Impact of Domestic and Foreign Capital on Economic Growth and Employment: Empirical Analysis of 43 Lower Middle-income Economies

Sudan Kumar OLI

Lumbini Province Planning Commission, Deukhuri Valley, Dang, Nepal
Corresponding Email: sudankumaroli@gmail.com

Abstract

The purpose of this paper is to investigate the impact of domestic and foreign capital inflows on economic growth and employment in lower-middle-income countries (LMICs). To analyze the impact of domestic and foreign capital on economic growth and employment, this study used panel data from 43 LMICs spanning the period 1990 to 2021. The study employed the Panel Ordinary Least Squares (POLS) estimation method for the baseline regression analysis. However, the Breusch-Pagan test suggested that the estimation model is not suitable for GDP per capita growth (GDPPCG) under POLS estimation. Thus, the Generalized Least Squares (GLS) procedure has been employed to examine the impact of domestic and foreign capital on economic growth. After the Hausman specification test, we used a random-effect estimation procedure for the conclusion of the impact analysis under panel data analysis techniques. This study concludes that there is a positive impact of both domestic and foreign capital on economic growth in LMICs. However, only foreign capital inflow has a significantly positive impact on employment. The impact of domestic and foreign capital inflows on economic growth and employment differs significantly. Therefore, this study advises that, for LMICs, domestic capital is more important for growth and employment.

1. INTRODUCTION

Capital accumulation and utilization of capital resources are essential for the sustainable economic growth and living standards of the people in the least developed and developing economies. From classical thought to modern economic theories, the role of capital creation and investment for sustainable income and employment is discussed to boost the living standards of the people. Ranson (1987), Harcourt (1069), Solow (1959), Rosenberg (1960), Chow (1993), Keynes (1936), Johnson (1936), and Hung (1939) explain the role of capital formation and investment in order to demonstrate how capital creation is important for production growth and employment generation.

Similarly, current literatures such as Blundell et al. (2016), Sarkar (2016), Park (2018), Gwande (2019), and Pal (2022) are also equally in agreement with those verdicts of classical and neoclassical thought on capital formation.

Following the massive liberalization policy and implementation of liberalization policy, particularly in the 1990s, there is a high demand for physical and technological development investment in developing countries (Hubbard, 1998; and Jin et al., 2019). Along with the physical infrastructure investment, lower middle-income countries are equally focusing on the need for human capital development, social security and welfare, intangible capital, technology, and knowledge dissemination in order to achieve the economic growth and employment objectives of the nation. Investment in knowledge and technology provides better productivity and chances of getting employment in the labor market (Sakamoto, 2018). The average rate of growth in per capita income and employment is 1.57 percent and 57 percent, respectively. Lower middle-income countries are 55 economies with per capita incomes ranging from 1086 USD to 4255 USD (World Bank, 2023).

It is indisputable that both domestic and foreign capital play a significant role in driving economic growth and employment in lower middle-income countries. The mean value of per capita growth is highest in South Asia (3.55%), followed by East Asia and the Pacific (2.52%), the Middle East and North Africa (1.95%), sub-Saharan Africa (1.12%), Latin America and the Caribbean (1.19%), and the lowest growth in Europe and Central Asia (0.66%), respectively. Similarly, the highest rate of employment is in East Asia and the Pacific (65.46%) and the lowest is in the Middle East and North African region (37%). If we observe the relationship of domestic and external capital with economic growth and employment in different regions, it can be seen a mixed relation between them. For example, South Asia has highest domestic capital formation (27.83%) with highest average per capita growth (3.55%). Similarly, lowest rate of capital formation is in Latin America and Caribbean but growth is not lowest which is better than Europe and Central Asia. On the other hand, external capital (FDI) is highest in East Asia and Pacific (3.75%) and GDP per capita growth second highest (2.52) after the South Asia. However, employment is highest in East Asia and Pacific. This observation also shows that the lowest FDI is in South Asia and the lowest employment is also in South Asia. Thus, we can quickly see the positive association between external capital and employment generation in the lower middle-income economies. It indicates that the South-Asian economy has the highest mean value of per capita growth along with the fourth highest employment rate in lower middle-income economies (See figure 1).

