Changing Pattern of Pakistan Stock Exchange Convergence from Global Market to Chinese Market after the CPEC Agreement

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Abstract

The notion of globalization is generally developed around the paradigm shift from localization to internationalization. After the financial crisis in 2007-08, market dynamics have been shifted towards the regional connectivity, alliance and integration. This concept is required to be investigated from the perspective of China-Pakistan Economic Corridor (CPEC) that whether or not regional connectivity shifted mean and volatility spillover which illustrates predictability of PSX returns from global markets (i.e. NASDAQ and FTSE 100) to regional market (i.e. Shenzhen Stock Exchange). A two-state Markov-switching model, and (GARCH) (1, 1) are applied to differentiate between bull and bear regimes and to seek the return and volatility spillover using daily and monthly market returns during the period from January 2001 to July 2017. The results suggest that PSX's return predict bear and bull markets employing the stock returns of US, UK and China. The findings of this study posit that regional connectivity shifts financial integration and trends predict PSX's returns from international to regional market.

Keywords: CPEC, Return and Volatility Spillover, Bear & Bull Market, Predictive Models, GARCH, Two-State Markov Switching Model.

JEL codes: C22, E44, F15, F21, R58

Introduction

Globalization and network economy has drastically changed the channels of trading and functioning of capital markets (Boucekkine & Huang, 2016) connecting higher level of financial integration, free flow of capital and international listing (Dorodnykh, 2014). This creates high level of dependency among markets in the context of co-movement, transmits mean & volatility spillover and trends to predict market returns. This paradigm shift creates new debate in financial literature with regard to convergence theory where regional and local markets are being influenced and converged towards main origin, that is, global market (Wang & Shih, 2013). Two school of thoughts emerge from this debate i.e. proponent of financial integration and opponent of financial integration (Barro, 2016).

Proponents of financial integration shed light on the fruitfulness of the financial integration in terms of transmission of mean and volatility from global to regional market (Gunasinghe, 2005), volatility and its impact on the prices of stocks of regional markets (Gallo & Otranto, 2007), predictability of risk using volatility transmission (Bouri & Azzi, 2014), and price discovery &

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volatility spillovers in spot and futures prices (Sehgal, Ahmad, & Deisting, 2015). Similarly, other researchers focus on trickle down impact of financial integration in terms of co-movement of exchanges of local exchanges with international markets (Taneja, 2012; Patel, 2016) and correlations between the developed and least developed markets. Financial integration provides useful insights to the investors about the trends of international markets and their trickledown influence over regional markets(Rajhans & Jain, 2015). This creates opportunities for international investors to develop portfolio for investment in stock markets of emerging economies (Epaulard & Pommeret, 2016).

On the other hand, opponent of the globalization highlighted severity of financial integration such as high level dependency causes high level of risk (Slimane, 2012), less options for risk diversification (Sehgal et al., 2015) and limited emphasis for independent movement and growth of local exchanges (Natarajan et al., 2014; Yavas & Rezayat, 2016), high dependency of market on each other results higher chances of financial crisis (Meric, Prober, Gong, & Meric, 2011) and downfall in highly volatile and risky market results fall in stable and emerging market (Meric, Kim, Gong, & Meric, 2012). This narrative got strong constituency after the financial crisis occurred in 2007-08, which shifted the market dynamics and interest of financial analysts towards the regional connectivity, alliance and integration (Lee, 2013).

Researchers analyzed the integration of regional markets and their impact on prices and market return (Mukherjee & Mishra, 2010), co-movement of exchanges and linkages at regional level (Andreou, Matsi, & Savvides, 2013) and examination of severity of mean and volatility spillover from regional and international markets (Alotaibi & Mishra, 2015). Still it is a gray area which needs to be addressed and studied with the perspective that globalization is not merely responsible for co-movement and financial integration but country level alliances and control of exchanges (shareholding of foreign investors) are considered as major contributors in mean & volatility spillover and movements of returns. This raises a concern that how these regional alliances and strategic partnership of exchanges cause predictability of returns under bear and bull regime and influence partner stock market.

