Journal of Contemporary Issues in Business and Government Vol. 27, No. 06, 2021
https://cibg.org.au/

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.06.005

# Education, Poverty, and Unemployment: A Way Forward to Promote Sustainable Economic Growth in Pakistan

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## ABSTRACT

Research at hand used a generalized method of moments (GMM) to examine the relationship between economic growth, education, poverty, and unemployment in Pakistan. The study has looked at four different ways to analyzed and compared them with the growth path of Pakistan for the period under study 1990-2020 by providing the integrated approach. This research concluded that education hasan impact on unemployment and poverty, and all have an impact on economic growth in the long run. It shows that there isa fundamentalassociation betweenthe gross domestic product (GDP) and poverty (POV) and amongEducation enrollment. The findings of the research confirmed the positive effect of Education, Trade on economic growth, and unemployment have a negative influence on determining economic growth. This study is of particular concentration topolicymakers as it helps to formulate comprehensive economic policies to support economic development.

**Keywords: education, Poverty, unemployment, economic growth, GMM**

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.06.005

## 1. Introduction

Unemployment is regarded as a big problem in each country especially in developing countries (Lapavitsas, 2003). Unemployment in Pakistan has been classified in two ways urban and rural unemployment in Pakistan. However, unemployment is more visible in rural areas as compared to urban areas(Mincer, 1962). The unemployment rate is the same at 5.90% in 2016 and 2015 in Pakistan (Pakistan Economic Survey 2015-2016). Consequently, the per capita income declines due to a rise in the unemployment rate that forces a person to live a life below the poverty line and lower economic growth (Hamilton, 1989). Unemployment was common due to low education and higher population growth in Pakistan (Banerjee and Newman, 2004). A large number of people remain unemployed due to the lack of education, higher population, and low social-economic status (Nickell, 1997). People can have more employment opportunities if they have a better wage offer (Shaheen et al., 2015; Yasmin et al., 2021; Nasir et al., 2021)

Poverty is involved with two elements, income poverty, and human poverty. Income poverty is the lack of necessities for minimum material wellbeing determined by the national poverty line whereas human poverty means the denial of choices and opportunities for a life in all economic and social aspects (Xiao & Porto, 2017).Education is a basic human right (Iqbal et al., 2021). The international community has exposed the importance of primary education (Brunello, 2004). Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Education is one of the most important instruments that help to improve the quality of life as well as living standards. It is an essential component of social and economic development. Education facilitates individuals to make a better choice of their resources and to understand their potential (Morrell, 2002). Most developing countries are faced with depraved economic and political financial institutions such as low literacy rates and need to be addressed immediately (Akhuemonkhan et al., 2013).

## 2. Literature review

Economic literature has addressed the relationship between various social and economic indicators and economic growth. The current analysis will produce the results on education, unemployment, poverty, and economic growth as integrated intoa single analysis for which each impression was analyzed individually for economic growth.Simanaviciene et al., (2015) focused on the relationship between the growth of education and the economy. They are interested in the connection between education and unemployment (Lee & Chung, 2015). Finally, the relationship betweenunemployment and poverty is emphasized (Aiyedogbon & Ohwofasa, 2012). Luber et al., (2000) studied linkages of economic policies between rural poverty and financial sectors.The main purpose of this study was to describe the economic policies at a macro level to accelerate economic growth and reducing the poverty. The level of unemployment reduces due to the change in poverty in the long run. Clear evidence was also found a positive relationship between economic development and human development. Saunders (2002) explored the direct and indirect effects of unemployment on poverty and verified strong positive evidence that

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.06.005

unemployment increased the risk of poverty and increase income inequality. (Leventi et al., 2019) discussed the impact of improving targeting for poverty reduction. This research proved a negative link between inflation rate and poverty which creates macroeconomic instability in a country. Furthermore, current research influenced a positive impact of capital accumulation on public capital stock in infrastructure and investment. Finally, this research indicated a relationship between investment and education had a concave form whereas originate inverse link between education and poverty.