Figure 1: Comparison of South Asian economies
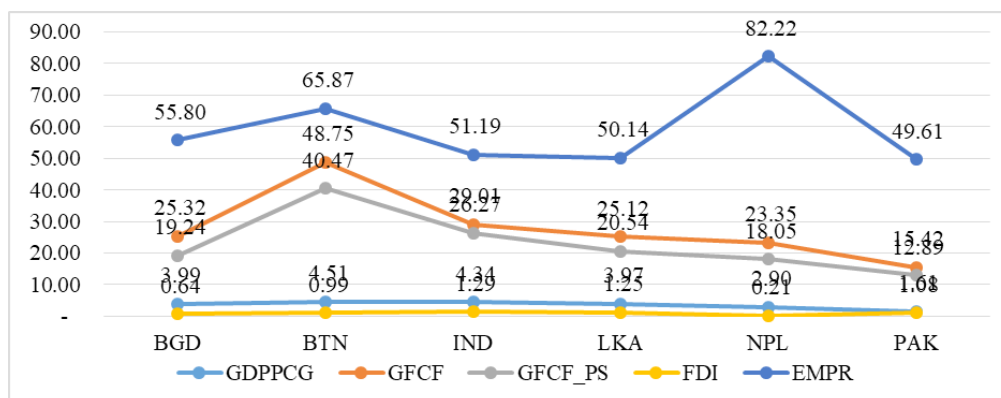
Source: Author's computation

The figure depicts that the highest average growth rate in south Asia is in Bhutan (4.51%), and the lowest is in Pakistan (1.61%). In Bhutan, domestic capital formation is also the highest, but FDI is only 0.99 percent. Except for Bhutan, India has a high rate of growth and both domestic and external capital. The Indian economy is very large, and FDI is the highest in South Asia. Similarly, the lowest rate of FDI is in Nepal, but the level of employment there is the highest (82.22%), but per capita growth is only 2.90 percent. Bangladesh has only received 0.64 percent of FDI and 25.32 percent of domestic capital, along with 3.99 percent growth. This shows that Bangladesh has a comparatively efficient economy due to domestic capital formation and a low inflow of foreign direct investment. Sri Lanka has the second-highest FDI inflow in the South Asian economy and has maintained a good growth rate, but employment is low in comparison to other economies. It is witnessed that there is consistent observation between the effects of domestic and external capital on income growth and employment in different economies and regions.

To meet the demand for capital investment, economies collected resources from domestic and external sources. In domestic capital formation, countries work on financial and non-financial resource creation and physical and non-physical asset accumulation, which are the foundation for any economic activity (Jin et al., 2019; and McGrattan and Waddle, 2020). On the other hand, external sources help to close the domestic resource gap through foreign direct investment, foreign debt, and grants (Lewis, 2019). Foreign investment provides not only financial support; it also helps bridge the gap in technological innovation, knowledge transfer, and global market access (Thangavelu and Findlay, 2018). However, which sources of capital

are more efficient and productive in which economies cannot be universally defined. As a result, it is important to analyze the role of domestic and external sources of capital in lower-middle-income economies. This group of studies is being considered primarily because of the current financial traps caused by the global economic crisis and primarily because these groups of economies are more vulnerable following the COVID-19 pandemic. Therefore, the purpose of this paper is to provide an empirical analysis of the impact of domestic and foreign capital inflows on economic growth and employment in lower middle-income economies.

Further, this paper is organized as follows: Section 2 provides regional observations of capital formation, economic growth, and employment. Section 3 provides a literature review on theoretical and empirical analysis. Section 4 provides data and research design. Section 5 provides empirical analysis, discussion, and the final Section 6 provides conclusions of the study findings.

2. RESEARCH METHODS

2.1 Conceptual Framework

From Adam Smith's (1723-1799) classical theory of economics to modern explanations of economic theories such as those of Solow-Swan (1956), Gill (1976), Chow (1993), Chichilnisky (2012), and Kumar and Li (2016), the role of capital on economic growth and employment generation has been discussed. The institutional theory of capital formation also places emphasis on capital accumulation for social well-being through social institutions (Ranson, 1987). The general model of economic growth, popularly known as Cobb-Douglas production or the special form of the Solow-Swan growth model, explains the role of capital and technological advancement in the production process through physical and non-physical capital equipment (Black, 1962; and Joshi and Thomas, 2013).

There are several studies available regarding capital formation, investment, and economic growth that have provided an empirical and theoretical foundation on how domestic and external capital affect economic growth and the creation of jobs. The study of Bond et al. (2010) provides evidence of a positive relationship between capital investment and economic growth by using pooled data for 75 countries from the period 1960 to 2000. Similarly, the study by Rajan (2004) also argued for the similar findings of Bond et al. (2010). The study by Rajan (2004) used a stochastic frontier model on panel data from 45 countries over the period 1997–2004.

The role of external capital investment on economic growth is also examined by Balasubramanyam et al. (1996), employing cross-sectional data for 46 developing economies from the period 1970–1985. They used the OLS method to estimate the

relationship between FDI inflows and economic growth. The findings of the study provide evidence of a positive relationship between external capital (FDI) and economic growth, and this argument of Balasubramanyam et al. (1996) is also justified by the findings of Olofsodotter (1998), De Mello (1999), and Choe (2003). De Mello (1999) used the panel fixed effects estimation method to examine the role of external capital on technology improvement and growth. The research looked at 32 developed and developing economies. Similarly, Johnson (2006) employed panel data from 90 nations to test the hypothesis that FDI has a positive impact on economic growth through improved technology and physical capital inflow.

