

## Behavior of Macroeconomic Forces to Predict Stock Returns: Empirical Evidence from Global Financial Markets

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### Abstract:

*Study aimed to understand macroeconomic variables and their dynamic nature to predict stock returns across the globe. Along with the assessment of pricing theory this paper also discussed; significance of financial markets, journey from portfolio theory to pricing theory and comparison of Sharpe & Ross theories. In order to develop understanding about behavior of macroeconomic forces, multiple empirical studies conducted on this subject from developed and developing economies were critically reviewed. Intense literature on CAPM and APT supported their validation but there exist some weaknesses in pricing theories. Capital asset pricing model focuses only on systematic risk ( $\beta$ ) and if we talk about arbitrage theory, selection of right macroeconomic forces is not defined. Paper is limited only to review previous publications available on asset pricing theories. This paper portrait a clear picture of global financial markets regarding their stock returns. Which is highly appreciable for investor's to make healthier returns.*

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**Key words:** Markowitz theory, Capital asset pricing model, Ross theory, Systematic risk ( $\beta$ ) and Macroeconomic forces

## 1. Introduction

Capital market is a place which provide platform to developed and developing economies for financial intermediation. Basic objective of the stock market is to attract potential investors for investing their surplus funds by offering handsome investment opportunities, in order to expand business volume of the community. Stock market index acts as a mirror to show performance of portfolios for ensuring long-term capital commitments (Ologunde, Elumilade, & Asaolu, 2006).

Shareholders have mind set of appropriate earnings beyond their investments, but the problem here is that performance of market can't be on peak all the times. There exist equal chances of gain or loss due to market factors (risk factors).

Behavior of risk factor pushes the need of portfolio and stock valuation models for making safe investments, in order to keep investors connected with the capital market.

Stock valuation models always remain dominant in the field of finance for making bridge between estimated and real returns (Graham, 1949). In 1952 Markowitz initiated portfolio theory for measuring expected risk and return. According to Markowitz; weighted average and variance of archival returns help us to quantify expected risk and return. And also makes a straight relationship among risk and return. Improper guidance about risk premium factor keeps the atmosphere of confusion for investors against holding risk. Neglecting the phenomena of risk free asset among risk and return showed ineffectiveness of Markowitz theory for investors.

William Sharpe in 1964 supplemented risk free asset in portfolio theory, this addition gave birth to first pricing model in the history of finance, known as Capital asset Pricing Model

(CAPM). Soon after the development of pricing model, Linter and Mossin also presented theories supporting its validation during the years 1965 and 1966 respectively. According to Sharpe extra returns of market portfolios can be gauged by multiplying risk premium with systematic risk. Deduction of risk free asset return against market portfolio return resulted risk premium, on the other hand  $\beta$  can be accounted by shearing market portfolio with co-variance of assets.

CAPM highlighted correlation between return and systematic risk; here the focus is only on beta. Other studies conducted on stock returns indicate that there are some other factors affecting the riskiness of stock returns. Factors affecting stock returns other than beta proved ineffectiveness of asset pricing model. This gave direction to financial economists to derive some other pricing theory which properly defines the actual worth of stocks.

(Ross, 1976) proposed Arbitrage Pricing theory (APT), Ross used macro-economic variables to predict stock returns of U.S. stock market. And empirically prove that macro-economic variables are actually those factors which affect stock returns other than systematic risk beta.

## **2. Research Motivation**

Soon after the first attempt of Ross in 1976 for evaluating asset market returns with the help of macroeconomic forces, attracted scholars and economists to study this dynamic relation. Researchers from different towns of the globe attempted to check efficacy of macroeconomic factors during multiple time frames on their desired asset markets.

Significance of macroeconomic forces in the history of finance, gave me poor competencies to become part of this appealing subject by reviewing arbitrage theory with intense global literature in arena of journey portfolio theory to pricing theory, and to make a comparison among pricing theories.

### **3. Objectives of the Study**

1. Discuss the journey from Portfolio theory to Arbitrage pricing theory.
2. Make comparison between two popular asset pricing theories.
3. Review Arbitrage pricing theory with global evidence support.

