



Empirical Relationship between Foreign Direct Investment and Economic Growth: Evidence from Nepal

Yatish Acharya¹ 

¹Global College of Management,
New Baneshwor, Kathmandu, Nepal

*Corresponding Email:

ecoyatish4444@gmail.com

Received: August 5, 2023

Revised: September 27, 2023

Accepted: November 20, 2023

Published: December 30, 2023

How to cite this paper:

Acharya, Y. (2023). Empirical Relationship between Foreign Direct Investment and Economic Growth: Evidence from Nepal. *Quest Journal of Management and Social Sciences*, 5(2). <https://doi.org/10.3126/qjms.v5i2.60833>

Copyright © 2020 by authors and Quest Journal of Management and Social Sciences.

This work is licensed under a Creative Commons Attribution-Non Commercial-No Derivatives 4.0 International License.

<https://creativecommons.org/licenses/by-nc-nd/4.0/>



Open Access

Abstract

Background: Foreign direct investment (FDI) is vital for developing countries like Nepal to access foreign capital, drive economic growth through technology transfer, open new investment and research opportunities, and harness their abundant natural resources. With Nepal experiencing a capital shortage, FDI plays a crucial role in bridging the resource gap and stimulating economic activities in the country.

Objective: The study examines the relationship between FDI and economic growth, gross domestic savings (GDS), trade openness, as well as the impact of policy (liberalisation) and security variables in Nepal.

Methods: The study employs data from secondary sources, such as the Nepal Rastra Bank, the Ministry of Finance, and the Central Bureau of Statistics, along with a database on the Nepalese economy from 1996 to 2019. The study utilises the Autoregressive Distributed Lag (ARDL) model for the evaluation and interpretation of the results.

Results: The findings of this study demonstrate a positive and statistically significant relationship between Real Gross Domestic Product (RGDP), Real Gross Domestic Saving (RGDS), and Trade Openness (X_m) with Foreign Direct Investment (FDI) inflow in Nepal in the long run. Likewise, the Liberalization Policy positively affects FDI, although it lacks statistical significance. However, the presence of poor security conditions during the civil war exerts an adverse impact on FDI inflow.

Conclusion: The empirical analysis provides compelling statistical evidence supporting the claim that Trade openness and RGDP positively impact FDI in the long run. It signifies the potential of FDI as a significant resource capable of contributing to economic growth, with trade openness facilitating the inflow of FDI in the economy. Furthermore, Gross Domestic Saving appears to be a significant determinant of FDI, as it fosters capital formation within the economy, ultimately promoting increased FDI inflows. Likewise, the success of FDI attraction in Nepal is contingent upon effective Liberalisation and Privatisation policies alongside a stable political environment, which collectively play pivotal roles in facilitating and sustaining FDI inflows.

Implications: The study suggests that policymakers should focus on the timely reformation of economic policies and should pay close attention to providing security and ensuring an investment-friendly environment. The government should encourage increased savings through the better facilities of financial institutions and promote international trade and infrastructure development.

Keywords: FDI, Gross Domestic Savings, Economic Growth, Trade Openness, ARDL

Paper Type: Research Paper

Introduction

Foreign Direct Investment (hereafter FDI) has been considered the key driving force for economic growth in developing countries in recent years. It helps boost the host country's economic growth by improving workforce training, expanding markets, increasing financial resources, improving technology, forming new job opportunities, and enhancing competitiveness (Reiter & Steensma, 2010). This unparalleled boost in the size of FDI in developing countries has stimulated research on the relationship between FDI and economic growth, as it has intensely changed the shape and structure of the modern and current global economy (UNCTAD, 1999).

The FDI serves as the crucial channel for technology transfer, making a more significant contribution to economic growth than domestic investment. However, enhanced productivity is only observable if the country has efficient human resources and sufficient absorptive capacity (Borensztein & Gregorio, 1998). There are several studies about the effectiveness of FDI for the overall growth of the economy, and most of them have common findings that it is crucial for enhancing human as well as physical capital, technology transfer, and accelerating economic activities in the host countries. De Gregorio (1992), in his analysis of twelve Latin American countries for the period 1950–1985, Blomstrom, Lipsey, and Zejan (1994) for a combination of 78 developing and 23 developed countries, Borensztein, De Gregorio, and Lee (1998) for 69 developing countries over the period 1970–1989, Bhandari, Dhakal, Pradhan and Upadhyaya (2007) studied about East European countries, and Pegkas (2015) studies about the Eurozone countries, have similar conclusions that FDI is an important vehicle for the transfer of technology and positive contributor to economic growth, its impact is greater the higher the level of human capital in the host economy. FDI has a significant positive influence on economic growth, but the influence seems to be confined to higher-income developing countries to a larger extent.

FDI plays a significant role in globalisation by intensifying the interaction between different states and business sectors. Globalisation offers an important opportunity for all developing countries to achieve rapid economic growth by engaging in trade and alluring investment (Shujiro Urata, 1998). Asian economies are experiencing rapid economic growth, and clout can be felt from the fact that out of the top five economies, three economies of the world (in terms of GDP by PPP) are Asian. Asia, except for Japan, South Korea, Hong Kong, and Singapore, is currently undergoing rapid growth and industrialization spearheaded by our neighbors China and India - the two fastest-growing major economies in the world experiencing rapid economic growth since the 1990s. The growth, in part, is attributed to the adoption of liberal trade policies by each country in the 1990s and the consequent surge in the flow of foreign capital to both these countries. From the beginning, China has been able to attract more FDI than India, both in terms of net inflow and as % of GDP. Over the past decade, China has established itself as the top recipient of FDI among developing countries (Agrawal & Khan, 2011).

The studies have already identified that Nepal has competitive advantages in areas such as agriculture, water resources (hydropower generation), and tourism (tourism-related hospitality industries) (Dhakal, 2015). Similarly, demographic structure (more than 52% economically active population), gradually improving business indicators (improvement of living standard with increment in the purchasing capacity through the inflow of remittance, etc.), strategic geographical location (Between two growing economies with huge population China and India) and improving legal infrastructure (NRB, 2008) are also other areas where Nepal can take advantages of. Nepal has huge prospects as it is the virgin land for various business ventures such as innovation, IT-related business, infrastructure development, manufacturing industries, etc. (Poudel, 2012).

