

Does FDI Generate Employment? An Empirical Study of Indian Service Sector[#]

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Abstract

Foreign Direct Investment (FDI) considered as a component of investment is needed by India to accomplish the ambition behind economic reforms and speed up the growth of the economy. The inflow of FDI in India initially was low due to regulatory policy framework but there is a sharp rise in investment flows from 2005 onwards as the new policy has broadened. The purpose of this paper is to look for evidence regarding the precise relationship between FDI inflows and employment in service sector of India. The used Auto-Regressive Distributed Lag (ARDL) model explains long run and short run relationship between FDI inflows and employment in service sector. The empirical results confirm that though negative relationship exists between FDI and employment in service sector but it is not statistically significant. According to the findings, FDI introduces skilled skewed technical changes to the host country, increasing demand for highly skilled employees. Because India's labour force is relatively unskilled, FDI in the service sector fails to provide jobs for the country's rising labour force. The ARDL results also confirm the existence of the long run co-integration between FDI and employment in service sector. The finding shows that the stock of the FDI is a significant factor for Indian service sector.

Keywords: Auto-Regressive Distributed Lag (ARDL) Model, Employment, Foreign Direct Investment (FDI), Service Sector

1. Introduction

The issue of employment has taken centre stage around the world. However, the situation is more complicated in India, where job growth has lagged behind the country's growing labour force. According to labour bureau figures, India has the world's highest unemployment rate. India's unemployment rate has risen from 3.8 percent in 2011-12 to 5% in 2015-16 (Economic Survey, 2015-2016). The situation is deteriorating day by day, as the number of job seekers in the labour market rises. Foreign Direct Investment (FDI) has emerged as a cure for economic growth and job creation, particularly in developing nations like India, according to macroeconomic patterns during the

previous 20 years. In theory, FDI is thought to have a favourable impact on job creation in the host country. It creates jobs not only in the industry through which it flows, but also in ancillary and connected industries. India eased the regulatory burden on FDI inflows in 1991. The goal of attracting substantial amounts of FDI is to provide new job possibilities while also boosting the economy's overall growth and development. The potential relationship between FDI and employment, on the other hand, is a hot topic in countries all over the world, including India.

The number of unemployed in India was anticipated to climb from 17.7 million in 2016 to 18.9 million by 2019, according to the ILO World Employment and Social

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Outlook (2018) Report. The country's largest problem right now is enormous unemployment among educated millennial. However, due to a labour shortage, many of these aspirants are unable to find appropriate work and instead go for higher education as alternative. Not only engineers, but students from other fields such as science, arts, and the humanities are enrolling in PhD programmes for the same purpose. The regular stipend is an incentive for many unemployed people to enrol in a PhD programme. According to the Indian Labour Report (2015), 1.6 million people in India pursue higher education due to a shortage of work opportunities. The key reason for India's unemployment growth, according to the Economic Survey (2015-2016), is the country's premature deindustrialization. Manufacturing drove the growth process in most developing nations in the early phases of development, while the service sector took the lead in the later stages. India, on the other hand, does not follow this well-defined economic pattern, which moves from agriculture to manufacturing and ultimately to the service sector. It migrated immediately from agriculture to the service sector, causing the manufacturing sector to lag behind following a leap frog growth pattern.

A number of studies have been undertaken to look into the impact of FDI on job creation in host countries. Studies by Fu and Balasubramanyam (2005); Mickiewicz *et al.* (2000); Wang and Zhang (2005); Craigwell (2006); Jayaraman and Singh (2007); Nunnenkamp *et al.* (2007) found a positive relationship between FDI and employment. Jenkins (2006); Rizvi and Nishat (2009); Mehra (2013); Nizamuddin (2013); Brincikova and Darmono (2014); Onimisi (2014) have found no or a negative relationship. The outcomes are conflicting. The service sector in India attracts the most FDI, but it provides very little to employment creation. The current study examines the relationship between FDI and job creation in India's service sector.

