A Cross-Country Stock Return Analysis: Evidence from Japan and United States of America

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Abstract: *This study has been employed, descriptive and analytical methods to examine the long-term relationship and causation with country-specific variable; size of stock market (market capitalization in percentage of GDP) and stock traded turnover ratio, as well as macroeconomic variables; inflation rate, GDP growth rate, exchange rate, real interest rate, money supply in percentage of GDP and trade openness. For the examination of empirical evidence, the stock markets of United States of America and Japan have been chosen purposively, for the period of 1980 to 2015. The correlation, regression, cointegration and causality has been examined. The variables have found negative correlation with size, stock traded turnover ratio, inflation rate, GDP growth rate and interest rate. Whereas, the relationship between stock return and money supply, trade openness and exchange rate have found positive relation with stock return. Similarly, size, stock traded turnover ratio, trade openness, money supply and interest rate have significant relationship, but exchange rate, inflation and GDP growth rate have found insignificant relationship. In the context of Japan there has five variables that have long-term relationship with stock return and four variables in the context of United States. Finally, stock return has predictability to size, stock traded turnover ratio, interest rate and GDP growth but other variables. In the other ways round, trade openness has predictability to stock return but other variables.*

Keywords: stock return, country-specific variables, macro-economic variables, relationship, long-term relationship and causation

1. Introduction

Stock markets are the barometer of the overall economy. The economy of the nation can be replicated through the stock market, higher the size of stock markets higher the size of economy and vice-versa. Thus, it has been holding immense attention of scholars, academicians and policy makers. The huge literature has been proved that the stock markets are an important aspect of the dynamic economic activity, performing a crucial role in the economy of any country. Moreover, many researchers have proved that the stock market plays an important role in economic prosperity, through fostering capital formation and sustaining the economic growth of the country.Stock return also affect the wealth of household, their consumption, saving and investment decision. Among all the pillars of economy, stock market is one of the most important ingredients of a free market economy. It has been supporting for the capital formation through shareholders and in turn provided ownership to them. Investors pour their money in stock market to get return, which is influenced by innumerable unknown forces. The absolute numbers of these variables have not tagged so far. The literatures on determinants of stock returns in the empirical capital markets have been indicated that several factors potentially interpreted the abnormality in stock return beyond a single market factor. In this regard two notable theories are very common in predicting the relationship between stock return and fundamental variables, the first is known as Capital Asset Pricing Model (CAPM) and the second is called as Arbitrage Pricing Theory (APT).The issue, stock return analysis has been occupied considerable attention since the publication of pioneer work of Markowitz (1952) the mean-variance portfolio theory. Since then there is an ongoing debate on whether the market risk factors explain better or there are some other anomalies influencing common stock returns. The empirical studies, such as (Black, Jensen& Scholes, 1972), (Miller & Scholes 1972), (Blume & Friend, 1973), among others, have also documented positive relationship

between beta and stock returns. In 1970s and 1980s CAPM became the central and dominant theory to estimate stock return. Till 1990s the variables were used to choose based on popularity among the practitioners, instate of explicit theoretical study. But (Fama, 1981) and (Fama, 1991) suggested reasons behind choosing variables to explain stock return through explicit theoretical study. However, there are other empirical evidences, (Basu, 1977), (Banz, 1981), (Fama & French, 1992), among others which demonstrate the inability of market risk factor (beta) in fully explaining common stock returns as opposed to that suggested by the CAPM. The CAPM was developed in 1960s by (Sharpe, 1964), (Lintner, 1965) and (Mossin,1966) have been specified Markowitz mean-variance portfolio theory in to a testable prediction regarding the relationship between risk and expected rate of return by identifying a portfolio.

(Khan, 2012) tested the Capital Assets Pricing Model in Pakistan's capital market, Karanchi Stock Exchange (KSE). It has examined the links between risk and return in efficient market. So, it has calculated beta of ten registered companies on KSE, and actual expected returns have been compared. The analysis of information has been revealed that the limited capability of CAPM to the KSE. These findings have brought in conclusion that the strong rejection of acceptance and applicability of CAPM and significant signs have been put forwarded against the use of CAPM. Even though, it is a valuable tool for testing of cost of capital, investment performance evaluation and efficient market events. This model has been provided knowledge about the capital market and market situations. Therefore, CAPM is a model to examine risk and required rate of return and investors should not rely on it for their investment decisions. Further, the detailed comparison of the result should be considered from KSE and other stock markets of developing and developed countries. This study has also recommended using more sophisticated tools for instance, GARCH and multi factor model like as, Arbitrage Pricing

Theory (APT). It has strongly suggested that in further study of CAPM should be tested individually and along with APT for the better understanding to analyze the risk and return relationship and pricing mechanism.

(Oke, 2013) examined the application of CAPM in Nigerian's stock market using weekly stock return from 110 countries listed in Nigerian Stock Market (NSE) from January 2007 to February 2010. The result invalidated the CAPM's predications that higher risk associated with higher level of return and that the intercept should be zero when determining security market line (SML). The estimation of CAPM that the slope of SML should be equal to excess return on the market is also not supported by this study. This has invalidated the prediction of the CAPM as far as Nigerian concerned.

The application of traditional equilibrium theory model, the Capital Assets Pricing Model (CAPM) developed by (Sharpe, 1964), (Lintner, 1965) and (Mossin, 1966) have been produced mixed results. The weak point of estimating CAPM is the difficulty of measuring the efficient market portfolio. Considering the several difficulties in the testing of CAPM, various other models have been proposed. (Ross, 1976) came up with Arbitrage Pricing Theory (APT) it has been proposed that there are various sources of risk factors in the economy that cannot be neutralized by diversification. These sources of risks can be thought wide range of economy, such as inflation, interest rate and variation in aggregate output. CAPM only calculate single beta whereas, APT calculate many betas by examining the sensitivity of an asset's return to very in each factor. The central idea of APT is securities return is a linear function not only of one but also for the whole set of common factors. The APT thus implies that the risk premium for an asset is related to the risk premium for each factor and the risk premium increases due to assets sensitivity. The APT estimates that the price of all risky assets in the market conformed that there is no arbitrage to an individual investor having a well-diversified portfolio. The investor would not be able to earn any excess return merely by changing the weights of the assets incorporated in the portfolio, holding both systematic and unsystematic risk constant.

