



Comparison of Equity Markets of SAARC Nations with the Equity Markets European Union Nations

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ABSTRACT

Relationships amongst the different stock markets have previously been examined many times; whereby such studies help market players better understand and grasp the equity markets. This paper is based on the comparison of the Equity Markets of both the SAARC and the European Union nations. Changes within one market (whether good or bad) and the subsequent effects on the other market are both measured and analyzed. The study focuses upon SAARC and European Union markets, since these are two of the largest markets of the world. The study data includes the countries of: Pakistan, India, Bangladesh, Sri Lanka (SAARC Contrives), France, Germany, Portugal, and also the Czech Republic (European Union countries). The trends between the outlined markets, with respect to Closing Share Price (CSP) and Trading Volume (T.V) are analyzed using the Johansen Co-integration Test in this paper while findings of this paper confirmed the presence of a co-movement is between the two market clusters.

Keywords: Equity markets, SAARC Nations, European Union Nations.

Introduction

Overview

For any country of the world, the equity-market is an essential part of the economy, and perhaps is the key factor leading to economic growth and increased commercial activity. The key players and investors of the industrial sector, from all the countries, keep a close eye on the movements in the equity markets.

In 1985, South Asian countries set up a political and economic organization named as SAARC. The primary most aim of which is to speed up economic and social development and progress in the member countries through intra cooperation, where the European Union holds a spectatorial status since the year 2006. The European Union Commission and

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SAARC have a co-operative strategy for the advancement of trade, to increase knowledge about the benefits of regional cooperation, and promote business networking not only within the SAARC but also with the European Union Nations.

This paper analyzes the trends in stock markets of the four SAARC nations including Pakistan, India, Sri Lanka, and Bangladesh and compares them with trends in the stock markets of EU countries i.e. Germany, France, Portugal, and Czech Republic.

The attributes of equity markets which include closing share prices and trading volumes were taken of these stated nations for the comparisons.

Hypotheses

H₁: The Closing Share Price Index of the SAARC Nations and the Closing Share Price Index of the European Union Nations are Co-integrated.

H₂: The Trading Volume of the SAARC Nations and the Trading Volume of the European Union Nations are Co-integrated.

Definitions

Closing Share Price

This is the final price of a traded security at the closing moment of the day. The closing share price (CSP) evaluates the most recent pricing of a security until trading starts the next day.

Trading Volume

Total numbers of shares traded in the entire market within a given period of time.

Literature Review

Anaraki (2011), in his study, examines the European Stock Markets' reaction to the U.S fundamentals; whereby the Granger Causality Test and the Vector Error Correction model and were used, which are co-integration techniques developed by Johnson & Jurelins. Monthly data from Jan 1999 to Apr 2009 has been used for the analysis. The study shows that changes in the U.S stock markets are contagion to the stock markets of the European Union, and have an impact on the domestic monetary policy of the EU often formulated to neutralize the effects. It demonstrates that the U.S business cycle is the key driving and dependency factor of the EU's financial stability.

The U.S, Indian, and the Chinese stock markets were studied using the (FIVECM) Fractionally Integrated Vector Error Correction Model, where stock data from Jan 1992 to Dec 2004 were studied on a weekly basis, with a number of 731 observations in total. Whereby, it came to be concluded that a functional co-integration exists between these three stock markets. Whereas, a dominant role was played by the U.S Stock Market, over the other two markets (Chen, Lobo, and Wong, 2006).

Cappiello, Kadareja, and Manganeli (2010) studied the impact of Euro on the equity markets, the study concluded that co-movement between equity markets of the Euro-zone (at both the industrial and the national levels) showed subsequent change due to variations in the Euro. With regard to the data specifics of the study, a regression quintile based methodology was used on the collected data covering a period starting March 1987 and ending January 2008. Which demonstrates that introduction of a single currency in the region has brought about a co-movement in the equity markets of the region.