This gap in financial literature motivates to construct a linkage between regional strategic partnership of exchanges and stock markets movements. Further, we also contribute our propositions in the domain of 'Convergence Theory' that how regional alliances of exchanges may converge from one stock market return & volatility spillover considering prediction of bull & bear regimes towards its strategic regional partner. This illustrates regional connectivity and strategic partnership between Pakistan and China which formulates China Pakistan Economic Corridor (CPEC) with an estimated investment of US$57 billion. It is pertinent to mention that after demutualization of Pakistan Stock Exchange (PSX), Chinese consortium acquired 40% (Hussain, 2016) shareholding in PSX which extend our understanding about this theory and exhibits the answers of these questions 'how strategic partnership triggers country's capital market movement and return towards its strategic partner and to what extent predictability of bull and bear regimes influence its strategic partner's market under bull and bear regime? It may be not manifested as serious point of concern by prior literature. In the backdrop, this study develops two fundamental research questions: (a) how returns and volatility of one country's

stock market influences its allies' market return and volatility? and (b) at what extent predictability of market behavior effect behavior of strategic partner's market ?

Methodology

Firstly, the two-stage GARCH-in-mean approach (GARCH-M), (Bhar & Nikolova, 2007) is applied to measure the spillover effects of international markets such as US, UK and regional market-China on the PSX. In the first step, we determine the mean and volatility spillover effects of international markets on the PSX and PSX follow which stock exchange. For this purpose, we use daily data of stock returns from January 2001 to July 2017 by splitting it into two regimes i.e. January 2001 to December 2014 (before CPEC agreement) and January 2015 to July 2017 (after CPEC agreement). In the first step, we calculate the returns for sample exchanges through following formula[3]:-

$$r_t = \log(P_1 / P_0) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

where r_t explain the average market return of each exchange for day *t*, and $P_1$and P_0 represent the overall weighted index (explain which is P1 and Po). To measure the behavior and volatility of these international indices, series of PSX returns are modeled through an ARMA (1, 1)-GARCH (1, 1)-M model(Mozumder, DeVita, Kyaw, & Larkin, 2015). The equations for these models are given below:-

$$r_{i,t} = \gamma_0 + \gamma_1 r_{i,t-1} + \gamma_2 V_{i,t} + \gamma_3 \mu_{i,\ t-1} + \mu_{i,\ t} \quad where\ \mu_{i,t} \sim N(0, V_{i,t}) \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

$$V_{i,t} = \delta_0 + \delta_1 V_{i,t-1} + \delta_2 \mu_{i,\ t-1}^2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

where the daily return of stock indices is reflected as 'k' (FTSE, NASDAQ and SZSE) at time t, and s the Ut-residual (unexpected return) relying on the assumption that it is normally distributed with mean zero and time-conditional variance . The inclusion of ARMA (1, 1) and/or MA (1) structure in the model is designed to adjust for possible serial correlation in the data.

In order to measure the spillover effects of mean return and volatility across market share calculated by measuring the standardized residual and its square in the first stage. After obtaining standardized residual and its square, they are included in equation of other market return and volatility as given below:-

$$r_{j,t} = \eta_0 + \eta_1 r_{j,t-1} + \eta_2 V_{j,t} + \eta_3 \varepsilon_{j,\ t-1} + \varphi_j \varepsilon_i + \varepsilon_{i,\ t} where\ \varepsilon_{j,t} \sim N(0, V_{j,t}) \ldots\ldots\ldots\ldots\ldots \quad (4)$$

$$V_{j,t} = \alpha_0 + \alpha_1 V_{j,t-1} + \alpha_2 \varepsilon_{j,\ t-1}^2 + \lambda_j \varepsilon_{i,\ t}^2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5)$$

Here $\varepsilon_{i,t}$ is the standardized residual series (μ_t=Residual) for different international indices such as FTSE 100, NASDAQ and SZSE and is extracting the mean return spillover effect from these indices. In order to measure the spillover effects of volatility, the exogenous variable $\varepsilon_{i,t}^2$the square of the standardized residual series (ut^2) is included in the conditional volatility equation.

Secondly in order to differentiate between bull and bear regime, we use Markov switching model utilizing monthly return of FTSE100, KSE100, SZSE and NASDAQ from February, 2001 to

[3] Daily market return for each index i.e. KSE 100, SZSE, FTSE 100 and NASDAQ is calculated by using formula: $rt = \log(\frac{Index_t}{Index_{t-1}})$ Index *t* and Index *t-1* respectively are logs of indexes at time *t*, and one period lag.

