

# Highlighting the Dynamics of the Game-Changer: Empirical Evidence from Stock Markets of the Key Players

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## Abstract

*China Pakistan Economic Corridor (CPEC), a predictive game-changer, was perceived to bring favourable changes in the economy of both its players. It was claimed that a boost shall be seen in each sector of the economy especially for Pakistan. Highlighting this key assumption, this study attempts to conduct a comparative analysis of PSX and Shanghai returns for pre and post announcement of CPEC. The time-series data of the two indices i.e. PSX-100 and Shanghai Stock Exchange Composite Index (SHCOMP) is selected ranging from 4th January 2010 to 2nd January 2019. The comparative analysis of both the economy indicates significant difference  $t(2220.237) = 2.872, p = 0.004$  before CPEC-announcement and this difference becomes insignificant post-CPEC announcement  $t(1654.132) = 0.315, p = 753$ . Whereas, individual analysis of returns of both the economies indicated a significant change for PSX-100  $t(1038) = 2.050, p = 0.041$  but for SHCOMP this change is not significant  $t(1008) = -0.697, p = 0.486$ . The findings of the study reflect the potentials of CPEC to bring changes in Pakistani Stock market than a mature market of China.*

**Keywords:** Game-changer, CPEC, PSX-100, SHCOMP, Stock Returns

**JEL Classification:** C22, E44, F15, F21

## INTRODUCTION

Pakistan being a developing country has always struggled with Growth indices. This struggle is not only for yearly growth but to have a sustainable one in the long run. Though enriched with the power of youth (Ahmad, 2018), the lack of proper policy initiatives has never let it shine among the developed country. Year after another, with frequent changes of governments, emerged a new slogan of development which never becomes truth for the people of the country. Now a more promising initiative has been taken by the government in 2015 ie CPEC, which is not only perceived as a mere project affecting a single industry or sector but rather a key leading towards paths of success evolving around the entire economy. This project is commenced as a means to improve Pak-China relationships through One Belt, One Road (OBOR) route starting from Kashgar China, passing from different areas of Pakistan

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and ending at Gawadar port Pakistan. As a multidimensional initiative, it takes into account railways, roads, oil and gas, cable channels and construction of important model and pilot projects- being part of its route. The mutual cooperation of both the governments shall work for diversified fields, resources, energy, infrastructure, agriculture, irrigation, communication and information and energy along the corridor (CPEC- Corridor Council, 2019).

CPEC is considered to be the game-changer as echoed in various news sources and has been the key interest source for many policymakers and researchers across different countries. As for Pakistan, the project will have a positive impact on macroeconomic indicators of the country, which is already in an economic turmoil. The project has had multi billion spendings to link the two countries through highways and railways and will help Pakistan resolve its energy crises with the completion of energy projects. Because the project can affect investors' confidence it will have an impact on the stock exchanges of the two countries. The location of Pakistan is perhaps the biggest advantage of the country, because of which global powers have shown interest in the country in order to gain connections with rest of the region and attaining their economic interests (Shaikh, Ji, & Fan, 2016). CPEC is a golden opportunity for both countries to combine their strengths in the economic and financial fronts in the emergent South Asian region (Javaid & Javaid, 2016).

The research aims to compare the stock returns of PSX-100 and Shanghai Stock Exchange Composite Index before and after the announcement of CPEC, and to analyze the impact on both markets. The research focuses to do a comparison between the two markets and within these two markets pre and post a comparison of returns. The Scope includes the two stock market indices of PSX-100 and Shanghai Stock Exchange Composite Index. The study focuses on the measurement and comparisons of stock returns of the two indices pre and posts CPEC announcement separately. It also aims to see and compare the pre and post CPEC announcement returns within each index. The scope does not include the factors that may cause differences in returns. CPEC is considered to be game-changer especially with regard to Pakistan. There is a need to evaluate investor sentiments with regard to CPEC in both countries. This research is conducted to compare and evaluate the stock returns of both indices that are PSX-100 and SHCOMP pre and post the announcement of CPEC.

