

## Impact of FDI on Employment Generation: Nexus in Afghanistan

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### Abstract

This study aims to analyze the effect of foreign direct investment (FDI) on new job creation, and pays attention to factors interrelated to employment by using the case of Afghanistan. Using time series data from 2003 to 2017, this paper explores the driving forces and reduction potentials of employment in Afghanistan with consideration for dynamic changes within the traditional OLS and standardized OLS model. The results show that exchange rate plays a dominant role in increasing employment in Afghanistan. And exports and inflation rate play a dominant role in decreasing employment in Afghanistan. All variables are co-integrated and the analysis of the impulse response function and variance decomposition turns out to be synchronous. Furthermore, in the short run export and inflation rate are more critical in reduction potentials of employment in Afghanistan. Policies should be advised to control inflation rate and illegal export and improve the investment projects to attract more FDI into the economy for quick adjustment purpose in case of the shock to the system.

**Keywords:** FDI; Employment; Import & export; OLS; Afghanistan.



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### 1. Introduction

FDI are generally considered to have a major contribution to the economic development of emerging economies, on the other hand, FDI are also important for developed economies, apparent both developed economies and emerging economies have a common interest in encouraging FDI flows, although their goals are different Resmini (2000); Estrin and Klaus (2004); Coe *et al.* (1997). The positive externalities of FDI are for host economies, while corporate profits and growth is a typical goal for multinational companies that are globally oriented. A positive impact of FDI on economic growth has been confirmed by number of studies by researchers such as Lunn (1980), Schneider and Frey (1985) Schneider and Frey (1985) Carkovic and Levine (2002). FDI contributes to the economic growth through several channels. First, it is expected to achieve the economies development through capital accumulation more inputs being incorporated into the production process and the existence of a wider range of intermediate goods Carkovic and Levine (2002); Buckley and Mark (1998); Feenstra and Markusen (1994). Secondly, FDI is an important source of technologies change and improving human capital and have the effect of promoting modern technology in the host country Borensztein *et al.* (1998).

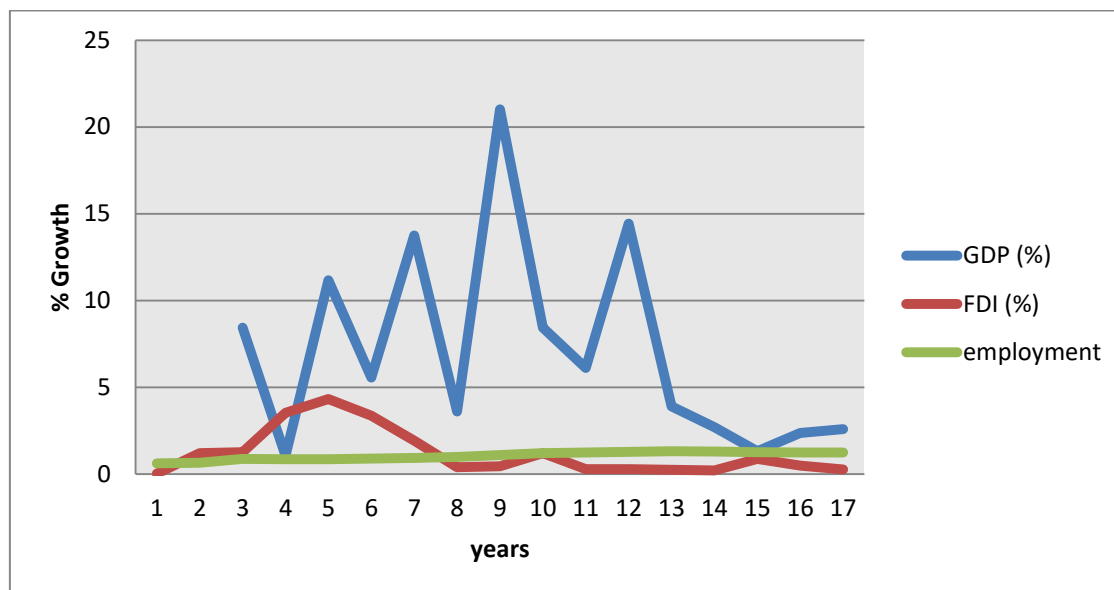
It indicates that additional foreign direct investment will be generated more employment of labor in the long run and thereby making the absorptive capacity of the economy to be increased. From the classical point of view, unemployment and wage rate are negatively related showing that as there are more demand for goods and services, wages will increase and employment will be demanded for. Salami (2013), stated FDI which is the other concept inbound in FI are investment made by an organization or individuals in one nation in business interested in another nation, in the form of either establishing business operation or acquiring business assets in the other country, such as ownership or controlling interest in a foreign direct company. In contrast to this, Rizvi and Nishat (2009) concluded their study of the impact of FDI on employment opportunities in India, China and Pakistan, by stating that it would not suffice to expect FDI to create a direct impact on employment opportunities in the above mentioned countries. They also suggest that in addition to FDI enhancement policies, other measures to boost employment growth should be generated.