July 2017. In this technique we identify the lowest market return regime (bear) and highest market return regime (bull). This technique is applied using following equation:-

$$r_t = \mu_{St} + \epsilon_t, \epsilon_t \sim i.i.d/(0, \sigma_{st}^2) \quad \text{..... (6)}$$

Here, μ_{St} and σ_{St}^2 indicate the regime-dependent mean and variance respectively. It the $st = m$ then the market is in regime m. In result, we differentiate between bear and bull by classifying these regimes as: $st = 0$ regime is bear and $st = 1$ regime is bull(Alemohammad, Rezakhah, & Alizadeh, 2013). Moreover, stock return (r_t), using two-state Markov process, has the following transition probability equation and matrix:-

$$P(s_t = j | s_{t-1} = i) = P_{ij}(t) \quad \text{..... (7)}$$

Generally, these probabilities are considered to be time-invariant so that or all t, but this restriction is not required(Goodwin & Goodwin, 2017). Principally, this matrix can be explained as follow:-

$$P = \begin{bmatrix} p^{00} & p^{01} \\ p^{10} & p^{11} \end{bmatrix} \quad \text{..... (8)}$$

Where, $P^{00} = P(s_t = 0 | s_{t-1} = 0); P^{11}(s_t = 1 | s_{t-1} = 0); P^{01} = 1 - P^{11}; P^{10} = 1 - P^{00}$. Once the two regimes are statistically identified, the filtered probabilities for each state are computed. This indicates the probability of the bear (or bull) each month: $\theta_{jt} = P(s_t = j | \varphi_{t-1}), j = \{0,1\}$. This technique is firstly used by Hamilton (1989) which specifies that real GNP growth follows an (autoregressive) AR (4) process(Huang, 2014). In this model, nonlinearity arises because the process of this model is based on discrete shifts in the mean, between high growth and low-growth states. These discrete shifts comprises of their own dynamics, specified as a two-state first-order Markov process:-

$$r_t - \mu_{st} = \emptyset_1(r_{t-1} - \mu_{st-1}) + \emptyset_2(r_{t-2} - \mu_{st-2}) + \emptyset_3(r_{t-3} - \mu_{st-3}) + \emptyset_4(r_{t-4} - \mu_{st-4}) + \sigma\varepsilon_t, \sigma\varepsilon_t \sim \mathrm{N}(0,1) \quad \text{..... (9)}$$

4. Findings

4.1 Overall Descriptive

The results of Table I considering the entire sample from 2001 to 2017 depicts that Pakistan's Stock Exchange is more efficient and responsive to economic shocks (p^{00}=0.86) because transition from bear to bull has a relatively higher probability (1-0.86= 0.14) than other markets, for instance, U.S. (1-0.865= 0.14), U.K. (1-.0.896=0.11) and China (1-0.99=0.01). Contrary to this, it is lesser risky than other markets (p^{11}=0.992) because conversion from bull to bear has a relatively lesser probability (1-0.992= 0.01) than others e.g. U.S. (1-0.969= 0.04), U.K. (1-.0.93=0.07) and China (1-0.98=0.02). It shows that Pakistan's stock market is more responsive to economic shock and recover more quickly from bear to bull. This finding also implies that expected duration of bull of PSX is also generally higher (142 months) than duration of bear (7 months) illustrating that bull market is twenty times higher than bear market. In case of U.S. stock market, the expected duration of being bear is just 3 months, and for the bull market, this is

32 months. Likewise, British market retains the position of bear for the 9 months and bull for 16 months. It is important to note that Chinese market behaves differently from others, the duration of its bear market is 189 months and bull regime comprises 50 months. Comparing both the Chinese and Pakistan stock market, the results suggest that PSX has a privilege on rest of the market because average market return of KSE-100 (1.8%), NASDAQ (0.5%), FTSE-100 (0.1%) and SZSE (0.6%) respectively. This elaborates that KSE-100 obtained the highest average market return relative to to other markets.

Table I: Descriptive statistic and Markov switching result from 2001 and 2017

	Pak	**US**	**UK**	**China**
Bull	0.024**	0.013**	0.009**	0.004
	(0.004)	(0.004)	(0.002)	(0.002)
Bear	-0.102*	-0.090**	-0.011	-0.005**
	(0.020)	(0.021)	(0.006)	(0.004)
p^{11}	0.992	0.969	0.938	0.980
p^{00}	0.670	0.865	0.896	0.994
Duration for				
Bull	142.471	32.910	16.318	50.53
Bear	7.448	3.039	9.699	189.47
Mean	0.018	0.005	0.001	0.006
Median	0.022	0.014	0.007	0.004
Maximum	0.241	0.140	0.083	0.240
Minimum	-0.449	-0.195	-0.140	-0.258
Std. Dev.	0.075	0.057	0.040	0.086
Skewness	-1.250	-0.616	-0.711	-0.242
Kurtosis	10.212	4.009	3.863	3.713
Jarque-Bera	478.288	20.798	22.729	6.101
Probability	0.000	0.000	0.000	0.047

Data used in this table is monthly stock market return of PSX(KSE100), NASDAQ, FTSE100 and SZSE from February 2001 to December 2017. The figures quoted in brackets below the actual estimates are standard errors. The transition probabilities, p^{11} andp^{00}, relate to the bull and bear regimes, respectively. The expected durations of the two regimes are also provided in the last two rows. Similarly, remaining figures such as mean, median, range of data and normality exhibits descriptive statistics of overall sample.

