporate financial results. The economic framework of Pakistan shows that market growth phases tend to develop during times of positive stock market patterns.

In the light of above mentioned, this study will explain the correlation between GDP growth rate and KSE-100 index in order to understand how performance of an economy can be in terms of stock market returns.

Unemployment Rates: The stock market responds to unemployment in various ways because it influences spending behavior of consumers alongside investor feelings and business earnings. The Pakistani stock exchange shows evidence that an increase in unemployment creates falling aggregate demand and decreased corporate profit which damages investor trust and results in market value decreases.

Since the late 1930s unemployment has existed as a primary economic worry which affects nearly every economy according to (Farah and Ali, 2018). The continuous state of unemployment in Pakistan diminishes household income with reduced disposable spending ability that restricts investment activities and may cause harm to KSE-100 index performance. (Sahnoun and Abdennadher, 2019) researched how unemployment affects the informal economic sector. Developed nations demonstrate two-way causality between rising unemployment and stock market activity but Pakistan along with other developing economies exhibit only one-way causality leading to informal sector expansion and decreased formal market investment ability. (Jena and Sethi, 2019) pointed out capital accumulation challenges faced by various developing economies that reduce their ability to fund investments. The economic condition in Pakistan faces constraints because high unemployment and low savings rates obstruct capital formation which leads to limited stock market liquidity and drops in growth potential.

Through his work in (Okun, 1962) established the negative connection between GDP growth with unemployment level in real terms. The Pakistani economy shows signs of slow economic performance due to inadequate job generation which results in decreased business revenue along with unfavorable market stock outcomes. (Phillips, 1958) and other researchers we learn that unemployment and inflation show a temporary direct relationship which enables demand-side policies to work on both elements. The Pakistani economy presents a short-term inverse relationship between unemployment and rising inflation while sustained inflationary pressures tend to destabilize investor stock market trust.

Hypothesis

H1 - The KSE-100 index reacts negatively to an increase in interest rates. H2 - The KSE-100 index reacts negatively to an increase in inflation.

H3 - The Exchange rate volatility negatively affects performance of KSE-100 index in relation to USD. H4 - The KSE-100 index has positive relation to higher foreign direct investment.

H5 - The KSE-100 index have positive relation in linked to higher GDP growth rates.

H6 - The KSE-100 index is react positively when the unemployment rate declines

Methodology

The research method uses systematic data assessment to study how macroeconomic factors influence KSE-100 index performance at the Pakistan Stock Exchange. The study starts through data acquisition utilizing monthly time-series information about interest rate, exchange rate, inflation, foreign direct investment (FDI), gross domestic product (GDP) and unemployment rate. Reputable sources including World Bank, International Monetary Fund (IMF), Investing.com and State Bank of Pakistan together with Pakistan Bureau of Statistics will provide accurate and reliable information regarding the data.

The Augmented Dickey-Fuller (ADF) test will determine integration order of variables as part of data analysis procedures. An ARDL framework will determine the relationship between the KSE-100 index and macroeconomic variables by assessing their long-run and short-run effects. The application of the Bounds Test for cointegration will determine if the variables form a long-term equilibrium relationship.

To validate the model we will perform diagnostic tests which include Ramsey's RESET test for model specification and autocorrelation tests and heteroscedasticity tests. Short-term and long-term effects of macroeconomic factors on the stock market emerge through the coefficient estimates obtained from the ARDL model.

The research investigation of KSE-100 index macroeconomic influences will deliver actionable suggestions for investment decision-making by both stakeholders and policy officials. This study enhances theoretical stock market and investment strategy knowledge within Pakistan's financial realm through research on macroeconomic factors that affect market performance.

Collection of Data

This research investigates the macroeconomic variables which affect KSE-100 index performance using six main predictors named interest rate, exchange rate, inflation rate, foreign direct investment (FDI) and GDP per capita alongside unemployment rate. The study draws data from July 2009 to June 2024 monthly and year-end periods through reputable sources which include the State Bank of Pakistan together with the Pakistan Bureau of Statistics and the World Bank for reliable and accurate information.