Joshi (2004) looked at the sectoral makeup of GDP and employment from 1950 to 2000. The author discovered that the Indian economy has changed dramatically over time. Agriculture was the main sector in the 1950s, accounting for a large part of GDP. With the 1990s reforms, the service sector has surpassed all other

sectors, emerging as the dominating sector in terms of growth rates and GDP share. The study concludes that, in the medium term, the tertiary sector plays a critical role in job creation and poverty reduction, but in the long run overall economic growth necessitates simultaneous development of all the three sectors. As a policy suggestion Joshi says that the government could take some direct actions in both the urban and rural sectors to address the problem of poverty and unemployment among low-skill people. Banga (2005) explored the challenges with India's service sector growth. He looked at the performance of India's service industry both at aggregated and disaggregated level using the data on employment, growth rates, proportion of GDP, FDI, and trade. The study found that the growth performance of India is entirely different from other countries. In most of the developing countries where growth has taken place, decline in agriculture output has been followed by rise in industry and consequent shift towards service sector takes place in the last stage of growth. But India has followed a leap frog growth. Wu (2007) makes a comparison between service sector growth in India and China. Study reveals that over the years, share of service sector in GDP has increased in both the countries but the role of service sector is different in each country. In India, service sector makes highest contribution to GDP but this growth has not generated sufficient linkages with rest of the economy. Growth in Indian service sector is mainly boosted by IT service exports which provide employment only to the educated and urban youth of the country. On the other hand, in China growth in service sector has led to the shift of labour from agriculture to services. Presently, service sector is the main provider of new jobs in China while in India employment absorption capacity of this sector is low. Therefore, the study suggests that India needs growth in both manufacturing and service sector to generate employment for the growing labour force of the country.

Reena (2011) has studied the performance of service sector in India. The study establishes the positive correlation between GDP and employment. According to her, India's service industry has grown rapidly since the 1990s, but this expansion has not been matched by a comparable increase in the share of employment in

services sector. Some industries, such as communication and business services, have experienced tremendous expansion in the recent decade, while others, such as construction, transportation, and professional services have experienced negative growth. The sectors with the fastest growth rates are those with the least potential for creating jobs. The potential for increasing employment in fast-growing industries is reduced as productivity rises, but the sectors with a slow or negative growth rate have a significant potential for creating jobs. The JOBLESS growth of the Indian economy is due to non-uniform expansion across diverse service sub-sectors. Sen (2011) looked into the FDI growth dynamics in India. The article investigates the impact of FDI on the expansion of the service sector as well as whether or not this growth has an impact on overall GDP. The author used determining variables to find the influence of FDI on the growth of the Indian economy. The model's findings suggest that FDI has had a positive impact on service sector output, and that this, in turn, has had a considerable impact on India's GDP. The research also looked at the significance of sub-sectors, finding that trade, hotels and restaurants, transportation, storage, and communication all play a vital part in the expansion of India's service industries. The study also addresses the argument about service-led growth's long-term viability. Because the rise of the service sector in India is mostly led by hi-tech services and outsourcing to foreign countries, the author pointed out that a key disadvantage of service-led growth is that it increases reliance on FDI. Another criticism of service-led growth is that, because the expansion of the industrial and agricultural sectors is slower than that of the service sector, the service sector will be unable to generate its own demand and sustain long-term growth. Finally, the study indicates that FDI can be employed as an economic growth propagator due to its good impact on the growth of the Indian service sector.

The above literature reviews reflect the impact of FDI on economic growth, employment and the determining factors of FDI. Very few studies have been done on employment generation in service sector. The present study is an attempt to fill this gap as most of the FDI inflow in India has turned up in the service sector.