(Akpo,2015) stated that by comparing Capital Assets Pricing (CAPM) and Arbitrage Pricing Theory (APT) in institutional and theoretical framework that the CAPM offers powerful and intuitive predictions regarding how to measure risk and the relationship between risk and expected rate of return. Where, the empirical evidence of risk-return relationship shows that proxy of market is the mean variance efficiency. The Arbitrage Pricing Theory has been provided another model for explaining the relationship between risk and return. Whereas, CAPM and APT have been assumed some believable assumptions and stated that a linear relationship exists between a security's expected required rate and its beta. The study has empirically examined the APT and CAPM model and found that various agreement between CAPM and APT. However, some Limitations of CAPM also were noticed and which need to be addressed. This study has offered some recommendations, for instance the investors should try to use multiple factors model, as the security return are affected by a number of factors, like as interest rate, inflation rate and GNP. These factors impact on the return of other securities, while influencing on the market portfolio. The use of multiple factors model explains us how to maximize returns with least cost. Further, the government should have to develop sound macroeconomic policy for checking information and that could reduce uncertainty associated with the real rate of return. Therefore, this study has conducted in line with APT and examined the empirical evidence of Asian countries. The efficient market hypothesis has been assumed that market is rational. However, people are ruled as much by emotion as by logic. The Behavioral Finance has been explored how the emotions of a person cause over and under valuation of stock and provide opportunities of gaining to other investors. The efficient market hypothesis states that stock price already reflects all the information. The changes on price only occurred if there appeared new information. In this case the investor possesses the new information and the price of stock determined at new level. The investors decide new price through the value of new information. It is worthwhile to analyze the reasons why an investor's act rationally. It has been assumed that the investor makes decision to maximize utility, full utilization of unbiased information, information is excess to all and there is no any emotional behavior (Dhankar, 2002).

Rationality is the result of consistent logical action. The issue here is difference in individuals experience and level of knowledge might differ in setting logical parameters and values in every human being. It indicates that two different individuals might come up with different conclusions and results from the same evidence and information. This has explored two sides of market. An investor who has significant amount of money in the stock market may prefer to stay out of an overextended stock regardless of information. However, investor who has never been same experience would buy utilizing new information available. Even though both investors are rational based on their knowledge and experience.

Regarding efficient capital market, extensive studies have been made but remained controversial. Various economic theories have been developed based on the assumption that every investor behaves rationally, and all the information have been used in the investment process. Efficient market hypothesis interpreted that only changes in fundamental factors; for instance, profit margin and dividend ought to effect share price beyond short term. Whereas, random noise may prevail in the system. However, the experience shows that investor may temporarily move away from long term aggregate price trends. Only in short run investor becomes excessive optimistic and pessimistic that might lead stock price high and low and in long run investor behave normally. Economist continues to debate whether financial markets are really efficient. Where the Behavioral Finance takes place, which has been studied influence of psychological factors on investment decision. This information has significant role to prove, why the financial markets might be inefficient. The literature of the financial researchers has been described that a noise trader as idiot trader whose decision to buy, sale or hold are irrational and erratic. The presence of noise trader in financial market might influence even all the other investors are rational.

Unfair competition adds a new complication to the efficient market hypothesis, because investors having large amount of investment may utilize specific information for their strategic choice. There are sufficient reasons that efficient market hypothesis breaks down with unfair competition. The private information ensures that the equilibrium price to be sensitive.

How the fundamental variables, size (MC), stock trade turnover ratio, trade openness, money supply, inflation rate, GDP, real interest rate and exchange rate explain the relationship with stock return?What is the long-term relationship and direction between stock return and its fundamental variables? Whether there has unidirectional or bidirectional causal relationship exist between stock return and its fundamental variables? Japan and United States are both develop countries and the stock market of these countries have also systematic and transparent. In terms of market capitalization, the largest and second largest stock exchange; New York Stock Exchange and NASDAQ have been situated in United States and the third largest stock exchange Japan Exchange Group has been situated in Japan. Therefore, this paper has been analyzed the influence of fundamental variables on countries.

Japan
This country is situated in East Asia. The population of Japan was 126.99 million with -0.1 percent growth rate in 2016 AD. This country has been holding 378 thousand square kilometers in surface area. The population density (people per square km of land area) was 348.4. The GNI per capita PPP (current international $) was 42,790 US dollar. The life expectancy of Japanese citizen was 84 years. Mortality rate of child in every 1,000 births was 3. The GDP (current US $) was 4940.46 billion with growth rate 1 percent. The inflation rate was 0.3. The agricultural value added was 1. Whereas, industry value added was 29 percent and service value added was 70 percent. The export and import of goods and services was 16 percent and 15 percent in percentage of GDP respectively. The gross capital formation was 23 percent in percentage of GDP. In an average time required to start a business was 12 days. Individuals using internet was 92 percent in total population. The merchandise trade was 25 percent of GDP. The personal remittance received was 3819 million US dollar and foreign direct investment was 34,905 million US dollar (World Bank Development Indicators, 2018).

Japan Exchange Group
Japan exchange Group, Inc. (JPX) was established with the business combination between Tokyo Stock Exchange Group and Osaka Securities Exchange on January 1st, 2013. JPX operates financial instruments exchange market users with reliable venues for trading listed securities and derivatives instruments. In addition to providing market infrastructure and market data, JPX also provides clearing and settlement services through a central counterparty and conducted trading oversight to maintain the integrity of the market. In the course of working together as an exchange group to offer a comprehensive range of services, it continues to make effort to ensure reliable markets and create greater convenience for all market users. JPX provides a fair, secure, and reliable market infrastructure,

and in turn receives fees from securities firms, issuers, information vendors, and other market users. Its main revenue streams are trading services revenue. In terms of cost revenue factors, market expansion and growth boost income while expenses remain relatively constant and unaffected by change in market condition. The stock trading floor has attracted attention as a symbol of the security and financial markets of Japan for more than 120 years since floor trading began at the former Tokyo Stock Exchange, predecessor of current Tokyo Stock Exchange, on June 1, 1878. However, the stock trading floor was closed on April 30th, 1999 an effort to accelerate the speed and reduce the cost of transaction by member securities companies and seek further efficiency in the Tokyo Market. At the site of the stock trading floor, "TSE arrows" was opened on May 9th, 2000 as a new symbol of the Tokyo market. The Tokyo Stock Exchange, which is called TSE/TYO for short, is a stock exchange located in Tokyo, Japan. It is the third largest stock exchange in the world by aggregate market capitalization of its listed companies and largest in Asia.