Internal resources are quite limited, even not enough to meet the current expenditures, which is 65% of the total budget (Budget, 2023/24), in Nepal. As a result, there is some dependency on foreign aid (grants and loans). In this context, FDI plays a role in sustainable development. This statement fairly makes sense as there is a huge resource gap, with a low level of domestic saving, a low per capita GDP,

and a high MPC. Hence, our domestic resources could not meet the total investment requirement. In this regard, we need to have the investment fund from abroad (Dahal & Aryal, 2003).

With addressing the significance of foreign capital in the economy, Nepal embarked upon a new economic policy regime in the mid-1980s through the sixth five-year plan (1980-1985), but the FDI promotion strategy was adopted only after the restoration of the multiparty democratic system in 1992. Nepal also formulated liberal economic policies and strategies: tariff rate reductions, the introduction of a duty drawback scheme, the adoption of a current account convertibility system, and liberalisation of the exchange rate regime, etc., and so, as a consequence, realised FDI averaged of US\$ 11 million per annum during 1990-2000, peaking at US\$23 million in 1997 (UNCTAD, 2006).

Looking back to the history of industrialisation and the role of FDI in Nepal, it began with the initiative of the Indian capital, management, and labour after 1936 (NCP, 1983). In 1936, the first company act was ratified, and in the same year, the Biratnagar Jute Mill was established in collaboration with Indian entrepreneurs. During World War I, many people in business from India came to undertake new business ventures in Nepal. As a result, during the decade of 1936 to 1946, more than 63 industrial units were established with a total paid-up capital investment of Rs.72 million, of which Rs.70 million (97.22 per cent) was an investment by Indian investors, the remaining investors were from the Nepalese side. (Giri, 1976).

Literature Review

Neoclassical and endogenous growth models thoroughly examine the relationship between FDI and economic growth. Solow (1957) has explained the role of capital and FDI in his widely accepted neoclassical growth model, in which he suggests that FDI increases capital stock and growth in a host economy through enhancing capital formation. Unlike the endogenous growth theory, it assumes that FDI is more effective than domestic investment as it integrates new technologies in the production function (Romer, 1990; 1994). It assumes that FDI-related technological spillovers offset the effects of diminishing returns to capital and keep the economy on a long-term growth path (Kotrajaras, 2010)

There are several studies on FDI from the world perspective and Nepalese context. FDI has positive effects on growth through its interaction with human capital. And it also contributed more to growth than domestic investment (Gregorio & Lee, 1998). The study (Shah & Afridi, 2015) uses the random effects panel estimation technique and found that political stability and regulatory quality, market size (population), and development level (GDP per capita) have statistically significant and direct effects on FDI inflow in the host country. On the contrary, trade openness and human capital do not significantly influence FDI inflow in the SAARC region. FDI and economic growth are cointegrated and are positively related to each other (Asghar & Rehman, 2012). Similarly, Johnson (2006) concluded that economic growth increases the size of the host country's market and strengthens the incentives for market-seeking FDI. Wheeler and Mody (1992) found that political risk is insignificant to the inflow of FDI. Park (2018) confirmed the existence of a long-run relationship between FDI and political stability, which is similar to the findings of (Aharoni, 1966 & Basi 1966), where political stability is considered an important factor for investment.

Sethi & Bhujabal (2023) studied 'Foreign Aid, FDI and Economic Growth in South-East Asia and South Asia' and found that FDI flows positively impact economic growth in the region. However, GDP growth attracts FDI only when the entire South East Asia and South Asian region as a whole is considered, signifying the importance of trade integration to benefit from foreign capital. (Dinh & Nguyen, 2019) examined the impact of FDI on economic growth, both in the short run and the long run, in developing countries of the lower-middle-income group and found that FDI stimulates economic growth in the long run. However, it has a negative impact in the short run for the countries in this study. FDI fosters growth in general but is determined by the status of financial market development in the economy in which the growth effect of foreign direct investment becomes negligible when the ratio of

private sector credit to gross domestic product exceeds 95.6% (Osei, M. J., & Kim, J., 2020)

In the Nepalese study, Gurung (2010) concluded that FDI has a modest impact due to several reasons: political instability, outdated foreign investment law, rigid labour regulation, and poor physical infrastructure. Likewise, Kundan and Gu (2010) studied a time series analysis of foreign direct investment and economic growth. They found that Nepal's FDI does not depend on the Gross Domestic Product growth Rate. This conclusion is similar to those (Yan & Pokhrel, 2011): FDI does not adequately describe the GDP. FDI is not yet a big contributor to economic growth in the context of Nepal, but slowly, it is creating its stand in the Nepalese economic scenario (Phuyal & Sunuwar, 2018). Bista (2015) emphasises that policy reforms to attract FDI are insufficient to increase the inflow of FDI in a country like Nepal. Similarly, Chitrakar (1994) reveals that even after the promulgation of more liberal provisions, handsome facilities, and incentives, it could not bring in a heavy flow of foreign investment. Despite being well-positioned among low-income economies, Nepal has not been able to attract much investment, neither by foreign countries nor the neighbouring country (Pyakurel, 2017). However, Nepal – to some extent – has benefitted in terms of attracting FDI after embarking on a privatisation policy and concluded that in the process of industrialisation, foreign capital helps to introduce an advanced level of technology and new techniques for marketing and promotion (K. C., 1996). FDI is a significant predictor of employment, and the changes in FDI have a significant impact on employment and technological advancement (Kharel, 2019).

FDI increases capital stock and growth in a host economy by enhancing capital formation (Solow, 1957). It is a vital factor in influencing the contemporary process of global economic development and is also a suitable form of external finance in Nepal. Despite being well-positioned among low-income economies, Nepal has not been able to attract much investment, neither from the neighbouring countries nor from overseas (Pyakurel, 2017). Nepal has many potential areas to attract FDI; why has it not been able to encourage foreign investors to invest here and get back profit? What factors determine FDI inflow in Nepal? What must the government do to encourage foreign investors to invest their capital in Nepal? What special provisions and facilities can the government provide to foreign investors to ensure the security of their investment? These queries captivated me and made me dive into this topic. This research work examines the major prospective areas and the role of economic growth on FDI in Nepal during the study period. I believe the output of the study would be useful for policymakers, and academicians and be a basis for further study in the future.