### **4. Analogy among Sharpe and Rose theories**

#### **4.1 Suppositions of CAPM**

Asset pricing theory assumed that capital market entertains investors by acknowledging  $\beta$  rather than specific risk. According to Sharpe school of thought; specific risk has no meaningful influence, it can easily branched out. Every market portfolio encloses certain specific risk in it, but investor's exclusive risk regarding market portfolio is only the systematic risk due to heterogeneity. Mean variance of productive portfolio termed as market portfolio. For making equilibrium in asset market there is strongly needed to have relationship among expected risk and return against portfolios.

#### **4.2 Weaknesses of CAPM**

Under-valuing risk premium and amplifying risk free rate resulted in various applications, indicated poor explanatory power of CAPM. These uncertainties and short comings are due to looking away all other risk factors and spotlighting only on  $\beta$ .

#### **4.3 Suppositions of APT**

Arbitrage pricing theory contradicts CAPM on the behalf of its less restrictive premises and explanatory power to account returns of assets. APT correlates with "market portfolio" concept, according to arbitrage theory individuals have

different portfolio of investments with their specific systematic risk.

APT is a multifactor model, intense literature and empirical findings showed applicability of this theory for predicting asset returns. (Paavola, 2006) Stated that APT; proposed better results comparatively to CAPM, because it used multiple factors for explaining shared and systematic risk.

#### **4.4 Weaknesses of APT**

Major flaw in Arbitrage pricing theory is the absence of clear direction for selection of macroeconomic factors (Azeez & Yonezawa, 2006). On the other hand CAPM is easy to use because of availability of proper guidelines.

### **5. Review of Literature**

Proportion of macroeconomic variables with asset return remained a cardinal issue in the history of finance for valuable investors and economic analysts. Basic objective for focusing this area is to ensure healthier investments and development of more perfect theories. Couple of scholars from all over the world enrolled with this subject by employing multiple variables on different economies.

(Ali & A.B.C, 2014) arranged monthly data of net foreign assets, exchange rate, credit to non government institutions and money supply to determine the worth of macroeconomic variables for estimating Nigerian asset returns during period 2000-2013. Error correction model, Augmented Dicky fuller test, Engle and Granger co-integration techniques were applied for interpretation of data to draw findings. There exist a positive effect of credit to non government institutions and negative impact of exchange rate on Nigerian returns. Overall results are valuable for regulatory authorities and investors in order to reconcile their portfolios.

(Cliff & Willy, 2014) used Microsoft excel and multivariate regression with the help of SPSS to monitor the relationship among Kenya asset returns and macroeconomic factors by gathering monthly data of listed manufacturing companies during period 2003-2012. GDP changes, exchange rate, inflation and interest rate were selected as macroeconomic variables for conducting the study. Findings indicated positive effect of macroeconomic factors for predicting returns of Kenya financial market.

(Fazli, Shlan, Radsar, & Radsar, 2014) declared the validation of arbitrage pricing model on Tehran financial market during period 1997-2007. For the purpose of analyzing potency of asset pricing theory, authors considered following macroeconomic forces; less accounted changes in interest rate components as well as industrial production, money supply, oil price and inflation. Statistical technique OLS regression was used make association among asset returns and selected variables.

(Garba, 2014) selected ten Nigerian firms through stratified sampling in order to account asset returns with the help of certain factors; exchange rate of domestic currency, inflation, gross national income and interest rate. Study used Pearson Movement Correlation test to figure out relation among asset returns and selected variables. Findings showed ineffectiveness of favored factors on Nigerian stocks.

(Kalyanaraman & Al-Tuwajri, 2014) prefer following macroeconomic factors; oil price, CPI, exchange rate, money supply and industrial output to grasp the association between Saudi S&P 500 index and arbitrage theory with the help of monthly data during period 1994-2013. For clarification of variables nature, Vector error correction model was used. Findings revealed that all selected variables have significant effect on Saudi stock prices but S&P 500 index fails to quantify asset prices.

(Ouma & Muriu, 2014) tested significance of asset pricing theories on Kenya financial market by arranging monthly data during the period 2003-2013. OLS regression was employed, in order to measure the frequency of pricing theories for predicting asset returns. Empirical findings suggested inverse effect of interest rate as well as assured outcome of inflation rate and money supply for quantifying capital market returns in Kenya.

(Samontaray, Nugali, & Sasidhar, 2014) in their study explore the response of macroeconomic factors for forecasting returns of Saudi Arabia capital market during period 2003-2013. Regression analysis and Pearson correlation were used for interpreting monthly data of PE ratio, oil WTI and exports with the help of SPSS. PE ratio showed better results as compare to other variables of the study.