2. Methodology

Economic theory has identified various factors that influence the employment in the country. To evaluate empirical impacts of FDI on employment in service sector, we specify the following formulation:

$$EMP_t = \beta_0 + \beta_1 GCF_t + \beta_2 \ln SFDI_t + \beta_3 PE_t + \beta_4 GDPG_t + e_t$$

Where,

β_0 = Intercept

EMP = Employment in service sector (in percent)

GCF = Gross capital formation (% of GDP)

SFDI = FDI inflow in service sector

PE = Public Expenditure (% of GDP)

GDPG = Gross domestic product growth (annual %)

e_t = Error term

The sum of Gross Domestic Capital Formation (GDGF) and stock change in an economy is known as gross capital formation. Physical assets like buildings, roads, modes of transportation, machinery, and other durable items are included in the GDGF. The GCF is calculated as a percentage of annual investment as a percentage of total GDP. This variable has been chosen to indicate an economy's degree of domestic investment. A higher GCF indicates a higher level of investment in a country, which leads to increased employment growth. Public expenditure refers to the money spent by government agencies such as the federal government, state governments, and municipal governments on different social and economic services to meet society's common needs. It is believed to have a favourable impact on a country's output and employment levels. FDI is thought to have a favourable impact on job creation in the sector into which it flows. Because the service sector in India receives the biggest amount of FDI, it is predicted to have a beneficial impact on employment growth.

The purpose of this study is to determine the influence of FDI in the service sector on job growth in that sector, this being the most relevant explanatory variable of all. Employment growth is seen to have a

direct positive association with GDP growth. Okun's (1962) law asserts that output and employment are inextricably linked providing a better explanation for this relationship. The rationale behind Okun's law is simple - output is proportional to the amount of labour required in the manufacturing process, hence as output rises, so does labour demand. The study also uses GDP growth (annual percentage) as an explanatory variable.

The study applies Auto-Regressive Distributed Lag (ARDL) bound testing approach, developed by Pesaran *et al.* (2001). ARDL has several advantages over other methods of co integration. First, it can be applied in cases where underlying variables are integrated of order zero or one or both meaning thereby the model can be used whether variables are stationary at level or at first difference or a combination of both. Second, in case of small samples the ARDL method utilizes Johansen and Juselius cointegration technique as a key strategy to determining cointegration relationship (Pesaran & Shin, 1999). Third, when part of the model's regressors are endogenous, this method produces efficient long-run estimates and valid t-statistics (Narayan, 2005). Fourth, the ARDL technique uses a suitable number of delays to capture the data generation process as it progresses from general to particular modelling frameworks (Laurenceson & Chai, 2003). Fifth, the Error Correction Model (ECM) can be developed from the ARDL model using a simple linear transformation that combines short-run corrections with long-run equilibrium while preserving long-run transformation (Pesaran & Shin, 1999). To estimate the long-run connection, the ARDL technique uses two procedures. The first step is to see if the variables in the equation under estimation have any long-term relationships. The second stage is to estimate the long-run and short-run models if there is evidence of cointegration. The Wald or F-statistic in a generalised Dickey-Fuller type regression, which is used to examine the significance of lagged values of the variables under consideration in a conditional unconstrained equilibrium correction model, is the statistic underlying the technique (Pesaran *et al.*, 2001). The F-test has a non-standard distribution that is influenced by four factors: the order of variables in the ARDL model, the number of explanatory

variables, whether the ARDL model includes intercepts or temporal trends or both, and the sample size.

In cases of I(0), I(1), or both, the ARDL model can be used. The F-statistics produced by Pesaran become invalid in the presence of I(2) variables (Ouattara, 2004), because the bound test is based on the assumptions that the variables should be integrated of order zero, one or a combination of both. As a result, a unit root test must be implemented in the ARDL procedure to ensure that no variables of order two or higher should be integrated. The order of integration of the variables is checked in this work using an enhanced Dickey-Fuller test (null is non-stationary).