This study uses the net inflow of FDI (the difference between total capital inflow and the total amount of repatriation from the country realised) as the proxy of FDI. At various stages, the basic objective of the study suffered due to the inadequacy of time series data from concerned agencies. There has also been a problem with sufficient homogenous data from different sources. This study is based on secondary data only.

Research Methodology

Research Design

The pace of FDI in Nepal took a rapid shape after FY, 1990. The study is concerned with the empirical relationship between FDI and its determinants, mainly Trade Openness (X_m), Gross Domestic Saving (RGDS), and economic growth explained by the proxy variable Real Gross Domestic Product (RGDP) using the ARDL cointegration approach. The study is descriptive as well as analytical type.

Sources of Data

The secondary data have been collected from different sources: data of FDI from Quarterly Economic Bulletin (NRB), Trade Openness (X_m), Gross Domestic Saving (RGDS), and Real Gross Domestic Product (RGDP) from CBS.

Operational Definitions and Justification of the variables used in the study

Real Gross Domestic Product (RGDP)

The Real GDP is one of the most important variables for measuring the country's economy's performance/economic growth/health. I have used Real GDP calculated as the CPI-adjusted value of nominal one. An increase in RGDP refers to economic growth, which is assumed to be the determinant of FDI in the economy.

Foreign Direct Investment (RFDI)

FDI is defined as the sum of the capital equity, reinvestment of earnings, and other short-term and long-term capital accounts in the balance of payment under the financial account as direct investment in the NRB worksheet. In this study, it is used as the dependent variable; I have taken the real value of FDI by deflating the CPI of the corresponding year.

Trade Openness (Xm)

It is the policy of the economy that either limits or smagnetises trade between countries. Here, in my study, I have used the volume of net export in real terms for different years while deflating the CPI to evaluate the performance of the variable in terms of its growth. Investors from different countries always consider the market area and economic policies regarding the market openness or access with the rest of the world, so it is termed a significant variable that affects the inflow of FDI in the economy.

Gross Domestic Savings (RGDS)

GDS is one of the major components of FDI inflow in the country as it helps to increase gross domestic capital formation and economic growth. Economic growth henceforth attracts FDI in the home country (Dhar & Roy, 1996). It is defined as the difference between gross domestic product (GDP) and consumption by the government and the private sector (total consumption). It consists of savings in the household sector, private business sector, state enterprises, and public sector. Here, I have used GDS in real terms by deflating the CPI of the corresponding year.

DUM1

DUM1 is the policy variable. Liberalisation is the economic policy where the government leaves economic activities (investment, production, and distribution) in the market with the assumption of a fair and free price mechanism and competition. Liberalisation is considered by several researchers as a necessity for the overall development and progress of society and the growth of its productive forces (Baumann, Hermes, & Lensik, 2013), (Shrestha, 2017), (Carrieri, Chaieb, & Errunza, 2013), (Paykuryal & Singh, 2021). Nepal has been following the policy of economic s liberalisation since the mid-1980s, which accelerated at the beginning of the 1990s. Following different literature, including Pyakuryal, Thapa & Roy, 2005 and Bista, 2017, I have considered the most impactful period of the implementation of the Liberalisation Policy from 2002 to 2010 to be taken as 1 and 0 for otherwise for further analysis.

DUM 2

Here, DUM 2 is assumed to be the security variable. The political stability in the host country is the most important determinant of FDI inflow in any country. Nepal witnessed a bloody decade-long Maoist insurgency from 1996 to 2006, in which the whole economy was hard hit or mostly affected. Following the various literature, the severely affected period of insecurity is considered from 2001 to 2006, and thus is taken as 1 and 0 for otherwise.

Model and Methodology

Model Specification

In particular, as we found in the literature section, FDI and trade can easily be endogenous; however, they are also assumed to affect GDP and growth. Thus, for FDI, following the literature, we postulate a relationship as given below:

$$FDI_t = f(RGDP, X_m, GDS, D_1, D_2) \dots \dots \dots (1)$$

The linear equation of the above function is expressed as,

$$FDI_t = \beta_0 + \beta_1 RGDP + \beta_2 X_m + \beta_3 GDS + \beta_4 D_1 + \beta_5 D_2 + \varepsilon_t \dots \dots \dots (2)$$

Where,

ε_t = Error term

β_i = Coefficients of each variables (i = 0, 1, 2,.....5)

Broadly, in this study, taking reference of the previous literature, a model of the empirical relationship between Foreign Direct Investment (FDI), Trade Openness (X_m), Domestic Saving (RGDS), and Gross Domestic Product (RGDP) along with two policy variables has been developed to perform the long-run and short-run analysis. Now, for further analysis, I have used all stated variables in real terms.

ARDL Model Specification

After estimating the variables’ integration level, the next step is to find the short-run and long-run dynamic relationship among the variables of interest. For that, I have applied the bound test approach within the framework of the Autoregressive Distributed Lag (ARDL) model, proposed by Pesaran et al., 2001 to investigate the presence of cointegration among the variables.

To sanalyse the short-run and the long-run relationship between FDI and its determinants in Nepal, I have employed the ARDL approach. Various econometric approaches have been used for short-run and long-run estimations, such as an approach by Engle & Granger, 1987, Johansen & Juselius, 1990, and Johansen, 1996.

The methodology of the bound test is chosen for multiple reasons. (i) ARDL avoids the problem of the level of integration of the same order as connected with Johansen’s likelihood approach (1990). (ii) The conventional cointegration approach followed by Stock and Watson (1988) and Johansen and Juselius (1990) is best for sizeable small size data, while the bound test procedure is best for estimating the small-size study Pesaran et al. (2001). (iii) At the same time, we run the parameters of the short run and the long run of the model. (iv) The variables must be assumed endogenous. (v) This technique provides unbiased estimates of the long run and suitable t-statistics (Harris and Sollis, 2003).