(Zaighum, 2014) investigated the impact of macroeconomic variables; risk free rate, market return, money supply, Inflation (CPI) and industrial production index on 115 listed non-financial firms of Karachi stock exchange over the period of 2001-2011. Im, Pesaran and Shin (2003) unit root test were selected to inquire the stationary of variables; Pooled ordinary least square (POLS) was applied for evaluation of data. Variables of the study, showed significant role in explaining stock returns, money supply indicated powerful role for analyzing stock returns on the other hand inflation and market returns showed lower potential.

(Addo & Sunzuoye, 2013) tried to estimate Ghana financial market returns during period 1995-2011 using valuation model. Treasury bill and interest rate were selected as variables of the study. To understand the nature of relation among variables Vector Error Correction and Johansen's Multivariate Co-integration models were used. According to findings both treasury bills and interest rate collectively affect Ghana capital market returns but individual potency of studied variables was not satisfactory for returns prediction.

(Gul & Khan, 2013) observed the dynamic impact of macroeconomic variables on 37 KSE listed stocks over the period 2000 to 2005 including four variables; Interest rate, exchange rate, money supply and industrial production. T-test along with 2-tailed p-values was used in evaluation phase with the help of SPSS 12.0 and Eview 5.1. Findings suggested the ineffectiveness of APT to predict stock returns of KSE.

(Haroon & Jabeen, 2013) executed a study on KSE 100 index, for uncovering the dynamic effect of macroeconomic factors on market returns during period 2001-2010. Components of interest rate (3 month, 6 month, 12 month) treasury bills and units of inflation (Sensitive price, CPI and wholesale price) were taken as variables. Application of Pearson correlation, regression analysis and coefficient correlation with the help of SPSS showed significant results of the study.

(Jain & Waghmare, 2013) make an effort to review Indian stock and bullion market returns in presence of variables; money supply, inflation, interest rate, global conditions and exchange rate during period 2001-2012. T-statistics was used for acknowledging variances of selected variables and firms have been selected through convenient sampling technique. Data collection phase comprised of two sources primary (through questionnaire) and secondary (through previous studies). High interest rate, low money supply, exchange rate and global conditions indicated poor relation with dependent variable, moreover high money supply, low interest rate and both high & low inflation impacts Indian asset markets positively.

(Naik & Kumar, 2013) examined the validity of APT on Bombay Stock Exchange (BSE) over the period of 1994:04–2011:06 in taking money supply, exchange rate, Treasury bill rate, wholesale price index and industrial production index as macroeconomic factors of the study. For evaluation of data to arrive findings Johansen's co-integration and Vector error



correlation model were used. Results showed partially applicability of arbitrage theory on BSE.

(Saeed, 2013) took industrial production, interest rate, oil price, exchange rate and money supply as a macroeconomic components to inquire their dynamic effect on listed companies of KSE 100 index. Findings indicate exchange rate, industrial production and oil prices less appealing while interest rate and money supply more favorable for returns prediction with in specific given time frame of the study.

(Sireesha, 2013) gauge Indian assets, silver and gold return with support of arbitrage pricing theory during period 1993-2012. Arbitrage theory includes external variables (domestic & foreign institutional investors, exchange rates of JPY-INR, USD-INR, EUR-INR and GBP-INR) and internal variables (money supply, CPI, industrial production index and GDP). Results showed poor potency of arbitrage theory on Indian stocks.

(Abedallat & Shabib, 2012) examined the behavior of macroeconomic factors; changes in GDP and investments for estimation of returns during period 1990-2009 of Amman asset market. Multiple regressions were adapted for processing of data, results showed linear relationship between dependent and independent factors. Moreover changes in investment showed better explanatory power as compare to changes in GDP, when studying Amman capital market under given time frame.

(Abraham, 2012) selected three macroeconomic factors; exchange rate, inflation and interest rate to study asset returns of Nigerian economy in the presence of Error correction model. Results showed meaningful negative association between minimum rediscounting rate and capital market, indicating that short fall in minimum rediscounting rate boost efficiency of asset market. Furthermore resisting nature of exchange rate also advance Nigerian market operations.

(Harper & Jin, 2012) did a research to explore the relation among Indonesian market index and macroeconomic variables; exchange rate, industrial production, money supply, interest and inflation rate. Study carried monthly data during period 2001-2010 and Augmented Dicky fuller technique was appreciated to state the stationary of variables. Furthermore Vector error correction model and Johansen co-integration tests were occupied to achieve end results. Only industrial production indicated positive response for suppositions of returns.