3. Cointegration Analysis

The ARDL model involves the estimation of eq. 1:

$$\begin{aligned} \Delta EMP_t = & \alpha_0 + \sum_{i=0}^p \alpha_{1i} \Delta EMP_{t-i} + \sum_{i=0}^p \alpha_{2i} \Delta GCF_{t-i} + \sum_{i=0}^p \alpha_{3i} \Delta \ln SFDI_{t-i} \\ & + \sum_{i=0}^p \alpha_{4i} \Delta PE_{t-i} + \sum_{i=0}^p \alpha_{5i} \Delta GDPG_{t-i} + \theta_1 EMP_{t-1} + \theta_2 GCF_{t-1} \\ & + \theta_3 \ln SFDI_{t-1} + \theta_4 PE_{t-1} + \theta_5 GDPG_{t-1} \\ & + \mu_t \quad \dots \dots \dots \quad (1) \end{aligned}$$

Where Δ denotes the first difference operator, alpha is the drift component; μ is the usual white-noise residual and the expression with summation signs represents the short-run dynamics of the model while the coefficients represents the long-run relationship. The ARDL method estimates $(p + 1)^k$ number of regressors in order to obtain the optimal lag length of each variable, where p is the maximum number of lags to be used and k is the number of variables in the equation. This is an appropriate lag selection based on criteria such as Akaike Information Criteria (AIC) and Schwarz Information Criteria (SIC). Before the selected model is estimated, it is important to choose lag selection criteria. Pesaran *et al.* (1999) demonstrate that for the ARDL model the SIC method is superior over the AIC method and recommend to choose a maximum of two lags in case of annual data. Hence, the ARDL model in this paper used SIC and the result of lag selection criteria indicates that the optimal lag order is one. The

lag order of one is also appropriate in case of small sample size in annual data (with 20 data points in this case) to avoid loss of degrees of freedom. The bound testing procedure is based on the joint F-statistics or Wald statistics that tests the null hypothesis of no co integration. Pesaran *et al.* (2001) and Narayan (2005) individually report two set of critical values for a given significance level. One set of critical values assumes that all variables included in this model are I(0) and the other set of critical values assumes that all the underlying variables are I(1). If the computed test statistic exceeds the upper critical bound value, then the null hypothesis of no cointegration is rejected. If it falls between the bounds then the test becomes inconclusive in which case error correction term will be a useful way to establish co integration (Kremers *et al.*, 1992; Banerjee *et al.*, 1998). The null hypothesis of no co integration cannot be rejected if the F-statistic is less than the lower limits value. Narayan (2005) reports two sets of critical values for sample sizes ranging from 30 to 80 observations. We derive relevant critical values from Narayan (2005) given the short sample size (20 observations) in this investigation.

After determining that the variables have a long-run relationship, the next step is to calculate the error-correction model as in eq. 2:

$$EMP_t = \alpha_0 + \sum_{i=0}^p \alpha_{1i} \Delta EMP_{t-i} + \sum_{i=0}^p \alpha_{2i} \Delta GCF_{t-i} + \sum_{i=0}^p \alpha_{3i} \Delta \ln SFDI_{t-i} + \sum_{i=0}^p \alpha_{4i} \Delta PE_{t-i} + \sum_{i=0}^p \alpha_{5i} \Delta GDPG_{t-i} + \eta ECT_{-1} + \mu_t \dots \dots \dots (2)$$

Where ECTt-1 is the residuals produced from the estimated co integration model of Eq., and measures the speed of adjustment per year to achieve equilibrium (1). Diagnostic and stability tests are carried out to ensure that the model’s specification is adequate. Serial correlation, functional form, normalcy, and heteroscedasticity are all examined in diagnostic tests. The Lagrange Multiplier (LM) test of residual serial correlation is used to assess serial correlation (the null is no serial correlation). If the fitted values are square, the Ramsey’s Reset test is used to check the functional form (the null is no error of specification and is conducted for one fitted term using LR). The normality test is based on the Jarque-Bera statistics for skewness

and kurtosis of residuals (the null is non-normal). The Breusch-Pagan-Godfrey test is used to determine whether or not there is heteroscedasticity (the null is homoscedastic). Brown *et al.* (1975) devised the CUMulative SUM (CUSUM) and CUMulative SUM of Squares (CUSUMSQ) tests to verify the stability of the short-run and long-run coefficients (1975). The statistics CUSUM and CUSUMSQ are iteratively updated and plotted against the break points. The null hypothesis of ‘all the coefficients in the model are stable’ cannot be rejected if the graph of these tests falls inside the critical constraint of 5% level of significance.