Another study by Mohapatra and Gopalswamy (2016) assessed the long-run and short-run relationship between domestic and foreign investment in 32 emerging open market economies from the period 1996 to 2012. They have used fully modified OLS (FMOLS) and dynamic OLS (DOLS) to estimate the long-run and short-run. An argument by Cohen and Roberts (2016) stated that clearly proposed domestic and foreign investment will be beneficial for the domestic industry and employment opportunities in the United States. However, Johnson (1936) argued that domestic saving can stifle job creation by reducing the propensity to consume income. The study of Adam (2020) also concludes that foreign capital investment and domestic productivity have a direct relationship due to enhancements in technology transfer and productivity spillover. Over a 30-year period, the study used panel data from seven developing economies. The SYS-GMM estimation technique is used to figure out the relationship between foreign investment, human capital, and productivity. The study also shows that the intrusive impact of foreign capital and human capital is positive for domestic productivity growth in developing economies.

Figure 2: Conceptual framework
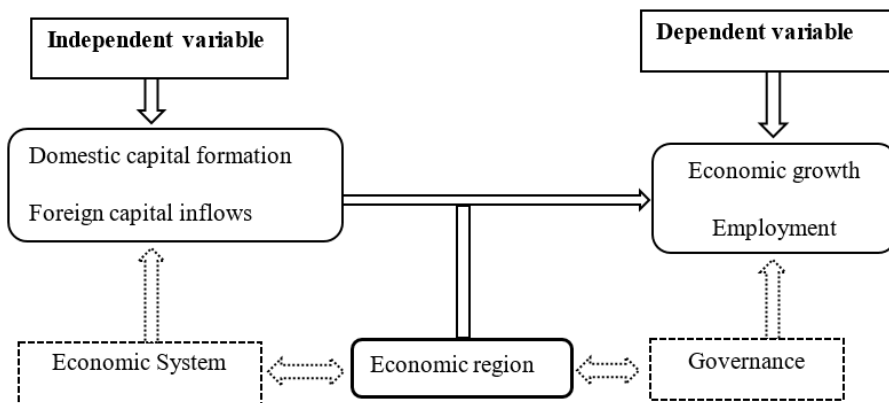
Source: Author's computation

The existing literature is more focused on foreign direct investment and economic growth. The studies related to domestic capital formation and employment generation are very limited. The studies by Zhao (1998), Mohapatra and Gopalswamy (2016), Bachmann et al. (2014), Amuedo-Dorantes et al. (2015), and Patnaik (2018) are some of the studies that deal with investment and employment issues. However, there is no specific literature found regarding domestic capital formation and employment in lower middle-income economies. Therefore, this work also included analysis of the impact of domestic and foreign capital on economic growth and employment together in order to meet the knowledge gap on this issue.

Based on existing literature reviews, this study developed the conceptual framework below to formalize the relationship between domestic and foreign capital and economic growth and employment in lower middle-income countries. There are two dependent variables: economic growth and employment, and two explanatory variables: domestic capital formation and foreign capital inflows in the respective economy. In addition to these target and explanatory variables, the framework also provides the economic region as a control variable, along with the economic system and governance as the environmental setting of the particular lower middle-income economy. Here, the economic system and governance are two key environmental factors that are not under the control of the explanatory variables under the given circumstances.

2.2 Data

This paper has used balanced panel data extracted from the 43 lower middle-income countries across the world from the 1990 to 2021. As per the definition of lower middle-income countries by the World Bank, this study has selected 43 lower milled income countries from all around the world for the assessment of domestic capital formation and foreign direct investment on economic growth and employment. 6 countries from *East Asia and Pacific* – Indonesia, Cambodia, Mongolia, Philippines, Solomon Islands and Vanuatu; 4 from *Europe and Central Asia* i.e., Kyrgyz Republic, Tajikistan, Ukraine and Uzbekistan; 5 from *Latin America and Caribbean* that includes Bolivia, Honduras, Haiti, Nicaragua, and El Salvador; 7 from *Middle East and North Africa* – Algeria, Egypt Arab Republic, Iran Islamic Republic, Lebanon, Morocco, West Bank and Gaza, and Tunisia; 15 from *Sub-Saharan Africa* i.e., Angola, Benin, Cote D'Ivoire, Cameroon, Congo Republic, Comoros, Ghana, Kenya, Lesotho, Mauritania, Nigeria, Senegal, Eswatini, Tanzania and Zimbabwe. Finally, 6 countries are from *South Asia* – Bangladesh, Bhutan, India, Sri Lanka, Nepal and Pakistan. The data were collected from the world bank development indicators World Bank (2023).