Unemployment rate stayed unaffected in Afghanistan during the last two fiscal years, in (2017) at 8.80 percent from 8.80 in 2016. Since 1991 until 2017 Afghanistan is facing high rate of unemployment which is causes poverty, education, and low per capita income and GDP growth. Averaged unemployment rate is 9.60 percent, reaching an all-time high of 12.40 percent in 1993 and a record of 6.70 percent in 2009 (trading economic). According to World Bank data relationship between FDI and employment in Afghanistan since 2001 until 2017 shows there slightly impact on employment generation, the lowest is employment rate is 0.26 percent and the very high is 1.32 percent. in (2001) FDI % 0.03, employment 0.62, (2005) FDI % 4.32, employment 0.88, (2010) DFI % 1.2, employment 1.21, and finally (2017) FDI% 0.26, employment 1.24, on the other hand in same period GDP% growth rate is comparatively significant and satisfactory due to FDI inflows percentage.

The most recent household survey mid-term result (ALCS 2016/2017) show an increase in the unemployment rate about 1 percent point over the past two years. In 2013/14 the unemployment rate stood at 22.6 percent, female employment rate higher two in half times than male. It is primarily severe amongst low skill, illiterate workers, who are at the greatest risk to falling in poverty. Sustained demographic pressures and sluggish economic growth

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exacerbate unemployment situation, average annual population growth rate of 3 percent with estimated 400,000 Afghans entering the labor market each year. Higher economic growth rates required to improve per capita incomes and provide best opportunities for expanding workforce (World Bank report, Nov 2017).



Source: World Bank Data Indicators, 2018

## 2. Conceptual Framework

FDI are particularly important for transition economies because these economies have insufficient reserves and the technology and the capital are needed in order to stimulate economic growth Billington, 1999; Bevan and Estrin, 2000. The international capital flows, through the magnitude of their composition and stability are important for the transition to a market economy Garibaldi et al. 2002, Neuhaus, 2006. After receiving foreign capital, Romania has recorded high growth rates for the period 2005-2008. In a considerable way, this growth can be explained by the FDI that contributes by using new technologies, knowledge, and employment in the host country and opening new markets for them. According to Obadan and Odusola (2001), the growth of employment is demand determinants of long term growth of output also influence the growth rate of employment. Foreign direct investment feeds receiver countries through the capital inflows, technical involvement, human capital improvement and managerial proficiency compulsory for supportable economic development according to Abdoulaye and XieKefan (2015). this section is focus on to highlight the nature and measurement of these economic growth variables around which the whole study revolves. The next section is focus on the methodology and analysis of these variables.

In accumulation a number of literature that focuses on FDI and employment, there is the other aspect of literature that discover the impact of inward FDI on job creation, such as Tang and Gyasi (2012), which was focused to employment activities. Chinese investments have impacted the economy of Ghana. Their results from this study show that, about 8 percent or more of investments from China have been mostly concentrated in manufacturing. Kim and Han (2014) focused on location patterns of inward FDI in Korea and explored local impacts of job creation with respect to flows of capital, people and economic activities. Their findings show that foreign capital has added to the vivacity of the economy, creating job opportunities. Manufacturing has brought larger-scale employments than producer services due to the labor-intensive industrial nature.