To apply the bound test procedure, the following ARDL will be estimated to find the cointegration relationship between RFDI and RGDS, X_m , and RGDP; we specify the following model:

$$\Delta RFDI_t = C + a_{11}\Delta RFDI_{t-1} + a_{12}\Delta RGDP + a_{13}\Delta RX_m + a_{14}\Delta RGDS + \sum a_{1i}\Delta RFDI_{t-1}P_i + 1 + \sum a_{2i}lnRGDP_t - 1q_i = 1 + \sum a_{3i}lnRX_{mt} - 1r_i = 1 + \mu t \dots \dots \dots \text{eq (3)}$$

The initial step of the ARDL approach is to estimate equation (3) by OLS. The second step is identifying the presence of cointegration among the variables by restricting all the estimated coefficients of the lagged variable equal to zero. The null hypothesis is that no integration exists ($H_0 = \alpha_1 = \alpha_2 = \alpha_3 = 0$), while the alternative hypothesis is cointegration exists ($H_1 = \alpha_1 \neq 0, \alpha_2 \neq 0, \alpha_3 \neq 0$).

According to Pesaran et al. (2001), if the F value lies below the F critical values (the lower bound value, $I(0)$), it is an indication of the acceptance of the null hypothesis. That means there is no cointegration among variables. While the F value exceeds the F critical value (the upper bound value, $I(1)$), we will reject the null hypothesis. After confirmation that there exists cointegration among the variables, in the long run, Eq.2 will be estimated by the Error Correction Model (ECM) as follows:

Error Correction Model (ECM)

The ECM was introduced by Engle and Granger, 1987. It provides causal factors that may influence the variables. The negative sign of ECM and statistical significance confirmed that a long-run relationship can be achieved among the variables included in the model. This method is the easiest to confirm cointegration among the variables (Banerjee et al. 1998)

Now cointegration relationship exists between the variables, the next steps are to estimate the equation (3) via the ARDL technique by choosing the order of the model using Akaike Information Criteria (AIC) to achieve the short-run and long-run dynamics parameters and Error correction from equation (4) is given as below:

$$\Delta RFDI_t = Co + \Sigma a1iki = 1 + \Delta RGDOt - 1 + \Sigma a2iki = 1 \Delta Xmt - 1 + \Sigma a3iki = 1 \Delta RGDS_t - 1 + \Sigma \delta iki = 1 \Delta D1t - 1 + \Sigma \gamma iki = 1 \Delta D2t - 1 + ECMt - 1 + \epsilon t \dots \dots \dots \text{eq (4)}$$

Empirical Results And Interpretation

The study employs time series annual data on FDI, GDS, and real GDP growth rate from Nepal over the period 1995 to 2018 and uses the computer software E-views (10) for applying the econometric analysis on the stated relationship of such variables.

Descriptive Statistics

Descriptive statistics, as given in Table 5.1 below, represent the analysis of all variables, expressed in real terms, using the annual data set from 1995 to 2018 and affirm that the average RFDI is 50.76 with a standard deviation of 52.49. The average of the RGDS is 0.24, with a standard deviation of 0.15. RGDP has an average of 573016 with a standard deviation of 0.17. The average RXm is -1925.38, with a standard deviation of 2048.286.

Table 1.1 Results of Descriptive Statistics

Column 1	RFDI	RGDS	RGDP	RXM	DUM1	DUM_2
Mean	50.76357	0.246322	573016.9	-1925.38	0.36	0.24
Median	34.39859	0.194335	532038.2	-1133.52	0	0
Maximum	155.6555	0.628346	949885.8	279.7456	1	1
Minimum	-10.7759	0.036997	330291	-6559.16	0	0
Std. Dev.	52.49092	0.1535	0.1775	2048.286	0.489898	0.43589
Skewness	0.743137	0.937104	0.497901	-0.81973	0.583333	1.217562
Kurtosis	2.178472	2.976531	2.196387	2.539673	1.340278	2.482456
Jarque-Bera	3.00408	3.659592	1.705642	3.020582	4.28728	6.455913
Probability	0.222675	0.160446	0.426211	0.220846	0.117227	0.039638
Sum	1269.089	6.158039	14325423	-48134.5	9	6
Sum Sq. Dev.	66127.11	0.565491	7.56E+11	1.01E+08	5.76	4.56
Observations	25	25	25	25	25	25

Source: Author’s Estimation (2022)

These measurements of skewness and kurtosis combined to determine whether the variables follow a normal distribution. We can use the Jarque-Bera (JB) test for normality, implying that residuals are normally disturbed. Jarque-Bera (Probability value) is greater than 0.05 as with all the variables. Therefore, it is stated that all the variables included in the model are normally distrusted.

ADF Test for Unit Root

Table 1.2 Results of ADF for Unit root

Variables	t-Statistic		P- value		P (I)
	Level	1st Difference	Level	1st Difference	
RFDI	-3.25	-3.64	0.1546	0.0246**	I(1)
RGDP	2.15	-3.26	1.0000	0.0322**	I(1)
RGDS	-3.29	-4.44	0.0282**	0.0005***	I(0)
RXm	-2.66	-4.43	0.2614	0.0002***	I(1)

Source: Authors calculation extract from estimation output using E-views 10. *** & ** indicates stationary at 1% and 5% level of significance, respectively

Table 1.2 indicates that all the variables are integrated of I(1) except RGDS, which is I(0). Having a mixture of an order of integration lent credence to the usage of the ARDL approach for testing for cointegration.

Estimation results of the ARDL model

As can be seen above, some variables are integrated into order one, along with some others which are I(0). This means we cannot apply ordinary least square techniques to investigate determinants of FDI. The variables must be transformed; otherwise, the regression results would be spurious. However, thanks to the works of Engle and others, transformation is not necessarily the case if the variables are cointegrated. Thus, the natural step that follows is to test for cointegration. There are at least three tools available to test cointegration. These are Engle-Granger, Johansen procedure, and Bounds testing.

