



The Effect of Stock Markets of Major Developed Countries on Pakistan Stock Market

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Abstract

The study tests the relationship among stock markets of selected developed countries and Pakistan stock market for 12 years from the period Jan. 1994 to Dec. 2016. The objective of this research is to analyze the long-run relationship of stock markets of USA, Japan, and Australia with Pakistan stock market. Researcher includes KSE 100 Index as dependent variable and S&P 500, ASX 200, and Nikkei 225 as independent variable for this particular study and applies Augmented Dickey-Fuller Test (ADFT), Co-integration test, OLS regression and VECM test on secondary data of weekly index prices with total observation of 1200 to find out long run and causal relation between selected variables. Results of models indicate that models are valid and are applicable in the stock markets of selected countries. By applying these tests researchers conclude that all independent and dependent variables have a positive and significant relationship during the proposed period of this particular study.

Key words: Co-integration, stock markets, KSE 100 Index, VECM and ADFT

1. Introduction

1.1 Background of the Study

The creating market objective is to accomplish financial development and advancement. Notwithstanding numerous different variables, Investment assumes a basic part in accomplishing the financial development and improvement of a nation. Reserve funds create venture. Reserve funds are constantly equivalent to speculation. The finest place to utilize the saving in kind of speculation is the market of capital securities. The limit of capital markets is to drive the hold subsidizes in an effective and capable way towards the wander portfolios and associates in working up a theory culture in the country. This market is divided into two markets named as primary market and secondary market. Commonly, stock market or equity market is known as secondary market. Stock market or exchange is a place where traders can buy and sell their shares, bonds and other financial instruments. Only listed companies' can traded their securities like, unit trusts, derivatives, portfolio investment products and bonds in stock exchange. Today stock market is considered as the most important part of the global economy. Different markets of the world depend on each other's stock market for the economic growth and development. However securities exchange isn't generally assume a critical part in worldwide economy since it is new marvel. Stock trade was established first time in London in 1801 with the name of London Stock Exchange yet it was not permitted to organizations to exchange shares over this trade until 1825. It was an extremely constrained trade. Because of this confinement the stock trade established in New York (NYSE) in 1817 was considered as a critical crossroads in the history (Godfrey, Granger, & Morgenstern, 1964; Agmon, 1972).

However, today almost every country of the world has its own stock exchange where the companies of these countries trading on regular basis. In Pakistan the stock trade was established on September 48, 1947 by the name of Karachi Stock Exchange. Karachi Stock Exchange was recorded among 10 best securities exchanges of the world. As demonstrated by the examination of Bloomberg, the Pakistani securities trade record was the third-best performer stock trade on the planet since 2009. Presently stock trade in Pakistan is working by the name of Pakistan Stock Exchange After the merger of individual stock trades of Karachi, Lahore and Islamabad which was built up on 11 January 2016. Here the inquiry is the reason securities exchanges have turned into an enthusiastic power for the financial development of the worldwide nations? In the cutting edge age, securities exchange can be discovered anyplace on the planet and one can't prevent the worldwide significance from securing securities exchanges. Consistently, millions or trillions of dollars are exchanged on securities exchanges everywhere throughout the world and they genuinely considered as the motor of industrialist economy (Berument & Ince, 2005).

1.2 Problem Statement

The problem which is focused by researcher in this particular study is to know the impact of securities markets of developed countries on Pakistan stock market. It's also true that stock market consider a main indicator for economic growth of any country. If companies of any country perform better and manage well their resources and provide the investors with benefits or chance to increase their return, then it can interacts different investors from the world to invest in their home country, it lead to increase in stock market growth due to this increase in economy of any countries. However there are several other things that affect the securities markets of different countries, such as; political and economic instabilities, behavior of investor towards particular market, and foreign direct investment. So any change in one economy may affect the market condition of other country due

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to globalization. If this is not calculated that when and how different stock exchanges in the world interlinked. It is not possible for any country to predict future for their country and protect their stock markets and economy from any curse hence proposed this study.

1.3 Research Objective

The research study focuses to analyze the impact and relationship between stock markets of major developed countries and Pakistan stock market. So, our research study's specific objectives are;

- To calculate the impact of U.S.A stock exchange on Pakistan stock market.
- To determine the impact of Japan stock market on Pakistan stock market.
- To measure the impact of stock market of Australia on the stock market of Pakistan.
- To compare the relationship among U.S.A stock market, Japan stock market, and Australia stock market and Pakistan stock market.