### *Research Questions*

- Is there a difference in stock returns of PSX and Shanghai stock exchange for pre-CPEC tenure?
- Is there a difference in stock returns of PSX and Shanghai stock exchange for post CPEC tenure?
- Is there a difference between average stock returns of Pre and Post CPEC announcement for PSX?
- Is there a difference between average stock returns of Pre and Post CPEC announcement for Shanghai Stock exchange?

### *Hypotheses*

**$H_1$ :** There is no difference in stock returns of PSX and Shanghai stock exchange for pre-CPEC tenure

*H*<sub>2</sub>: There is no difference in stock returns of PSX and Shanghai stock exchange for post CPEC tenure?

*H*<sub>3</sub>: There is no difference between average stock returns of Pre and Post CPEC announcement for PSX?

*H*<sub>4</sub>: There is no difference between average stock returns of Pre and Post CPEC announcement for Shanghai Stock exchange?

## LITERATURE REVIEW

In current times, China's has played an intense role to develop a global economy, which has contributed a lot in taking the world trade to unprecedented levels (Ali, Gang & Raza, 2016). The China- Pakistan Economic Corridor (CPEC) is part of the vision of China for a 'One Belt, One Road', which is to form interconnections between landlocked countries and build strong ties with neighbouring countries for its trade and strategic purposes (Wang, 2016). Through CPEC China will build a 3000 km network of ports, terminals, roads, railways and oil & gas pipelines extending its way from coastal area of Gwadar city to the historic city of Kashgar in northwestern China (Bader, 2015). Ahmad and Mi (2017) in their study investigated the impact of CPEC on infrastructural development within Pakistan. They found out that CPEC is indeed good news for the countries and it has positive impacts as far as the country's economic problems are concerned. The CPEC envisions upgrading infrastructure, developing the energy sector and establishing industrial parks with an estimated cost of \$46 billion USD by 2030. China Pakistan Economic Corridor is specifically beneficial for Pakistan as it will provide employment opportunities to people of Pakistan and will help utilize its human resource in the most efficient manner to boost the economy and then developing its industrial base. It will help China likewise by providing Chinese companies new trade zones, providing industries with new ways to tackle industrial overcapacity, and increasing foreign reserves (Amir, 2016).

Kumar (2017) performed exemplary work on evaluating the relationship between the two countries and to determine the impact of CPEC on terms of trade, investment, energy and infrastructure. She concluded that infrastructural development in Pakistan sponsored and initiated by China in the shape of Gwadar Port and others have proven to be strategically very important for both countries. This partnership will continue to grow in future because of the mutual interest of both countries in the form of economic support to Pakistan and China's trade access to new markets. Ismail and Mahyideen (2015) conducted research in which they found out that infrastructure has a significant impact on the development of activities related to trade development. This means that the building of different link routes from one country to another can help and facilitate trading activities by reducing the costs and time required previously. This is what has resulted in globalization and integration of economies, and has subsequently resulted in better relations between linked countries. The study also suggested that such infrastructure and link routes do not only benefit the sponsoring countries but also the base country and the surrounding countries as well. Stock prices fluctuate forever, a stock may be fairly priced at one point in time, overpriced at another and underpriced in the very next period. It can be explained in a way that the market has both speculators and investors, the former cause major fluctuations in the market, while the investors are more rational. Both

speculators and investors behave differently. For instance, if good news circulates in the market for a company the stock price for that company increases. The speculator hopes for the prices to further increase and thus takes a long position causing the prices to increase further. The investor, however, knows the intrinsic value of the stock and starts to place sell orders to settle for a profit, leading to lower prices (Vveinhardt, Streimikiene, Rizwan, Ahmad & Rehman, 2016).

