

## **An Impact of Foreign Direct Investment on Employment Generation in Nepalese Economy**

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### **Abstract**

This study aims to analyze the impact of FDI on employment generation in industrial sector of Nepal for the period of 1990-2020. For analyzing the impact of FDI, the econometric analysis likes OLS, unit root, co-integration, vector autoregressive model and Granger causality are undertaken. Results of unit root test are not stationary in level but stationary after first differenced. The result of co-integration test indicates that there is no co-integration between foreign direct investment and employment generation. This means a long-run co-integration relation between variable does not exist. The result of Granger causality test shows there is no bidirectional causality between these variables. It is seen that due to the negligible and flexible amount of FDI in Nepal, there is no long-run relationship between FDI and employment generation.

*Keywords:* Unit root, cointegration, VAR model, Granger causality

### **Introduction**

Investment is one of the most important macro-economic variables because the capacity of production of any economy depends not only on labor but also on the capital available to produce goods and services. In recent years, Foreign Direct Investment (FDI) and private domestic savings have become very important drivers of economic growth and employment creation in many developing countries. Foreign Direct Investment is an investment made by Multinational Enterprises (MNEs) or by a non-resident in enterprises of host (recipient) countries over which they have a control and earn private return (Sahoo, 2004). Foreign Direct Investment is generally seen as a composite bundle of capital stock and technology, and can augment the existing stock of knowledge in the host economy through labor training, skill acquisition and diffusion and the introduction of new managerial practices and organizational arrangements (De Mello, 1997). The IMF (1999) refers to FDI as an investment made to acquire lasting interest in enterprises operating outside of the economy of the investor.

In recent years, foreign direct investment has gained renewed importance as a vehicle for transforming resources and technology across national borders. The significance of foreign direct investment flows is well documented in literature for both the developing and developed countries. Over the last decade, foreign direct investment has grown at least twice as rapidly as trade (Meyer, 2003).

Many LDCs face increasingly formidable difficulties- rising inflation, snowballing foreign debt as well as falling growth rate and it is claimed that more resources is needed to resume the impetus of economic growth, to increase employment generation and to eradicate poverty. The government of Nepal has initiated market based economic reform policies from 1990s. The government has gradually liberalized its trade and investment regime by providing generous trade and fiscal incentives to foreign investors through number of tax concessions, credit facilities and tariff reduction. These included opening of the new policy on Foreign Direct Investment and "One Window System" in 1992, Industrial Enterprise Act in 1992, Foreign

Investment and Technology Transfer Act 1992, and Industrial Policy 2010 provisions of international rule of "No Work No Pay" for the overall development of the industrial sector (Jabara & Pradhan, 2005).

Job creation is one of the main challenges for developing countries. It is believed that FDI can generate several benefits to help solving the capital shortage problem. Nepal lacks sufficient amount of investment for the mobilization of available resources. Foreign capital and technology can act as engine of socio-economic growth which accelerate capital formation, helps to alleviate poverty, mobilizes the natural resources available in the country, creates employment opportunities, increases the production of national level, it increase GDP and curtails import which helps to reduce trade deficit. Malaysia's rapid industrialization and employment generation was largely the result of its early openness to the inflows of foreign direct investment (Someshy, 2015).

FDI flows into Nepal increased significantly after the liberalization of 1990s. Due to the wave of globalization, Nepal linked to the world economy through WTO and BIMSTEC. However, the FDI as compared to other developing countries like China, Brazil, Mexico, Thailand, Korea and India, Nepal has a nominal position in attracting FDI; it is going to be prominent force in the macro-economic policy and growth of the Nepalese economy.

As FDI inflows increase in a nation; GDP, market size, industrialization and consumption increase as does unemployment reduction in the long-run. Nevertheless, there is little or no knowledge about the impact of FDI on industrial growth and employment generation, especially in Nepal so this research fulfills the gap on empirical work.

In the line with the objective of the study, this study is based on the impact of foreign direct investment on employment generation with respect to industrial sector of Nepal. Researcher assumes the hypothesis that there is no relationship between foreign direct investment (FDI) and growth of employment generation.

### **Review of Literature**

Although there are many schools of thoughts which have been used to explain this phenomenon, there is still no consensus on any superior or general theory of FDI. FDI theory dates a few back as the early work of Smith (1776) and Ricardo (1817), and was related to international specification of production. In Smith's theory of absolute advantage, he explained that trade between two nations will occur if one country is able to produce and export goods using a given amount of capital and labour, more than its closest competitor (absolute advantage). However, Smith's theory did not explain how trade arose between countries where one country was not in the business production. It is then that the work of Ricardo (1817) emerged to explain FDI using the theory of comparative advantage. Ricardo was more interested in international factor movements as he was of the opinion that labour and capital were mobile domestically but not across borders. This theory is however flawed because it was based on the assumptions of two countries, two products and perfect factor mobility, but still did not justify international capital movements.