(Iqbal, Khattak, Khattak, & Ullah, 2012) conducted a study to test the applicability of APT on Karachi stock exchange for the period 2004-2008, considering factors; oil price, inflation, money supply (M1) and exchange rate. T-statistics was employed for valuation of stock variances. Results supported validation of arbitrage theory in Pakistan.

(Olugbenga, 2012) employed Error correction instrument and Johansson's Co-integration technique on periodically selected data of Nigerian stock exchange over the period of 1985-2009 to check the efficiency of Arbitrage pricing theory. Findings indicate momentarily stronger impact of exchange rate on market index and poor impact for longer period.

(Osamwonyi & Evbayiro-Osagie, 2012) conducted a research on Nigerian capital market for evaluating the effectiveness of Arbitrage pricing theory using yearly data from 1975-2005. Authors selected six variables; (GDP), exchange rate, inflation, interest rate, money supply and fiscal deficit) for execution of study with the help of Vector Error Correction Model (VECM). Findings indicated adverse impact of money supply (M2) on market returns of Nigerian stocks.

(Quadir, 2012) applied APT on Dhaka stock exchange to evaluate its performance during the period January 2000 to February 2007 by taking Treasury bill interest rate and industrial production as macroeconomic variables. Study checked stationary of variables with support of Phillips-perron

and Augmented Dicky-fuller tests. To figure out the association among asset return and macroeconomic forces; study employed Box Jenkins, Autoregressive Integrated Average (ARIMA) technique.

(Samadi, Bayani, & Ghalandari, 2012) selected five macroeconomic variables; gold price, oil price, exchange rate, liquidity and inflation to check potency of arbitrage theory on Tehran financial market during period 2001-2011. Stationary of variables was examined by Augmented Dicky-fuller test. To understand the impact of macroeconomic factors on asset returns, Generalized Autoregressive Conditional Heteroskedasticity (GARCH) approach was applied. Findings revealed inflation rate, gold price and exchange rate effective to stock returns.

(Tandon & Malhotra, 2012) found minimal relation among Indian asset returns and macroeconomic factors during period 2006-2010. NIFTY 50 indexes were taken as dependent variable and to make an alliance, study considered following independent variables; Industrial production, exchange rate, broad money supply (M3), and inflation. In order to understand harmony of selected variables and making suppositions regarding research; multiple regression and correlation analysis were applied and scatter diagrams have been plotted.

(Yahyazadehfar & Babaie, 2012) considered three macroeconomic factors (house price, gold price and interest rate) to appraise asset returns listed in Iran over the period of March 2001 to April 2011. Augmented Dicky-fuller approach was practiced to inspect the stationary of variables. Johansen Juselius co-integration and Vector auto regression techniques were employed to check potency of macroeconomic factors for forecasting asset market returns. Only house price indicated returns of Tehran asset market.

(Asaolu, O, & S, 2011) studied the behavior of Nigerian average share price with coordination of selected variables (investment, fiscal deficit, industrial output, external debt,

exchange rate, inflation and foreign capital inflow) by arranging yearly data during the period 1986-2007. Statistical techniques named; Granger causality, Augmented Dicky-fuller were applied for interpretation of data bank. Proposed variables failed to become effective indicators of Nigerian economy.

(Izedonmi & Abdullahi, 2011) conducted a sartorial approach to understand the Nigerian stock returns with the help of variables (Inflation, exchange rate and market capitalization) over the period of 2000-2004. Study used OLS regression and Durbin-Watson test to arrive results and clicking correlation among variables. Findings structured poor influential impact of macroeconomic factors toward Nigerian asset returns.

(Singh & Mehta, 2011) examined asset returns of Taiwan capital market with assistance of employment rate, inflation rate, exchange rate, money supply and GDP. Linear regression was applied to attain desired outcomes, employment rate and money supply regarded less frequent for predicting returns moreover exchange rate and GDP have effective results for all firms excluding small and medium enterprises. Only inflation has impact on small company's portfolio. Overall findings significantly impacts both companies and investors.