1- **Interest Rate (KIBOR):** In this study, the KIBOR is used as a proxy to the nominal interest rate. KIBOR is the interest rate at which commercial banks operating in Pakistan, borrow money from other banks without any security in the money market. It serves as a measure of short term funding costs applied in Pakistan's financial markets for loan and investment purposes. Since nominal interest rates are defined as the price of credit advertised by the actual credit givers, the KIBOR can be identified as a measure of this idea within Pakistan's financial system. This study has utilized the month-end KIBOR to reflect the market cost of borrowing and the costs that may affect the behavior of investors to undertake more, or less trading as evident from the KSE-100 index. The data for KIBOR is available on **monthly basis**, and hence the data is convenient for time series analysis. As KIBOR mostly captures the short-term borrowing rates we are hence using it as a proxy for the nominal interest rates in this context particularly for analyzing it with the KSE-100 index.

2- **Exchange Rate (USD to PKR):** The ratio of USD to PKR is an important variable for analyzing of an open economy like Pakistan since fluctuations of exchange rate imply the overall effect on the profitability of organization that comes through imports and exports. On the same aspect, **monthly basis** information on the exchange rate is applied in determining the relative change in the value of domestic currency against the US Dollar on the stock market. There is potential that weakening of the Pakistani rupee may decrease the capacity of the firms to fund imported products, some of which may affect the company's operational costs leading to decreased profits or even, lower stock prices. On the other hand, a stronger currency might be positive for the stocks if as is often the case it boosts investor sentiment and the prospects for firms. This increases the robustness of the study to capture short-term impacts of exchange rate movements on the KSE-100 index, since monthly exchange rates are employed.

3- **Inflation Rate (Consumer Price Index – CPI overall):** Inflation is one another form of information which may be defined here as a rate of change in the Consumer Price Index – CPI overall that reflects the rise in prices of overall goods and services across the country. This inflating price level data is taken on **monthly basis** to determine the extent of market on stocks. Inflation tends to undermine consumers buying capacity, lessen on consumer demand and even depress corporate earnings that have a potentiality to bring down stock values. Therefore, employing monthly data for the inflation analysis will help to identify short-run movements in the price level, and their effects on movements in the stock markets.

4- **Foreign Direct Investment (FDI – US $ in Million):** Global investment is one of the forms of investments that directly invests in the economy as well as funds the stock market. High FDI implies that foreigners have confidence in the country's economy hence will, thereby increases demand for stocks. This study monitors the FDI inflows in US $ millions, on **monthly basis**, depicting how foreign capital is invested in Pakistan and its effect on KSE-100 index. An increase in FDI tends to result in an upswing in the stock market because the foreign investors require more stocks leading to increased stock price. The analysis of FDI on stock market can be done with discrete data of monthly FDI inflow to understand direct and instantaneous impact of foreign capital on the stock market. Logarithm of Absolute Value will be used to counter negative value in case of negative FDI.

5- **GDP per Capita:** Usually, Gross Domestic Product per capita is considered to be an elementary criterion of development and living conditions in the country. It is included in the analysis since we want to benchmark the long run economic forces that affect stock market. Although GDP per capita is given on an **annual basis**, it is an important aspect of identifying the general performance of the economy and therefore the market. Higher GDP per capita is normally linked to bettering economic circumstances, increase in the spending power of consumers and bettering corporation profits thus giving more confidence to investors and increased stock market. Because GDP per capita is an annual measure, it can fill in the gaps in trends affecting the overall stock market in the long run, while other factors such as percentage change can indicate changes in the market for that month.

6- **Unemployment Rate:** The unemployment rate is also an economic statistic, which highlights the number of people in a population that does not have work, but who are willing to take a job. A higher unemployment rate has adverse meaning since it denoted subdued economic activity, lower consumption and thereby a low production, slow economic growth and downturns in the stock market. On the other hand, low unemployment usually reflects sound economy, which in turn improves investor's optimism thus the stock prices. This is reported **yearly basis**, and even though it gives a broader perspective on employment in the labour market, it is a key determinant of the economic factors that affect stock market returns.

Therefore, monthly and yearly data used in this analysis helps to better explain both short-term and long- term drivers of the KSE-100 index. Monthly data for interest rate, exchange rate, inflation and FDI helps to monitor the short term changes the market makes to the existing economic conditions. Yearly data for GDP per capita and unemployment rate on the other hand enables understanding of bigger picture of economic activity and its impacts on the stock market in the distant future.

Findings

The research uses the ARDL approach to establish both the long-term and immediate effects of interest rate, exchange rate, inflation rate, foreign direct investment (FDI) and GDP per capita alongside unemployment rate on the KSE-100 index. The KSE-100 index demonstrates a meaningful co-integrating relationship with selected independent variables in both the long run and short run which validates the interest rate and exchange rate along with GDP per capita as critical factors influencing Pakistan's stock market performance.