Figure 3 illustrates the distribution of dependent and independent variables used in this study. GDPPCG stands for gross domestic product per capita growth in annual percent, and GFCF stands for gross fixed capital formation, a proxy for domestic capital formation in the ratio of GDP. Similarly, FDI stands for foreign direct investment as a proxy for foreign capital inflows. Finally, EMPR stands for the employment rate of a particular economy as a proxy for employment. All these data are extracted from the World Bank development indicator for the period 1990–2021, including lower middle-income countries covering all economic regions.

Figure 3: Distribution of data point for each variable
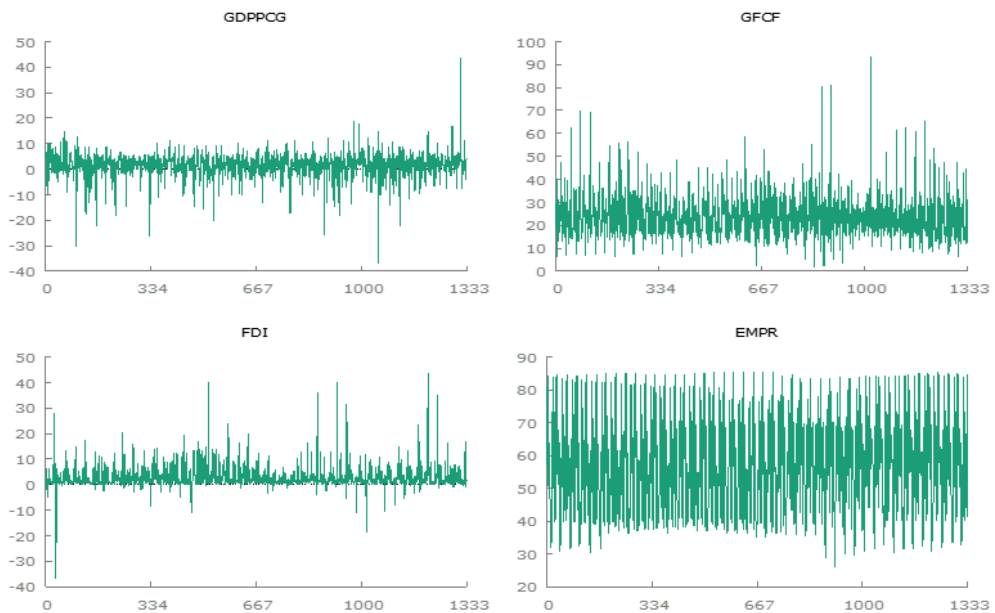
Source: author's computation based on the World Bank database.

2.3 Model specification

The objective of this study is to examine the impact of domestic and foreign capital on economic growth and employment in lower middle-income countries. Therefore, for the baseline regression analysis simple panel ordinary least square (POLS) estimation procedure has been performed.

$$GDPPCG_{it} = \alpha_0 + \beta_1 GFCF_{it} + \beta_2 FDI_{it} + \beta_3 Region_{ir} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots (1)$$

$$EMPR_{it} = \alpha_0 + \beta_1 GFCF_{it} + \beta_2 FDI_{it} + \beta_3 Region_{ir} + \varepsilon_{it} \dots \dots \dots \dots \dots \dots (2)$$

Where GDPPCG is GDP per capita growth as a proxy of economic growth and also one of the dependent variables in the analysis. EMPR is the employment rate of a particular country. EMPR is a proxy for employment and a dependent variable in equation (2). There are two explanatory variables: gross fixed capital formation (GFCF) and foreign direct investment inflows (FDI). Region is a dummy variable representing different economic regions where selected lower middle-income counties lie across the world. The value for the South Asian region is 1, otherwise it is 0. α_0 is intercept and $\beta_1, \beta_2,$ and β_3 are the coefficient parameters of respective variables. Finally, ε is error terms at time t and country i.

After the estimation of baseline regression under panel ordinary least square (POLS), we have performed the Breusch-Pagan test, and the chi-squared probability value is lower than the threshold value. i.e., $x^2 p - value < 0.05$ for equation (1) indicating that the POLS results is not robust to explain the true impact of domestic and foreign capita on economic growth. Therefore, further examination should go through the generalized least squares (GLS) estimation process on the panel data. However, regression equation (2) is best fit to POLS for the assessment of impact on employment, which gives the chi-squared probability value that is greater than the threshold value to fit in the regression model. Therefore, by assuming the Gauss-Markov theorem are satisfied under BLUE assumption (Taboga, 2021; and Cateia, 2019) GLS are specified as below.

$$GDPPCG_{it} = \alpha_0 + \beta_1 GFCF_{it} + \beta_2 FDI_{it} + \beta_3 Region_{ir} + \lambda_i + \mu_i + \epsilon_{it} \dots \dots \dots \dots (3)$$

$$EMPR_{it} = \alpha_0 + \beta_1 GFCF_{it} + \beta_2 FDI_{it} + \beta_3 Region_{ir} + \lambda_t + \mu_i + \epsilon_{it} \dots \dots \dots \dots \dots (4)$$

Equations (3) and (4) provide the GLS estimation equation for economic growth and employment, respectively. λ_t denotes a fixed effect and μ_i and ϵ_{it} denotes unobserved country specific effects and other error terms in the equation. The remaining terms are defined as in the previous specification.