1.4 Significance of Study

Investors of different countries want to diversify their risk through different techniques. In this global era investors used to invest their resources in others countries for diversifications. So this study is as equally important for individual investors, institutional investors, investment bankers, mutual fund companies, different industries, and govt. of Pakistan as well as govt. of different countries.

2. Literature Review

Being familiarized with what has already been written on the topic, researcher provides a compact background to the research topic. Different research studies were conducted by different researchers in past related to the recent topic. This section divided into two following subsections. Section I is about theoretical foundation of the study, further sections comprise as relationship between Stock Exchange of Pakistan, USA, Japan and Australia respectively.

2.1 Theoretical Foundation of the Study

This section provides theories and assists us in understanding the basis of develop model of the research. The section explains the relationship among variables used in the model. It gives guidance to the scholars in building up, a hypothetical base and displays that how the factors have been made and assessed.

2.2 Modern Portfolio Theory

In finance history, portfolio optimization was come into being by Markowitz (1952) and received the noble prize in 1990. The idea of portfolio with the ideal return can't be accomplished by incorporating the abundant securities in the portfolio, yet for the making of an ideal portfolio financial specialist must consider the association along with investment. Markowitz (1952) was the primary person who explored the design of portfolio, be that as it may, portfolio imply that most noteworthy expected return at certain level of risk. Modern portfolio theories explain that how investor and manager minimize the risk and maximize the anticipated return. How investors choose their portfolio optimization only prosed by the author in this interesting study.

2.3 Implication of Portfolio Theory

Theory of Portfolio suggests that if the investors of 1 country ought to diversify their assets across totally different countries in results of this return to stocks across countries square measure but absolutely related (Narayan & Smyth, 2004). The co-ordination and relationship of securities exchanges underlies a noteworthy foundation of present-day portfolio hypothesis which tends to the issue of differentiating resources. This hypothesis advocates financial specialists to expand their advantages crosswise over national borders, insofar as comes back to stock in these different markets are less at that point impeccably connected with the local market. The upsides of advantage enhancement have been broadly talked about in the writing in which a lot of exertion was given to endeavors that measure chance decrease and its related advantages accessible to the globally expanded portfolio (Lessard, 1973; Masih and Masih, 1997; Solnik & Mcleavey, 2003). The contentions for global portfolio expansions incorporate hazard lessening and return upgrade openings. The relationships between significant values markets are routinely observed by subsidize administrators. All in all, low relationships crosswise over nations enable juvenile financial specialists to spread hazard since a few markets are probably going to go up while others go down. Low connections likewise provide possibilities to master monetary specialists to time the business sectors by getting in those business sectors that they hope to travel up whereas high the pessimistic ones (Solnik & Mcleavey, 2003).

2.4 Relationship between Stock Exchanges of Different Countries

Some similar studies are conducted by Sharma (2011), Bekaert, Harvey, & Lundblad (2001), Dunis & Shannon, (2005) and Hung & Cheung, (1995) in which researchers inspect the relationship among emerging stock markets of the world and their interdependence on each other and interdependence with USA stock market; researcher includes India, China, Japan, Malaysia, South Korea, Singapore, Hong Kong, USA, Indonesia, Taiwan, Mexico, Pakistan stock markets as variables of their studies and apply the tests of co integration, vector auto regression models, and correlation to find out the relationship between variables; researchers draw conclusion from their studies that during the period of research all the emerging markets of the said countries have become closely interconnected with the stock market of Japan and the international diversification was still



beneficial for all the investors of USA during the given period of time; since 1987 after the stock market crash it has been observed during the examination that the inter-dependence of various developed countries stock markets and emerging markets of the world has been increased and this interdependence of markets have increased after the Asian financial crisis in 1997 (Ali, Butt, & Rehman, 2011 and Bhunia, 2012).

Related Studies accompanied to observe the link amongst macroeconomic variables and stock market indices and to know how emerging equity market would affect the economic growth of a country and they also studied that whether the international stock markets are interrelated with each other or not; for these studies research include inflation, interest rate, industrial production, exchange rate, and different emerging markets like India, Malaysia, Pakistan, Korea, Turkey, Brazil, and Bangladesh has independent variables and dependent variables include the GDP, and stock market of Singapore; further variables include the US, UK, Germany, Japan, and France stock markets; co integration, two-step error correlation and time series analysis models were used by researchers. it is found by expert that the US market has significant and positive impact on the markets of United Kingdom (UK), French, and Germany and these markets provides great response to the innovation in US stock market but the Japanese stock market have no relation to the stock market of France, Germany, and the UK; researchers further conclude that the change in inflation rate (CPI), interest rate, money supply, exchange rate and industrial production form significant relationship with the Singapore's stock market (Maysami, Howe, & Hamzah, 2004; Arshanapalli & Doukas, 1993; Bekaert, Harvey, & Lundblad, 2001; Alvi & Chughtai, 2014 and Khan, 2011).