Chaudhry and Rahman (2009) analyzed education and employment, discuss the application for poverty. Regression analysis had also found a negative and significant relationship with a coefficient of poverty. The study showed that the unemployment rate was higher in poor people. In turn, education was the main attitude that increases labor productivity as well as economic growth. Sharif *et al.* (2006) described empirical analysis of rural poverty in respect of Pakistan. The finding of this study stated that inflation, unemployment, and growth rate had an important impact on the reduction of rural poverty in Pakistan. The inflation rate had a negative association with the GDP growth rate because the inflation rate has high in Pakistan.Antonopoulos (2008) described self-employment as the best solution to reduce unemployment. The present study proved no positive impacts of self-employment rates on GDP growth. Furthermore, self-employment and entrepreneurship both have been most important in the small business sector that was used to boom economic growth and productive employment opportunities.

Ahsan (2016) analyzed the relationship between crime incidence, inflation rate, and poverty, new evidence from structural breaks from Pakistan. Income inequality and inflation had a positive and significant association with crime. The study was proved a positive relationship between crime and income inequality in the shortrun but in long run, present research had discovered the positive and significant impact of poverty, income inequality, and inflation on crimes level. Afzal *et al.* (2021) defined linkages patterns among education, unemployment, and economic growth in Pakistan. Time series uninterrupted data had been used for the period 1980-2014. The Cointegration technique had been used for empirical analysis. The current study had found a direct positive correlation between security expenditure and income inequality while exists no relation between defense expenditure and income inequality.

## 3. Data and Methodology

Secondary data is used to analyze the linkages between Education, Unemployment, and Poverty. Time series data have been used for the period 1976 to 2020 to find the nexus of Education, Unemployment, and Poverty in Pakistan. Data of variables are collected from different sources like:

### a) Theoretical and EmpiricalMethodology

Hansen in 1979 designated a statistical methodology that is GMM. The "Generalized Method of Moments" or GMM would give econometricians the capability to evaluate alternative theories and explore significant economic phenomena without fully developing each of their elements

P-ISSN: 2204-1990; E-ISSN: 1323-6903
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(Hansen, 1982). The concept of GMM was established by Hansen in 1982 and (Newey&McFadden,1994). Instrumental variables are plays like an instrument in the model. Instrumental variables are those which is correlated with explanatory variable and uncorrelated with disturbance term.

**Model 1: Contemplation of Education on Poverty**

$$POVI = \delta 0 + \delta 1GDP + \delta 2EDI + \delta 3PG + \delta 4GFCF + \delta 5SDI + \mathcal{E}it \quad (1)$$

$\mathcal{E}_{it}$ = Error term and $\delta_0$is Intercept and $\delta_1, \delta_2, \delta_3, \delta_4, \delta_5$are the Slope coefficients.

**Model 2: Contemplation of Unemployment on Poverty**

$$POVI = \beta 0 + \beta 1UNR + \beta 2TO + \beta 3HI + \beta 4INF + \beta 5GFCF + \vartheta it \quad (2)$$

$\vartheta_{it}$ is error term and $\beta_0$isintercept and $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$are Slope coefficients.

**Model 3: Contemplation of Poverty on Education and Unemployment**

$$POVI = \gamma 0 + \gamma 1UNR + \gamma 2EDI + \gamma 3PG + \gamma 4GDP + \gamma 5HI + \gamma 6FDI + \gamma 7SDI + \gamma 8PO2 + \gamma 9TO + \mu it \quad (3)$$

μit is error term while the γ0 is intercept and γ1, γ2, γ3, γ4, γ5…, γ8 are slope coefficients.

## 4. Empirical Analysis

### a) Descriptive Analysis

Descriptive analysis is helpful to see the past tendency and predict the future values of the variables. Before econometric estimation, Descriptive analysis discusses the mean, median, and standard deviation of the variables used in the analysis.