## 3. Econometric Methodology

### 3.1. Unit Root Test

The reliability of statistical inference depends on the distinction between stationary and non-stationary (or integrated) time series. Shocks to a stationary time series are momentary due to constant mean and variance over time. In turn, non-stationary time series has time dependent mean and variance giving raise to permanent fluctuations after shock. Keeping in view the importance of peculiar characteristic of time series, it is necessary to check the stationary properties of the variables using appropriate unit root tests, these tests include inter alia ADF, Phillips-Perron and Ng-Perron tests. The general form of various tests is:

$$\Delta Y_t = \beta Y_{t-1} + \delta_1 \Delta y_{t-1} + \delta_2 \Delta y_{t-2} + \delta_3 y_{3-t} + \mu_t \quad (1)$$

The equation for intercept and no trend can be written as follows:

$$\Delta Y_t = \alpha + \delta Y_{t-1} + \sum_{i=t}^p \alpha_t \Delta y_{t-i} + \epsilon_t \quad (2)$$

### 3.2. Cointegration Test

To investigate the relationship among variables several econometric techniques have been proposed in the literature. Univariate cointegration examples include Engle and Granger (1987) and the fully modified OLS procedure of

Phillips and Hansen (1990). With regard to multivariate cointegration, Johansen S. (1988) and Johansen and Juselius (1990) full information maximum likelihood procedure are widely used in empirical research. We can apply Ordinary least-square (OLS) method to investigate the cointegration among FDI, employment rate and, other variables.

$$EMR = f(FDI, EXP, IMP, EXR, INF) \tag{3}$$

$$H_0: \alpha_1 = \alpha_2 = 0 \text{ (there is no cointegration)}$$

$$H_1: \text{at least one } \alpha \text{ is not equal to zero (there is cointegration)}$$

### 3.3. Regression Model

Suppose the equation 1 has a linear relationship, it can be written as;

$$EMR_t = \beta_0 + \beta_1 FDI_t + \beta_2 EXP_t + \beta_3 IMP + \beta_4 EXR + \beta_5 INF + u(4)$$

*EMR<sub>t</sub>* = the total employment growth rate in Afghanistan at time "t"

*FDI* = foreign direct investment

*IMP* = import growth rate at a time

*EXP* = export growth rate in a time

*EXR* = exchange rate at a time

*INF* = inflation rate

We also run standardized regression model for advantages,

$$EMR_t = \beta_1 FDI_t + \beta_2 EXP_t + \beta_3 IMP + \beta_4 EXR + \beta_5 INF + u \tag{5}$$

### 3.4. Granger Causality

Granger causality tests endeavors to establish if changes in FDI precede change in EMR, this is, FDI causes EMR and not causing FDI. The Granger causality test in vector auto regressive model (VAR) format can be expressed as follows:

$$EMR_t = \beta_0 + \sum \beta_j EMR_{t-j} + \sum c_j FDI_{t-j} + u_t \tag{6}$$

$$FDI_t = \beta_0 + \sum \beta_j FDI_{t-j} + \sum c_j EMR_{t-j} + u_t \tag{7}$$

Equation (7) assumes that current EMR is belongs to past values of itself as well as that of FDI, and (8) postulates a similar behavior for FDI. There are four possibilities for Granger causality

(i) *EMR* → *FDI unilateral causality*; (ii) *FDI* → *EMR unilateral causality*; (iii) *EMR* ↔ *bilateral causality*; and *EMR – FDI no causality*.

## 4. Data and Estimation of the Model

### 4.1. Data Overview

Time series secondary data over the period 2003 – 2017 have been used for analysis. Based on data availability, FDI data is taken in (% of GDP). Employment to population ratio in (%), export & import are also (% GDP). Official exchange rate to dollar and inflation consumer prices (annual %). The data are collected from the World Bank Development indicators (WDI, 2017 [www.worldbank.org](http://www.worldbank.org)). All variables are taken in natural logarithm form.

**Table-1.** Correlation and Descriptive statistics and correlation

	<i>EMR</i>	<i>FDI</i>	<i>IMP</i>	<i>EXP</i>	<i>EX_RATE</i>	<i>INF_RATE</i>
Mean	3.878	-0.298	3.750	2.385	3.969	1.240
Std. Dev.	0.013	1.068	1.073	0.960	0.125	1.194
Skewness	0.481	0.416	-3.076	-0.716	1.033	0.163
Kurtosis	2.133	1.717	11.463	3.585	2.747	1.643
Jarque-Bera	1.048	1.463	68.419	1.496	2.712	1.216
<i>EMR</i>	1					
<i>FDI</i>	-0.3033	1				
<i>IMP</i>	-0.525	0.456	1			
<i>EXP</i>	-0.613	0.736	0.830	1		
<i>EX_RATE</i>	0.919	-0.433	-0.595	-0.677	1	
<i>INF_RATE</i>	-0.282	-0.079	0.258	0.125	-0.257	1

Table 1 provides descriptive statistics of the variables along with correlation matrix of the variables. Standard deviations of the variables indicate that all other variables are less volatile followed by EMR and FDI. Correlation results show that some variables are not positively correlated with each other and these correlations are not statistically significant. There is negative correlation between EMR and FDI followed by other variables.