Subhani, Hassan, Mehr, and Usman (2011) studied the co-movement amongst unrelated South Asian stock markets, whereby the Johnson co-integration analysis was used.

The data analyzed covered the period of May 1995 to May 2011; Alinkage between the prices at the Karachi Stock Exchange (KSE) and the Dhaka Stock Exchange' was determined. While, other markets were found to not hold any co-integration with the KSE.

Cooray and Wickramasighe (2007) described efficiency of the South Asian stock markets, of including that of: Bangladesh, Pakistan, Sri Lanka, and India. The Elliot Rothenberg Stock, the Dickey Fuller Generalized Least Square, the Augmented Dickey Fuller tests, and the Phillips Perron Tests were applied to analyze the weak form of stock market efficiency. For the semi-strong form of analysis of the effectiveness of co-integration between the equity markets, the granger causality tests were used. The data collected and used for this study covers the period of Jan 1996 to Jan 2005. Both the international and local investors can use the identified relationship in-order to predict the profitable investments.

Phylaktis and Ravazzolo (2005) studied the stock markets of U.S. and Japan, and their subsequent linkages with the stock-markets of the Pacific-Basin Countries. Multivariate co-integration model is applied to the data in-order to analyze the moving average forms and the auto-regression; the research data covers the period of 1980 to 1998. The study basically investigates as to whether the foreign exchange restrictions affect the financial linkages between the industrialized countries (like that of U.S and Japan), and the Pacific countries. The results shows that Japan has more significant impact on the Pacific-Basin Countries as when compared to the U.S; whereby, if each market has a permanent component, corresponding to the behavior of stock prices and the common trends; the authors found the "transitory component" as being considerable for U.S and Taiwan.

Tan and Tse (2001) studied the variation in the integration of the South Eastern and East Asian capital markets, while the markets were deregulated. Data from the periods of 1988 to 2000 has been analyzed, where the co-movements of the stock prices was reflected by the integration of the stock markets; whereby the Geweke measure followed by the vector auto-regression (VAR) analysis was used to examine as to how over the time co-movements in the daily returns over the stock prices differ. Analysis shows that after the Asian financial crises, the connections and the interactions between the markets have come to increase, thus national markets have come to be more inter-reliant. The Geweke measure provides evidence that the capital market integration of ESEA have a rising trend, where the ESEA markets demonstrate a sturdy response to changes in the U.S markets.

Subhani and Osman (2011) studied the contact of Consumer Price Index on the Stock Markets, where trading volume of the Karachi Stock Exchange-100 index was analyzed in comparison with the CPI. The key feature of the research was the presence of endogeneity in the data. The research data covers the period from Jan 1991 till Jan 2001, for the analysis of which Simple Linear Regression technique has been applied. The study reached the conclusion that the Consumer Price Index has an inverse relationship with the stock trading volume; where it was observed that the market participants acted differently just as the CPI was announced.

Saeed, Sargana, and Ayub (2011) investigated the efficiency of the equity markets, where mainly the Karachi Stock Exchange (KSE) was analyzed, covering a period ranging Jul 1997 to Apr 2010. The Karachi Stock Exchange was investigated into with regard to the turn of month effect, days of week effect, and the within-month effect; this was the first study which inquires into all the three effects, all within a paper, while focusing on a one specific stock market. For the period mentioned, no evidence was found for the days-of-week effect, except for the period of Jul 2000 till June 2003. A significant return was demonstrated by the turn-of-month (TOM) effect, which is the time when a month ends and another starts; it is further noted that TOM effect was not found present in the sub-sample data.

Kasibhatla, Stewart, Sen, and Malindretos (2006) emphasized and help the policy makers, investors, and the portfolio managers to better understand the stochastic trends of the

equity markets. The study states about the western equity markets and its linkage in both the short and the long run. The markets as covered by the study included: Paris (CAC40), Frankfurt (DAX30), and London (FTSE100). Sample data consisted of the daily closing index prices from November 1990 to June 2002, upon which the Vector Error Correction model and the Granger Causality test has been applied for the analysis, whereby mainly the co-integration of the index prices of the three equity markets was examined.