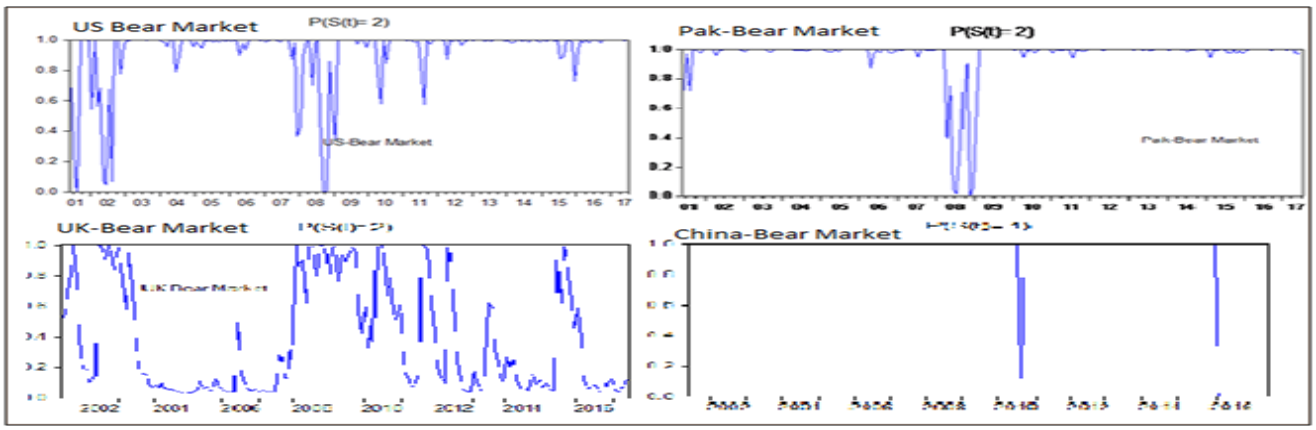

Figure I: *Filtered Probabilities of Bear market (from 2001 to 2017)*

4.2 Market Integration and Convergence

To test return (mean) spillover and volatility, we use GARCH variance equation for each index. The mean return of one stock index is auto-regressed on the return of other market and spillover effects of volatility-the exogenous variable $\varepsilon_{i,t}^2$the square of the standardized residual series (ut^2) is included in the conditional volatility. Table II demonstrates that result of GARCH test for all series like KSE 100 (0.7689 $p < 0.001$), SZSE (0.8882 $p < 0.001$), NASDAQ (0.848 $p < 0.001$) and FTSE100 (0.8487 $p < 0.001$) representing that markets are volatile and responsive to economic shocks. This also indicates the level of persistency in information and its effects on the volatility. The sum of ARCH and GARCH coefficients in all indices is almost closer to one which exhibits that shocks are persistent and the forecasts of conditional volatility take longer time to congregate to the stable level of variance. Similarly, result of $\varepsilon_{i,t}$ (φ) is the standardized residual series (μt=Residual) and volatility spillover-the exogenous variable $\varepsilon_{i,t}^2$. The square of the standardized residual series (ut^2) shows that before the CPEC agreement, return series KSE 100 index is capturing mean and volatility effects form FTSE 100 (mean (φ) = -0.008722, volatility (λ) = 0.000549 at $p < 0.05$) and NASDAQ (mean (φ) = 0.007465, volatility (λ) = 0.000345) at $p < 0.05$) respectively. This indicates that before the event of CPEC, KSE 100 index did not capture mean and volatility effects from SZSE (mean (φ) = -0.008089, volatility (λ) = 0.0000311 at $p > 0.05$). It can be inferred that before the CPEC agreement and participation of Chinese on the PSX, mean and volatility of KSE-100 were being influenced by FTSE100 and NASDAQ. It can be deduced that during the period from 2001 to 2015, KSE-100 market was capturing effects from these global markets.