4. Empirical Results and Discussion

4.1 Unit Root Test

In this study, unit root tests are used to see if there are any mixes in the order of integration of the underlying variables. The presence of a unit root indicates a non-stationary time series, whereas the absence of a unit root indicates a stable stochastic process. The ADF test was used to investigate the sequence of integration of the time series, as shown in the Table 1.

The values reported in Table 1 indicates that all variables are stationary at first difference and none of the variables are stationary at second difference or beyond that paves the way for employing ARDL bound test approach to cointegration.

4.2 Cointegration Results

The calculated F-statistics along with their critical values are reported in Table 2. The result of the bounds testing approach for a long run relationship produces

Table 1. Unit root test

Variables	Test-statistics	Order of integration	
	Level	1st Difference	
EMP	-2.27	-5.01*	I(1)
GCF	-0.38	-4.25*	I(1)
lnSFDI	-3.00	-5.11*	I(1)
PE	-2.62	-4.12*	I(1)
GDPG	-3.93	-5.96*	I(1)

Note: *Significant at 5 percent.

Table 2. Test for cointegration

Level of significance	Critical values	
	Lower Bound	Upper Bound
10%	2.68	3.53
5%	3.05	3.97
2.5%	3.4	4.36
1%	3.81	4.92
wald test (F-value)	5.304645	

a calculated F-statistic of 5.30. The value is higher than the critical value of upper bound which is 4.92 (at 1% level) implying that the null hypothesis of no cointegration is rejected, Which implies that there is indeed a cointegration relationship among the variables at 1 percent level of significance. Hence long run relationship among the variables is established.

4.3 Short-run and Long-run Coefficients

The coefficient of variable Gross capital formation is (-0.25) which means that one percent increase in GCF causes 0.25 percent decrease in employment in service sector. This is primarily because government is investing in capital intensive industries which have resulted in replacement of labour with machines.

After establishing long run relationship, the coefficients are estimated by choosing maximum of one lag under Schwarz Information Criteria (SIC) whose estimates are reported in Table 3. The empirical results clearly say that all the variables are statistically significant which means these significant variables affect employment in service sector significantly in the long run. The lag values of Employment positively affect the employment in service sector. The coefficient of the variable LNSFDI is (-0.8), implying that a 1% increase in LNSFDI results in a nearly 0.8 percent decrease in service sector employment. As a result, the study joins a growing body of research that has found a negative link between FDI and job creation in host nations like Jenkins (2006); Rizvi and Nishat (2009); Mehra (2013); Nizamuddin (2013). According to the findings, FDI introduces skilled skewed technical changes to the host country, increasing demand for highly skilled employees. Because India's labour force is relatively

unskilled, FDI in the service sector fails to provide jobs for the country's rising labour force. There are also a slew of other factors to consider. Furthermore, there are numerous other factors that contribute to the unfavourable association between FDI and job creation in the service sector. One reason could be that a significant proportion of FDI is flowing in the form of mergers and acquisitions, which does not result in the creation of new jobs. According to Williams (1999), when FDI inflows take the form of mergers and acquisitions, employment losses will occur due to the rationalisation of operations in the expanded enterprises. The second reason could be that services such as telecommunications, financial and nonfinancial services, and others have seen an increase in their average worker productivity as a result of FDI spillover. Computers in banks, for example, have been installed. When labour productivity is higher, fewer employees are needed to generate the same amount of output. As a result, labour demand in the service sector has decreased. The third explanation could be the service industry's high skill needs. Because the bulk of India's population is semi-skilled, FDI in the service sector fails to provide jobs for the vast majority of the population. Individuals need solid qualifications, English fluency, and soft skills to secure a job in the service sector, which limits employment opportunities to few as India's education level is not very high (Mehra, 2013). Furthermore, FDI inflows into the service sector are primarily focused in IT industries, which are not substantial enough to have a significant impact on employment levels in the economy because they primarily employ the country's educated and urban youth (Wu, 2007).