Further, we have also had the regional factor interact with domestic and external

$$GDPPCG_{it} = \alpha_0 + \gamma_1 \prod_{t=1}^{n} GFCF_{it} X Region_{ir} - \gamma_2 \prod_{t=1}^{\tilde{n}} FDI_{it} X Region_{ir} + \lambda_i + \mu_i$$
$$+ \epsilon_{it} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots . (5)$$

$$EMPR_{it} = \alpha_0 + \gamma_1 \prod_{t=1}^{n} GFCF_{it} XRegion_{ir} - \gamma_2 \prod_{t=1}^{n} FDI_{it} XRegion_{ir} + \lambda_i + \mu_i$$
$$+ \epsilon_{it} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (6)$$

To find the net impact of external capital follows on economic growth and employment is obtained through the difference between coefficient (γ_1) and coefficient (γ_2) computed under equation (5) and (6).

3. RESULTS

3.1 Summary Statistics and Correlation

This section provides a presentation of data descriptions, empirical analysis, and discussion of the findings, connecting the research objectives and conceptual framework specified in the previous sections. We used descriptive summary statistics and correlation analysis to observe the data distribution summary of the variables. The descriptive summary statistic table shows the mean value, standard deviation, minimum value, and maximum value of each variable in the list. Table 5.1 shows the average GDPPCG is 1.59 percent and the standard deviation is 4.89 percent, along with a minimum of -37 percent and a maximum of 43.38 percent of growth over the observation period. The range of gross fixed capital formation (GFCF) is from 2 percentage points to 93.55 percent. The mean value of GFCF is 23.37, with a standard deviation of 9.03 percent. Similarly, FDI flows in lower middle-income countries are 2.78 percent of GDP on average, with a standard deviation value of 4.47. FDI contribution ranges from 37.17 percent at the low end to 43.91 percent at the high end of the study period from 1990 to 2021. Similarly, the average employment rate of lower middle-income countries is 57 percent, and the standard deviation of the employment distribution is 14.26 percent. The range of employment status is from a minimum of 26.05 percent to a maximum of 85.43 percent during the study period.

Table 1: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
GDPPCG	1333	1.59	4.89	-37.00	43.38
GFCF	1333	23.37	9.03	2.00	93.55
FDI	1333	2.78	4.47	-37.17	43.91
EMPR	1333	57.00	14.26	26.05	85.43

Source: Author's computation

Along with summary statistics, a correlational table is also presented to illustrates the results of the correlation analysis of dependent and independent variables used in the analysis equations. It is evident that the GDPPCG has a positive correlation coefficient with EMPR, GFCF, FDI, and region (see Table 2). This explains that both domestic capital (GFCF) and foreign capital (FDI) have a positive relationship with economic growth. Similarly, the region with GDPPCG coefficient is positive, indicating that the South Asian economy is more important than that of other economic regions. Likewise, another dependent variable is employment (EMPR). The FDI and region coefficients have a positive correlation with the EMPR. This shows that there is a positive relationship between foreign capital inflows and employment generation. The coefficient of GFCF with EMPR, on the other hand, is negative, indicating that domestic capital formation has a negative relationship with employment generation in lower middle-income economies. The result also explains the positive regional impact on employment, which is similar to economic growth.

Table 2: Correlation analysis matrix

Variable	GDPPCG	EMPR	GFCF	FDI	REGION
GDPPCG	1.000				
EMPR	0.010	1.000			
GFCF	0.130	-0.149	1.000		
FDI	0.094	0.051	0.169	1.000	
Region	0.162	0.061	0.199	-0.168	1.000

Source: Author's computation

3.2 ADF unit root test

Along with the correlation result, the Augmented Dickey-Fuller (ADF) unit root test is also performed. The ADF test is employed to assess whether a time series data set exhibits a unit root, indicating non-stationarity. Identifying unit roots helps determine the presence of a long-term trend, essential for proper time series analysis and forecasting in economics and other fields. The ADF panel unit root test analysis shows that all the variables are stationary at the level under the lag length criteria. This indicates that the null hypothesis (H0) of panel data contains a unit root is rejected. Therefore, it is concluded that the panel data set used for the analysis is stationary.