## METHODOLOGY

Quantitative data is collected from secondary sources. Closing prices of PSX-100 and Shanghai Stock Exchange Composite Index is taken from Yahoo Finance website. The frequency of the data is daily. The variables of the study are average stock returns of PSX-100 and Shanghai Stock Exchange Composite Index over a period of 9 years. The time period chosen the sample data is 4th January 2010 to 2nd January 2019. The research will assess the stock returns of the two indices, and for that purpose, descriptive statistics will be computed of the data. The study focuses on two aspects; the first one is to compare the stock returns of PSX and Shanghai Stock Exchange for pre-CPEC tenure, and similarly for post CPEC tenure separately. For this independent sample, T-Test will be applied to assess the data and to reach a conclusion. The second aspect of the research is to compare the stock returns of the two indices individually for pre and post CPEC analysis, for which Paired sample T-test will be applied. The tests will be applied to the data through SPSS software. Since the data downloaded from the Yahoo Finance website is the closing prices data, we converted the prices into stock returns by taking the natural log of prices. The same was done by Ahmad, Ahmed, Vveinhardt, & Streimikiene (2016) in their paper on Asian stock markets. The formula is expressed as:

$$R_t = \ln\left(\frac{I_t}{I_{t-1}}\right)$$

Where:  $R_t$ : Stock returns at time  $t$

$I_t$ : Stock Market Index at time  $t$

$I_{t-1}$ : Stock market index at time 1<sup>st</sup> lag of time  $t$

## RESULTS DISCUSSION

### *Descriptive Analysis*

Table 1 depicts the different statistics the most important of which are a mean and standard deviation. The results show that among the two indices PSX-100 pre-announcement tenure mean return is the highest i.e. 0.099%, followed by post CPEC announcement mean return of PSX-100 of 0.018%. Shanghai Stock exchange composite index has negative returns in both tenures. The standard deviation which measures the dispersion about the average returns is highest for post-CPEC announcement returns of Shanghai Stock Exchange. This finding is different in a sense that where the mean returns are highest, there the risk i.e. standard deviation of returns is lowest. Lastly, the skewness and kurtosis value indicates that the data is negatively skewed in all cases and leptokurtic indicating a kurtosis value of more than 3.

Table 1: Descriptive Statistics

	PSX-100		SHCOMP	
	Pre	Post	Pre	Post
<i>N</i>	1205	1039	1178	1009
<i>Range</i>	.0763	.0918	.0968	.1448
<i>Minimum</i>	-.0456	-.0476	-.0544	-.0887
<i>Maximum</i>	.0307	.0442	.0423	.0560
<i>Mean</i>	.000999	.000180	-.000226	-.000006
<i>Std. Deviation</i>	.0090148	.0097657	.0116024	.0160688
<i>Skewness</i>	-.393	-.352	-.296	-1.197
<i>Kurtosis</i>	5.160026	5.746077	4.963474	9.179251

**Inferential Analysis**

Table 2 shows the results of the independent sample T-test applied on data of PSX and SHCOMP. The Test consists of Levene's Test for Equality of Variances and t-test for Equality of Means. Since in Levene's Test for Equality, PSX-100 and SHCOMP have significance level lesser than 0.05, therefore, we can say that there is a significant difference among the variance of the returns of both indices before the announcement of CPEC. Similar is the case with post-announcement returns, hence we do not assume equal variances. By looking at the significance level of t-test for Equality of Means we can say that since significance level of post-announcement returns is greater than 0.05 i.e.  $0.05 < 0.753$ , therefore, there is no significant difference among the mean returns of PSX-100 and SHCOMP in the post-announcement tenure; however, the significance of pre-announcement returns is less than 0.05 which means there is significant difference among the mean returns of PSX-100 and SHCOMP. Since t value is positive, it indicates that the mean return of PSX-100 is greater than that SHCOMP.

Table 2: Independent Samples Test

		Independent Samples Test								
		LTEV*		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% CI****	
								Lower	Upper	
<i>Pre</i>	<i>EVA**</i>	46.062	.000	2.88	2381	.004	.00122	.00043	.00039	.00206
	<i>EVNA***</i>			2.87	2220.23	.004	.00122	.00043	.00039	.00206
<i>Post</i>	<i>EVA</i>	53.711	.000	.31	2046	.751	.00019	.00059	-.00096	.00133
	<i>EVNA</i>			.31	1654.13	.753	.00019	.00059	-.00097	.00134

\*Levene's Test for Equality of Variances

\*\* Equal Variances Assumed

\*\*\* Equal Variances Not Assumed

\*\*\*\*Confidence Interval of the Difference

Table 2 shows the results of the Paired sample T-test applied on data of PSX and SHCOMP. By looking at the significance level for pair 1 that is a comparison between pre and post PSX-100 returns we see that the sig value is less than 0.05, thus we reject the null hypothesis. This means that there is a significant difference between the pre and post announcement mean

returns of PSX-100. The t value is positive which indicates that the pre-announcement mean returns of PSX-100 are greater than post-announcement returns. However, the significance level for pair 2 that is a comparison between pre and post SHCOMP returns is greater than 0.05 which means there is no significant difference among the pre and post announcement mean returns of SHCOMP.