**Table1: Descriptive Analysis of the Data**

| Variables | Desscription | Mean | Median | Std.Dev |
|---|---|---|---|---|
| POV | *Poverty Headcount ratio* | 24.092 | 22.7050 | 6.4009 |
| GDP | *The total market value of all final goods and services produced in given time domestically* | 2.2595 | 2.1893 | 1.8337 |
| EDI | *This index is a proxy of education constructed with Principal Component Analysis (PCA)* | 6.6839 | 6.3839 | 2.9212 |
| PG | *Increase in numbers of people during a given periodwithin a country* | 2.5756 | 2.4846 | 0.5046 |
| GFCF | *Gross fixed capital formation is a fixed investment over a specified period* | 16.2491 | 16.8989 | 1.6518 |
| SDI | *The social development index measures the wellbeing of the society without the economic* | 98.2854 | 94.8109 | 61.438 |

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| | | | | |
|---|---|---|---|---|
| | *factors* | | | |
| UNR | *People can work and searching jobs* | 5.2012 | 5.4350 | 1.5764 |
| TO | *It measures the inflow/outflow of a country's goods and services across international borders* | 6.3421 | 6.7821 | 2.4683 |
| HI | *Health index is constructed and indicates the overall health of individuals* | 104.31 | 106.67 | 56.205 |
| INF | *Increase in average prices of a market basket of selected goods and servicesover a specific period* | 9.1034 | 9.7500 | 3.6665 |
| FDI | *It is investment coming from other nations in a specified time* | 1.1340 | 0.7500 | 0.9939 |
| POL2 | *Autocracy-democracy index (polity2) ranging between -10 (total autocracy) and 10 (total democracy)* | 1.1666 | 5.0000 | 6.5812 |

Source: Authors Calculation with E- Views 9.5.

Table 1 denotesthat the average value of poverty is 24.092 persons. The average value of GDP growth is 2.2595 which points out that GDP is low in Pakistan. The mean of Education index (EDI) is 6.6839 which focused ona very low enrollment rate in Pakistan. The mean of population growth is 2.5756%that is moderate while the standard deviation of population growth is 0.5046. The average Gross Fixed Capital Formation is 16.2491 and its median is 16.8989. The standard deviation of GFCF is 1.6518 which proves a high oscillation in the Pakistan economy. The mean value of the Social Development Index (SDI) is 98.2854 although the standard deviation of SDI is 61.438 which points out a large fluctuation from its average value in Pakistan. The mean value of the Unemployment rate is 5.2012.

**b) Unit root analysis**

In table 2, time-series data is used to check stationarity with the help of an augmented dickey fuller test. It is necessary to examine the order of integration of the relevant variables before the decision. Each variable is checked on three domains of ADF identical to intercept, intercept and trend and the third one is none which is explained in the following table.

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**Table 2: Augmented Dickey-Fuller Test Results**

| Variables | Intercept | Intercept and Trend | None |
|---|---|---|---|
| POVI | | | -2.4865(0.3326) |
| ΔPOVI | | | -2.3603(0.0195) |
| GDP | -4.6860(0.0005) | -4.732(0.0024) | -4.2898(0.0140) |
| ΔGDP | -10.2254(0.0000) | -10.0895(0.0000) | -10.3460(0.0000) |
| EDI | -6.2314(0.0050) | -6.5647(0.0004) | -6.8968(0.0005) |
| ΔEDI | -8.2198(0.0000) | -8.6674(0.0000) | -8.8968(0.0000) |
| PG | -2.0041(0.2839) | -2.8658(0.1844) | -2.5221(0.013) |
| ΔPG | -2.5880(0.1042) | -2.5404(0.3082) | -1.6200(0.098) |
| GFCF | -1.7767(0.3864) | -2.6798(0.2498) | -0.6193(0.4429) |
| ΔGFCF | -6.1674(0.000) | -6.0670(0.0001) | -6.1778(0.0000) |
| SDI | -0.194(0.9310) | -2.3133(0.4177) | 4.2496(0.0100) |
| ΔSDI | -6.7115(0.0000) | -6.6181(0.0000) | -0.8915(0.3233) |
| UNR | -2.1001(0.2457) | -2.4342(0.3575) | -0.0207(0.6837) |
| ΔUNR | -7.9030(0.0000) | -7.8666(0.0000) | -7.9237(0.0000) |
| TO | 0.3993(0.9806) | -0.9551(0.9392) | 1.7611(0.9794) |
| ΔTO | -4.8827(0.003) | -5.0188(0.0011) | -4.5748(0.0000) |
| HI | -0.9082(0.7753) | -3.1352(0.1120) | -2.0678(0.0386) |
| ΔHI | -9.0550(0.0000) | -9.0427(0.0000) | -0.7735(0.3743) |
| INF | -3.2917(0.0218) | -3.4408(0.059) | -1.1528(0.2228) |
| ΔINF | -8.3485(0.0000) | -8.2829(0.0000) | -8.4573(0.0000) |
| FDI | -1.3881(0.5782) | -4.5651(0.0039) | -0.2578(0.5868) |
| ΔFDI | -6.2706(0.0000) | -6.1827(0.0000) | -6.2600(0.0000) |
| POL2 | -1.9429(0.3101) | -2.4976(0.3277) | -1.9425(0.050) |
| ΔPOL2 | -5.9503(0.0000) | -5.9503(0.0000) | -6.0282(0.0000) |