### 4.2. Unit Root Test

The result of the unit root tests are presented in Table 2 the data are in linear form with no trend and intercept. It is evident that all the variables are stationary at I (1). The implication of the results presented in table 2 is that there is a tendency of producing a spurious regression result should the data be used in the linear form.

**Table-2.** Unit Root Test for Stationary with Constant Only/ None intercept

<i>variable</i>	<i>Level</i>	<i>1 diff</i>	<i>2 diff</i>	<i>Conc.</i>
FDI	-1.067	-3.411(0.0025)	-6.428(0.0001)	
EMR	1.796	-6.640(0.0000)	-3.320(0.0038)	
EXP	-5.406(0.000)	-2.456(0.018)	-5.431(0.0001)	
IMP	-1.945(0.0523)	-1.487(0.123)	-3.517(0.0022)	
EXR	2.045	-1.998(0.047)	-4.007(0.0009)	
INF	-2.926(0.0067)	-5.156(0.0001)	-6.436(0.0000)	

\*, \*\* and \*\*\* implies significant 10%, 5% and 1% respectively,

**Table-3.** Leg selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	7.124409	NA	3.39e-08	-0.172986	0.087760	-0.226581
1	129.5075	112.9690*	1.23e-13*	-13.46268	-11.63746	-13.83785
2	1952.129	0.000000	NA	-288.3275*	-284.9379*	-289.0243*

\*indicate that the leg order is selected by criterion

LR: Sequential modified LR test statistics (each test at 5% level), FPE: final prediction error, AIC: Akaike information criterion.

SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion

### 4.3. OLS Model

The table below presents the results of the ordinary or traditional OLS model. Our traditional and standardize OLS results are presented in [table 4](#) and [5](#) respectively. The constant term, the coefficient of FDI, import and exchange rate of traditional OLS linear regression are respectively 3.494, 0.000, 0.097 all are positive, but the coefficient of export and inflation rate are negative in [table 4, 5](#).

**Table-4.** Dependent Variable EMR

Variable	Coefficient	S.E	T.value	P.value
Constants	3.494	0.076	45.449	0.000
FDI	0.0003	0.002	1.215	0.255
IMP	0.002	0.003	0.751	0.472
EXP	-0.004	0.005	-0.970	0.357
EXR	0.097	0.018	5.357	0.000***
INF	-0.000	0.000	-0.292	0.777

\*, \*\* and \*\*\* implies significant 10%, 5% and 1% respectively.

Multiple R-squared: 0.870, Adjusted R-squared: 0.799, F-statistic: 12.105, DW: 3.545

### 4.4. Result Of the Standardize Linear Regression Model

[Table 5](#) demonstrate the result of the standardize regression model. [Gujarati \(2004\)](#) states in standardize regression all variables are put in equal basis. In this case all the coefficients can be compared directly with one another. If the coefficient of one standardize regressor is greater than another standardize in the model, then the earlier contributes more relatively to the explanation of the regressand than the later. The economics significance of the variables in [table 4](#) remains the same in [table 5](#), their statistical significance differs dramatically. Regression on the Standardize variable shows that exchange rate makes the greatest positive and significance contribution to Afghanistan employment status. While inflation rate and export impacts negatively on the economy of Afghanistan.

**Table-5.** Standardize OLS / dependent variable (EMR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	0.194107	0.153450	1.264953	0.2377
IMPORT	0.092712	0.267984	0.345962	0.7373
EXPORT	-0.238297	0.267552	-0.890659	0.3963
EX_RATE	0.874596	0.137319	6.369082	0.0001
INF_RATE	-0.179167	0.114836	-1.560199	0.1531

\*, \*\* and \*\*\* implies significant 10%, 5% and 1% respectively.