Table – 1 ARDL Bound Test

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.383984	10%	1.99	2.94
K	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99
Actual Sample Size	177		Finite Sample: n=80	
		10%	2.088	3.103
		5%	2.431	3.518
		1%	3.173	4.485

The ARDL Bound Test confirms a long-run relationship based on the F-statistic value of (**4.3839)** which successfully surpasses upper bound critical value at 5% significance level. According to long-run coefficient estimates, stock market index performance of KSE-100 index decreases when interest rate rise **(-0.5064 with p = 0.0400)** but exchange rate **(0.8534, p = 0.0129)** and GDP per capita **(1.8811, p = 0.0040)** show positive effects. FDI and inflation exhibit statistically insignificant effects in the long run. During the short-run period exchange rate generate negative downward pressure on KSE-100 index performance at the (**0.0001**) significance level with a coefficient value of **(-0.6333)**. The error correction term shows that approximately 10% of any departure from the long-run equilibrium will receive proper correction during each time period **(p = 0.000)**.

Table – 2 ARDL Long-Run Coefficients

Variables	Coefficient	Std. Error	t-Statistic	Prob.	Hypothesis
Interest Rate	-0.5064	0.2446	-2.0705	0.0400	Accepted
FDI	0.0471	0.0570	0.8273	0.4092	Rejected
Exchange Rate	0.8534	0.3396	2.5130	0.0129	Accepted
Inflation Rate	-0.0772	0.1487	-0.5190	0.6045	Rejected
GDP Per Capita	1.8811	0.6442	2.9199	0.0040	Accepted
Unemployment Rate	1.8001	0.9724	1.8511	0.0659	Rejected
C	-9.5585	4.3423	-2.2012	0.0291	

Diagnostic tests affirm the reliability of the model, with no evidence of autocorrelation **(Durbin-Watson = 2.0468)**, heteroscedasticity **(p = 0.3873)**, or serial correlation **(p = 0.5270)**. The Jarque-Bera test reveals non- normal distribution in residuals at a significance level of **(p = 0.0000)** indicating the need to refine the approach. The KSE-100 index structural model based on this research shows **19.06%** variation explanation along with a p-value of **0.5503** from the Ramsey RESET test indicating functional validity.

Table – 3 Model Diagnostics

Test Name	P-Value	Decision
Ramsey RESET Test	0.5503	No Problem of Function Form
Heteroscedasticity Test	0.3873	No Problem of Heteroscedasticity
Serial Correlation	0.5270	No Problem Serial Correlation
Normality JB Test	0.0000	Data is normally distributed

The research determines that macroeconomic factors especially interest rate combined with exchange rate as well as GDP per capita play a substantial role in influencing the KSE-100 index. The study delivers useful information to stock market investors and policymakers who understand how the market operates in Pakistan.

Discussion about Hypothesis

The research findings back up several proposed relationship hypotheses although they establish contrary evidence for some others. The research determines interest rate together with exchange rate and GDP per capita work as primary determinants of the KSE-100 index yet inflation and FDI and unemployment affect it weakly or fail to reach statistical significance levels.

Hypothesis-1 (H1): The research data shows that interest rate have a negative statistical relationship with the KSE-100 index which supports H1. Economic principles support this connection because rising interest rate increase financing expenses which subsequently diminish corporate profitability while destabilizing investor sentiment thus causing stock market value decreases. The government needs to execute proper interest rate modifications to prevent both inflation control and economic expansion issues while ensuring minimal stock market deterioration.

Hypothesis-2 (H2): Research findings fail to support the hypothesis which predicts that the KSE-100 index demonstrates negative reaction to inflation. The research data indicates inflation does not influence KSE-100 index performance in the long-term periods. The evidence shows inflationary trends have already been integrated into market valuations or businesses maintain adequate flexibility for adjusting to inflationary environments. Further research needs to analyze how inflation affects different business sectors when it comes to stock market performance.

Hypothesis-3 (H3): The results support hypothesis (H3) because they demonstrate that KSE-100 index falls after Pakistani Rupee appreciation. Exchange rate volatility creates negative effects on stock market performance across the short-term period according to results so a rising Pak Rupee value does not lead to market benefits. The market behaves negatively to exchange rate volatility since it impacts exports along with investor sentiment and trade competitiveness. A stable exchange rate framework has potential to minimize exchange rate instability that causes market fluctuations.