The relevant approach with small sample size data such as this is Bounds testing, which depends on the ARDL model. Here, the dependent variable is Real FDI (RFDI), while the independent variables are Real Gross Domestic Saving (RGDS), Real net Export (RXm), Real GDP (RGDP), D1 and D2 (Dummy for liberalisation and privatisation policy). The best model with a lower AIC value is found to be ARDL (1 2 2 2 2). This is automatically selected by Eviews 10.

ARDL Bounds Test Cointegration Test Results

In recent studies, a new econometric approach known as the Bounds test and the ARDL approach was proposed by Pesaran et al. (2001). The null hypothesis of no cointegration in Eq.2 is ($H_0: \beta_1 = \beta_2 = \beta_3 = 0$) against the alternative hypothesis ($H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq 0$). To confirm cointegration, we follow the critical value of the F statistic given by Pesaran et al. (2001), and Narayan (2005). According to them, if the F value lies below the lower bound value, it is an indication of the acceptance of the null hypothesis, which means there is no cointegration. In contrast, when the F value exceeds the upper bound value, we will reject the null hypothesis as of no cointegration.

Table 1.3 The Result of the Bounds Test

F-Bounds Test			Null Hypothesis: No levels of relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n=1000				
F-statistic	20.47***	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Note: ***, ** indicates significance at 1%

Source: Author's Estimation (2022)

The result from the Bounds test with a maximum lag length of 2 (based on the Akaike info criterion) generated from the ARDL model (1 2 2 2 2) indicated that there exists a long-run equilibrium relationship among the variables at a 1% level of significance. Specifically, the cointegration test in Table 5.3 shows that the F value = 20.47 > I (1) critical value = 4.15 and is significant at the 1% level. So, it is statistical evidence to reject the null hypothesis. The Bounds test shows that cointegration exists among the variables. The F-statistic is greater than the critical upper bound values in the model, confirming that a stable long-run relationship exists among the variables.

Result from the Short Run Estimates with Error Correction Model

After confirmation of cointegration, we apply the error correction model to determine the immediate effect of change in independent variables on FD I in the short run. The short-run analysis with an error correction model (ECM) term incorporated is estimated within the ARDL framework. The ECM determines the speed of adjustment to return to equilibrium when there is any deviation. As a priori, the coefficient of the ECM is supposed to be negative and statistically significant for the variables to converge to equilibrium.

Table 1.4 ECM Regression: Estimated short-run results

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP)	-0.001783	0.000233	-7.644563	0.0003
D(RGDP(-1))	-0.004943	0.000353	-13.99128	0.0000
D(RGDS)	679.0739	70.72414	9.601728	0.0001
D(RGDS(-1))	-27.8598	63.09873	-4.340179	0.0049
D(RXM)	0.014451	0.007708	1.874800	0.1099
D(RXM(-1))	-0.105779	0.010945	-9.664243	0.0001
D(DUM1)	67.58380	8.948146	7.552828	0.0003
D(DUM1(-1))	-38.66715	7.576398	-5.103632	0.0022
D(DUM_2)	38.98525	9.322828	4.181698	0.0058
D(DUM_2(-1))	14.17840	8.871992	1.598108	0.1611
CointEq(-1)*	-0.761929	0.045010	-16.92799	0.0000
R-squared	0.960016	Mean dependent var		4.151685
Adjusted R-squared	0.926696	S.D. dependent var		32.39673
S.E. of regression	8.771328	Akaike info criterion		7.486788
Sum squared resid	923.2344	Schwarz criterion		8.029850
Log-likelihood	-75.09806	Hannan-Quinn criteria.		7.623366
Durbin-Watson stat	2.421826			

* P-value incompatible with the t-bounds distribution.

Source: Author's Estimation extracted from estimation output using Eviews 10 (2022)

The numerical outcome of the ECM illustration of the chosen ARDL model was obtained from equation (4) and accounted for in Table 1.4. The coefficient with the D sign explains short-run elasticity. Table 1.4 shows the ECM coefficient is negative but significant, and thus, it confirms the long-run equilibrium relationship among the variables in the cointegration test and also indicates the estimated model is stable. It thus indicates how the variables in the model converge to a long-run equilibrium after a shock in the short run.

The value of the coefficient of the cointegration Equation signifies the degree of adjustment in the long run, and its value of 0.761929 implies the 76.19% speed, which depicts a high speed of adjustment in the long run, is required to adjust from the short run to long run in a year.

The statistical value of the Durbin-Watson is 2.421826, which indicates that no autocorrelation exists between the variables. The value of R2 is 0.960016, which suggests that a 96% per cent change in variation in the dependent variable is due to independent variables. Adjusted R2 is 0.926696. Therefore, we conclude that the variables are jointly significant at a 5% level and with a good fit.

Diagnostic Test

I have conducted additional diagnostic tests, including a heteroskedasticity test, autocorrelation test, distribution of residuals, and functional test. To test the stability of the long-run coefficients and the short-run dynamics, I employed the cumulative sum of recursive residuals (CUSUM) test and the cumulative sum of squares of recursive residuals (CUSUMSQ) test. The diagnostic test is presented in Table 1.5 and Table 1.6, and the CUSUMSQ and normality tests are shown in Figure 1.1 and Figure 1.2.