Multiple R-squared: 0.892, Adjusted R-squared: 0.832, F-statistic: 14.853, DW: 3.464

### 4.5. Cointegration Analysis

To determine the existence of long run cointegration relationship among FDI and employment rate, OLS regression model is applied using the data period (2003 – 2017). [Table 4](#) and [5](#) provides the estimated results. [Wilhelms and Itter \(1998\)](#) conducted partly similar work to ours, submit that the robustness of unlogged regression results could be tested by using the semi-logged (linear-log) and the logged forms of the variables, following this clues we presents the standardize OLS result of the log-log forms of the variables in tables. Comparison of [Table 4](#) and [5](#) discloses not only stimulating difference but it also indicates some good similarities, the log-log regression form shows a higher contribution of exchange rate to employment. The Durbin-Watson (DW) statistic test is

generally used for the presence of autocorrelation in a data. BLUE (Best Linear Unbiased Estimator) property of OLS is lost in the presence of autocorrelation. Whether a regression result contains autocorrelation or not depends on the closeness of departure of the associated DW statistics to or from 2 respectively. The DW statistic associated with table 4 and 5 are respectively 3.464 and 3.545. The negative sign of inflation equally makes more economics sense than the positive sign reported in table 4

**Table-6.** Standardized linear regression model/ dependent variable ln (EMR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ln(FDI)	0.240384	0.197852	1.214969	0.2553
ln(IMP)	0.181255	0.241332	0.751059	0.4718
ln(EXP)	-0.325328	0.335295	-0.970272	0.3573
ln(EX_R)	0.901164	0.168207	5.357486	0.0005
ln(INF__R)	-0.038109	0.130434	-0.292174	0.7768

\*, \*\* and \*\*\* implies significant 10%, 5% and 1% respectively

Multiple R-squared: 0.870, Adjusted R-squared: 0.799, F-statistic: 12.105, DW: 3.545

#### 4.6. Granger Causality Test (VAR)

**Table-7.** Dependent variable: EMR

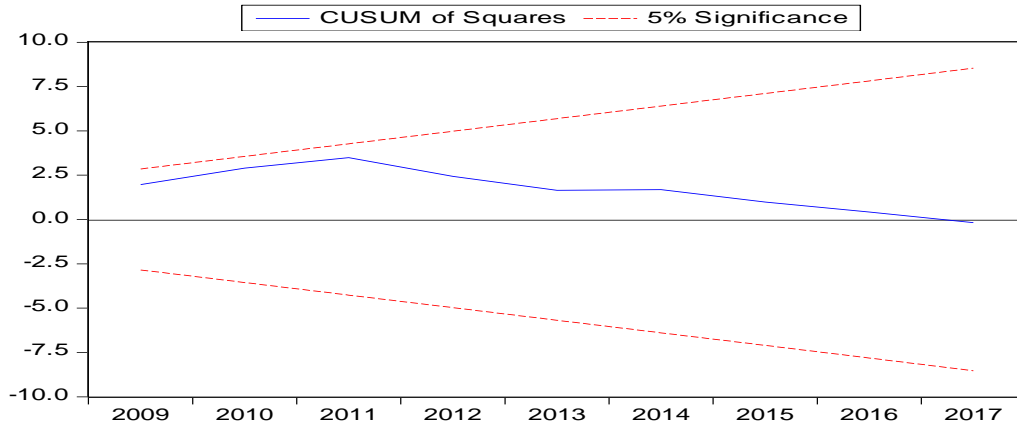
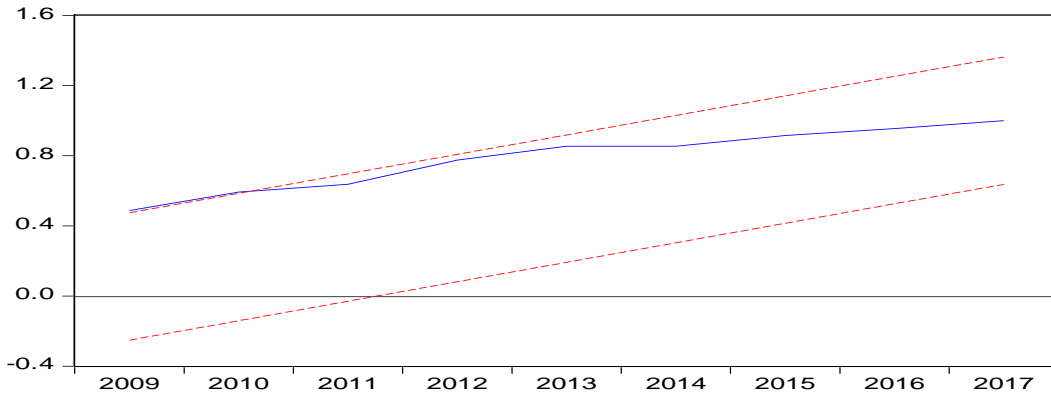
Null hypothesis	Chi-sq	Prob.
FDI	0.435492	0.5093
IMP	2.956924	0.0855
EXP01	6.101184	0.0135
EX_RATE	9.698164	0.0018
INF_RATE	0.039108	0.8432

