Measuring Economic Cost of Exchange Rate: Empirical Evidence from Panel Data

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Abstract

This study examines the economic cost of exchange rate. Pakistan has been facing serious issue in regard of exchange rate and this fluctuations impact on various economic indicators or variables. The overall exchange rate value is being depreciated since 2008, it started from Rs 60 against one dollar and recently it reached to Rs, 154 that is equal to one dollar. Time series panel data from 2002-2016 has been used for analysis, it has two cross-sections Pakistan and India. Data is collected from various sources that include Asian Development Bank, Transparency International US and World Economic Indicators. Exchange rate in Pak rupees and Ind rupees, corruption perception index in percentage and foreign borrowings in both Pak rupees and Ind rupees' variables are taken for analysis. Various statistical tests have been applied for the analysis of data such as unit root panel and regression analysis panel in E-views version 7. Based on all studied variables are found to have significant and positive impact on real exchange rate. In previous studies research scholars investigated overall exchange rate impact on GDP of any economy. This study gives insight into exchange rate impact on government department corruption of both countries Pakistan and India. In future similar study can be conducted for those countries which are also facing problem of exchange rate in their respective countries.

Keywords: Exchange Rate, Corruption Perception Index, Unit Root Test

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INTRODUCTION

Currency exchange rate crisis occurs when microeconomic as well as macroeconomic fundamentals experience vulnerabilities. Higher borrowing coupled with higher corruption perception index affects exchange rate fluctuations. Asian crisis confirms it. According to Radelet and Sach (1998), many observers criticized widespread corruption and crony capitalism as a root cause for financial crisis. Mc Kinnon and Phil (1997, 1999) analyzed the Asian crisis as the "over borrowing syndrome". Corruption along with lack of transparency and excessive borrowings were thought to be the fundamental causes of exchange rate crisis. Wei and Wu (2001), proposed that corruption may affect the country's structural composition of capital inflows in a way that country faces a currency crisis internally, that can be widened by a sudden reversal international capital flows.

Ghosh and Ghosh (2002), findings showed that countries with poor governance in public sector is much likely to have exchange rate crisis. Eichengreen and Rose (1999), analyzed the impact of corruption; they found that it discourages creditors and Foreign Direct Investment (FDI). FDI suffers more. It creates a shift in composition of capital inflows over FDI. Corruption, nepotism creates hindrances for FDI, international investors need to pay bribery. They need to deal with corrupt bureaucrats, hence the cost of doing business rises. This is one of the reason that exchange rate does not stable due less FDI and foreign currency reserves engulfed by creeping corruption and external borrowings. Same is the case with Pakistan and India. Countries with high level of corruption indices face issues of FDI in their country. Developing countries face this menace in multifaceted forms. Higher debt accumulations/ higher borrowings affect many economic indicators and curb the curve down of economic growth. Foreign exchange sharply declines in line with higher debt accumulations. All these

problems have negatively affected on economic growth of these two countries.

The Concept of CPI (corruption perception index) is related to foreign exchange rate fluctuation. Transparency international is global non-governmental organization which publishes CPI, aimed at combating corruption. It is used as an indicator to check the country's credibility. Higher the level of CPI, higher the chances of currency crisis. It has major impact on FDI. Additionally, every country is a member of some international trade organization. In 21st century, the development /economic models around the world are interdependent on between more than two countries. Therefore, exchange rate does not only create chaos in one country's economy, but it affects the whole region or at least other member of the same trade organization.

Theoretical and Conceptual Framework

An economic theory suggests that, if the money loaned out by a nation is consumed is efficient and active means in the useful speculation purpose that has trickledown effect in the GDP of respective country. Alternatively, if the borrowed money is not used properly, due to corruption can badly hit the economy of any country, where exchange rate rises along with inflation in multifarious sectors. This situation is explained by overhang theory. This theory states that if the borrowed money level, exceeds, above the capacity of country to repay it, then, an expected default of country may signal the local and overseas financiers to enticement their cash return. This creates the bottlenecks situations for a country, where borrowings creates dramatic shift in exchange rate. These foreign borrowings negatively affect the economic growth. For the sake of repayments of debt, domestic output is increases via additional taxes, which again creates inflation. Figure 1 depicts the relationship between the constructs of current study.

Fig 1.