Table 1.5 Heteroskedasticity Test: Breush- Pagan- Godfrey

Null hypothesis: Homoskedasticity			
F-statistic	1.349261	Prob. F(16,6)	0.3754
Obs* R-squared	17.99786	Prob. Chi-Square (16)	0.3240
Scaled explained SS	1.145137	Prob. Chi-Square (16)	1.0000

Table 1.6 Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.491513	Prob. F(2,14)	0.1983
Obs*R-squared	12.75846	Prob. Chi-Square(2)	0.17

Figure 1.1. Stability Test

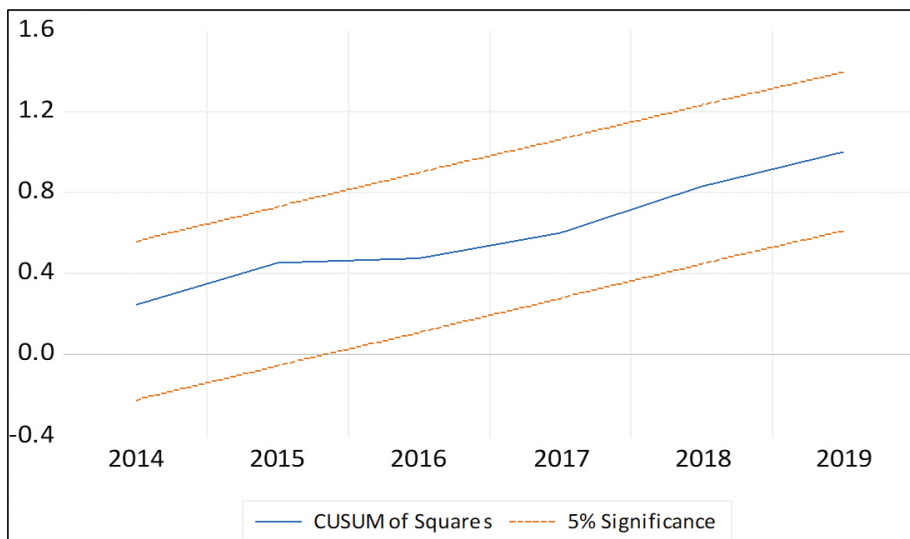
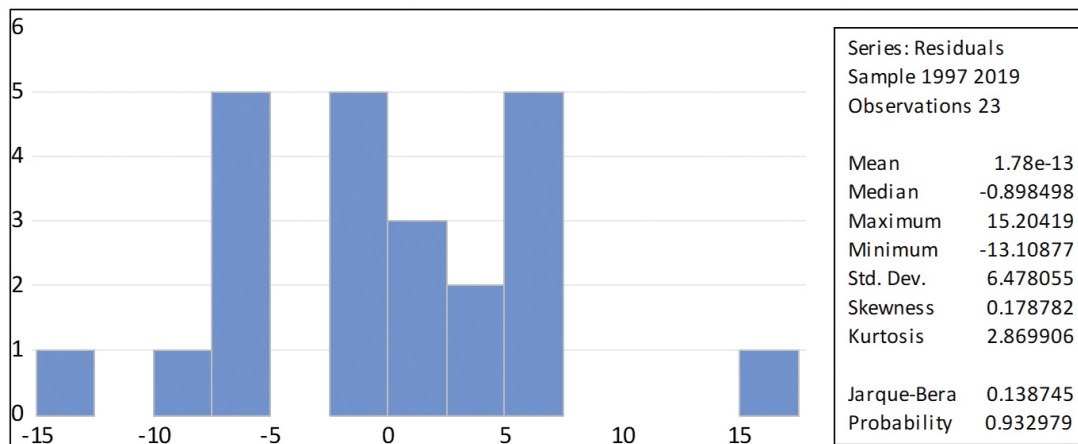


Figure 1.2. Normality Test



From Table 1.6, the test of serial correlation based on the Breusch-Godfrey Serial Correlation LM test among the residuals confirms the absence of serial correlation since the F-Statistic was statistically insignificant. The test of heteroscedasticity in Table 1.7 based on the Breusch-Pagan-Godfrey test 39 also reported statistically insignificant F-statistics, thus indicating the absence of heteroscedasticity among the error terms. Similarly, Figure 1.1 and Figure 1.2 show that the CUSUM and CUSUMSQ lie within the critical bounds and are significant at 5%. Also, the normality test based on the Jacque-Bera test indicates the variables are normally distributed. The CUSUM and the CUSUM squares further indicate that the estimated model was stable.

The result of the four diagnostic tests of serial correlation, Jacque and Bera normality test, autoregressive conditional heteroscedasticity test, and stability tests confirm that the model passed all four diagnostics tests, demonstrating the model’s consistency and efficiency.

Results from the Long Run Estimates

The study tests the long-run impact of the RGDP, Trade openness, and Gross Domestic Savings along with two dummies on FDI during the study period to assess the impact of some macroeconomic variables on FDI in Nepal. The results are presented in Table 5.8.

Table 1.8 Levels Equation; Restricted Constant and No Trend Levels Equation

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDP	0.3074	0.000764	4.021213	0.0069
RGDS	15.8943	331.2568	4.615583	0.0036
RXM	0.113103	0.041810	2.705175	0.0353
DUM1	12.2022	27.98351	4.581349	0.0038
DUM_2	-8.76524	21.01286	-3.986379	0.0072
C	-169.665	409.0777	-4.105980	0.0063

$$EC = RFDI - (0.3074*RGDP + 15.89433*RGDS + 0.1131*RXM + 12.2022 *DUM1 -8.7652*DUM_2 -169.6652) \dots\dots\dots (i)$$

To determine the major influential factors of FDI inflow in the Nepalese economy in the long run, I also employed the error correction model. Accordingly, the coefficient of the RGDP variable is positive and significant at the 5% level. These results implied that FDI inflow in Nepal is affected by RGDP. This is also evidence to conclude that there is an impact of RGDP on FDI. This conclusion is also confirmed by the coefficient of (the RGDP, RGDS, and RXm) variable is positive and significant at a 5% level.

The result shows that RGDP, RGDS, and XM have a positive relationship with FDI inflow in Nepal in the long run, while Dum2 harmed FDI. Specifically, a unit increase in RGDP will cause the FDI to increase by 0.3074 units in Nepal. This positive and significant impact of RGDP on FDI is consistent with the prior expectations and also confirms the findings of (Bista, 2003).

Perhaps this is because the increase in RGDP implies the country's economic growth, which encourages the FDI from all over the world to Nepal. High economic growth signifies that economic activities are running smoothly, which encourages further investment in the economy, so FDI increases in the long run.

Similarly, an increase in Gross Domestic Saving by one unit causes FDI to increase by 15.89 units. This indicates that when Gross Domestic Saving increases, then national investment also increases, but the gap between domestic saving and domestic investment is fulfilled by FDI, and it has a positive impact on FDI in the long run.