Hypothesis-4 (H4): The fourth hypothesis fails to receive strong evidence due to a lack of significance in the FDI coefficient. The absence of statistical significance regarding foreign direct investment (FDI) in this study demonstrates that alternative factors presumably have a stronger influence on stock market performance than FDI does. The influence of FDI on the stock market can be strengthened through long-term stable inflows and improved business ease of operation.

Hypothesis-5 (H5): Research outcomes support the fifth hypothesis because findings reveal that KSE-100 index shows a positive association with GDP growth. The relationship between GDP per capita and stock market performance remains positive and significant since economic growth causes businesses to become more profitable and investment-driven while expanding the market. The relationship between sustainably growing economy and market infrastructure development and industrial output policies increases in strength.

Hypothesis-6 (H6): The sixth hypothesis (H6) supporting that the KSE-100 index exhibits positive changes when unemployment rate fall is only supported partially based on analysis results. The positive relationship between unemployment rate and stock market performance shows statistical insignificance at normal significance thresholds ($p = 0.0659$). Other macroeconomic factors seem to dominate the influence on stock market performance despite the relation expected from employment levels. Strategies that enhance job opportunities and worker abilities and worker involvement will produce secondary effects which support market stock stability.

Recommendations

Government actors need to handle interest rate adjustments in a prudent way to achieve control of inflation and economic development while preventing harmful stock market consequences. Exchange rate stability serves as an essential element for short-term volatility reduction and stability of investor trust. The stock market growth benefits from foreign direct investment can be enhanced through regulatory reforms and better business implementation procedures. Strategic enhancements of economic growth alongside policy stability and industrial development will advance the performance of the KSE-100 index. The stock market receives indirect support from employment initiatives that build jobs and train workers and boost participation levels since these activities strengthen consumer spending and corporate operational success. There is a need for future research to analyze specific industries' responses to inflation alongside FDI and unemployment because this will yield directed market and policy considerations that investors and government officials can employ.

Conclusion

This study conducts a detailed investigation of macroeconomic variable effects on the KSE-100 index through the ARDL framework to study its long-term and immediate effects. Research results validate interest rate, exchange rate and GDP per capita as essential factors which drive stock market performance in Pakistan. Elevated interest rate generates negative effects on the KSE-100 index because they reduce corporate earnings levels and transform investor perception. The study demonstrates that exchange rate appreciation together with rising GDP per capita produces positive effects on the stock market by supporting economic stability.

Some of the stock market influencing factors specified by the study's hypothesis proved ineffective at generating significant results. Stock prices already include inflationary estimations or industrial entities have successfully adapted to inflationary situations through time. The findings show no correlation between FDI inflows and performance in the KSE-100 index which indicates that foreign investments have no direct impact on market value possibly because of unstable policies and capital exports. The positive connection between unemployment rate and stock market performance persists although statistical tests show unimportance demonstrating other economic factors remain primary drivers of investor decision-making.

The KSE-100 index establishes negative reactions to changes in exchange rate according to short-term analysis thus demanding policies to reduce currency volatility. An error correction mechanism in the data confirms that short-term market shocks cause adjustments leading to long-term equilibrium through a gradual process which reaches 10% correction each time period. The diagnostic tests establish robustness of the model by showing that autocorrelation, heteroscedasticity, and functional form misspecification does not exist. The detection of non-normality in residuals shows that future investigations require additional attention to this area.

Researchers introduce vital conclusions that provide essential knowledge for investors and financial analysts and government officials, stock market stability and growth demands that monetary authorities use interest rate policies to achieve inflation control without decreasing market performance. The stability of exchange rate remains essential to control short-term market fluctuations while protecting market trust among investors. The stock market achieves further strength through economic policies which focus on development of industries and infrastructure and regulatory adjustments. The stock market becomes more resilient through both the promotion of stable foreign direct investment and the improvement of ease of doing business operations. Methods which stimulate labor market participation also generate positive stock market effects through their simultaneous ability to raise corporate profitability and boost spending power of consumers.

Research should move forward to assess how specific economic sectors handle macroeconomic factors in order to deliver precise market insights. Research on how global economic conditions and external financial shocks affect Pakistan's stock market will strengthen understanding of international market trends' impact on the local market. Pakistan can establish a sustainable economic growth by implementing correct macroeconomic policies and ensuring investment stability thus creating a resilient stock market.

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