### 5. Concluding Remarks

The paper empirically examines the cointegration and causal relationship between FDI employment rates in Afghanistan using annually data for the period 2003 – 2017. The estimated result indicates that long run cointegrating relationship holds between FDI and employment. Granger causality results indicate that there is bidirectional short run and long run causality between FDI and employment rate. However, no short run causal relationship is found between employment rates, import, export and exchange rate. Long run cointegration is also found between variables and statistically this cointegration is more significant during the period. These results also upheld by variance decomposition and impulse response analysis. Our OLS results show FDI net inflows don't have a significant effect on employment rate in Afghanistan, the error arising from traditional OLS model and the negligent of the FDI-growth lag dependent. Instead of using a single model to investigate the data, the present work employs 3 different regression models in a bid to arrive at a true conclusion. A comparison of the two results do not only show some bewildering difference but it will also vindicate the claim that detailed analyses are required to predict the true part of FDI in the economy of Afghanistan. Export and inflation rate has negative effect on employment rate, which indicates government in Afghanistan should take measure to cope with inflation rate and illegal flow of money; more steps need to be taken especially to build small businesses and make employment opportunities. Further, government should remove the root causes of unemployment, poverty, illiteracy, income equality, etc. to attract beneficial foreign direct investment and allocate them in proper way government should plan properly and increase public investment. Further, diversification opportunities may be provided to foreign investors with less risky environment.

#### 5.1. Stability Checking

In order to check the stability of the long-run coefficients, the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMSQ) tests suggested by Brown *et al.* (1975) are used. If the plots of CUSUM and CUSUMSQ statistics stay within the critical bounds of 5% level of significance, the null hypothesis of all coefficients in the given regression are stable and cannot be rejected. As can be seen in Figs.1 and 2, the estimated CUSUM and CUSUMSQ stay within the critical bonds indicating that all coefficients in the OLS model are stable.