Trade openness and ease of foreign trade also have a direct impact on FDI inflow in the economy; this insignificant impact can be attributed to Nepal's over-dependency on imports of consumer goods at the expense of investment goods. The result shows that an increase in net export by one unit causes an increase in the FDI by 0.113 units.

Similarly, the liberalisation policy introduced in Nepal in the early 90s also became helpful to encourage FDI in Nepal. The result shows that policy improvement regarding the liberalisation of trade and transactions has significantly increased the FDI inflow in the economy.

A decade-long civil war in Nepal during the late 90s and early 20s affected the entire economy. During wartime, investors from all over the world felt the threat to invest in the economy as there was a lack of proper security in an industrial area, and so FDI during the period plunged sharply.

Summary, Conclusions and Policy Implications

The main goal of this study is to investigate the determinants of FDI in Nepal. With the data collected from 1996 to 2019, I employed the ARDL approach proposed by (Pesaran et al., 2001) for short-run and long-run counteraction dynamics. I also applied some diagnostic tests, such as CUSUM and CUSUMSQ tests, to show that this model is stable and suitable for policymaking.

The result of the study demonstrates that the level of FDI in the country is largely determined by gross domestic savings, gross domestic product, and trade openness affect the change in output level. The reason is that the change in FDI concerning economic growth is significant in both short and long run. The empirical result of this study affirms the following main findings:

There is statistical evidence to conclude that trade openness positively impacts FDI in the long run. The result indicates a positive relationship between RGDP and FDI despite the small size and fluctuating trend. It signifies FDI is the potential resource that can contribute to GDP and economic growth by enhancing industrial productivity. Gross domestic savings is an important determinant of FDI in Nepal as it significantly determines FDI through capital formation. Liberalisation and privatisation policies formulated by the government have a direct and significant impact on the inflow of FDI in Nepal. On the other, political instability and frequent changes in industrial policies affect FDI adversely and do not have a significant impact.

The insights from this research are important for a deeper understanding of the role of determinants

in the inflow of FDI. In particular, this will be relevant and helpful for policymakers to drive ideas and stimulate researchers to think innovatively and study further in this field, and this, in turn, will be helpful to attract investment from all over the world.

References

- Agarwal, J. P. (1980). Determinants of foreign direct investment: A survey.
- Agarwal, G., & Khan, M. A. (2011). Impact of FDI on GDP: A comparative study of China and India. *International Journal of Business and Management*, 6(10), 71.
- Asghar, N., & Nasreen, S. (2012). Relationship between FDI and Economic Growth in Selected Asian Countries: A Panel Data Analysis. *Review of Economics and Finance*.
- Bhandari, R., Dhakal, D., Pradhan, G., & Upadhyaya, K. (2007). Foreign aid, FDI, and economic growth in East European countries. *Economics Bulletin*, 6(13), 1-9.
- Bista, R. B. (2017). Economic liberalization in Nepal: Determinants, structure, and trends of FDI. *The Winners*, 18(1), 33-41.
- Bista, R. B. (2017). Economic liberalization in Nepal: Determinants, structure, and trends of FDI. *The Winners*, 18(1), 33-41.
- Blomstrom, M., Lipsey, R. E., & Zejan, M. (1992). *What explains developing country growth?* (No. w4132). National bureau of economic research.
- Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics*, 45(1), 115-135
- Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How does a foreign direct investment affect economic growth? *Journal of International Economics*, 45(1), 115-135.
- Busse, M. (2003). Democracy and FDI (No. 220). Hamburg Institute of International Economics (HWWA).
- Carrieri, F., Chaieb, I., & Errunza, V. (2013). Do implicit barriers matter for globalization? *The Review of Financial Studies*, 26(7), 1694-1739.
- Chakraborty, C., & Basu, P. (2002). Foreign direct investment and growth in India: A cointegration approach. *Applied Economics*, 34, 1061-1073.
- Dahal, M. K., & Aryal, S. (2003). Improving Nepal-India economic relations: A study of the impact of foreign direct investment (FDI) and transfer of technology in Nepal. Institute for Integrated Development Studies: Kathmandu.
- Dangal, M. (2002). Prospects of Foreign Direct Investment in Nepal, An Unpublished M.A. Dissertation Central Department of Economics. Multinational Enterprises and the Global Economy. Harlow: Addison-Wesley.
- De Gregorio, J. (1992). Economic growth in Latin America. *Journal of Development Economics*, 39(1), 59-84.
- Dhakal, R. (2015). Overview of tourism development prospects in Nepal.
- Dhar, B., & Roy, S. S. (1996). Foreign direct investment and domestic savings-investment behavior: Developing countries' experience. *Economic and Political Weekly*, 2547-2551.
- Dinh, T. T. H., Vo, D. H., The Vo, A., & Nguyen, T. C. (2019). Foreign direct investment and economic growth in the short run and long run: Empirical evidence from developing countries. *Journal of Risk and Financial Management*, 12(4), 176.
- Engle, R. F., & Granger, C. W. (1987). Cointegration and error correction: representation, estimation, and testing. *Econometrica: Journal of the Econometric Society*, 251-276.
- Frenkel, M. Funke, K., and Stadtmann, G. (2004). A panel analysis of bilateral FDI flows to emerging economies. *Economic System*, 28, 281-300.
- Giri, H.P.(1976). Audhyogikaran Ma NijiKshetra Ko Den. *Udyog Banijya Patrika*, 10(7), 115-134.
- Goyah, A. K., & Madan, T. (2019). Determinants of Foreign Direct Investment in BIMSTEC Economies: A dynamic panel data analysis. *International Journal of Advance and Innovative Research*, 6(2), 66-74.
- Granger, C. W. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica: Journal of the Econometric Society*, 424-438.