United States
It is situated in North America. The population of United States was 325.72 million in 2017, with 0.7 percent growth rate. This country has been holding 9,831.5 thousand square kilometers in surface area. The population density (people per square km of land area) was 35.6. The GNI per capita PPP (current international $) was 60,200 US dollar. The life expectancy of American citizen was 79 years. Mortality rate of child in every 1,000 births was 7. The GDP (current US $) was 19,390.60 billion with growth rate 2.3 percent. The inflation rate was 1.8. The agricultural value added was 1. Whereas, industry value added was 19 percent and service value added was 80 percent. The export and import of goods and services was 12 percent and 15 percent in percentage of GDP respectively. The gross capital formation was 20 percent in percentage of GDP. In an average time required to start a business was 6 days. Individuals using internet was 76.2 percent in total population. The merchandise trade was 20 percent of GDP. The personal remittance received was 6301 million US dollar and foreign direct investment was 354,828 million US dollar (World Bank Development Indicators, 2018).

Stock Markets of United States
The New York Stock Exchange, largest stock exchange in terms of market capitalization and NASDAQ, second largest stock exchange in the world have been situated in United States. The total market capitalization of New York Stock Exchange and NASDAQ was 22,923 billion and 10,857 billion respectively in 208 (World Bank Development Indicators, 2018). Similarly, the monthly traded volume of New York Stock Exchange and NASDAQ was 1,452 billion and 1,262 billion respectively. Both the stock exchange remains open around 253 days in a year except holidays. The office time is 9:30 to 4:00 every working days as per the EST/EDT time zone. Both stock exchanges has been situated in New York city of United States. On May 17, 1792, twenty-four brokers signed the Buttonwood Agreement which set a floor commission rate charged to client and bound the signers to give preference to the other signers in securities sales, which can be considered as the first step of establishment of New York Stock Exchange.

NASDAQ was initially an acronym for the National Association of Securities Dealers Automated Quotations. It was founded in 1971 by the National Association of Securities Dealers (NASD), which divested itself of NASDAQ in a series of sales in 2000 and 2001. The NASDAQ Stock market is owned and operated by NASDAQ incorporation. After having basic information of American stock markets and Japanese stock markets. The study has been attempted to examine the following issues as problem statements.

1) How the fundamental variables, size (MC), stock trade turnover ratio, trade openness, money supply, inflation rate, GDP, real interest rate and exchange rate explain the relationship with stock return?
2) What is the long-term relationship and direction between stock return and its fundamental variables?
3) Whether there has unidirectional or bidirectional causal relationship exist between stock return and its fundamental variables?

The study has core objective to examine the relationship, co-integration and causality between the stock returns and its fundamental variables from the evidence of American and Japanese stock markets. The following specific objectives have been dealt:

1) To examine the relationship between stock return and fundamental variables; size (MC), stock trade turnover ratio, trade openness, market liquidity, inflation rate, GDP, and exchange rate from the evidence of Asian Stock Market.
2) To analyze the long-term relationship and direction between stock return and its fundamental variables.
3) To observe the causal relationship between stock return and its fundamental variables.

2. Literature Review

Table 1: Major findings of the influncing studies in the area of stock markets

Author and date	Title and publishers	Major findings
(Markowitz,1952)	Port Folio Selection. *Journal of Finance*	The expected risk premium oninvestment is proportional to beta risk, that how the risk of an investment should affect the expected return.
(Chang,Hamao and Lakonishok, 1991)	Fundamentals and Stock Returns in Japan. *Journal of Finance.*	The findings reveal a significant relationship between these variables and expected return in the Japanese market. Out of the four variables book to market ration and cash flow yield have the most significant positive impact on the expected returns.
(Black, 2006)	Macroeconomic Risk and the Fama-French Three Factor Model. *Managerial Finance*	The results showed that volatility for market risk premium appear to be a predictor of future macroeconomic risk, as peroxided by the conditional variance for default risk premium and the conditional variance for GDP growth.
(Sarkar, 2008)	The Trade Openness and Growth: Is there any link? *Journal of Economic Issues.*	The trade openness has negative relation with the stock return.
(Tian, 2010)	The Relationship between Foreign Exchange Rate and Stock Return. *The Journal of Asia Pasific Economy.*	When national currency becomes strong in exchange US dollar. This influences the national economy positively and that help to increase the stock return. Thus, there has positive relation between exchange rate and stock return.
(Almeida, Kim & Kim, 2015)	Internal Capital Markets in Business Groups: Evidence from the Asian Financial Crisis. *Journal of Finance.*	The capital reallocation allowed Chaebol firms with greater investment opportunities to invest significantly more than control firms in the aftermath of crisis. Choaebol firms with greater investment opportunities also showed higher profitability a lower decline in valuation than control firms following the Asian crisis. Choaebol firms transferred cash from low growth to high growth member firms after the crisis, using cross-firm equity investments.
Lee, Cheng & Chong, 2016)	Markowitz Portfolio Theory and Capital Assets Pricing Model for Kuala Lumpur Stock Exchange: A Case Revisited. *International Journal of Economics and Financial Issues.*	CAPM is reasonable to be the indicator of stock prices in Malaysia as well as portfolio basket. Linearity in CAPM but unique risk and systematic do not to be captured. Managers can use as a proxy to estimate their stock return and diversity the portfolio to reduce the unsystematic risk to enable them to execute the right policy in their management in order to maximize profit at the same time increase shareholders wealth maximization.
(Jebran, Chen, Ullah & Mirza, 2017)	Does Volatility Spillover among Stock Market Varies from Normal to Turbulent Periods? Evidence form Emerging Markets of Asia. *The Journal of Finance and Data Science.*	There has bidirectional volatility spillover between stock market of India and Sri Lanka in both period before and after 2007. However, the volatility spillover is bidirectional between stock market of Hong Kong and India, Pakistan and India in pre-crisis period, while stock markets of Sri Lanka and Pakistan in post-crisis period. The integration of emerging markets of Asia has important implication for investors and policy makers.
(Muhammad & Ali, 2018)	The relationship between Fundamental Analysis and Stock Return on the panel Data Analysis: Evidence from Karachi Stock Exchange (KSE). *Research Journal of Finance and Accounting*	The result has found that the fundamental analysis can predict future stock returns in Pakistan listed companies and end up with the implications and further directions.