Gerard, Thanyalakpark, and Batten (2003) studied the co-integration of the East Asian Markets. The research constitutes of a data-set covering the period from 1985 to 1998, where the bi-diagonal multivariate (GAARCH 1,1) process has been applied for the analysis. Unexpectedly, in the South East Asia, there was no exposure of market segmentation as during the mentioned period, even though the data-set covers the period of the Asian crisis.

Khan (2011) investigates the co-integration of the international stock-markets, where he observes that many of the investors invest all across the various countries. The underlying reason being that capital flows today have become significantly liberalized and thus operate in a global context. Thus due to the globalization, it is now easy for an investor to know about the global market trends and that which markets offer more favorable returns. The study sample constitutes of 22 countries, covering a period starting 1999 to 2010; which when analyzed led to the conclusion that nearly all the countries were co-integrated with the U.S stock markets. The distinguishing part of this study is that the analysis was based upon the latest data instead of the everyday values. In most of the cases, no co-integration could be established with application of the Johansen test, however, the use of Gregory and Hansen (1996) test identified co-integrations within the same cases. For the diversification opportunities, the Capital Asset Pricing Model had been used for the analysis of the daily returns, as resulting from the period of 2005 to 2007. Mixing with the co-integration tests, it was recognized that China, Austria and Malaysia were most favorable of the countries for diversification.

Furthermore, Siklos and NG (2001) delve into the co-integrations amongst the stock markets of various countries specifically those of the Asia-Pacific. A monthly data for the period starting Jan 1976 and ending Aug 1995 was taken, whereby the ordinary stochastic trend within the stock prices in Japan, U.S., Korea, Hong Kong, Thailand, Singapore, and Taiwan was examined. Economic and Institutional consideration suggest co-integrations amongst the North American and the Asian markets, whereby an identified single common stochastic trend is a recent fact. It was noticed, while observing the economic shocks (i.e. the U.S market crash in 1987, and/or the Gulf War of 1990), that most of the stock markets were indeed linked with each other. Before the 1987 crash the analysis showed that a common trend was not demonstrated by all the seven markets; thus investors did not utilize opportunities of diversification. As recently, most of the financial markets were up-and-coming to liberalize the foreign investors.

Alexander and Dimitriu (2005) investigated the performance of the co-integrated strategy of vibrant equity index for the effectiveness of the market. Demonstration of abnormal returns is in excess for the different time-horizon in the stock markets and real world was analyzed. For abnormal returns, the leading indicator was used to evaluate the dispersion in stock-prices. In the two market regimes their relationship was shown as the Markov switching process. The volatility regime was allied with total abnormal returns. The authors in this study reveal that a simple dynamic strategy could generate excess returns; it also revealed that the abnormal returns occurred during the special volatile periods, while a risk-premium factually represents the abnormal returns. Therefore, no proof was found, as against the market efficiency.

Syriopoulos (2004) investigates both the long-run and short-run connections between the emerging Stock Markets of Central Europe including those of: Czech Republic, Slovakia,

Poland, and Hungary, along with the developed markets of USA and Germany. In order to determine the co-integration, a Vector Error Correction Autoregressive model was used, since stock market behavior is affected by both the external and the domestic forces. The study shows that, stronger relationships were present within the central European markets rather than with their neighbors. Although the European Union has been recently joined by the Central European States, the analyses remain a critical issue for the Central European States with regard to co-movements and the long run interdependencies within their stock markets. Integration has been shown by the Central European Markets with the International Mature Markets, following along the same trends. To carry on with policy-coordination within the Euro zone, the central European states have become bounded to eliminate barriers of investment and trade altogether.