Table 3: ADF unit root test

Variables	Statistic	P-Value
GDPPCG	-5.393	0.000
EMPR	-3.415	0.001
GFCF	-3.139	0.000
FDI	-5.732	0.000

Source: Author's computation

3.3 Regression analysis

Baseline regression analysis is estimated through panel ordinary least squared (POLS) estimation process and the results are presented in table 4.

Table 4: Baseline regression analysis with Panel Ordinary Least Squared (POLS)

Variables	GDPPCG				EMPR			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
GFCF	0.043 (2.85) ***	0.064 (4.28) ***	0.071 (4.80) ***		-0.300 (-6.76) ***	-0.257 (-5.93) ***	-0.236 (-5.51) ***	
FDI	0.118 (3.89) ***	0.081 (2.69) ***		0.103 (3.44) ***	0.328 (3.69) ***	0.252 (2.87) ***		0.164 (1.88) *
Region	2.315 (5.87) ***				4.751 (4.12) ***			
Constant	-0.069 (-0.19)	-0.129 (-0.35)	-0.062 (-0.17)	1.304 (8.29) ***	62.421 (58.57) ***	62.299 (58.13) ***	62.505 (58.29) ***	56.542 (123.09) ***
No. of observations	1333	1333	1333	1333	1333	1333	1333	1333
Adj. R-squared	0.0449	0.0163	0.0208	0.0081	0.0384	0.0269	0.0215	0.0019

Source: Author's computation

Note: Dependent variables are GDPPCG for panel GDPPCG (1, 2, 3, and 4), and EMPR for panel EMPR (1, 2, 3, and 4). The explanatory variables in both panels are GFCF, FDI, and region. Signs *** and * indicate the level of significance at the 0.01 and 0.10 levels. The value in the parenthesis is the t-value.

The coefficient of GFCF is positive and significant with GDPPCG in all panel of estimations. Which indicates that domestic capital formation has significant positive impact on economic growth in lower middle-income economies. This finding is similar to argument of Jhingan (2006) and Ranson (1987). Similarly, coefficient of FDI is also positive and significant with GDPPCG. This shows that there is positive impact of foreign capital inflows on economic growth, explaining that higher the volume of foreign capital inflows higher would be the economic growth and vice-versa. This finding is also in line with the previously explanation on FDI and economic development (Adam, 2020; and Johnson, 2006). Likewise, coefficient of Region is positive and significant with GDPPCG which indicates that the South Asian economic has more dynamic and volatile in comparison to other economic regions.

On the other hand, the coefficient of GFCF is negative and significant with EMPR, which indicates that there is a negative impact of domestic capital formation on employment generation. This could be a big question: How is it possible that domestic capital formation negatively affects employment? To answer this question, we will provide our concluding remark on it after the robustness of the analysis. However, the coefficient of FDI is positive and significant, with EMPR explaining the positive impact of foreign capital on employment generation in the LMICs. This finding is consistent with the arguments of many other researchers (Li and Liu, 2019; and Rehman, 2014). The regional factor has a positive impact on employment as well, which is explained by the fact that the dynamics of the South Asian economy and other regional economies are significantly different.

In order to see the robustness of the baseline regression analysis, we have performed the Breusch-Pagan test, which shows that the probability value of Chi-squared is less than the threshold, i.e., P-value < 0.05 for GDPPCG. However, the probability value of chi-squared is higher than the threshold, i.e., the P-value > 0.05 for the EMPR. The results of Breusch-Pagan test is presented in table 5.

Table 5: Breusch-Pagan test results

Model	Chi-squared	Prob>chi-squared
GDPPCG	22.17	0.0000
EMPR	2.60	0.1069

Source: Author's computation

The Breusch-Pagan test result shows that the p-value of Chi-squared is less than 0.05, indicating the rejection of the null hypothesis of constant variance. As a result, the robustness of the simple POLS regression result precludes generalization of the

findings. However, the p-value of Chi-squared for the EMPR is greater than 0.05, which indicates that an estimation model is fit for generalization of the findings. As suggested by the Breusch-Pagan test, for further analysis on the impact of domestic and foreign capital on economic growth and employment, we perform the assessment under the generalized least squares (GLS) estimation procedure.

3.4 Generalized Least Squared (GLS)

The generalized least squares (GLS) estimation procedure computes the unknown parameters under the condition that there is a certain degree of correlation between the residuals in regression analysis. Therefore, as suggested by the BP test, the framework of Aitken (1936), and further explanation by Hansen (2007), we have employed GLS to examine the role of domestic and foreign capital on economic growth and employment in LMICs. Thus, the GLS estimation results are presented in table 6.