Boubakera & Jouinic (2014), Kim (2010), and C.Chan, E.Gup, & Pan (1997) have studied the relationship among emerging and developed markets in different countries, relationship and integration between international stock markets respectively; scholars conduct research to measure the connection of stock market of US with the stock markets of Asian countries to see how one market have an impact on other equity markets; variables of the study include the Australia, Belgium, Germany, Greece, Iceland, Ireland, Denmark, Spain, UK, Switzerland, USA, France, Italy, Norway, Hong Kong, Korea, Taiwan, Canada, Finland, Japan, India, Netherland, Pakistan, and Sweden; test applied for the testing the results of the hypothesis by the researchers are co integration, Granger causality and vector auto regression model (VECM) these tests are used to find the relationship between international stock markets; results of these studies state that the bidirectional relationship or impact between emerging and western European markets is higher as compared to the relationship between emerging markets and US markets; the impact of developed countries' stock exchanges on emerging markets is very vital than that of emerging markets on developed markets; after the crisis of Asian financial the stock markets of the world become more interrelated specially relationship between US market and Asian emerging markets are more dominant than the casual linkage (Lamba, 2005; Ali, Butt, & Rehman, 2011; Alvi & Chughtai, 2014; Bhunia A., 2012 and Narayan, Smyth, & Nandha, 2004).

Berument & Ince (2005), Clausa & Lucey (2012), Chan, Gup, & Pan (1997), S.Eun & Shim (1989) and Shah, Husnain, & Ali (2012) conduct their studies to find out the effect of USA market on the emerging markets of the world and study the global stock market integration and efficiency. After they find out the integration of equity market in the Asian Pacific region and also conduct researches to look out the relationship of Pakistan stock exchange market with other markets of world and international spread of movements or co-movements of stock market; used variables are USA stock market, Turkish stock market, Australia, Japan, Hong Kong, Korea, India, Malaysia, New Zealand, Singapore, Taiwan, Thailand, South Korea, Canada, UK, France, Italy, Belgium, Denmark, Spain, Switzerland, Pakistan, Germany, and Indonesia; Johansen Co-integration test, VAR model, Fama-French model, , and VECM were used for calculation of results; at the conclusion that the USA stock exchange market is the dominant market of the world because of their superpower and also established a long run relationship between the markets of Australia, Japan, Hong Kong, New Zealand, and Singapore stock exchange with USA stock exchange market.

All previously published pieces of literature summarize as almost all researchers used same statistical techniques for analysis on stock indices of different countries and also most of the researchers concluded that stock indices of different countries have a connection with each other due to global investments. After a comprehensive analysis of the literature, we are able to develop the following hypotheses.

2.5 Hypotheses

- H1.** USA stock market does have a positive and significant impact on Pakistan stock market.
- H2.** Japan stock market does have a positive and significant impact on Pakistan stock market.
- H3.** Australia stock market does have a positive and significant impact on Pakistan stock market.
- H4.** USA, Japan, Australia stock market does have a positive and significant impact on Pakistan stock market.

3. Research Design and Methodology

The research design used in this particular study is quantitative (Numeric) and the philosophical assumption is deductive accordingly. This study is quantitative in nature and its purpose is to demonstrate the relationship of developed markets with Pakistan markets, this section includes the following points;

3.1 Time Period

The weekly closing index prices of developed and developing countries are used as a Population for this study. The sample selected for the purpose to find out the relationship between developed countries and Pakistan is KSE, S&P 500, Nikkei 225, and S&P/ASX 200. Researchers collect data for 22 years from January 1995 to December 2017 to find out the long-term relationship between Pakistan and developed countries markets.

3.2 Nature and Source Of Data

This research study focuses on time series and secondary data which is used to show the long-term connection between Pakistan and developed countries market. Secondary data for weekly closing prices of indexes are collected by researchers for this quantitative nature of the study. Researchers collect weekly data of closing prices from websites like yahoo finance and from investing.com for the period January 1995 to December 2017 with the total observation of 1200.