(Sohail & Zakir, 2011) prefer to arrange a study on KSE, to calculate market returns of securities during period 1991-2008. Employed Phillips person, Augmented Dicky fuller and Kwiatkowski Phillips Schmidt shin methods on monthly data of variables; 3 month treasury bill, inflation, money supply, GDP and exchange rate. Findings suggest negative effect of 3 month treasury bills and money supply as well as significant effect of exchange rate, GDP and inflation for evolution of asset returns when studying Karachi stock market.

(Zubairi & Farooq, 2011) took 17 listed firms from fertilizer, oil and gas sectors of Karachi stock market for evaluating the effectiveness of arbitrage pricing theory and capital asset pricing model during period 2004-2009. Market

return, GDP changes, exchange rate and inflation were considered as macroeconomic factors of the study. Durbin Watson test, t-statistics and f-statistics were for execution of data. Results showed ineffectiveness of both asset pricing models for calculating stock returns.

(Ahmet, 2010) tried to predict stock returns of Istanbul stock exchange by arranging monthly data of variables; gold price, money stock, oil price, CPI, exchange rate, industrial production index and interest rate. Multi-Variable regression model was applied on monthly data for the period of 2003-2010, findings showed significant impact of exchange rate, industrial production index, interest rate and oil price on asset returns moreover other variables considered ineffective.

(Sharma & Mahendru, 2010) classified weekly data of variables; change in exchange rate, gold price, inflation and exchange reserve during period 2008-2009, for mapping returns of Bombay financial market. Results showed high frequency relation of exchange rate and gold prices with returns of Bombay stock exchange (BSE), whereas foreign exchange reserves and inflation rate have not such a great potential for BSE returns.

(Shubita & Al-Sharkas, 2010) adapted Johansen co-integration technique to interpret long period association among New York financial market returns and macroeconomic forces; inflation, real rate of interest and industrial production growth rate during period 1964-2010. Findings revealed adverse effect of real rate of interest and inflation as well as significant impact of economic activities on New York capital market. Results showed partially applicability of macroeconomic factors for determining asset returns.

(Dash & Rao, 2009) examined the applicability of CAPM and APT on Indian stock exchange with sample of fifty companies's listed in National Stock Exchange (NSE). Results indicate better performance of CAPM as compare to APT for Indian capital market.

(Daferighe & Aje, 2009) observed the effect of inflation, real GDP and interest rate during period 1997-2006 on Nigerian capital market. Regression analysis was applied on annual data on selected variables to draw conclusions. Findings indicated about 95% variation among asset returns. Furthermore low frequency of inflation and interest rate resulting higher asset returns as well as growth in real GDP showed significant effect on Nigerian returns during the studied period.

(Mohammad, Hussain, Jalil, & Ali, 2009) selected and arrange quartly data of six macroeconomic variables; money supply (M2), exchange reserve, gross fixed capital formation, exchange rate, wholesale price index and industrial production index for examining returns on Pakistani capital market (KSE). For the purpose of arranged data interpretation Auto regressive integrated moving average and Augmented Dicky fuller tests were used. Exchange reserve and exchange rate remained effective indicators for valuation.

(Gay, 2008) exercised Box-Jenkins Auto regressive integrated and moving average method for classifying market indexes of four emerging countries in coordination of oil price and exchange rates. Findings suggested incapability of selected macroeconomic factors for reviewing indexes of emerging economies under specified time duration.

(Türsoy, Günsel, & Rjoub, 2008) attempted to investigate stock returns of Istanbul asset market, in taking monthly data of selected variables during period 2001-2007. Findings revealed that variables of the study have no potential for determining stock returns of ISE. However different portfolios impacts industries in different manners.

(Brahmasrene, 2007) studied macroeconomic indicators to understand their potency for evaluating asset returns in Thailand. Study gathered data of variables; money stock, oil price, CPI, exchange rate, industrial production and interest rate during period 1992-2003. To attain study outcomes Granger causality and co-integration tests were used; co-

integration indicated positive behavior of all variables for measuring stock returns. And Granger causality test marked only money stock as a suitable variable for Thailand's stock returns.

(Paavola, 2006) investigated stock returns of Russian market for the period of 1999-2006 with sample of twenty largest stocks. Five macroeconomic factors including industrial production, inflation, exchange rate, money supply and oil prices were selected through factor analysis approach. Study concluded ineffectiveness of selected variables to figure returns.