From the above evidence it can be presumed that the size (Market capitalization in percentage of GDP) showed that negative relation with stock return. This assumption, supported by tow logics; the first one is that, if the size of carket capitalization is already large, then the trade cycle does work and the rate of growth could in decreasing order.

Secondly, the business organization increases the size of the capital from the external equity that increased the number of the share and reduces the prices of shares that results decrease in the stock return. The stock traded turnover ratio has positive relation with stock return. The trade openness has negative relation with the stock return. The GDP growth rate has the positive relation with stock return. The inflation rate has negative relation with the stock return. The

exchange rate has positive relation with the stock return. This is because when the national currency becomes strong in exchange US dollar. This influences the national economy positively and that help to increase the stock return. Interest rate has negative relation with stock return and money supply has positive relation with stock return. From the above evidence the following theoretical framework has been developed.
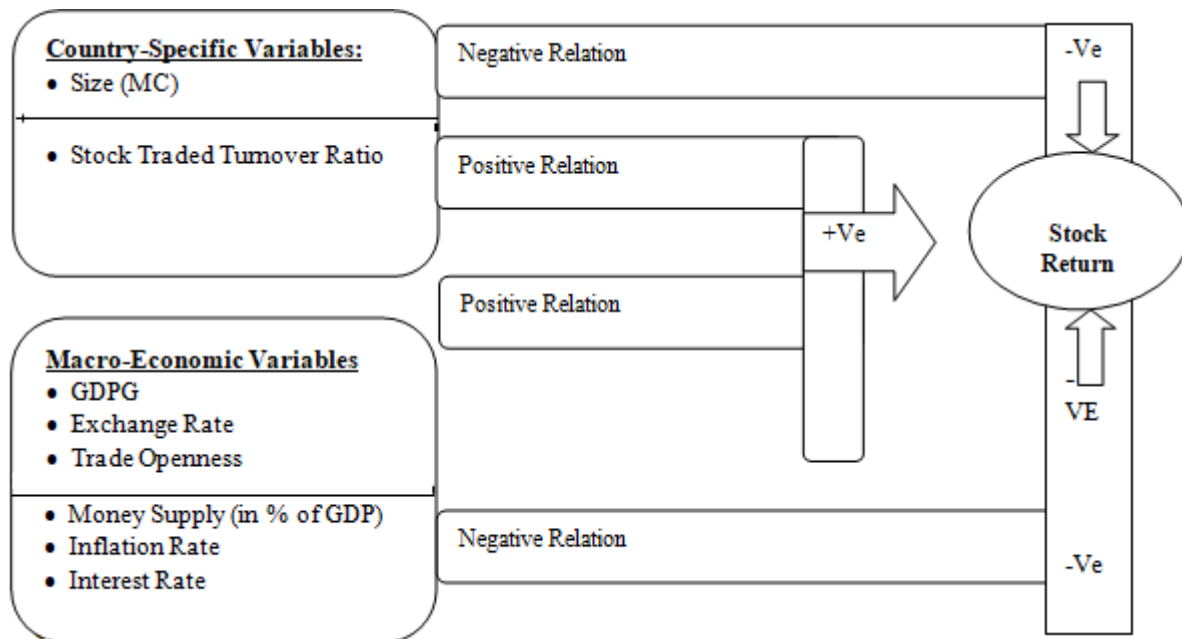

Figure 1: Theoritical Framework

3. Methodology

This study has analyzed the long-term relationship and causality between stock return and fundamental variables. Study has chosen the developed stock markets for the study, purposively. The country where has situated the largest stock market and second largest stock market; United States and the country where the third largest stock market has situated; Japan. Because, this paper has been examined the effect of fundamental variables in the developed stock market. The study has covered the period of 36 years from 1980 to 2015 AD. Firstly, this paper has examined the relationship between stock return and fundamental variables. Secondly, it has been examined long-term relationship between stock return and fundamental variables. Finally, the test of causality has been examined to examine the evidence. For the analysis the following models has been developed.

Regression Model: $(SR)_i = \beta 0 + \beta 1(SIZE)_{1i} + \beta 2\ (STTR)_{2i} + \beta 3(MS)_{3i} + \beta 4(TO)_{4i} + \beta 5\ (GDPG)_{5i} + \beta 6(INF)_{6i} + \beta 7\ (ER)_{7i} + \beta 7\ (IR)_{8i} + u_i \ldots\ldots\ldots\ldots(1)\ (Gujarati,\ Porter\ \& Gunasekhar,\ 2012)

In the above regression model SR stands for stock return. Similarly, SIZE stands for size of stock market in terms of market capitalization, STTR denotes stock traded turnover ratio, MS refers money supply percentage of GDP, TO is the representation of trade openness, GDPG stands for gross domestic product growth rate, INF denotes inflation rate, IR refers interest rate and beta is the slope of the regression line.