After the CPEC agreement, the results of GARCH test for all series like KSE 100 (0.6064 $p < 0.001$), SZSE (0.5225, $p < 0.001$), NASDAQ (0.5519 $p < 0.001$) and FTSE100 (0.6868 $p < 0.001$) show that markets are volatile and responsive to economic shocks describing the level of persistency in information and its effects on volatility. After the CPEC, demutualization series of KSE 100 index mean and volatility are capturing the effects from FTSE 100 (mean (φ) = 0.076980, volatility (λ) = 0.247852 at $p < 0.05$) and SZSE (mean (φ) = -0.00060 $p < 0.001$, volatility (λ) = 0.0000692 at $p < 0.05$) respectively. It also indicates that after the CPEC

agreement, KSE 100 index is not capturing mean and volatility effects from NASDAQ (mean (φ) = -0.001633, at $p > 0.05$ volatility (λ) = 0.000332 at $p < 0.05$).

This suggests that PSX is converging towards the regional markets. The reclassification of PSX will most likely bring foreign investors in market, which is already facing an arrival of international investments (Ahmar, 2016). Previously, PSX was influenced by the economic policies of U.K. and U.S. When the Pakistan came into being, it was directly influenced by UK as Pakistan was the part of British Colony (Ahmar, 2016), however, after the authoritative regime from 1958 to 1969, this trend shifted towards the USA. Therefore, PSX was influenced by the U.S. market for decades (Hali, Shukui, & Iqbal, 2015). But the joint venture of China and Pakistan established in 2015 set new paradigm shift. Now, the financial and strategic integration with China will influence the PSX and hence it will result in multilateral economic corridor. Both the countries will be connected through roads and highways and Pakistan will become hub of trade. It will connect China with the sea through the port of Gawadar. Recently, with the advent of integration through CPEC, dependency on their stock exchanges will increase. Increase or decrease in the volatility of China's stock market may have a positive (negative) impact on the PSX (Irshad, Xin, & Arshad, 2015).

Table II: Mean and volatility spillovers from Global and Regional index to KSE 100 (PSX) estimated from an ARMA (1,1)–GARCH (1,1)–in–mean model from Jan, 2001 to Dec, 2017 (before and after CPEC)

	Before CPEC						**After CPEC**					
	FTSE100 VS KSE100		NASDAQ VS KSE100		SZSE VS KSE100		FTSE100 VS KSE100		NASDAQ VS KSE100		SZSE VS KSE100	
	FTSE 100	KSE100	NASDAQ	KSE100	SZSE	KSE100	FTSE 100	KSE100	NASDAQ	KSE100	SZSE	KSE100
γ_0	-0.1804	0.0011	-0.0009	0.0011	0.0002	0.0011	-0.1804	0.0003	0.0010	0.0004	0.0009	0.0005
	(2.1605)	(0.0002)	(0.0007)	(0.0002)	(0.0001)	(0.0002)	(2.1605)	(0.0003)	(0.0057)	(0.0003)	(0.0001)	(0.0003)
γ_1	-0.0009	0.1746	2.4472	0.1746	-0.0479	0.1746	-0.0009	-0.0257	-0.7417	0.0187	0.5069	0.0392
	(0.0001)	(0.1702)	(1.0619)	(0.1702)	(0.2770)	(0.1702)	(0.0001)	(0.1519)	(8.9350)	(0.1412)	(0.0643)	(0.1516)
γ_2	2.4215	-0.0622	-2.4639	-0.0622	0.1079	-0.0622	2.4215	0.3668	0.7635	0.3028	-0.1784	0.2837
	(1.0792)	(0.1728)	(1.0634)	(0.1728)	(0.2758)	(0.1728)	(1.0792)	(0.1666)	(8.9390)	(0.1517)	(0.0684)	(0.1646)
γ_3	-2.4382	0.1443	-0.0009	0.1443	-0.0044	0.1443	-2.4382	0.3895	0.5789	0.3750	0.6799	0.0522
	(1.0812)	(0.1502)	(0.0008)	(0.1502)	(1.006)	(0.1502)	(1.0812)	(0.1567)	(0.0543)	(0.1625)	(0.0458)	(0.1876)
φ		-0.0087**		0.0074*		-0.0080		0.0769*		-0.0016		-0.0006**
		(0.0104)		(0.0113)		(0.0095)		(0.0285)		0.0370		(0.0244)
α_0	0.0001	0.0040	0.0001	0.0004	-0.0001	0.0004	0.0001	0.0002	0.0001	0.0003	0.0005	0.0003
	(0.0024)	(0.0055)	(0.0002)	(0.0005)	(0.0001)	(0.0001)	(0.0024)	(0.0037)	(0.0004)	(0.0002)	(0.0003)	(0.0002)
α_1	0.0708**	0.1851**	0.0709**	0.1851**	0.1334**	0.1851**	0.0708**	0.2478**	-0.0038	0.2103**	0.4769**	0.1740**
	(0.0100)	(0.0099)	(0.0100)	(0.0099)	(0.0023)	(0.0099)	(0.0100)	(0.0524)	(0.0124)	(0.0442)	0.0211	(0.0139)
α_2	0.8487**	0.7689**	0.8486**	0.7689**	0.8882**	0.7689**	0.8487**	0.0851	0.5519	0.0222	0.5225**	0.6064**
	(0.0200)	(0.0087)	(0.0200)	(0.0087)	(0.0014)	(0.0087)	(0.0200)	(0.0674)	(1.1047)	(0.0415)	(0.0083)	(0.0232)
λ		0.0005**		0.0003**		0.0001**		0.0001**		0.0003**		0.0006**
		(0.0003)		(0.0002)		(0.0001)		(0.0007)		(0.0004)		(0.0006)
Residual Diagnostics												
Q(24)	0.531	0.129	0.331	0.129	0.014	0.129	0.671	0.512	0.121	0.901	0.231	0.123
Q(24) Sq	0.976	0.189	1.000	0.189	0.791	0.189	0.906	0.781	0.341	0.221	0.123	0.125