4. Methodology

In this area of the research study, different approaches and methods are used to define the research objective of the particular study. Unit root test is applied to check the stationarity of data which is compulsory to know the pattern of data. Stationarity is checked by applying the Augmented Dickey-Fuller Test (ADFT). After applying these tests researchers see data is stationary at the same order and then researchers check the relationship between variables. To measure the long-term relationship between variables co-integration (Hansen & Johansen, 1999) analysis and regression analysis is used. In case, if the data is not stationary at any level then literature recommend Auto Regressive Distributive Lag (ARDL model for the analysis of both short and long-term connectivity between variables) (Pesaran, 1997).

5. Results and Interpretations

5.1 Unit Root Test

As far as already discussed that unit root test is used to know about the stationary pattern of data. It gauges the stationary or non-stationary of information of time series at the level or at drift. The existence of unit root in the autoregressive model is estimated by applying Augmented Dickey-Fuller (ADF) test. This test is for the most part utilized as a part of unit root test to fit an autoregressive (AR) demonstrate, it looks at invalid speculation of Autoregressive Integrated Moving normal (ARIM) process against the stationarity of information (Cheung & Lai, 1995).

Hypothesis

Ho: If probability is less than 0.05 it will be stationary

H1: If probability is not less than 0.05 it will not stationary

Table 1. Result of Unit Root Test

Country	Variable	Unit Root Tests (ADF)	Test-Statistic	Prob.	Critical Value		
					1%	5%	10%
Pakistan	KSE-100	I (0)	4.816664	1.0000	-3.435691	-2.863787	-2.568016
		I (1)	-31.0027	0.0000	-3.435696	-2.863789	-2.568018
USA	S&P 500	I (0)	-0.57292	0.8739	-3.435590	-2.863742	-2.567992
		I (1)	-37.3109	0.0000	-3.435595	-2.863744	-2.567994
Japan	Nikkei 225	I (0)	-1.80274	0.3795	-3.435590	-2.863742	-2.567992
		I (1)	-36.2396	0.0000	-3.435595	-2.863744	-2.567994
Australia	ASX/S&P200	I (0)	-1.19537	0.6785	-3.435595	-2.863744	-2.567994
		I (1)	-35.8065	0.0000	-3.435599	-2.863746	-2.567995

The test of Unit root shows the stationarity of data. It is necessary to apply ADF (Augmented Dickey-Fuller) to check the stationary status of data before applying the co-integration test. Significant level for variables is 0.05 it means if the value of probability is less than 0.05 then variables are stationary. As the results of unit root test, only Nikkei 225 is stationary when it is checked at level while all other variables as observe above are non-stationary at level. Due to Presence of these results null hypothesis which says that variables have unit root so it cannot be rejected in case of a level. On the other when they have measured at first difference all variables are stationary so null hypothesis for all variables can be rejected at the 1st difference. In spite of all variables are stationary at first difference as our results shown in the table then it indicates to apply co-integration.

5.2 Co-integration



Co-integration analysis is used for the measurement of long-term relation between variables with respect to the non-stationary property of index prices (Kim, 2010).

Hypothesis

Ho = The lag level series are not Co-integrated

H1 = The lag level series are Co-integrated

Table 2. Co-integration Rank Test- Unrestricted (Trace)

Hypothesized No. of CE(s)	Eigen-value	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.207140	857.5513	47.85613	0.0001
At most 1	0.187817	585.5202	29.79707	0.0001
At most 2	0.147065	341.7089	15.49471	0.0001
At most 3	0.124087	155.2771	3.841466	0.0000

Max-Eigen value test indicates 4 co-integrating eq. (s) at the 0.05 significant level

* Is for the rejection of the hypothesis at the 0.05 level

** Is for MacKinnon- Haug-Michel's (1999) p-values

The long-term relationship between said variables is to find through co-integration analysis. Results of co-integration show that probability of all variables is less than 0.05 and the max-Eigen statistic is also more than Eigen-value, critical value i.e. 857.5513 which reveals that the included variables of the study are co-integrated with each other. It means that all stock markets of selected countries have a long-run relationship among each other.