Table 3: Paired Samples Test

	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. De- viation	Std. Error Mean	95% CI				
				Lower	Upper			
<i>PSX (Pre – Post)</i>	.0008378	.0131715	.0004086	.0000360	.0016396	2.050	1038	.041
<i>SHCOMP (Pre – Post)</i>	-.0004454	.0203067	.0006393	-.0016999	.0008091	-.697	1008	.486

### Hypotheses Assessment Summary

Table 4 presents a summary of the overall results and concludes on the rejection or acceptance of hypotheses.

Table 4: Hypotheses summary

No	Statements	Sig Value	Re- marks
$H_1$	<i>There is no difference in stock returns of PSX and Shanghai stock exchange for pre-CPEC tenure.</i>	0.004	Reject
$H_2$	<i>There is no difference in stock returns of PSX and Shanghai stock exchange for post CPEC tenure.</i>	0.753	Retain
$H_3$	<i>There is no difference between average stock returns of Pre and Post CPEC announcement for PSX.</i>	0.041	Reject
$H_4$	<i>There is no difference between average stock returns of Pre and Post CPEC announcement for Shanghai Stock exchange.</i>	0.486	Retain

### Discussion

The descriptive analysis was done by taking log returns as done by previous studies e.g. Saleem (2007) and Ahmad, Ahmed, Vveinhardt and Streimikiene (2016). The descriptive analysis shows that among the two indices PSX-100 has the highest mean return of 0.099%, followed by post-CPEC announcement mean return of PSX-100 of 0.018%. It was also found PSX-100 pre-announcement mean returns are highest with the least variation. On analyzing these finding we see that though there was an impact of CPEC announcement on PSX-100 returns, no impact was seen on Shanghai Stock Exchange Composite Index returns. This is because the Chinese market is a more mature market and works on fundamentals rather than the Pakistani market. Because the CPEC project has many things unclear about it and is in its initial stages yet, thus there was investor under-confidence in Pakistani market which resulted in the returns to decrease. Further, it was found that there is no significant difference in the post CPEC announcement returns of PSX-100 and SHCOMP.

## **CONCLUSION, LIMITATIONS & RECOMMENDATIONS**

### *Conclusion*

The study attempts to do a comparison between the returns of PSX and Shanghai stock exchange relative to CPEC announcement. Out of the four null hypotheses two were rejected and two were retained. The findings showed that there is a significant difference in stock returns of PSX and Shanghai stock exchange for pre-CPEC tenure. Similarly, there is a significant difference between average stock returns of Pre and Post CPEC announcement for PSX. Likewise, two null hypotheses are retained indicating no difference in stock returns of PSX and Shanghai stock exchange for post CPEC tenure. And also no difference between average stock returns of Pre and Post CPEC announcement for Shanghai Stock exchange.

### *Limitations*

The research takes into account the period of 4 years before and after the announcement of CPEC. However, most of the projects associated with CPEC haven't been started yet and will require time to complete, thus it will take time for the impact to be reflected in stock markets. The research also does not take into account other factors that may impact the stock market indices other than the announcement, for instance, Pakistan has been in political turmoil since the last couple of years which may have resulted in the downfall of returns. The research is a comparative study of returns pre and post announcement of CPEC and thus not gauge the stock exchange volatilities.