Table 6: Regression analysis results under GLS estimation procedure

Variable	POLS		Fixed Effect		Random Effect	
	GDPPCG	**EMPR**	**GDPPCG**	**EMPR**	**GDPPCG**	**EMPR**
GFCF	0.043 (2.85) ***	-0.299 (-6.76) ***	0.062 (2.72) ***	-0.002 (-0.16)	0.048 (2.75) ***	-0.002 (-0.21)
FDI	0.118 (3.89) ***	0.328 (3.69) ***	0.144 (4.27) ***	0.017 (1.16)	0.129 (4.09) ***	0.017 (1.18)
Region	2.315 (5.87) ***	4.751 (4.12) ***			2.314 (4.48) ***	
Constant	-0.069 (-0.19)	62.421 (58.57) ***	-0.266 (-0.49)	56.987 (241.97) ***	-0.206 (-0.48)	56.643 (24.23) ***
No. of observations	1333	1333	1333	1333	1333	1333
R-squared	0.047	0.0406	0.0210	0.0065	0.0469	0.0048

Source: Author's computation

Note: Dependent variables are GDPPCG for panel GDPPCG and EMPR for panel EMPR. The explanatory variables in both panels are GFCF, FDI, and region. Signs *** indicate the level of significance at the 0.01 level. The values in parenthesis is z-value for random effect and t-value for fixed and POLS.

The coefficient of GFCF on GDPPCG is positive and significant for all estimation processes: POLS, fixed effect, and random effect. which demonstrates that the higher the domestic capital formation, the better the economic growth or income level growth will be. However, the coefficient of GFCF is negative but only significant under POLS estimation. As we have already discussed, the EMPR estimation model fits the POLS

estimation procedure. Therefore, our conclusion on the impact of domestic and foreign capital on employment will be drawn through the POLS estimate. Though the results are not significant, all these estimation methods provide a consistent negative impact of domestic capital formation on employment in LMICs.

Similarly, in all estimation processes, the coefficient of FDI with GDPPCG is positive. The significant positive impact of GFCF on GDPPCG explains that the higher the level of foreign capital inflows, the better the economic growth. Higher foreign capital inflows mean higher investment in economic activities. Foreign investment increases productivity by promoting technological and knowledge spillovers (Jin et al., 2019; Chow, 1993; and Johnson, 2006). Therefore, foreign capital inflows directly help increase economic growth in LMICs. On the other hand, the coefficient of FDI with EMPR is positive and significant under POLS but not significant through fixed and random effect estimation methods. Further, the analysis of regional impact on economic growth and employment is consistent under all estimation processes, as has already been discussed in the baseline regression analysis.

So far, we have discussed the estimation results on the impact of domestic and foreign capital on economic growth and employment under baseline POLS regression and GLS regression, but for the concluding estimation, we have done Hausman specification to detect the best fit estimation model. Table 7 presents the Hausman specification results, which provide evidence of model fit under panel regression estimation. The hull hypothesis of the Hausman test, H0: Difference in coefficient is not systematic. The probability value of Chi-squared is greater than 0.05 (Prob > Chi-squared is 0.1746), which accepts the null hypothesis. This explanation provides evidence for the preferred estimation is random effect estimation procedure. As a result, further explanation of the impact of domestic and foreign capital on economic growth and employment will be based on random effects.

Table 7: Hausman specification

Variables	Coefficients		Difference	SE	Chi-squared	Prob>Chi-squared
	FE	**RE**				
GFCF	0.0623	0.0477	0.0145	0.015	3.49	**0.1746**
FDI	0.1441	0.1289	0.0152	0.012		

Source: Author's computation

Note: The dependent variable is GDPPCG. FE stands for fixed effects, and RE stands for random effects estimation technique.

The net impact of domestic and foreign capital on economic growth and employment can be determined through the variance in the impact of domestic capital and foreign capital inflows on growth and employment. The estimation of the difference tell us which source of capital formation is more important for LMICs (see table 8).

Table 8: Estimation for impact of domestic and foreign capital on economic growth and employment

Variable	GDPPCG				EMPR			
	(1)	**(2)**	**(3)**	**(4)**	**(1)**	**(2)**	**(3)**	**(4)**
GFCF*Region	0.085 (5.33) ***				0.108 (2.92) ***			
FDI*Region		1.684 (4.99) ***				-1.419 (-1.65) *		
GFCF*Region-FDI*Region			0.844 (5.23) ***	0.082 (4.55) ***			0.117 (3.08) ***	0.271 (6.60) ***
GFCF-FDI			0.001 (0.00)				-0.386 (-8.58) ***	
GFCF				0.031 (1.71) *				-0.386(-8.22) ***
FDI				0.133 (4.19) ***				0.389 (4.39) ***
Constant	1.265 (7.09) ***	1.375 (7.55) ***	1.272 (7.13) ***	0.183 (0.42)	56.579 (136.37) ***	57.178 (141.01) ***	56.558 (136.44) ***	63.911 (59.02) ***
Time effect	Yes	Yes	Yes	Yes	No	No	No	No
Country effect	Yes	Yes	Yes	Yes	No	No	No	No
No of observations	1333	1333	1333	1333	1333	1333	1333	1333
R-squared	0.0318	0.0282	0.0310	0.0472	0.0064	0.0020	0.0021	0.0592

Source: Author's computation

Note: Dependent variables are GDPPCG for panel GDPPCG and EMPR for panel EMPR. The explanatory variables in both panels are GFCF, FDI, and region, as well as the interaction of region. Signs *** and * indicate the level of significance at the 0.01 and 0.10 levels, respectively. The values in parenthesis are the z-value for GDPPCG and the t-value for EMPR.