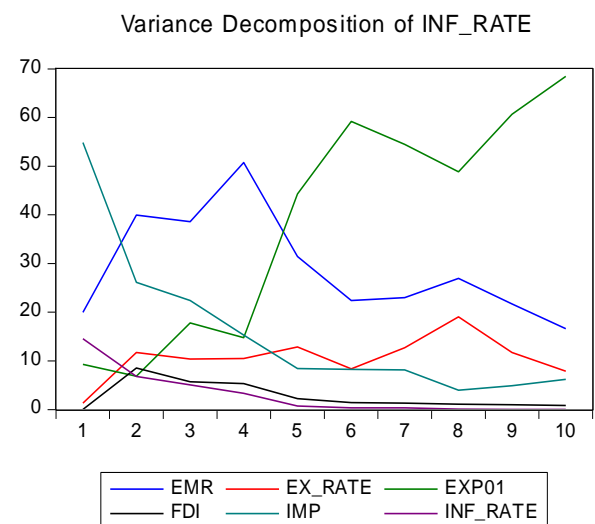
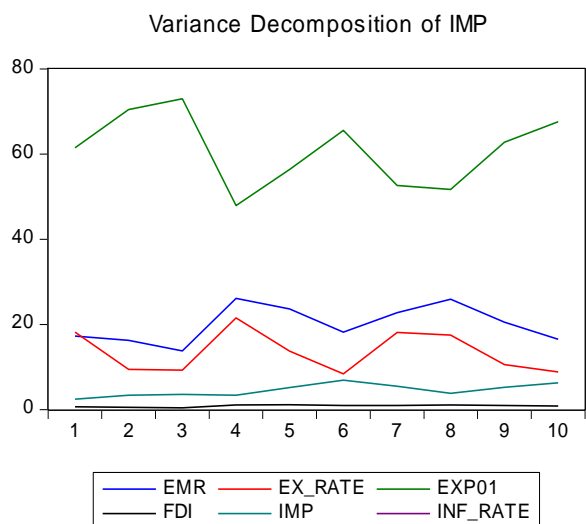
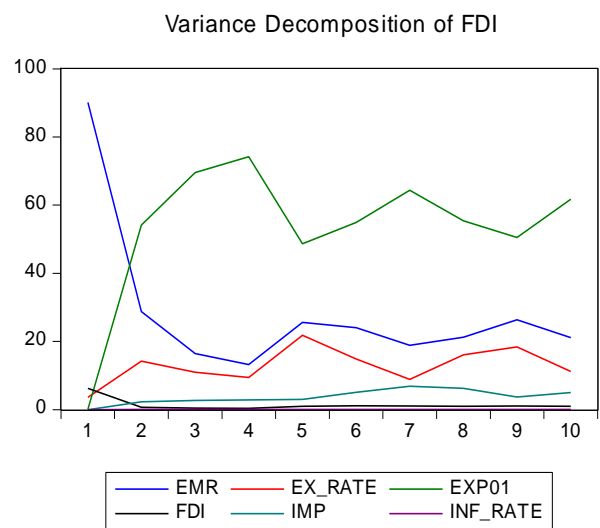
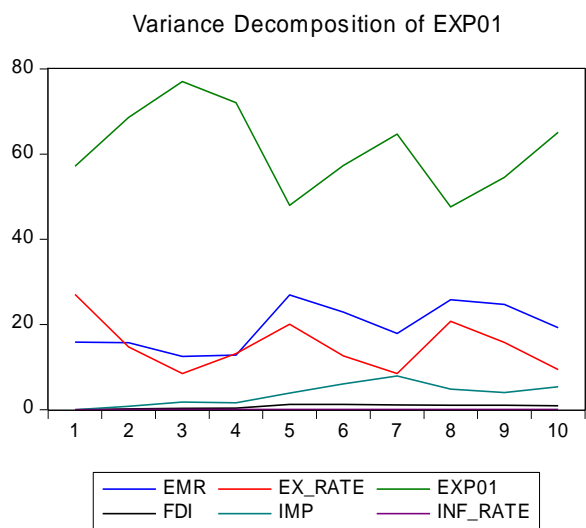
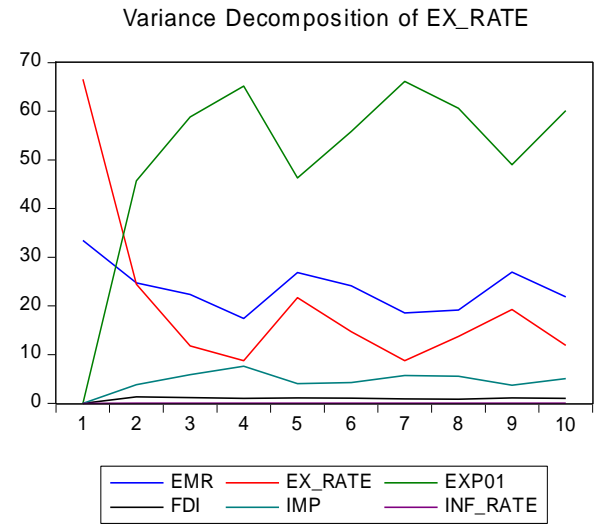
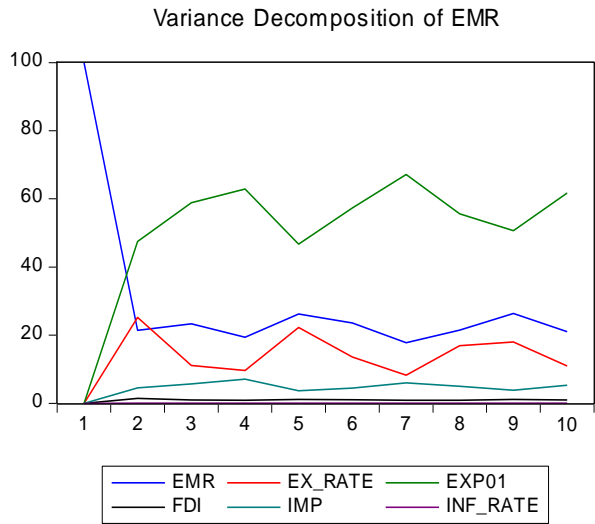


### 5.2 .Impulse Response

Response to Cholesky One S.D. Innovations  $\pm 2$  S.E.



### 5.3. Variance Decomposition



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