Co-integration Test
For the examination of long run relationship between the stock return and it underlying variables co-integration test has been examined. There is difference between test of unit root and test of co-integration. As David A. Dickey, Dennis W. Jansen, and Daniel I. Thornton observe, test for unit roots are pre-formed on univariate time series. In contrast co-integration deals with the relationship among a group of variables, where each has unit root (Economic Review, Federal Reserve Bank of St. Louis, 1991). The test now supplemented by more powerful tests developed by Johansen (1991). So, for the examination of co-integration Johansen co-integrationtest will be examined. The following is the Johansen co-integration model.
Johansen's methodology takes its stating point in the vector auto-regression (VAR) of order p given by:

$$y_t = \mu + x_1 y_{t-1} + \ldots\ldots\ldots\ldots + x_p y_{t-p} + u_t \ldots\ldots\ (2)$$

Where, yt is an n*1 vector of variables that are integrated of order one commonly denoted I(1) and u_t an n*1 vector. This VAR can be written as

$$\Delta y_t = \mu + \textstyle\prod y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-I} + u_t \ldots\ldots\ldots\ldots\ (3)$$
Where, $\prod = \sum_{i=1}^{p} x_i - I$ and $\Gamma_i = -\sum_{i=i+1}^{p} x_j$ *(Source: IMF Working Paper, 2007)*

Test of Granger causality

The regression result shows the relationship, but it does not imply that there is causation. In other word the existence of relationship between variables does not prove causality or the direction of influence. Time does not run backward. If event A happened before event B, then it is possible that A is causing B. However, it is not possible that B is causing A. In other words, events in the past can cause events to happen today. But future event cannot. This is the idea behind the Granger Causality test. But it should be noted that the causality is the philosophical with all kinds of philosophies. At one extreme are people who believe that everything causes everything and at another extreme are people who deny the existence of the causation whatsoever.

Granger Causality test, it is appropriate to call it the Wiener-Granger Causality Test, for it was earlier suggested by Wiener.The following are bivariate model.

$$Y_t = \sum_{i=1}^{n} \alpha_i X_{t-1} + \sum_{j=1}^{n} \beta_j Y_{t-j} + \varepsilon_{1t}$$

$$X_t = \sum_{i=1}^{n} \lambda_i X_{t-i} + \sum_{i=1}^{n} d_j Y_{t-j} + \varepsilon_{2t} \ldots\ldots\ldots(4)$$
(Gujarati, Porter & Gunasekhar, 2012)

The VAR model has been also used to examine the causality between variables to make robust the findings.

4. Result and Discussion

Table 2: Correlation Coefficients between stock return and fundamental variables

SR	Size	STTR	MS	TO	INF	GDPG	ER	RIR	
1.0000	-0.3007	-0.3362	0.9281	0.2868	-0.4947	-0.2295	0.6987	-0.4639	SR
	1.0000	0.6061	-0.2584	0.2796	-0.2236	0.1568	-0.3748	-0.2634	Size
		1.0000	-0.3007	0.3308	-0.0954	-0.0683	-0.3941	-0.2887	STTR
			1.0000	0.1789	-0.5663	-0.2663	0.7383	-0.4797	MS
				1.0000	-0.1485	-0.1986	0.1062	-0.5750	TO
					1.0000	0.1403	-0.2689	0.4634	INF
						1.0000	0.0464	0.3761	GDPG
							1.0000	-0.1763	ER
								1.0000	RIR

The correlation matrix has shown that the relationship between stock return and size negative. Similarly, the correlation of stock traded turnover ratio, inflation rate, GDP growth rate and interest rate have found negative relation. Whereas, the relationship between stock return and money supply, trade openness and exchange rate have found positive relation with stock return in the context of United States and Japan for the period of 36 years from 1980 to 2015.

Table 3: Panel-A: Regression result considering stock return as dependent variable and size (MC % of GDP), stock traded turnover ratio, money supply, trade openness, inflation rate, GDP growth rate and interest rate as independent variables

Models	Constant	Size	STTR	MS	TO	INF	GDPG	IR	Adjusted R^2
Model:1	0.4802 (1.134)	−0.0051 (−3.542)	−0.0004 (−0.707)	−0.0090 (−0.707)	4.006 (2.288)	−0.0345 (−2.101)	0.0036 (0.2178)	0.0039 (0.1958)	0.16027
Model:2	0.5315 (1.624)	−0.0051 (−3.615)	−0.0004 (−0.69)	−0.009 (−2.028)	3.8574 (2.487)	−0.0332 (−2.234)	0.00436 (0.2741)		.188115
Model:3	0.4997 (1.228)	−0.005 (−3.602)	−0.0004 (−0.785)	−0.0092 (−2.043)	4.0386 (2.354)	−0.0357 (−2.347)		0.0049 (0.2563)	0.18785
Model:4	0.4104 (0.9199)	−0.0034 (−2.702)	2.1350 (0.0349)	−0.0065 (−1.379)	2.2874 (.398)		0.0153 (0.9263)	−0.0125 −0.6339	0.06142
Model:5	0.8034 (1.880)	−0.0026 (−2.583)	0.00039 (0.7237)	−0.0052 (−1.108)		−0.0169 (−1.090)	0.00685 (0.3865)	−0.0161 (−0.83)	0.03765
Model:6	−0.0782 (−0.2420)	−0.004 (−2.885)	−0.0005 (−0.847)		2.7908 (1.633)	−0.0267 (−1.604)	0.0098 (0.5737)	0.0107 (0.5142)	0.08139
Model:7	0.5817 (1.473)	−0.0048 (−3.511)		−0.0093 (−2.020)	3.2830 (2.330)	0.0304 (−1.996)	0.0061 (0.3814)	0.0011 (0.0557)	0.17474
Model:8	0.436019 (0.8715)		0.00016 (0.2274)	−0.0023 (−0.450)	−0.66 (−0.5)	−0.002 (0.491)	0.00361 (0.1841)	−0.0072 (0.3051)	-0.17403

From the evidence of United States Stock Markets for the period of 36 years from 1980 to 2015.
Null Hypothesis (H0): There has no significant relationship
Alternative Hypothesis(H1): There has significant relationship

Panel-B: Regression result considering stock return as dependent variable and size (MC % of GDP), stock traded turnover ratio, money supply, trade openness, inflation rate, GDP growth rate and interest rate as independent variables

Models	Constant	Size	STTR	MS	TO	INF	GDPG	ER	IR	Adjusted R^2
Model:1	0.2472 (0.82)	1465 (1.00)	-1465 (-1.0)	0.002 (1.86)	2.073 ((7.3)	-0.02 (-1.9)	-0.0027 (-0.33)	-0.0003 (-0.46)	-0.066 (-4.7)	0.892
Model:2	−0.367 (−1.05)	8277.14 (0.045)	−8277.1 (−0.045)	0.004 (2.8)	2.508 (7.26)	0.011 (0.96)	−0.007 (−0.7)	−0.001 (−1.0)		0.8227
Model:3	0.1598 (0.68)	151448 (1.05)	−15145 (−1.05)	0.003 (2.55)	2.034 (7.56)	-0.024 (-2.3)	-0.003 (-0.38)		-0.067 (-4.91)	0.8945