Table 3. Co-integration Rank Test-Unrestricted ((Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigen-value	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.207140	272.0311	27.58434	0.0001
At most 1	0.187817	243.8113	21.13162	0.0001
At most 2	0.147065	186.4318	14.26460	0.0001
At most 3	0.124087	155.2771	3.841466	0.0000

Max-Eigen value test indicates there are 4 co-integrating eq. (s) at the 0.05 level

* Shows the rejection of the hypothesis at the 0.05 significant level

**Indicate the MacKinnon-Haug-Michel's (1999) p-values

As said in above paragraph the co-integration analysis is used for finding out the long term relationship between variables. Results of co-integration show that probability of all variables is less than 0.05 and max-Eigen statistic is also more than Eigen-value, critical value i.e. 272.0311 which reveals that the data is co-integrated. It also depict that all included counties' stock exchanges have long term relationship with each other.

5.3 OLS Regression Analysis

Hosmer & Lemeshow (1980) Regression model used techniques for depicting the relationship between dependent and independent variable and a vector of independent variables. Distinctively, regression model providing understanding about how typical values of respond variable changes when one of explanatory variables varies while all other explanatory variables remain constant during the period

5.3.1 Hypothesis

Ho: X variable does not have positive and significant impact on Y variable.

H1: X variable does have positive and significant impact on Y variable.

Table 4. OLS Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-21801.44	912.7155	-23.88635	0.0000
ASX-200	2.699768	0.234005	11.53723	0.0000
NIKKEI-225	0.212563	0.045204	4.702276	0.0000
S&P-500	15.25119	0.699299	21.80924	0.0000
R-squared	0.711930	F-statistic Prob. (F-statistic)		967.1342
Durbin-Watson Stat Prob(F-statistic)	1.014005 0.000000			0.0000

For This Study

KSE 100 = Pakistan Stock Market

Nikkei 225 = Japan Stock Market

ASX 200 = Australia Stock Market

S&P 500 = US Stock Market

Proposed Equation For The Data Available

$$KSE\ 100 = \beta_0 + \beta_1 * ASX\ 200 + \beta_2 * Nikkei\ 225 + \beta_3 * S\&P\ 500 + e$$

Substituted Coefficients

$$KSE100 = -21801.4376618 + 2.69976836093 * ASX200 + 0.21256343235 * NIKKEI225 + 15.2511861548 * SP500$$

R-Squared in the above tables shows that 71% change or variation in dependent variable (KSE 100 Index) is explained by included independent variables i.e. S&P 500, ASX 200, and Nikkei 225. Results of regression analysis shows as in above table that the value of R-squared and adjusted R-squared is 0.711930 and 0.511194 respectively explains that in dependent variable KSE 100 index most of the variation is explained by included three independent variable ASX 200, S&P 500, and Nikkei 225. Durbin-Watson stat measurement is used in this study; it is a measurement to check the closeness autocorrelation. The value of Durbin-Watson test limit is between 1 to 4, if the results value lies between 1.5 to 2.5 it means that there is not any autocorrelation between variables are exists. In this study the results of Durbin-Watson result is 1.014005 which shows that there is no autocorrelation exists between variables. The value of constant is -21801.44 it means that if all other variables remain constant or assumed to be 0 even then the value of dependent variable is equal to -21801.44. If index price will increase by 1% in ASX 200 then KSE 100 index will increase at the rate 2.699768%. When prices will increase 1% in Nikkei 225 the prices will move up in KSE 100 by 0.212563% and 1% increase in the index prices of S&P 500, prices of KSE 100 will increase 15.25119%. F-statistics probability value shows the good fitness of regression model. Goodness and fitness of model should be observe from the probability value of F-state, if value of prob. Less than 0.05 it means model good fit so In above table probability value of F-statistics is 0.0000 which is less than 0.05 it means that model used in the study i.e. regression model is good fitted.

5.4 Vector Error Correction Models (VECM)

VECM is used to see short run relations and dynamics between variables. It tells that how much time it will take to convert short term disequilibrium into equilibrium. If co-integration has been detected between variables it means long run relationship has been exists between variables and thus VECM applied to find out short term relationship between series (Asari, et al. 2011).