Foreign direct investment establishes a lasting interest in or effective management control over an enterprise World Bank (2004). In the publication of The Benchmark definition of FDI, the OECD (2008), defined FDI as the net inflows of investment undertaken to acquire a lasting management interest (10% or more of the voting stock) in a firm conducting business in any other economy but the investor's home country. Lepsey, Feenstra, Hahn and Hatsopoulos (1999) had earlier commented that this "lasting interest" implies the existence of a long-term relationship between the direct investor and the firm, as well as significant degree of influence on the management of the firm.

Mehra (2013) studied impact of foreign direct investment on employment and gross domestic product in India on an annual based frequency from the year 1970 to 2007 a total of 38 data points. A substantial amount of development has been observed in the inflows of FDI in India over the last two decades. FDI improves the economic growth and consequently enhances employment opportunities. FDI provides technological advances (increasing GDP) and widens the scope for the domestic market (increasing employment). The multiple regression method had been used with the help of the SPSS software to empirically analyze the correlation of the data sets of FDI, employment and GDP. The obtained data show that Foreign Direct Investment does have a significant impact on dependent variable Gross Domestic Product, employment in the public sector, employment in the private sector and total employment. Joshi and Ghosal (2009) empirically studied the impact of foreign direct investment inflow on the employment situation in Oman. By employing statistical tool like the correlation analysis, this study gives the degree of association among the variables. The correlation between FDI inflow and Oman's employed in private sector is also positive and high at 93 percent reflecting the current FDI policy is an important tool to promote employment among nationals.

Johnson and Matthew (2014) investigated the impact of foreign direct investment on employment generation in Nigeria: a statistical investigation to establish the relationship between FDI and employment. Using time series econometric analysis it is found out that there are strong bilateral flows between FDI and employment at both lags. The highest causality occurs from employment rate to export which is economically plausible. Higher employment rate induced greater productivity and hence more exportation of goods. Mishra and Agarwal (2017) assessed the study on the impact of FDI on economic growth and employment on BRICS nations. This descriptive and empirical research is completely based on the secondary data taken from World Bank, BRICS report for the 2000 to 2015, 16years using correlation analysis. The impact of FDI in the economic growth is positive and significant; it means that FDI growth can help these countries to push up the faster growth employment generation of these nations.

Despite different publication in the field of FDI there has neither been adequately studied nor evaluated the impact of FDI on employment generation. It means since a significant number of studies are on the overall relationship between FDI and economic growth there is dearth of comprehensive study on impact of FDI on employment generation. Therefore, this research fulfills the gap in empirical work on the extent and impact of FDI on employment generation with respect to industrial sector.

## Methodology

### Model

The income of the host economy is affected by the inward FDI to that economy. However, income of any economy will go up only when the unemployed resources of that economy are employed and it could be achieved by a local content requirement policy of the same countries (Brander and Spencer, 1987). Researcher assumes the hypothesis that there is no relationship between foreign direct investment (FDI) and growth of employment generation. To confirm the hypothesis let us consider linear regression equation,

$$EMP_t = \alpha + \beta FDI_t + \varepsilon_t \quad (1)$$

Where,  $FDI_t$  and  $EMP_t$  represent the foreign direct investment and employment generation at a particular time respectively while  $\varepsilon_t$  represents the error term;  $\alpha$  is the intercept term and  $\beta$  represents the slope and coefficient of regression. The coefficient of regression  $\beta$  indicates how a unit changes in the independent variable (FDI) affects the dependent variable employment in equation. The error  $\varepsilon_t$  is incorporated in the equation to cater other factors that may influence

employment. The validity or strength of Ordinary Least Squares method depends on the accuracy of the assumptions. In this study, the Gauss Markov assumptions are used and they include; that the dependent and independent variables are linearly correlated, the estimators ( $\alpha$  and  $\beta$ ) are unbiased with an expected value of zero i.e  $E(\epsilon_i)=0$ , which implies that on average the errors cancel out each other.

### Data and Tools of Analysis

The study employs Nepal's annual time series data for each of the variables covering the period 1990-2020, 31 years only due to the negligible existence of FDI in the pre-1990 phase of Nepal. The required data are obtained from the Industrial Statistics, Ministry of Industry, Nepal Government.