Model:4	0.2317 (0.78)	148080 (1.02)	−148080 (-1.07)	0.002 (2.05)	2.076 (7.37)	-0.022 (-1.9)		-0.0003 (0.51)	-0.066 (-4.83)	0.8948
Model:5	0.0739 (0.246)	141670 (0.932)	−14167 (−0.93)	0.003 (2.56)	2.113 (7.15)		−0.003 (−0.36)	−0.0007 (−1.28)	−0.049 (−4.3)	0.8834
Model:6	0.2739 (0.564)	08887 (0.465)	−108887 (−0.46)	0.0043 (2.25)		−0.005 (−0.4)		0.0011 (1.129)	−0.099 (−4.6)	0.72235
Model:7	0.773 (6.78)	149358 (0.984)	−149358 (−0.98)		2.194 (7.61)	−0.028 (−2.6)	−0.006 (−0.81)	−0.0009 (−1.69)	−0.07 (−5.4)	0.88382
Model:8	.2549 (0.84)	0.0012 (1.854)		0.0023 (1.87)	2.0632 (7.234)	−0.021 (−1.9)	−0.0029 (−0.36)	−0.0004 (−0.53)	−0.063 (−4.6)	0.89192
	0.2549 (0.84)		0.00119 (1.854)	0.002 (1.87)	2.0632 (7.234)	−0.021 (−1.9)	−0.0029 (−0.36)	−0.0003 (−0.53)	−0.063 (−4.6)	0.89192

From the evidence of Japan Stock Markets for the period of 36 years from 1975 to 2015.
Null Hypothesis (H0): There has no significant relationship
Alternative Hypothesis(H1): There has significant relationship

Just the explanation of numerical result may not give the real interpretation. So, let's look after some conditions of other externalities. The population of United States has been increasing at decreasing rate in the study period. Whereas, the population of Japan has been increased from 1990 to 2010 but after 2010 it has been decreasing. The GNI of United States has been increasing in the study period and GNI of Japan has been found in the same line. The life expectancy of the both nations has been increasing. The urban population has been decreasing in the both nations. The energy consumption of the both nations has found increased up to 2000 AD. But after 2000 AD it has been decreased. Whereas, the consumption of electricity consumption has found increased up to 2010 AD and it has decreased. The value added by the agriculture to GDP has been constant in the context of United States but in the context of Japan it has decreased. The value added by the industry has been found decreased in the both nations and the value added by service sector to GDP has been increased in both nations. Exports of goods and services has found increased in the context of Japan but in the context of United States it has increased up to 2010 AD and it has decreased. Imports of goods and services has been increased in the context of Japan but in the context of United States it has increased up to 2010 AD and it has decreased. Gross capital formation has decreased in both nations. Revenue has increased before 2000 AD but after it has decreased. Net lending has been decreased in both nations. Time required to start business is less in the context of United States rather than Japan. Domestic credit provided by the financial sector has been increased in both nation in the study period. Tax revenue has increased in the context of United States up to 2000 AD and it has decreased up to 2010 AD and again it has increased. In the context of Japan, it has decreased up to 2010 AD and it increased. Expenditure has been fluctuated in the context of United States and Japan has somehow fixed. Use of cell phone has been increased in the both nations. High technology has decreased in the context of United States but in the context of Japan it has increased up to 2010 and it has decreased. Merchandise trade seems constant in the constant of United States but in the context of Japan it has increased. Net barter has constant in the context of United States, but it has decreased and again increased in the context of Japan. Personal remittance has been increased in the context of both nations. Foreign direct investment has increased has increased but in the period of 2000 to 2010 AD it has decreased in the both nations World Bank Development Indictors, 2018).

Keeping all the things constant, the influence of fundamental variables on stock return has found size has negative and significant explaining power in the context of United States stock market. Which has found exactly as per the presumed hypothesis that the stock return has negative and significant relationship with stock return. Whereas, the influence of the size on stock return has found positive and insignificant. The result has found in opposite with the presumed hypothesis that the size positively and significantly influences stock return. That could be, due to the attitude of person regarding the stock market. This implies that Japanese investors do believe that larger the firm higher in size lower the risk. So, there has positive relation between stock return and size. Stock traded turnover ratio has found negative relationship with stock return in the both nations but insignificant. This could be because of holding by the stock player to increase the price of the stock. Money supply has found significant relationship in the both nations. But it has negative relation in the context of United States but positive relation in the context of Japan. This implies that the money, which is out of the bank has value in the context of United States as well as in the context of Japan. Though, both nation emphasis banking transaction. Trade openness has positive and significant relationship with stock return in the both nations. This implies that the import and export of goods and services have been occupying significant portion of GDP. Similarly, the inflation has found significant and has negative relationship with stock return. This refers that the inflation has been influencing the investment decision of the investors and the return of the organizations. GDP growth rate has found insignificant relationship with stock return. It has positive relationship in the context of United States and negative relationship in the context of Japan. This implies that the stock market has not been predicting the GDP. The interest rate has found significant in the context of Japan and insignificant in the context of United States. This implies that the Japanese people has been considering the fixed deposit as alternative of stock investment, but the American has not been considering the saving in the bank has not been considering as alternative of stock investment. Regarding exchange rate it has been examined in the context of Japan only because it has been same in the context of United States. The exchange rate has insignificant relationship with stock return. These relationships do not have predicting power for long run. Thus, this paper has gone through examining the long-run relationship as below.