## **6. Conclusion**

Literature regarding comparison of CAPM and APT suggested that both models are valid for showing relationship with stock returns, but they also have their own assumptions and limitations, According to Sharpe theory risk of different market portfolios have co-variation with only the systematic risk ( $\beta$ ), on the other hand arbitrage theory stated number of macroeconomic factors for considering risk associated with portfolios.

Review of Arbitrage pricing model in different economies including developed and developing nations not showed similar behavior all the times, even in a single economy results are contradicting. This situation of uncertainty in findings is because of non-formal guidance for choosing macroeconomic variables.

## **Future Areas**

There are also further areas of research on the subject of "macroeconomic factors". Suggested studies are as follows;

1. Asset pricing theories, which one is the best?
2. Behavior of Financial markets and selection of right macroeconomic forces

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## APPENDIX

### Research Time Line

Sr. #	Year	Topic	Variables	Findings
1	2014	Impact of Macroeconomic factors on non-financial firm`s stock returns: Evidence from sectorial study of KSE-100 Index	Inflation (CPI), market return, industrial production, risk free rate and money supply	Poor relation
2	2014	The Impact of Macroeconomic Variables On Stock Market Returns In Kenya	Exchange rate, inflation and money supply	Poor relation
3	2014	Impact of Macroeconomic Factors on Common Stock Returns: A Study of Listed Manufacturing Firms in Nigeria	Exchange rate of domestic currency, inflation, GNP and interest rate	Poor relation
4	2014	Empirical Analysis of the Relationship between Stock Market Returns and Macroeconomic Indicators in Nigeria	Net foreign asset, exchange rate, credit to private institutions and money supply	Poor relation
5	2014	Macroeconomic Fluctuations Effects On The Financial Performance Of Listed Manufacturing Firms In Kenya	Changes in GDP, exchange rate, inflation and interest rate	Strong relation
6	2014	A Study of the Effect of Macroeconomic Variables on Stock Market: Saudi	Price earnings ratio, Oil WTI and exports	Poor relation

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Sr. #	Year	Topic	Variables	Findings
		Perspective		
7	2014	Macroeconomic forces and stock prices: Some empirical evidence from Saudi Arabia	Oil price, Consumer price index, exchange rate, industrial output and money supply	Poor relation
8	2014	An investigation on the relationship between arbitrage and macro-economic indicators: A case study of Tehran Stock Exchange	Unanticipated changes in industrial production and interest rate, money supply, oil price and inflation	Strong relation
9	2013	Does Stock Market Respond to Economic Fundamentals? Time series Analysis from Indian Data	Treasury bill rate, industrial production, exchange rate, money supply and wholesale price index	Poor relation
10	2013	Impact of Macro-economic Variables on Share Price Behavior of Karachi Stock Exchange	1.Inflation rate (Sensitive price, CPI and whole sale price index) 2.Interest rate (3 months, 6 months and 12 months) treasury bills	Strong relation
11	2013	Macroeconomic Factors And Their Effect On Bullion And Stock Market In Indian Contex For The Period 2001 to 2012	Money supply, inflation, exchange rate, global condition and interest rate	Poor relation
12	2013	Effect Of Select Macroeconomic Variables On Stock Returns In India	1.Internal variables (Money supply, CPI, IIP and GDP) 2.External variables (Exchange rates of JPY-INR, USD-INR, EUR-INR and GBP-INR), foreign and domestic institutional investors	Poor relation
13	2013	The Impact of Treasury Bill Rate and Interest Rate on the Stock Market Returns: Case of Ghana Stock Exchange	Treasury bill and interest rates	Poor relation
14	2013	Macroeconomic factors and sartorial indices: A study of Karachi stock exchange (Pakistan)	Industrial production, interest rate, oil price, money supply and exchange rate	Poor relation
15	2013	An application of Arbitrage Pricing Theory on KSE-100 Index; A study from Pakistan	Industrial production, money supply, foreign exchange and interest rate	No relation