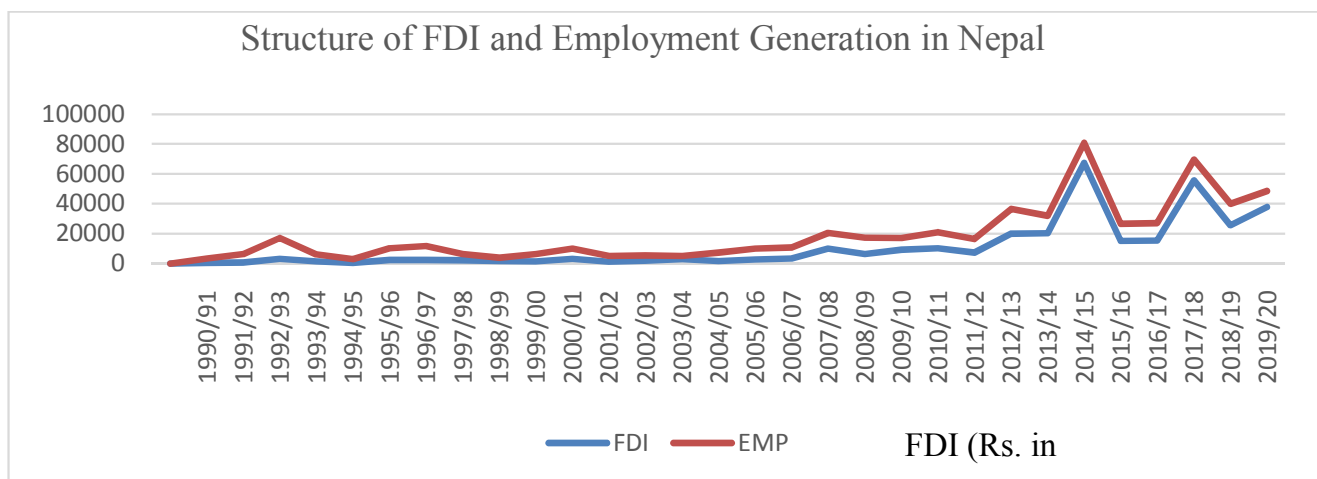
As the study is time series econometrics; unit root test, Johansen test of co-integration, Granger causality test, vector error correction model are applied to test whether these variables are stationary or not, whether they have the long-run relationship between independent and dependent variables or not and whether one variable granger cause another variable or not. The initial step for establishing the presence of a long-run relationship between variables is to determine the optimal lag length. Lag-length misspecification for the model often generates autocorrelated errors (Lutkepohl, 2005). Excessively short-lags may fail to capture the causality, lead to omitted variables, the bias in the remaining coefficients, and likely to produce serially corrected errors. Too many lags lead to loss of a degree of freedom and can cause multicollinearity, serial correlation in error terms, and misspecification error. A stochastic process is said to be stationary if its mean and variance are constant over time and the value of the covariance between two time periods depends only on the distance or gap or lag between the two time periods and not the actual time at which the covariance is computed (Gujarati, 2004).

### Empirical Results and Discussion

FDI in developing countries like Nepal seems to be a new terminology and issue. However, historical records and literature presents its long history stating that FDI isn't a new phenomenon. Structural analysis is an important method for analyzing the trend of FDI and employment generation in depth. An inflow of FDI and employment generation due to FDI from 1990/91 to 2019/20 has been explained in the following figure.

**Figure 1**

*Structure and Trend of Foreign Direct Investment and Employment Generation*



*Source:* Based on the data of Industrial Statistics, DoI, 2013/14 and Industrial Statistics, DoI, 2020/21

Figure 3.1 depicts the trend of foreign investment and employment generation. It is noticed from the figure that there is no constant trend sometimes it goes up and sometimes it goes down but in average both variables are in increasing trend.

### Lag selection

Table 1 shows the optimum lag structure. The results depict that majority of the selection criteria, such as the Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), and Hannan-Quinn Information Criterion (HQ) selected the optimum lag length of 1 at 5 percent level of significance. Since the star in the table indicates lag order, majority of the criteria suggest selecting lag 3 for estimating the Johansen Co-integration Test and Granger Causality Test.