Arouri and Jawadi (2009) investigated the integration of world stock markets with the markets of the Philippines and Mexico. The data utilized for the study covers the period of Dec 1998 to Dec 2008, and mainly includes the stock prices, whereby Nonlinear Co-integration techniques have been used for the analysis. The results show that the integrated stock-market process is asymmetric, time varying, and nonlinear. The researchers also find that the stock-markets of these countries hold a nonlinear financial integration with the stock-markets world-wide. Moreover, it has also been concluded that the relationship holds more significantly for Mexico after the year 1994.

Imrohorglu and Santis (1994) studied the dynamic behavior of volatility and stock returns in the rising Financial Markets. Data has been taken for the period of Dec 1988 to May 1994, whereby Major Middle Eastern, Asian, Latin American, and European markets were analyzed. The study mainly focuses upon the change in volatility of the stock markets over time, the relationship between expected returns and market risk, and the liberalization effect on the return volatility in these markets. The findings suggest that in almost all the countries there was a time varying volatility (i.e. volatility was in fact changing over time) in the all selected stock markets.

Gilmore, Lucey, and McManus (2008) investigated the short and long run co-movements between the stock-markets of the recently joined Central European Countries, and the stock-markets of the developed countries of European Union. The study data covers the period of July 1995 to February 2005, while there was no proof found in favor of any co-integration among these markets. The markets of both the European Union and the Central Europe countries were examined with the dynamic method analysis and static analysis; whereby equilibrium association for the long term, amongst the equity markets of CE, Germany, and UK, demonstrated a rather stable development.

Shahbaz, Ahmed, and Ali (2008) investigated the linkage between the development of the stock-market and the economic growth, within the rising countries like that of Pakistan. The research data gathered and analyzed covers the period starting 1971 and ending 2006. ARDL bounds testing and J.J Co-integration techniques were used for the analysis of the strength as amongst the above variables; whereby a very strong long-run association was found between economic growth and stock market development. The dynamic results point out that stock market progress is a key determining factor of the economic growth.

Chakraborty (2010) investigates the impact of the development in financial-sector on the Indian economic growth. Whereby, quarterly data for the period of 1993-2005 has been taken for the analysis, and the previously used model by Mankiw, Romer, & Weil (1992) for similar investigations was further extended and utilized. Findings confirmed that a significant role is played by the Indian stock market in the overall economic growth. Moreover, in the stock market of India, the implications of foreign-portfolio liberalization flows were found to not interrelate with the economy of the real sector since the year 1991.

Description of Data, sample and statistical test

Monthly data covering 12 years for the given period from 2002 to 2014 have been used to investigate the proposition of this study. Data was taken from Yahoo Finance for the closing share prices (CSPs) and trading volumes (TVs) both for the SAARC and European Union nations.

Augmented Dickey-Fuller Unit Root Test has been applied to each of the equity markets at level, and 1st difference to analyze the stationarity / non-stationarity in the given series of CSPs and TVs. while Johansen Co-integration Test has been deployed to check the co-integration/ co-movements among the closing share prices (CSP) and the trading volumes (TVs) of equity markets.

Findings and results

Table 1: Findings of ADF Unit Root Test for Closing Share Prices (CSPs) for SAARC and EU countries

Variables/ Series	ADF Test at Level			ADF Test at 1 st Difference		
	ADF Coefficient	T- Stat	P-Value	ADF Coefficient	T- Stat	P-Value
Pakistan	-0.0122	-1.0010	0.7521	-0.8810	-10.825	0.000
India	-0.0121	-0.9575	0.7671	-0.9625	-11.423	0.000
Sri Lanka	-0.0084	-0.8835	0.7911	-0.8267	-9.942	0.000
Bangladesh	-0.0117	-0.9242	0.7781	-0.9731	-11.534	0.000
Germany	-0.0285	-1.3623	0.5991	-0.8989	-10.494	0.000
France	-0.0234	-1.2613	0.6465	-0.8688	-10.153	0.000
Portugal	-0.0321	-1.4173	0.5723	-0.9761	-11.556	0.000
Czech Republic	-0.0196	-1.5413	0.5099	-0.7484	-9.140	0.000
Mackinnon Critical Values		1%	-3.4764			
		5%	-2.8816			
		10%	-2.5775			

Table 1 confirms the findings of ADF root test at level and at first difference both for closing share prices of equity markets of all selected nations. It was revealed in the findings that there is a non-stationarity (shocks) in all of the series of closing prices of all SAARC and EU nations as the trace statistics of all stated closing share prices are more than their respective mackinnon critical values at level. It was also noted in the findings that all of the observed shocks were got fixed when the first difference of the stated series were taken.