Table 4: Panel-A: Co-integration Test using Johansen Co-integration test between stock return and fundamental variables, Johansen test: Lag order = 2, Number of equations = 8, Case: Restricted constant

Rank	Eigen value	Trace test	p-value	Lmax test	p-value
None	0.89200	267.03	[0.0000]	75.672	[0.0000]
At most 1	0.85075	191.36	[0.0000]	64.674	[0.0001]
At most 2	0.74276	126.69	[0.0000]	46.163	[0.0064]
At most 3	0.65439	80.522	[0.0047]	36.124	[0.0226]
At most 4	0.56541	44.399	[0.1010]	28.334	[0.0366]
At most 5	0.22337	16.065	[0.7137]	8.5951	[0.8580]
At most 6	0.10561	7.4700	[0.5306]	3.7950	[0.8726]
At most 7	0.10245	3.6750	[0.0552]	3.6750	[0.0552]

Evidence form United States
Null Hypothesis (H0): There has no co-integration
Alternative Hypothesis (H1): There has co-integration
Level of significance: 0.05

Panel-B: Co-integration Test using Johansen Co-integration test between stock return and fundamental variables, Johansen test: Lag order = 2, Number of equations = 8, Case: Restricted constant

Rank	Eigen value	Trace test	p-value	Lmax test	p-value
None	0.99600	572.36	[0.0000]	209.86	[0.0000]
At most 1	0.95476	362.51	[0.0000]	117.64	[0.0000]
At most 2	0.87999	244.87	[0.0000]	80.567	[0.0000]
At most 3	0.83737	164.30	[0.0000]	69.018	[0.0000]
At most 4	0.67401	95.280	[0.0001]	42.594	[0.0021]
At most 5	0.52748	52.686	[0.0150]	28.488	[0.0348]
At most 6	0.29101	24.198	[0.1984]	13.069	[0.4603]
At most 7	0.21703	11.130	[0.2068]	9.2970	[0.2682]
At most 8	0.047087	18328	[0.1758]	1.8328	0.1758

Evidence from Japan
Null Hypothesis (Ho): There has no co-integration
Alternative Hypothesis: There has co-integration
Level of significance: 0.05

The regression result has found that the size, money supply, trade openness, inflation rate and interest rate have been significant relation. Whereas, stock traded turnover ratio, GDP growth rate and exchange rate have found insignificant to explain the stock return. In the same way in the context of United States at most four variables have found long term relationship, where the exchange has been excluded. In the context of Japan five variables have been found long term relationship with the stock return. The result has been computed at first difference to make the data stationary. This implies that keeping all the other variables constant these variables showed the relationship with stock return in long run.

Table 5: Causality Test
Panel-A: Causality between stock return and size

Stock Markets	Causation	Direction (F-value) Result
United States	Size causes stock return	SIZE→SR (0.41845) Do not reject null
	Stock return causes size	SR→Size (72.123) reject null
Japan	Stock return causes size	SR→Size (0.87178) Do not reject null
	Size causes stock return	Size→SR (0.51471) Do not reject null

Panel-B: Causality between stock return and stock traded turnover ratio

Stock Markets	Causation	Direction (F-value) Result
United States	STTR causes stock return	STTR→SR (-0.17140) Do not reject null
	Stock return causes STTR	SR→STTR (6.7158) reject null
Japan	STTR causes stock return	STTR→SR (0.51471) Do not reject null
	Stock return causes STTR	ST→STTR (0.87178) Do not reject null

Panel-C: Causality between stock return and money supply

Stock Markets	Causation	Direction (F-value) Result
United States	MS causes stock return	MS→SR (0.47528) Do not reject null
	Stock return causes MS	SR→MS (1.5618) Do not reject null
Japan	MS causes stock return	MS→SR (1.8319) DO not reject null
	Stock return causes MS	ST→MS (0.58645) DO not reject null

Panel-D: Causality between stock return and trade openness

Stock Markets	Causation	Direction (F-value) Result
United States	TO causes stock return	TO→SR (0.1355) Do not reject null
	Stock return causes TO	SR→TO (2.6897) Do not reject null
Japan	TO causes stock return	TO→SR (3.1949) reject null
	Stock return causes TO	ST→TO (0.043632) Do not reject null

Panel-E: Causality between stock return and inflation rate

Stock Markets	Causation	Direction (F-value) Result
United States	INF causes stock return	INF→SR (0.1355) Do not reject null
	Stock return causes INF	SR→INF (2.6897) Do not reject null
Japan	INF causes stock return	INF→SR (0.30496) Do not reject null
	Stock return causes INF	ST→INF (0.59569) Do not reject null

Panel-F: Causality between stock return and GDP growth rate

Stock Markets	Causation	Direction (F-value) Result
United States	GDPG causes stock return	GDPG→SR (0.02623) Do not reject null
	Stock return causes GDPG	SR→GDPG (4.7027) Reject null
Japan	GDPG causes stock return	GDPG→SR (1.7196) Do not reject null
	Stock return causes GDPG	ST→GDPG (0.1185) Do not reject null

Panel-G: Causality between stock return and interest rate

Stock Markets	Causation	Direction (F-value) Result
United States	IR causes stock return	IR→SR (0.4072623) Do not reject null
	Stock return causes IR	SR→IR (1.05731307) Do not reject null
Japan	IR causes stock return	IR→SR (0.65418) Do not reject null
	Stock return causes IR	SR→IR (2.9998) Reject null

Panel-G: Causality between stock return and exchange rate

Stock Markets	Causation	Direction (F-value) Result
Japan	ER causes stock return	ER→SR (1.8081) Do not reject null
	Stock return causes ER	SR→ER (0.043882) Do not reject null

F critical value at 5% level of significance and (3, 26) degree of freedom = 2.97515

The causal relationship examines the predictability of the variables. The paper has been examined bidirectional casual effect between stock return and fundamental variables. In the context of United States remaining all the other variables constant stock market size has not able to predict stock return. Whereas, the stock return can predict the size of stock market. In the context of Japanese stock markets there has no causal relationship between stock return and size. This implies that even though there has relationship between stock return and size in terms of market capitalization, these variables have no predicting strength. Regarding the stock traded turnover ratio, it has found that similar result with the size. The stock traded turnover ratio has no causal relationship with stock return in the context of United states and Japan. This implies that the stock traded turnover ratio unable to predict to stock return, though there has relationship between stock return and stock traded turnover ratio. Whereas, the stock return has causal relationship with stock traded turnover ratio in the context of United States Stock Markets. This implies that the stock return has predicting power to the stock traded turnover ratio but in the context of Japan the stock return has no causal relationship with stock traded turnover ratio. While taking about causality between money supply and stock return there has no causal relationship. This implies that neither the money supply nor the stock return has predicting ability to each other. Regarding the casual relationship of trade openness with stock return, in the context of United States trade openness has not predicting power to stock return but the stock return has predicting power to estimate the trade openness. But in the context of Japan has found just reverse result rather than United States that the stock return has no predicting power to estimate the trade openness, but trade openness has predicting power to the stock return. While, talking about the causal effect inflation rate and stock return both the variables have no predicting power each other. GDP growth rate has no predictability to stock return in the context of United States, but the stock return has found predictability to the GDP growth rate. Whereas, in the context of Japan both the variables have no predictability each other. Regarding the causality of exchange rate and stock return in Japan both the variables have found insignificant predicting power.