Table 8 shows the estimation of regional interaction and the real impact of domestic and foreign capital inflows on economic growth and employment. The coefficient of regional interface with GDPPCG is positive and significant. This indicates that the South Asian economy is more influential than other economic regions. After the regional interaction with domestic capital formation, the impact of domestic capital has a positive influence on employment generation as well. The coefficient of GFCF*Region is positive and significant with EMPR, which provides evidence of the comparatively positive impact of domestic capital on employment in South Asian LMICs. This finding is quite contradictory to the previous independent coefficient of domestic capital with employment.

Even when we interact regional factors with FDI, the coefficient of FDI is positive and significant at the 0.01 level of significance with economic growth. However, the coefficient of FDI with EMPR is inverse. This finding explains that the role of FDI on employment in the South Asian economy is negative in comparison to the rest of the economic regions. This conclusion of the analysis supports the economic structure and procedural hurdles, socio-political culture, and governance system of the South Asian economy. Here we see two contradictory roles for economic growth and employment because the increment in economic growth and the generation of employment are two different parameters of economic health. However, economic growth and employment cannot have an absolute direct impact due to labor productivity, the application of technology, and knowledge dissemination in the economic system through capital formation and capital inflows from external sources. As a result, we estimated the source of capital formation, which is more important for both economic growth and job creation.

The coefficient of variance on GFCF and FDI after regional interaction is positive and significant for both economic growth and employment, indicating that the role of domestic capital formation on economic growth and employment in the South Asian economy is more significant than foreign capital inflows. This argument is also supported by the estimation of the coefficient of variance between domestic and foreign capital inflows without interaction in the lower middle-income economies covered in this analysis. As a result, we agreed that domestic capital formation should focus more on the South Asian economy in order to boost economic growth and employment. However, for the whole lower middle-income economy, both domestic and foreign capital are positive and significant for economic growth, but only FDI is positive and significant for employment generation.

Domestic capital formation is detrimental to employment because of the proclivity to save and consume domestic income, which reduces consumption and production and,

as a result, results in stagnant job creation. Furthermore, many developing economies are focusing more on technological advancement and innovation than job creation; thus, even though economic growth is positive, many jobs are at risk of being lost due to artificial intelligence and the application of robotic systems.

4. CONCLUSION

The objective of this paper is to examine the role of domestic capital formation and foreign capital inflows on economic growth and employment in lower middle-income countries (LMICs). To analyze the impact of domestic and foreign capital on economic growth and employment, this study used panel data for 43 lower middle-income economies from the period 1990 to 2021. The study employed the Panel Ordinary Least Squares (POLS) estimation method for the baseline regression analysis. However, the Breusch-Pagan test suggested the estimation model is not fit for the GDPPCG under POLS estimation. Thus, the Generalized Least Squares (GLS) procedure has been employed to examine the impact of domestic and foreign capital on economic growth. After the Hausman specification test, the study used a random effect estimation procedure to further the conclusion of the impact analysis under panel data analysis techniques.

The study shows that the impact of domestic capital formation on economic growth is positive and significant. However, it has a negative impact on employment generation in LMICs. But after the regional interaction, it is positive and significant for employment, which explain that, for the South Asian economy, domestic capital is more important for job creation than other economic regions. Similarly, foreign capital inflows are also providing evidence of a positive impact on both economic growth and employment. However, after accounting for regional interaction, FDI is negatively correlated with employment, indicating that FDI plays a smaller role in job creation in the South Asian economy than in the economies of the other regions. This study also sees the net impact of domestic capital formation through difference analysis, which provides a significant difference on the impact of domestic and foreign capital on both economic growth and employment. However, analysis also shows an insignificant impact on economic growth without regional interface but a significant negative impact on employment.

Overall, this study concludes that there is a positive impact of both domestic and foreign capital on economic growth in lower middle-income countries (LMICs). But only FDI has a significant positive impact on employment in LMICs. However, the impact of domestic capital formation and foreign capital inflows on economic growth and employment differs significantly. Therefore, this study suggests that for the LMICs, domestic capital formation is more important for economic growth. However,

for employment, foreign capital inflows are equally important as domestic capital formation.

Declarations

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