Data used in above mentioned table are daily stock market return of PSX(KSE100) , NASDAQ, FTSE100 and SZSE from Jan 2001 to Jan 2017(18 years daily stock market return) by dividing into before (2001-2014) and after CPEC (2015-2017). The figures quoted in brackets below the actual estimates are standard errors. The residual diagnostics series are presented through p-values. Q (24) indicated the Portmanteau statistic which explains the null hypothesis of no residual serial correlations gauged through lag of 24. Likewise, Q(24) Sq indicates the same measurement and method with squared residual series which explain the null hypothesis of no residual ARCH effect.*and ** indicates the significant effect at 95% ($p<.05$) and 99% confidence ($p<.01$) respectively.

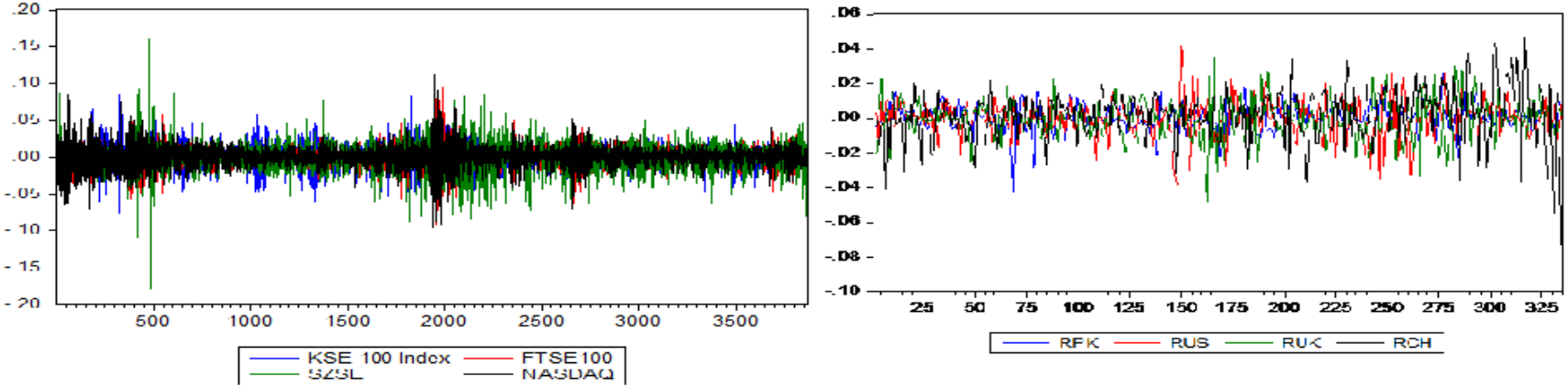

Figure II: Volatility of Daily Market Returns from 2001 to 2017 by diving into before (2001-2015) After (2015-2017) CPEC agreement