**Table 1**

#### Lag Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-52.28360	NA	0.223126	4.175661	4.272438	4.203529
1	-36.56622	27.80767*	0.090776	3.274324	3.564654*	3.357929
2	-32.07719	7.251511	0.088094	3.236707	3.720590	3.376048
3	-26.83310	7.664436	0.081469*	3.141008*	3.818444	3.336085*
4	-24.05712	3.630128	0.092464	3.235163	4.106153	3.485976

### Unit Root Test

The common method to test the presence of a unit root for all variables is Augmented Dickey-Fuller test (ADF test) using modified Akaike in levels and first differenced are presented in the table 2 below. All the variables are non-stationary in their level forms and stationary in their first difference at the 5 and 1 percent level of significance.

**Table 2**

#### Results of ADF Unit Root Tests

Variables	Level		First Differenced	
	Intercept	Intercept and Trend	Intercept	Intercept and Trend
LnFDI	-2.9762 (0.9622)	-3.5742 (0.0645)	-2.9762 (0.0000)**	-3.5875 (0.0000)**
LnEMP	-2.9810 (0.8849)	-3.5950 (0.660)	-2.9810 (0.0000)**	-3.5950 (0.0003)**

Source: Authors' Estimation Results using E-views10, 2021

Notes:

1. \* and \*\* denotes the statistical significance at the 1% and 5% level respectively.
2. The numbers with in the parentheses for the ADF statistics are the p-value.
3. LnGDP and LnEmp are Foreign Direct Investment and Employment Generation respectively taking at log.

### Johansen Test of Cointegration

Having established that all variables are integrated of the same order; stationary after first differenced, we proceed the Johansen co-integration test which allows us to test for long-run relationship between FDI and employment generation. For this, lag-length criterion is fixed i:e 3 from the lag selection procedure. Here, Johansen co-integration test is used and results are given below.

According to above table 3, the outcome of the co-integration test employed using both trace and max-eigen test statistics indicates the absence of a long-run relationship between the FDI and EMP variables at 5 percent level of significance, thereby leading to the acceptance of the null hypothesis of no co-integration. From the result, it is therefore evident that employment generation and foreign direct investment are not co-integrated. Due to trace statistics is less than critical value and probability value is more than 5 percent, the null hypothesis is accepted meaning that no long-run relationship between LnEMP and LnFDI. The same is happened at the result of Maximum Eigenvalue test. Due to the negligible and flexible amount of FDI in Nepal, there is no long-run relationship between these variables. This result is similar with evidence of the insignificant relationship between FDI on employment generation in Nigeria by Akpan and Eweke (2017) from time series data for the period 1981-2015.

**Table 3***Johansen Test of Cointegration*

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.1946	5.7392	15.494	0.7261
At most 1	0.0042	0.1097	3.8414	0.7404
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.1946	5.6294	14.264	0.6611
At most 1	0.0042	0.1097	3.8414	0.7404

Source: Authors' Estimation Results using E-views10, 2021

Notes:

1. *LnGDP and LnEmp are Foreign Direct Investment and Employment Generation respectively taking at log*
2. *\* denotes rejection of the hypothesis at the 0.05 level*
3. *\*\*MacKinnon-Haug-Michelis (1999) p-values*

**Vector Auto Regressive Model**

After Johansen cointegration test it is known that all the variables are not cointegrated; the unrestricted VAR model is used. For this model variables must be converted into first differenced since variables are non-stationary at level. From the help of lag selection and unit root test the following table gives the Vector Autoregressive Model.

The targeted variable employment generation; independent variable is negatively related to its lagged values i.e (-0.016064) and also negatively related to one lagged of FDI (-0.143361). Accordingly, the above table shows that both values are insignificant since the probability values are more than 5 percent. And again if we assume FDI as an independent variable, FDI is positively affected by one lagged of employment generation and negatively affected by its own one lagged value. These two coefficients are also insignificant from the probability value greater than 5 percent.

**Table 4***Vector Auto Regressive Model*

	D(LnEMP)	D(LnFDI)
D(LnEMP(-1))	-0.016064 (0.23209) [-0.06922]	0.496615 (0.29696) [ 1.67232]
D(LnFDI(-1))	-0.143361 (0.16277) [-0.88074]	-0.606771 (0.20827) [-2.91332]
C	0.045162 (0.10900) [ 0.41432]	0.209681 (0.13947) [ 1.50336]
R-squared	0.046980	0.253521
Adj. R-squared	-0.029262	0.193802
Sum sq. resids	8.038287	13.16035

Source: Authors' Estimation Results using E-views10, 2021

Notes: 2. The numbers with in the parentheses are Standard errors in ( ) & t-statistics in [ ].