Furthermore, the results of short-run coefficients along with error correction term are reported in Table 4. Case of short-run fluctuations on account of changes in independent variables is not read by ECM. Though minor change takes place due to GCF and GCF (-1) with one time period lag but it is immediately corrected as ECM (-1) value is more than 105%. The error correction term is not only highly significant (at 1%) but value of ECM is also very high that further confirms that there exist stable long run relationships among the variables of interest.

Table 3. Long run estimation results

Regressors	Coefficients
EMP (-1)	0.53* (0.23)
EMP (-2)	1.02* (0.42)
GCF	-.25* (.14)
GDPG	0.15 (0.17)
LNSFDI	-.8 (0.35)
PE	0.72** (0.31)
Constant	-49.43* (28.64)

Note: Values in bracket are standard errors. The asterisks * and ** are 10% and 5% significant levels respectively.

Table 4. Short-run estimation results

Regressors	Δ GCF	Δ GCF(-1)	ECM(-1)
Coefficients	-0.25*** (7.1)	0.34*** (0.08)	-1.05*** (0.15)

Note: ***significance at 1% level. Numbers in parentheses are standard errors.

Table 5. Diagnostic checking

Diagnostic Test	Serial correlation	Heteroscedasticity	Normality
P-Value	0.09	0.41	0.98

After estimating long-run and short-run results, the adequacy of the model specification is done. The results reported in Table 5 demonstrate that the short-run model passed the diagnostic tests. There is no evidence of serial correlation up to 2 lag and that the model passes the test for normality, the error term is also proved to be normally distributed. There is no presence of heteroscedasticity in the model.

4.4 Stability Test

In order to test the stability of all long-run coefficients along with the short-run dynamics, the CUSUM and the CUSUMSQ are applied. The graph represented in Figure 1 and 2 indicates that the plot of both CUSUM and CUSUMSQ lie within boundaries and hence the statistics prove the stability of the long-run coefficients. The model is properly specified and appears to be stable given that none of the two tests statistics go outside the bound of 5% level of significance.

5. Conclusion

The present research paper strives to empirically substantiate the long debate among policy makers and economists at the national and international levels about whether FDI creates jobs in the host countries. Using the ARDL bound testing in time series data since 1996, this paper analyzes the role of the FDI and other variables in generating employment in service sector of Indian economy. The ADF unit root test confirms that the variables under consideration are all integrated of order 1. The variables are co integrated. Growth rate of GDP and public expenditure are positively related to employment level in service sector with coefficient values of 0.15 and 0.72 respectively. The coefficient of variable Gross capital formation is (-0.25) which means that one percent increase in GCF as percentage

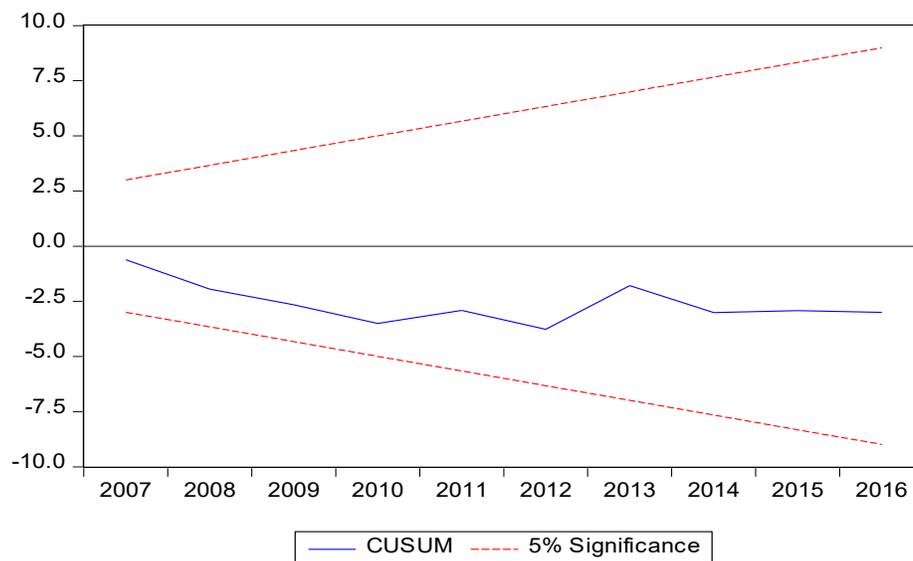


Figure 1. CUSUM.