4.3 Market predictability Transition

Table III compares the results of market transition versus transformation probability from bear to bull and bull to bear before (2001-2014) and (2015-2017) after CPEC agreement. Results show that mean returns in bull market before the CPEC is 2.5% and after CPEC is 2.7% which shows a marginal increase in market returns. These results depict that after the CPEC, market condition transition probability increases to convert from bull to bear. Before the arrangement of CPEC, $(p^{11}, 1-0.98=0.02)$ and after the event $(p^{00}, 1-0.89=0.11)$ illustrating an increase in probability from bear to bull $(p^{11}, 1-0.88=0.12)$ and after CPEC agreement $(p^{00}, 1-0.10=0.90)$ respectively. It shows that it converts PSX market from stable and responsive market to more volatile and reactive market. Similarly, this strategic partnership shifted trend of market influence from global to Chinese markets before mean return impact (2.7%**) after (2.5%**). On the other hand, the market duration in bull regime before CPEC is 53 months and after the CPEC is 9 months) which are larger period in both the cases than bear regime i.e. 9 and 1.21 months after the CPEC, respectively.

Likewise, trickledown effects of CPEC for Pakistan in the long run are not just limited to Energy and Military alliances (Ashraf, 2015), but if executed as proposed, it will have greater contribution in economic growth of the country as well. This project will upgrade the technological and Information and Communication landscape of Pakistan (Tiezzi, 2016), contribute towards empowering IT sector to boost its width in international markets (Abid & Ashfaq, 2015) which will integrate PSX with international investors and community. This project will not only expand the physical market of Pakistan but also enhance the capacity of capital market by linking it with the Chinese market (Irshad et al., 2015).

Table III: Markov switching result before (2001-2014) and after CPEC (2015-2017)

	After CPEC Agreement				**Before CPEC Agreement**			
	Pak	UK –Pak	US –Pak	China –Pak	Pak	UK –Pak	US –Pak	China –Pak
Bull	0.025**	0.064**	0.038	0.025	0.027**	0.033**	0.029**	0.027**
	(-0.004)	(-0.014)	(-0.011)	(-0.004)	(-0.004)	(-0.006)	(-0.005)	(-0.005)
Bear	-0.086	-0.012	-0.038	-0.088	-0.028	-0.006	-0.0133	-0.030
	(-0.016)	(-0.025)	(-0.017)	(-0.012)	(-0.032)	(-0.018)	(-0.025)	(-0.032)
p^{11}	0.891	0.423	0.384	0.877	0.98	0.739	0.875	0.965
p^{00}	0.108	0.74	0.615	0.122	0.889	0.58	0.762	0.757
Duration for								
Bull	9.243	4.889	6.879	8.31	52.54	13.088	6.894	45.62
Bear	1.121	2.457	2.267	1.203	9.055	2.407	5.724	181.01

Data used in this table is monthly stock market return of PSX(KSE100), NASDAQ, FTSE100 and SZSE from February 2001 to July 2017 by diving into two regimes before CPEC(2001-2014) and after CPEC (2015-2017). The figures quoted in brackets below the actual estimates are standard errors. The transition probabilities, p^{11} andp^{00}, relate to the bear and bull regimes, respectively. The expected durations of the two regimes are also provided in the last two rows. Similarly, remaining figures such as mean, median,

range of data and normality exhibits descriptive statistics of overall sample.

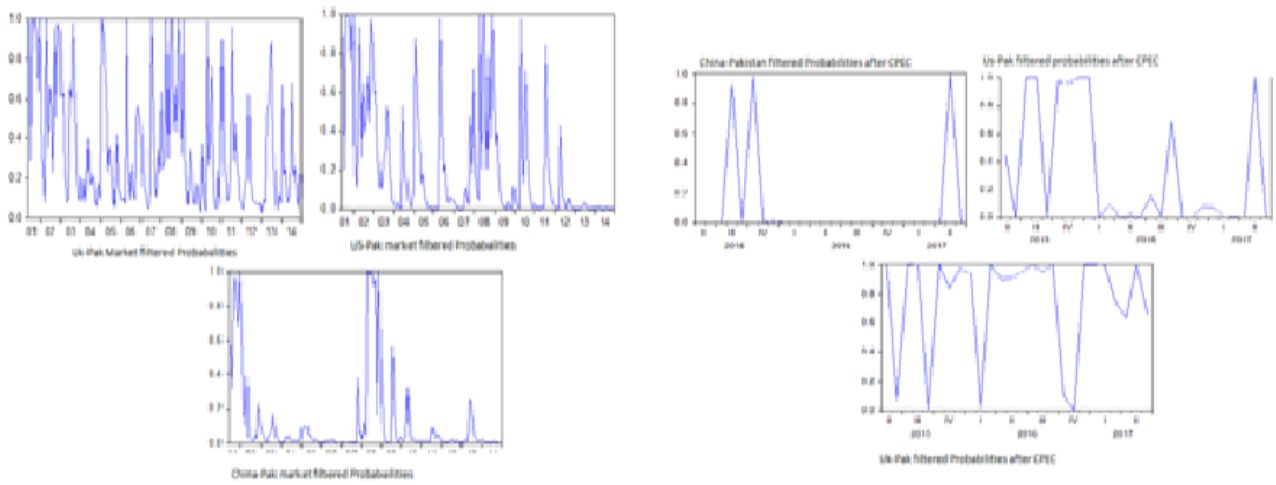

Figure III: Filtered Probabilities of Bear market Before CPEC (from 2001 to 2014) & After CPEC (2015-2017) agreement