5. Concluding Remarks

The findings have varied in different situations, for instance even though there has long-term relationship there might not have the causation. The same variable has relationship and causation in one nation but that has insignificant in another nation. This implies that the information could be very specific and the result of one context may not be useful in the context of another. So, the investors and policy makers should have to analyzes and use very specific information. Further, this paper has analyzed considering the assumption that other things has remain the constant, that has great meaning. The government policy, psychology of investors, company's policy and knowledge regarding stock markets of investors might influence the stock return. Therefore, the use of information has found very specific.

References

[1] Almeida, H. Kim, C. & Kim, H. (2015). Internal Capital Markets in Business Groups: Evidence from the Asian Financial Crisis. *The Journal of Finance,* Vol. *70,* pp. 2539-2586. Retrieved from http://www.jstor.org/stable/43611144

[2] Basu, S. (1977). Investment Performance of Common Stocks in Relation to their Price Earnings Ratios: A Test of Efficient Market Hypothesis. *Journal of Finance*, Vol. 32(3), pp. 129-156.

[3] Banz, R.W. (1981). The Relationship between Returns and Market Value of Common Stocks. *Journal of Financial Economics*, Vol. 9 (1), pp. 3-18.

[4] Black, A. J. (2006). Macroeconomic Risk and the Fama-French Three Factor Model. *Managerial Finance*, *32*(6), 505-517. DOI: 10.1108/03074350610666238.

[5] Black, F., Jense, M. C. & Scholes, M. (1972). The Capital Assets pricing model: Some Empirical Tests*Studies in the Theory of Capital Market*, pp. 79-124.

[6] Blume, M. & Friend, I. (1973). A New Look at the Capital Asset Pricing Model. *Journal of Finance*, pp. 19-34.

[7] Gujarati, D. N., Porter, D. C., & Gunasekar, S. (2012). *Basic Econometrics*. New Delhi: Tata

[8] McGraw Hill.

[9] Fama, E.F. (1981). Stock Returns, Real Activity, Inflation and Money. *American Economic Review*, Vol. 71, pp. 545-565.

[10] Fama, E. F. (1991). Efficient Market Hypothesis: II, *Journal of Finance: American Finance Association.* Vol, 46, pp. 1575-1617.DOI: 10.2307/2328565.

[11] Fama, E. F. & French, K.R. (1992). The Cross-section of Expected Stock Returns. *Journal of Finance*, Vol. 47(2), pp. 427-465.

[12] Jebran, K., Chen, S., Ullah, I. & Mirza, S. S. (2017). Does Volatility Spillover among Stock Market Varies from Normal to Turbulent Periods? Evidence form Emerging Markets of Asia. *The Journal of Finance and Data Science.*Vol. 3, pp. 20-30. URL: http://www.keaipublishing.com/en/journals/jfds/

[13] Jensen, M.C. & Black, F. & Scholes, M. S. (1972). The Capital Asset Pricing Model: Some Empirical Tests, *Praeger Publishers Inc.* SSRN: https://ssrn.com/abstract=908569

[14] Johansen, S. (1991). Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models. *Econometrica*. Vol. 59 pp. 1551-1580. JSTOR 2938278.

[15] Khan, M. I. & et. Al. (2012). Assessing and Testing the Capital Assets Pricing Model (CAPM): A Study Involving KSE-Pakistan, *Global Journal of management and Business Research*. Vol. 12, pp. 34-38.

[16] Lee, H., Cheng, F. & Chong, S. (2016). Markowitz Portfolio Theory and Capital Assets Pricing Model for Kuala Lumpur Stock Exchange: A Case Revisited, *International Journal of Economics and Financial Issues.* Vol. 6, pp. 59-65.

[17] Louis K. C. Chan, Yasushi Hamao, & Josef Lakonishok. (1991). Fundamentals and Stock Returns in Japan. *The Journal of Finance, 46*(5), 1739-1764. doi:10.2307/2328571

[18] Linter, J. (1965). The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets. *Review of Economics and Statistics*, Vol. 47, pp. 13-37.

[19] Markowitz, H. (1952). Portfolio Selection, Journal of Finance. Vol. 7, pp. 77-91. URL: http://links.jstor.org/sici?sici=0022-1082%28195203%297%3A1%3C77%3APS%3E2.0.CO%3B2-1

[20] Miller, M. & Scholes, M. (1972). Rates of Return in Relation to Risk: A Re-examination of Some Recent Findings. *Studies in Theory of Capital Market*, pp. 47-78.

[21] Mosin, J. (1966). Equilibrium in a Capital Asset Market. *Econometrica*, Vol. 34, pp.768-783.

[22] Oke, B. O. (2013). Capital Assets Pricing Model (CAPM): Evidence from Nigeria, *Research Journal of Finance and Accounting.* Vol. 4. pp. 17-27.

[23] Ross, S.A. (1976). The Arbitrage Theory of Capital Asset Pricing. *Journal of Economic Theory*, Vol. 13, pp. 341-360

[24] Sharpe, W.F. (1964). Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk. *Journal of Finance*, Vol. 19, pp. 425-442.

[25] Tian, G. a. (2010). The Relationship between Foreign Exchange Rate and Stock Return. *The Journal of Asia Pasific Economy*, 490-508.

[26] World Bank Group (2018). World Bank Development Indicators: *World Bank*.