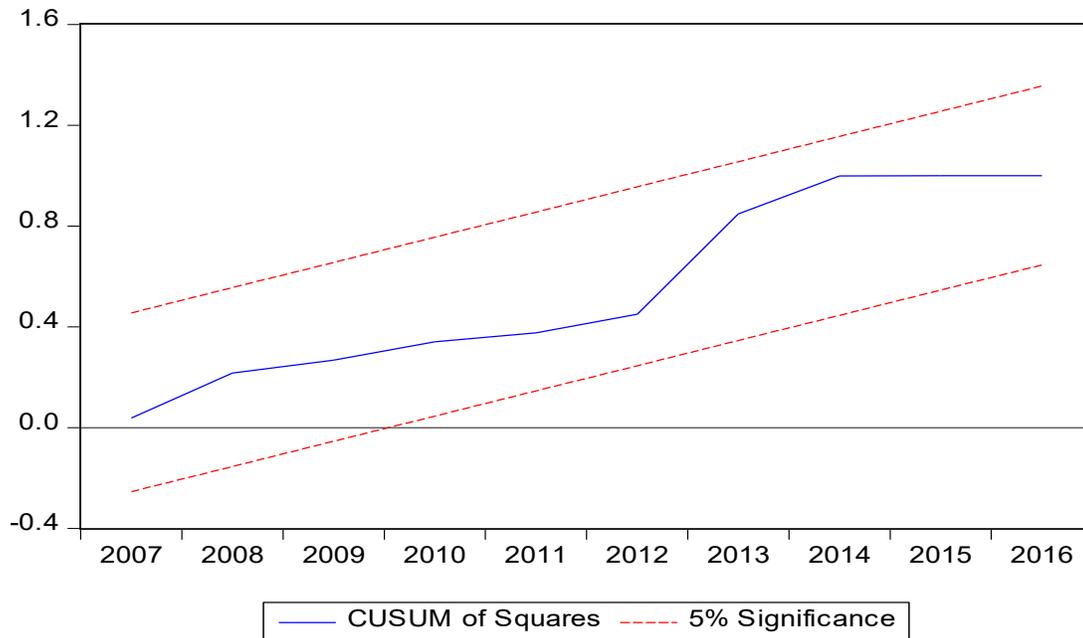


Figure 2. CUSUMSQ.

of GDP causes 0.25 percent decrease in employment in service sector. This is primarily because of investment in capital intensive industries replacing labour with machines. The coefficient of the variable LNSFDI is -0.8; implying that a 1% increase in LNSFDI results in a nearly 0.8 percent decrease in service sector employment. The reason is FDI transfers the advanced technology from developed nations which bring the leftward shift in the isoquant.

The error correction term is not only highly significant but value of ECM is also very high that further confirms that there exist stable long run relationships among the variables of interest. The diagnostic test passes the normality assumption with no auto-correlation and heteroscedasticity. In order to test the stability of all long-run coefficients along with the short-run dynamics, we observe that both CUSUM and the CUSUMSQ plots lie within boundaries and hence the statistic prove the stability of the long-run coefficients.

The positive relation between GDP growth and public expenditure with employment growth in service sector is a good sign but the employment elasticity could be increased further by making expenditure in MSMEs. The policy makers must work on this considering the

present prevailing high rate of unemployment in the country. Further, the benefits of FDI could be reaped in employment generation by designing policies which may lead to maximum linkages effect between service sector and other sectors of the economy.

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