LITERATURE REVIEW

Literature of currency crisis is attributed to (Krugman, 1979) classic paper. His work was further simplified in comprehensive by (Flood and Garber 1984, Aghor et al. 1992). First generation crisis models were based on exhaustible literature resource. These crises occurred because of adverse macroeconomic policy, poorly associated with exchange rate. Models failed. European Monetary System (EMS) and in Mexico crises occurred in same year. Earlier model couldn't justify the reason. Followed by the previous events, 2nd generation model was developed (Obstfeld 1994). This model specifically focused on government policy an exchange rate and other objectives. Again the model failed. Asian crisis of 1997-98 put a question mark on the existing model. Third generation model was developed. Krugman (1999), identified two post approaches to this crisis. The first approach namely moral hazard approach represented (Krugman, 1999) and over borrowing syndrome (Kinnon & Phill, 1999). Corruption coupled with lack of transparency were perceived to be the eventual cause engulfed by the over borrowing throughout the economy.

Currency Exchange rate

According to financial dictionary Currency exchange rate is well-defined as the value of one currency in terms of in another value. Volatility of exchange rate has significantly increased since 1970 due to multiple factors (Christopher & Kao, 1990). It has added more risk for international investment. Exchange rate has now become highly important for portfolio decision. Christopher and Kao (1990), found that stock price is highly associated with currency exchange rate.

Foreign Borrowings

Cambridge and business dictionary defines foreign borrowing as the amount of loan borrowed by any government to government or from any international organization. Borrowings can be directly government to or indirectly because of negative BOT. Economic theories by famous economist around world suggest that countries borrow money, in difficult economic conditions of their country in general and in specific to maintain the balance of trade (BOT) or for the settlement of EXIM (export-import) bill. This can be seen in the recent crisis of Pakistan. It is facing the challenges for trade bill settlement. According to official source by government of Pakistan, it has approached the IMF for funds to settle the trade deficit. Dollar reserves are at lowest level in history of last four years (Dawn, Oct., 5, 2018). Therefore deteriorating reserves has put pressure on foreign exchange rate of Pakistan in particular.

In these tough economic conditions, Pakistan is looking for the options to borrow the funds to deal with economic challenges. If the funds borrowed are not utilized in efficient and effective manner and for productive investment or managing BOT, then it can have negative result on the economic growth and economy and on exchange rate. But on other hand if they used for productive investment purpose the results will be altogether. Economy will rise with economic growth, and exchange rate would remain stable to attract foreign direct investment in country. The external debt thus accumulates with the passage of time. There comes a situation where it can have negative impact on economy. Irony of debt can be explained by overhang theory (Rabia & Malick 2012). When the amount of debt accumulated crosses the threshold level of any country's repayment capacity, may signal the default of economy in the eyes of investors to draw back their money; this will lower FDI in country and will hit the economy negatively. This study specifically analyzes the impact of foreign borrowings and corruption on foreign exchange rate in Pakistan. One of the indicators of economic growth of any country is gross domestic product (GDP). Investment, corruption, foreign borrowing / debt has major influence on GDP of a country (Giancarlo et al. 1999). Therefore, the model of this study test the influence of corruption and foreign borrowings on exchange rate, which directly or indirectly have major impact on economic growth

H1: There is significant impact of foreign borrowings on real currency exchange rate in Pakistan and India.

2.3 Corruption

It is practically observed that the corruption has negative cash inflow in context of country and investors may shift their expectations in this regard (Wei and Wu 2002). The word corruption has many meanings but if, define it in simple words that is the individual who offers to officials for undue favor for personal gains. Furthermore, this is not limited to bureaucratic system but also government officials may also involve in it to great extent. In, fact the two said hypothesis are interlinked. Importance of compositions inflows, outflows, was highlighted in exchange rate crisis of Russia, East Asia and Latin America. Multiple studies have been made on the correlations between capital inflows a currency crisis. They showed the positive relations. (Wei, S. J., & Wu, Y. (2002). Supporting studies starts with (Frakel & Rose 1996, Sachs, Rodrik and Velasco 1999).

H2: There is impact of corruption perception index (Corruption) on real exchange rate of Pakistan and India.

Data, Method & Material

TYPE OF DATA

Secondary data source is the type of data which is not collected by author of study but data is collected from various sources such government departments, annual reports of organization and global data service providers so on. This type of data source is not expensive with respect to primary data source that is collected by author of study by himself or herself. In this study data has been collected from various sources such as "world Economic Indicators" and various annual issues of "Economic Survey of Pakistan". Sample size in this study is from 2002-2016 of both countries Pakistan and India