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Sr. #	Year	Topic	Variables	Findings
		(2000-2005)		
16	2012	The Relationship between Macroeconomic Variables and Stock market Index in Nigeria	GDP, inflation, fiscal deficit, interest rate, money supply and exchange rate	Poor relation
17	2012	Exchange Rate Volatility and Stock Market Behaviour: The Nigerian Experience	GDP, interest rate, oil price, exchange rate, money supply and inflation	Poor relation
18	2012	The Relationship between Macroeconomic Variables and Stock Returns in the Tehran Stock Exchange	Oil price, exchange rate, liquidity, gold price and inflation	Poor relation
19	2012	The Effect of Macroeconomic Variables On Stock Returns on Dhaka Stock exchange	Industrial production, treasury bill rate	Poor relation
20	2012	Testing the Arbitrage Pricing Theory on Karachi Stock Exchange	Oil price, exchange rate, inflation and money supply	Strong relation
21	2012	Macroeconomic Variables and Stock Price: New Evidence from Iran	House price, gold price and interest rate	Poor relation
22	2012	Examining The Relationship Between Stock Prices And Macroeconomic Variables - Empirical Evidence from India	Industrial production index, inflation, money supply and exchange rate	Poor relation
23	2012	Stock Returns and Macroeconomics Factors: An Examination Of The Indonesian Domestic Economy	Exchange rate, industrial production, money supply, inflation and interest rate	Poor relation
24	2012	Stock Market Reaction to Selected Macroeconomic Variables in the Nigerian Economy	Exchange rate, inflation and interest rate	Poor relation
25	2012	Impact of the investment and gross domestic product on the Amman Stock Exchange index	Changes in gross domestic production and investment	Strong relation
26	2011	Macro economic factors and Stock returns: Evidence from Taiwan	Employment rate, inflation, exchange rate, money supply and GDP	Poor relation
27	2011	An Econometric Analysis of the Impact of Macroeconomic Variables on Stock Market	Investment, inflation, exchange rate, external debt, industrial output,	Poor relation

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Sr. #	Year	Topic	Variables	Findings
		Movement in Nigeria	fiscal deficit and foreign capital inflow	
28	2011	The Effects of Macroeconomic factors on the Nigerian Stock Returns	Exchange rate, inflation, market capitalization	Poor relation
29	2011	The Macroeconomic Variables And Stock Returns In Pakistan: The Case Of KSE100 Index	3 month treasury bill, inflation, money supply, GDP and exchange rate.	Poor relation
30	2011	Testing The Validity Of CAPM And APT In The Oil, Gas And Fertilizer Companies Listed On The Karachi Stock Exchange	Market return, movements in GDP, exchange rate and inflation	No relation
31	2010	The Effects of Macroeconomics Variables on Stock Returns: Evidence from Turkey	Foreign exchange rate, CPI, industrial production index, money stock, oil price, interest rate and gold price	Poor relation
32	2010	Impact of Macro-Economic Variables on Stock Prices in India	Inflation, gold price, change in exchange rate and foreign exchange reserve	Poor relation
33	2010	A Study Of Size Effect And Macroeconomics Factors In New York Stock Exchange Stock Returns	Inflation, real rate of interest, rate of growth in industrial production	Poor relation
34	2009	Asset Pricing Models in Indian Capital Markets	Inflation, closing price, MIBOR rate, oil price and closing index values and exchange rate	Poor relation
35	2009	Impact of Macroeconomics Variables on Stock Prices: Emperical Evidance in Case of KSE	Money supply, foreign exchange reserve, gross fixed capital formation, exchange rate, wholesale price and industrial production index	Poor relation
36	2009	An impact Analysis of Real Gross Domestic Product, Inflation and Interest Rates on Stock Prices of Quoted Companies in Nigeria	Inflation, real GDP and interest rate	Poor relation
37	2008	Macroeconomic factors, The APT and Istanbul Stock Market	Market pressure index, money supply, unemployment rate, industrial production,	Poor relation



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Sr. #	Year	Topic	Variables	Findings
			foreign reserve, crude oil price, GDP, CPI, interest rate, import, exchange rate, export and gold price	
38	2008	Effects of Macroeconomic Variables on Stock Market Returns for Emerging Economies: Brazil, Russia, India and China	Industrial production, interest rate, oil price, money supply and exchange rate	Poor relation
39	2007	Cointegration and Causality between Stock Index and Macroeconomic Variables in an Emerging Market	Oil price, industrial production, CPI, exchange rate, money stock and interest rate	Poor relation
40	2006	Test of Arbitrage Pricing theory using Macroeconomic Variables in the Russian Equity Market	Exchange rate, oil price, money supply, industrial production and inflation	No relation

- i. Strong relation indicates fully validation of APT model.
- ii. Poor relation means, up to some extent selected variables have potential to predict stock returns.
- iii. No relation shows ineffectiveness of study variables for linkage with returns.