Theoretical Contribution and Practical Implications

The current study theoretically contributes in the economic and financial literature and insight for the policy makers on issues and challenges related to CPEC and demutualization of PSX. The basic conceptual insight to emerge from this study is the shift of paradigm change which provides exchanges financial power to upgrade their technologies and devise strategies towards financial risks. It also enhances the magnitude of trading volume and increases the competition in stock market. This study contributes in theoretical knowledge in domain of Ex-Ante theory as ambiguities associated with this strategic change that whether or not it leads toward market growth. This study provides a solid narration that this composite change is not only beneficial for the stock market especially emerging and developing but also provides diversified sources of investments to listed companies and investors as well. This helps unfolding various issues and themes which are important to growth and expansion of opportunities in the stock market. This depicts that demutualization helps creating and building fair and inclusive corporate governance structures enabling them making collective decisions in response to changes in the business environment. On the basis of contemporary literature, the current study proposes following stringent international market requirements and made international alliance with different groups of exchanges to get practical outcomes from this change.

Firstly, the Board of Directors of PSX should be well aware that aftermath of this economic shift as there is a possibility of occurring conflict of interest, and participation of international investors. PSX may be suggested to focus on the long term growth and return for their survival in international market. Secondly, it leads to greater investor participation in the governance of the exchange. It yields in an improved platform in response to potential competitors in the form of alternative trading systems. It also unfolds avenues for listed firms for their growth opportunities and scope for both their products and location. It does not only diversify firm's capital resources, but also unfolds new emerging markets avenues for strategic growth and pooled resources.

Further, demutualization allows greater flexibility and access to global markets. It also facilitates faster and more complete consolidation of stock exchanges to enhance available synergies.

Thirdly, it ensures increased access to resources for capital investment raised by way of equity offerings or private investment. It is suggested that exchanges should keep the level of both local and international shareholding same because it still has to respond to international market ups and downs. However, when exchanges can gradually gains benefits in the long run, they can raise further capital through different sources such as debenture, bonds etc. In this way, the exchange can enhance their efficiency by expanding its leverages through technological and financial synergies. They should also be aware that the competition in market increases after demutualization and international alliances thus demanding more focus to equip themselves with both the knowledge (integrating researchers and policy analysts) and the psychological preparation (investors outreach training session) to deal with the complexities and technicalities associated with these changes-international alliances.

Conclusion

The objective of this study is to examine trickledown effects of the CPEC agreement in financial and capital market. To analyze this effect, a two-state Markov-switching model, and (GARCH) (1, 1) are applied to differentiate between bull and bear regimes and to seek the return and volatility spillover from 2001 to 2017. The findings of this study suggest that Pakistan's economy is integrated more in terms of financial and social aspects with the U.S. and U.K. markets from 2001 to 2015 period. Any substantial changes in these markets created a significant impact on the PSX. Alternatively, this trend is tilted towards regional market (i.e. SZSE) after the CPEC agreement. The results show that after the arrangement of China and Pakistan in 2015, market dynamics has shifted a new paradigm. At present, the financial and strategic integration with China is influencing the PSX and thus, it results in multilateral economic order(Tiezzi, 2016). With the Chinese integration, dependency of the PSX has picked up the pace and is in line with the SZSE. The plan of economic corridor calls for the successful completion by 2030 and the obstacles to regional capital flows such as legal restrictions on the capital mobility and foreign ownership will decrease due to flexibility in regulations for Chinese investors and traders(Gallo & Otranto, 2007). On the other side, financial integration with China can also posit a number of challenges for the regulatory bodies. In order to promote financial integration linkages with China, it is proposed that an arbitration cell is required to establish which will build the confidence of investors in conducting their business activities in Pakistan and in case of any dispute, the matter may be resolved amicably. The limitation of this study is to consider only two years after the CPEC event and therefore, results cannot be generalized. It is therefore, proposed for future research to include more years after the event for better understanding of linkages of one market to other.

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