3. LnGDP and LnEmp are Foreign Direct Investment and Employment Generation respectively taking at log.

**Granger Causality Test**

The result from the following table indicates that the probability value is more than the conventional level of p-value, so we cannot reject the null hypothesis suggesting that foreign direct investment does not Granger Cause employment generation whereas employment generation also does not Granger Cause foreign direct investment. This means for the data there is no causal effect between variables taken for analysis.

**Table 5***Pairwise Granger Causality Tests*

Null Hypothesis:	Observation	F-Statistic	Prob.
D(LnFDI) does not Granger Cause D(LnEMP)	26	0.53201	0.6658
D(LnEMP) does not Granger Cause D(LnFDI)	26	0.93414	0.4435

Source: Authors' Estimation Results using E-views10, 2021

Notes: LnGDP and LnEmp are Foreign Direct Investment and Employment Generation respectively taking at log.

**Diagnostic Checking**

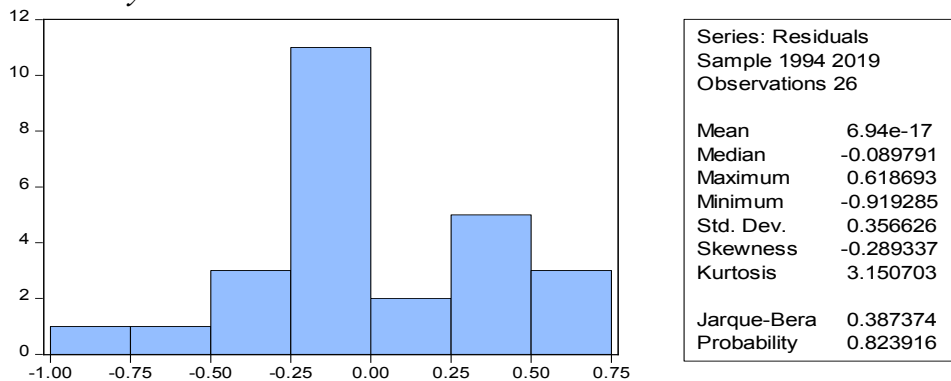
From the table 6 due to the probability value more than 5 percent that is 5.26 percent, we accept the null hypothesis, indicates there is no problem of serial correlation. The VAR residual heteroscedasticity in table 7 that which p-value of 52.95 confirms the absence of heteroscedasticity in the model since its p-values are greater than the critical values at 5 percent level of significance. Again the results of the Jarque-Bera normality test from table 8 with joint probability of 82.93 indicates that residuals are normally distributed. The above mentioned different diagnostic table shows that there is no problem of serial correlation, absence of heteroscedasticity but residuals are normally distributed. This all ensure the reliability of the model and results are presented below.

**Table 6***Serial Correlation*

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.292388	Prob. F(3,15)	0.1197
Obs*R-squared	8.173192	Prob. Chi-Square(3)	0.0526

**Table 7***Heteroscedasticity*

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.793026	Prob. F(8,17)	0.6162
Obs*R-squared	7.065966	Prob. Chi-Square(8)	0.5295
Scaled explained SS	3.641835	Prob. Chi-Square(8)	0.8879

**Table 8***Normality test***Conclusions and Policy Implications**

The present study employs with the relationship between foreign direct investments and employment generation using annual data with FDI for the period 1990/91- 2019/20 .The analysis of data was done using descriptive and analytical method. The analytical method is performed in econometrics analysis using eviews 10 software programme. The findings begin with showing result of ADF unit root test to check the stationary properties of the data. It is clear from the test that all the variables are non-stationary in their level but stationary in their first differenced forms. Johansen cointegration test is applied to investigate the long run relationship between these variables. Results reveal the absence of long-term relationship between these variables. Finally, result of error correction model (ECM) based causality are given to show the causal relationship and direction of causality and found out that there is no causality running form the independent variable foreign direct investment to dependent variables employment generation.

Economic indicators show that Nepal's performance is very low in terms of GNI per capita, commercial viability of natural resources, the extent of poverty and human development prospects. Since, Nepal has not been able to mobilize its existing resources; FDI is a crucial factor to mitigate all these problems. Due to the lack of well-developed capital markets, FDI as a source of physical capital is an important tool for investment and production and spur a nation's industrial development that leads to economic growth and employment generation. But the above derived results shows that there no long run relationship between foreign direct investment and employment generation, I think it is due to the negligible and flexible amount of FDI in Nepal.



The results is spurious due to the low inflow of its FDI volume than the committed. Until when this weak performance cannot be converted into remarkable one the existing scenario of low FDI and its contribution to employment generation cannot be changed. For changing growth scenario, FDI should be attracted within the economy in a greater extent providing suitable atmosphere and security of investment.

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