Table 5. Result Vector Error Correction Models

Error Correction:	D(ASX200)	D(KSE100)	D(NIKKEI225)	D(SP500)
CointEq1	-0.005248	-0.042341	-0.015388	-0.001882
	[-2.55517]	[-5.16549]	[-1.80758]	[-2.94927]
D(ASX200(-1))	-0.013341	0.416589	1.898520	0.092289
	[-0.38336]	[2.99951]	[13.1620]	[8.53563]
D(ASX200(-2))	0.065198	-0.028066	0.030016	0.017480
	[1.70479]	[-0.18389]	[0.18936]	[1.47115]
D(KSE100(-1))	-0.004796	0.067647	-0.062176	-0.002804
	[-0.64572]	[2.28208]	[-2.01962]	[-1.21499]
D(KSE100(-2))	0.000274	-0.017322	0.009946	0.002154
	[0.03706]	[-0.58709]	[0.32457]	[0.93779]
D(NIKKEI225(-1))	-0.000684	0.025187	-0.108980	0.000715
	[-0.09679]	[0.89311]	[-3.72087]	[0.32580]
D(NIKKEI225(-2))	-0.012580	-0.023431	0.033984	0.000750
	[-2.11759]	[-0.98832]	[1.38022]	[0.40655]
D(SP500(-1))	-0.111973	0.242259	3.892309	-0.240601
	[-0.99142]	[0.53747]	[8.31478]	[-6.85678]
D(SP500(-2))	-0.186988	0.230289	1.253326	-0.044977
	[-1.63103]	[0.50333]	[2.63761]	[-1.26276]
C	3.254034	35.10361	-13.42882	1.564825

Standard errors in () & t-statistics in []

Equation 1 in case of ASX 200, co-integrating equation's coefficient is amazingly demonstrating that first error correction term is help to adjustment of disequilibrium of relationship. ASX 200 can make 0.52% adjustment in one day and it takes almost 191 ($1/0.005248=190.8$) days to completely convert the disequilibrium into equilibrium. In case of KSE 100, the coefficient of co integration of the equation is remarkable to show that the imbalance correction is due to the first error correction period. Coefficient of correction term shows that KSE can convert its disequilibrium into equilibrium by 4.2% and 24 ($1/0.042341$) days are required to adjust this disequilibrium condition in short time period. In case of Nikkei 225, same as mentioned in previous lines. Equation 1 indicates that Nikkei 225 can make 1.5% adjustment in a day and takes almost 65 ($1/0.015388$) days



to completely make the adjustment of thus disequilibrium one time. In case of S&P 500, coefficient of co integrating equation is noteworthy demonstrating that adjustment of disequilibrium is due to first error correction term. According to equation 1 0.18% can be made in one day by S&P 500 to convert its disequilibrium into equilibrium. And to complete this adjustment one time it will takes almost 531 days (1 year 5 months and 16 days).

6. Conclusions

This study investigates the relationship between markets of major developed countries like US, Japan, and Australia with Pakistan Stock markets. Researchers applied correlation analysis to see the strength of relationship between variables, results shows that ASX 200 and S&P 500 have very strong positive relationship with KSE 100 index; S&P 500 and ASX 200 are also found in strong positive relationship. And strong negative relationship found between Nikkei 225, KSE 100 index, and ASX 200 during the period of study i.e. from Jan. 1994 to Dec. 2016. VECM test is applied by researcher to check the short term dynamics between variables. In this study unit root test indicates all variables are stationary at first difference therefore, VECM model is used for short term dynamics and researcher should use VAR if all variables are stationary at level. According to the results of OLS the value of constant is -21801.44.

It means that if all other variables remain constant then the value of dependent variable i.e. KSE 100 Index is equal to -21801.44. If index price will increase by 1% in ASX 200 then KSE 100 index will increase at the rate 2.699768%. When prices will increase 1% in Nikkei 225 the prices will move up in KSE 100 by 0.212563% and 1% increase in the index prices of S&P 500, prices of KSE 100 will increase 15.25119%. OLS regression show strong positive relationship KSE 100 Index and S&P 500. Second null hypothesis which says Japan stock market has not positive and significance impact on Pakistan Stock market is accepted by researchers, results could not show positive relationship between Nikkei 225 and KSE 100. Researchers reject the hypothesis that Australia stock market has not positive and significance impact on Pakistan Stock market. Results of correlation analysis define strong positive relationship between ASX 200 and KSE 100.

The hypothesis that says USA, Japan, Australia stock markets have not positive and significance impact on Pakistan Stock market is rejected because according to the results of OLS regression probability value of all variables is less than 0.05 that indicate significant relationship between variables and value of coefficient for all variables is positive which defines the positive relationship. As for as the result of co-integration shows that there is a four co-integrated equations. It means evidence of long term relationship between the stock exchanges of Pakistan, USA, Japan and Australia is exists. So the overall this study concluded that researchers reject the all hypothesis because they found positive, significance and long-run relationship between Pakistan, USA, Japan and Australian Stock Exchanges.

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