- Gurung, K. (2010). The Impact of FDI on Nepal's economic growth.
- Hansen and Rand. (2006). On the Causal Links Between FDI and Growth in Developing Countries. *The World Economy*, 29, 21-42.
- Harris, R., & Sollis, R. (2003). Applied time series modeling and forecasting. Wiley.
- IMF, (2010). The Coordinated Direct Investment Survey Guide. International Monetary Fund
- Industry, M. O. (2019). Industrial Statistics. Kathmandu:: Department of Industry.
- Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52(2), 169-210.
- Johnson, A. (2006). The effects of FDI inflows on host country economic growth. The Royal Institute of Technology. Centre of Excellence for Studies in Science and Innovation.
- Johnson, A. (2006). The Effects of FDI Inflows on Host Country Economic Growth. *Electronic Working Paper Series*, No. 58.
- K. C., F. B. (1996). FDI through Privatization in Developing Countries. *Tribhuvan University Journal*, Vol. XIX No. 2.
- Kapil, G. (2010). The Impact of Foreign Direct Investment on Nepal's Economic Growth. Graduate School of International Studies Ajou University.
- Karimi, M. S., & Yusop, Z. (2009). FDI and Economic Growth in Malaysia. Munich Personal RePEc Archive (MRPA).
- Kharel, K. R. (2019). Foreign Direct Investment in Nepal: A Study on Its Impact on Employment. *Interdisciplinary Journal of Management and Social Sciences*.
- Kharel, K. R. (2020). Foreign Direct Investment in Nepal: A Study on its Impact on Employment. *Interdisciplinary Journal of Management and Social Sciences*, 1(1), 53-65.
- Kundan, M. P., & Gu, Q. (2010). A time series analysis of foreign direct investment and economic growth: A case study of Nepal. *International Journal of Business and Management*, 5(2), 144.
- Lim, E. G. (2001). Determinants of, and the relation between, foreign direct investment and growth a summary of the recent literature.
- Mughal, M. M., & Akram, M. (2011). Does market size affect FDI? The Case of Pakistan. *Interdisciplinary Journal of Contemporary Research in Business*, 2(9), 237-247.
- Nepal, S., & Park, S.-W. (2018). Political Stability and FDI in Nepal. *Journal of International Trade & Commerce*, 14(5), 161-177.
- NRB (2018). A Survey Report on Foreign Direct Investment in Nepal.
- NRB (2019). A Survey Report on Foreign Direct Investment in Nepal. Retrieved from Study_Reports : <https://www.nrb.org.np/contents/uploads/2020/04/>
- NRB (2020). Quarterly Economic Bulletin. Kathmandu: NRB Research Department Nepal.
- Osei, M. J., & Kim, J. (2020). Foreign direct investment and economic growth: Is more financial development better? *Economic Modelling*, 93, 154-161.
- Pant, B., & Sigdel, B. D. (2004). Attracting foreign direct investment: Experiences and challenges. Nepal Rastra Bank, Working Paper, 1.
- Pegkas, P. (2015). The impact of FDI on economic growth in Eurozone countries. *The Journal of Economic Asymmetries*, 12(2), 124-132.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289-326.
- Phuyal, R. K., & Sunuwar, S. (2018). A Sectoral Analysis of Foreign Direct Investment on the Economic Growth of Nepal. *Journal of Business and Social Sciences Research (JBSSR)*, (13)1, 1-14.
- Poudel, Basu. "Promoting foreign investment in Nepal: prospects and challenges." Available at SSRN 2128641 (2012).
- Pyakurel, B. (2017). Foreign Direct Investment in Nepal. *NUTA Journal*, Vol. 5 (1&2).

- Pyakuryal, B., Thapa, Y. B., & Roy, D. (2005). Trade liberalization and food security in Nepal
- Rao, D. T., Sethi, N., Dash, D. P., & Bhujabal, P. (2023). Foreign aid, FDI, and economic growth in Southeast Asia and South Asia. *Global Business Review*, 24(1), 31-47.
- regression. *Biometrika*, 75(2), 335-346.
- Reiter, S. L., & Steensma, H. K. (2010). Human development and foreign direct investment in developing countries: the influence of FDI policy and corruption. *World Development*, 38(12), 1678-1691. Review, 21(2), 473-489.
- Shah, M. H., & Afridi, A. G. (2015). Significance of good governance for FDI inflows in SAARC countries. Shah, MH, & Afridi, AG (2015). Significance of Good Governance for FDI Inflows in SAARC Countries. *Business & Economic Review*, 7(2), 31-52.
- Shrestha, P. K. (2017). Economic Liberalization in Nepal: Evaluating the Changes in Economic Structure, Employment and Productivity. *Journal of Development Innovations*, 1(1), 60 – 83
- Shujiro Urata. (1998). Japanese foreign direct investment in Asia: Its impact on export expansion and technology acquisition of the host economies. Waseda University and Japan Center for Economic Research.
- Stamatiou, P., & Dritsakis, N. (2013, June). A Causal Relationship between Exports, Foreign Direct Investment and Economic Growth for five European countries: A Panel Data Approach. In *the twelfth Annual EEFS Conference, Berlin, Germany*.
- Stock, J. H., & Watson, M. W. (1988). Variable trends in economic time series. *Journal of economic perspectives*, 2(3), 147-174.
- Unctad (1999). Foreign Direct Investment and Development: FDI and the Challenge of Development. New York. United Nations Conference on Trade and Development.
- Unctad (2003). Foreign Direct Investment and Development. United Nations Conference on An Investment Guide to Nepal: Opportunities and Conditions. New York: UNCTAD.
- UNCTAD (United Nations Conference on Trade and Development). (2002). UNCTAD Handbook of Statistics, 2002.
- Unctad. (1996). World Investment Report 1996: Investment, trade and international policy arrangements. *Foreign Trade Review*, 31(3), 85-109.
- Unctad. (2019). World Investment Report 2019: Special economic zones. World Investment Report 2019, Special Economic Zones
- Yan, X., & Pokhrel, K. (2011). Relationship between Foreign Direct Investment and economic growth: Case Study of Nepal. *International Journal of Business and Management* Vol. 6, No. 6.
- Zhang and K.H. (2001). Does Foreign Direct Investment Promote Economic Growth? Evidence from East Asia and Latin America. *Contemporary Economic Policy*, 19, 175-185. <http://dx.doi.org/10.1111/j.1465-7287.2001.tb00059.x>
- Zhang, K. H., & Song, S. (2001). Promoting exports: the role of inward FDI in China. *China Economic Review*, 11(4), 385-396.