Table 1. Secondary Data

Year	Corruption Perception Index		Foreign Borrowings		Real Exchange Rate	
	Pakistan (percentage)	India (percentage)	Pakistan (Pak rupees, million)	India (India rupees, million)	Pakistan (Exchange rate in US dollar)	India (Exchange rate in US dollar)
2002	2.6	2.7	99,000	-119.3	58.5	48.0
2003	2.5	2.8	63,900	-134.9	57.2	45.6
2004	2.1	2.8	124,690	147.5	59.1	43.6
2005	2.1	2.9	96,573	74.7	59.8	45.1
2006	2.2	3.3	176,316	84.7	60.9	44.2
2007	2.4	3.5	230,353	93.2	61.2	39.4
2008	2.5	3.4	625,858	110.2	79.1	48.5
2009	2.4	3.4	530,756	110.4	84.3	46.7
2010	2.3	3.3	740,172	235.6	85.7	44.8
2011	2.5	3.1	1,086,704	124.5	90.0	53.3
2012	27	36	1,632,084	72.0	97.1	54.8
2013	28	36	1,835,540	72.9	105.7	61.9
2014	29	38	876,992	129.3	100.5	63.3
2015	30	38	1,275,693	127.5	104.9	66.3
2016	32	40	978,858	148.7	104.8	68.0

Source: Various Economic Survey of Pakistan (2017-16,11,10), Transparency International US & World Bank Economic Indicators.

RESEARCH MODEL & VARIABLES

$$NER = \alpha_0 + \beta_1 CPI + \beta_2 FB + \beta_2 MSE + \epsilon_{it}$$

Whereas, Real Exchange Rate (NER), Corruption Perception Index (CPI), Foreign borrowings (FB) and error (ϵ_{it})

UNIT ROOT TEST

Most of time secondary data has trends that means data is not stationary so, no further analysis can be conducted as suggested by most research scholars. Results of other analysis to be considered as overestimated. ADF (Augmented Dicky-Fuller statistical technique has been applied in various levels that includes 1st difference and 2nd difference so on. The null hypothesis is to be rejected with that assumption, data is stationary and further analysis can be applied.

OLS REGRESSION ANALYSIS

For the linear regression in e-views ordinary least squares regression (OLS) is highly recommended by the research scholars. In this technique impact between both independent variables and dependent variables is measured.

STATISTICAL TEST RESULTS AND DISCUSSION

Stationary Test (Unit Root Test)

Table 2. Panel Unit Root Test

Variable	Significance value after taking 2 nd difference	Remarks
Real Exchange Rate (Dependent variable)	0.0031	Data is Stationary (P-value less than 0.05)
Corruption Perception Index (Independent variable)	0.0029	Data is Stationary (P-value less than 0.05)
Foreign Borrowing (Independent variable)	0.0489	Data is Stationary (P-value less than 0.05)

Source: Author's estimation

You can see in the table # 02 all above stated variables such as real exchange rate, corruption perception index and foreign borrowings are stationary in nature, there is on trend in data. Now, author of this study can apply panel regression in order to estimate the impact of independent variables on dependent variable and results will be not considered as overestimated.

Panel OLS Regression

Table 3. Panel Least Square Method (OLS)

Name of independent variables	Significant value or probability value	R Square-value	Value of β	Remarks
Corruption Perception Index (Independent variable)	0.0000	0.9083or 90.83%	0.128317	Significant and Positive Impact
Foreign Borrowing (Independent variable)	0.0000		0.059397	Significant and Positive Impact

DV: Real Exchange Rate
Source: Author's estimation

Real Exchange rate = $3.381700 + 0.128317$ corruption perception index + 0.059397 foreign borrowing. The OLS regression analysis suggested based on three values such as significant value, R-square and beta value the final findings of this study. Significant value suggests the level of impact independent variables on dependent variable, value of beta indicates the relationship between both studied variables and whereas, R-square value explained the fitness of model in percentage. Most of research scholars also suggest that R-square value indicates how much in percent the independent variable explain to dependent variable. In this research we conclude based on findings that both independent variable such as corruption perception index (CPI) and foreign borrowings (FB) are found to have significant and positive impact on in this study's dependent variable real exchange rate in context of both countries Pakistan and India.

CONCLUSION

The key persistence of in this research decided by the author of this study that to examined the economic cost of real exchange rate in context of both countries Pakistan and India. Findings of this study suggested that independent variables (IV) that includes Corruption Perception Index (CPI), and foreign borrowing (FB) conclude based on findings that both independent variable such as corruption perception index (CPI) and foreign borrowings (FB) are found to have significant and positive impact on in this study's dependent variable real exchange rate in context of both countries Pakistan and India. Unique findings of this study is that exchange rate within country create two serious problems for the whole economy such as the level of corruption in

government department increased and amount of foreign borrowings also tends to enhanced. The fluctuation of exchange rate need to addressed at government level. Based on this results it is highly recommended that:

Recommendations

- Government should take certain corrective actions in order to stable the exchange in both countries Pakistan and India.
- Transparency among the government departments should be developed in order to avoid corruption in stated owned departments.

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