Table 2: Findings of ADF Unit Root Test for Trading Volumes (TVs) for SAARC and EU countries

Variables/ Series	ADF Test at Level			ADF Test at 1 st Difference		
	ADF Coefficient	T- Stat	P-Value	ADF Coefficient	T- Stat	P-Value
Pakistan	-0.9917	-12.024	0.0000	-3.0469	-10.320	0.000

Variables/ Series	ADF Test at Level			ADF Test at 1 st Difference		
	ADF Coefficient	T- Stat	P-Value	ADF Coefficient	T- Stat	P-Value
India	-0.0558	-1.9235	0.3208	-1.0399	-12.315	0.000
Sri Lanka	-0.3280	-5.1449	0.0000	-1.9669	-10.08	0.000
Bangladesh	-0.0613	-2.0248	0.2760	-1.0398	-12.313	0.000
Germany	-0.1090	-2.0903	0.0490	-1.4545	-11.455	0.000
France	-0.0344	-1.2392	0.6563	-1.8518	-10.225	0.000
Portugal	-0.0490	-1.7439	0.4070	-1.1987	-14.552	0.000
Czech Republic	-0.1103	-1.0436	0.2681	-1.9970	-10.410	0.000
Mackinnon Critical Values		1%	-3.4767			
		5%	-2.8816			
		10%	-2.5775			

Table 2 confirms the findings of ADF root test at level and at first difference both for trading volumes of equity markets of all selected nations. It was revealed in the findings that there is a non-stationarity (shocks) in the series of trading volume of India and Bangladesh from the SAARC nations. While non-stationarity (shocks) in the series of trading volume for all EU nations were also found observed for the given period from 2002 to 2014, as the trace statistics of stated trading volumes were more than their respective mackinnon critical values at level. It was also further noticed that all of the mentioned shocks were got fixed when the first difference of the stated series were taken.

Table 3: Findings of Johansen Co-Integration Test for Closing Share Prices & Trading Volume of SAARC and EU nations:

Variable/ Series	Log Likelihood	T- Statistics	MacKinnon Critical Value	Max Eigen Value	MacKinnon Critical Value
Closing Share Prices (SAARC & EU)	-7658.994	278.97	159.52	102.29	52.36
Trading Volume (SAARC & EU)	-17359.73	285.67	259.52	126.19	52.36

As shown in table 3 the findings of Johansson co-interaction test revealed and confirmed that the closing share prices of all selected SAARC and EU nations co move with each other as the Trace statistics and Eigen statistics of this test were found more than their macKinnon critical values. Thus we failed to reject our hypothesis i.e. The Closing Share Prices of SAARC Nations and the Closing Share Prices of European Union Nations are Co-integrated. Findings further confirmed that the trading volumes of all selected SAARC and EU nations also co move with each other as their Trace statistics and Eigen statistics of this test were found more than their macKinnon critical values. Thus we remained again failed to reject another hypothesis i.e. The Trading Volume of SAARC Nations and the Trading Volume of European Union Nations are Co-integrated.

Discussion & Conclusion

This paper shows a comparison between the equity markets of the SAARC nations and the European Union nations in terms of their closing share prices and trading volumes and their significant co movements with each other.

Subhani, Hassan, Mehr, and Osman (2011) also studied and confirmed the co-movement of unrelated stock markets. Khan (2011) in same fashion observed that nearly all of the countries of the world were found co-integrated with the U.S stock markets for several decades.

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