### *Recommendations*

CPEC is no doubt a global opportunity for Pakistan as it will provide linkages to Pakistan to different countries and will be a source of economic and financial support. Thus though currently, the market might be down in future the market will move upward in the sectors that are linked with CPEC such as Cement, Steel, Automobile, Banks, etc. It is the right time to invest money in Pakistan Stock Exchange in the following sectors. The recommendations for the policymakers can be to work on the smooth completion of CPEC projects and do not let the internal and external problems faced by the country have an impact on this opportunity project. Likewise, all provinces and stakeholders within the country and the mega-project should benefit the national interest of the country. The project should be run transparently to attract more investors, and the project should benefit the people in general by creating new employment opportunities and social well-being.

## **REFERENCES**

- Ahmad, N., Ahmed, R. R., Vveinhardt, J., & Streimikiene, D. (2016). Empirical analysis of stock returns and volatility: evidence from Asian stock markets. *Technological and Economic Development of Economy*, 22(6), 808-829.
- Ahmad, R., & Mi, H. (2017). China-Pakistan Economic Corridor and Its Social Implication on Pakistan: How Will CPEC Boost Pakistan's Infrastructures and Overcome the Challenges? *Arts and Social Sciences Journal*, 8(2), 01-08. <https://doi.org/10.4172/2151-6200.1000265>

- Ahmad, S. (2018, 24 July). *Unleashing the potential of a young Pakistan*. Retrieved from Human Development Reports: <http://hdr.undp.org/en/content/unleashing-potential-young-pakistan>
- Ali, W., Gang, L., & Raza, M. (2016). China-Pakistan Economic Corridor: Current Developments and Future Prospect for Regional Integration. *International Journal of Research*, 3(10), 210-222.
- Amir, F. (2016). CPEC and Regional Integration. Paper presented at the *32nd Annual General Meeting and Conference of the PSDE on China-Pakistan Economic Corridor and Regional Integration*, Islamabad. [http://www.pide.org.pk/psde/pdf/AGM\\_32/PSDECall-for-Paper.pdf](http://www.pide.org.pk/psde/pdf/AGM_32/PSDECall-for-Paper.pdf)
- Bader, L. (2015, December 14). *China's 6 magical economic corridors*. Retrieved from <http://themarketmogul.com/chinas-6-magical-economiccorridors/>
- CPEC- Corridor Council. (2019). *Council Profile*. Retrieved from *China-Pakistan Economic Corridor council*: <http://c-pecc.com/en/about/about-47.html>
- Hartpence, M. (2011). The Economic Dimension of Sino-Pakistan Relations: an overview. *Journal of Contemporary China*, 20(71), 581-599. <https://doi.org/10.1080/10670564.2011.587160>
- Ismail, N. W., & Mahyideen, J. M. (2015). The Impact of Infrastructure on Trade and Economic Growth in Selected Economies in Asia. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2709294>
- Javaid, U., & Javaid, R. (2016). Strengthening geo-strategic bond of Pakistan and China through geo-economic configuration. *Pakistan Economic and Social Review*, 54(1), 123-142.
- Kumar, S. (2007). The China-Pakistan Strategic Relationship: Trade, Investment, Energy and Infrastructure. *Strategic Analysis*, 31(5), 757-790. <https://doi.org/10.1080/09700160701662278>
- Liping, X. (2015). The Development of the “One Belt and One Road” and its Impact on China-US Relations. *Chinese People's Association for Peace and Disarmament*, 2(12), 110-130.
- Saleem, K. (2007). Modelling time-varying volatility and asymmetry of Karachi Stock Exchange (KSE). Available at SSRN 964898.
- Shaikh, F., Ji, Q., & Fan, Y. (2016). Prospects of Pakistan-China Energy and Economic Corridor. *Renewable and Sustainable Energy Reviews*, 59, 253-263. <https://doi.org/10.1016/j.rser.2015.12.361>
- Vveinhardt, J., Streimikiene, D., Rizwan, A. R., Ahmad, N., & Rehman, A. (2016). Mean reversion: an investigation from Karachi stock exchange sectors. *Technological and Economic Development of Economy*, 22(4), 493-511.
- Wang, Y. (2016). Offensive for defensive: the belt and road initiative and China's new grand strategy. *The Pacific Review*, 29(3), 455-463. <http://dx.doi.org/10.1080/09512748.2016.1154690>