*Source: Author's calculation using E-views (9.5).*
*Note: Value of "Δ" simplifies stationarity at first difference.*

### c) Estimation of Education, Unemployment, and Poverty

The results are obtained by applying the Generalized Method of Movement (GMM) technique are giving in the following table 3.

**Table 3: Determination of Education, Unemployment, and Poverty**

| Variables | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| **GDP-Per Capita Growth** | 0.2728* | | -0.0572* |
| | (1.6380) | | (-0.3986) |

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| | | | |
|---|---|---|---|
| | [0.1101] | | [0.6927] |
| **Education Index** | -0.4244***<br>(-6.3094)<br>[0.0000] | | -0.4286***<br>(-2.6498)<br>[0.0120] |
| **Population Growth** | -25.1154***<br>(-13.0033)<br>[0.0000] | | -20.4497***<br>(-9.9179)<br>[0.0000] |
| **GFCF** | -1.3660***<br>(-2.6623)<br>[0.0115] | -0.2021*<br>(-0.4816)<br>[0.6329] | |
| **Social Development Index** | -0.3980***<br>(-15.3247)<br>[0.0000] | | -0.1437*<br>(-1.0789)<br>[0.2884] |
| **Unemployment Rate** | | 0.2246**<br>(2.1164)<br>[0.0419] | 0.6752*<br>(1.3003)<br>[0.2025] |
| **Trade Openness** | | -71.3396**<br>(-2.0683)<br>[0.0458] | -48.0741***<br>(-3.1886)<br>[0.0031] |
| **Health Index** | | -0.1091***<br>(-4.6366)<br>[0.0000] | -0.1724*<br>(-1.4372)<br>[0.1601] |
| **Inflation** | | 0.1248*<br>(0.4694)<br>[0.6416] | |
| **FDI-GDP Ratio** | | | -11.8764***<br>(-2.8949)<br>[0.0065] |
| **POLITY2** | | | 0.2263***<br>(3.5865)<br>[0.0011] |

Source: Author's estimations by using E-views (9.5). Note that ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

**Table 3** analysis the impact of education on poverty by using the GDP per capita growth, Education index, Population growth, GFCF, and Social development index. The empirical results display that the coefficient of GDP per capita growth has a positive impact on poverty and its

P-ISSN: 2204-1990; E-ISSN: 1323-6903
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value is 0.2728. It points out that the rise in GDP per capita growth is due to an increase in employment opportunities and economic growth will increase automatically in the economy(Mincer, 1991).

The coefficient of the education index hurts poverty and its value is -0.4244. the education index displays that it is negatively related to poverty incidence. Similarly, explain that increase in educational level will also develop the living standard of wellbeing that decrease the chance of a person being non-poor increases. An increase in the education index can help to reduce poverty. Further, that increase in the education index will reduce poverty as proves a negative relationship in model 1.The coefficient of Gross Fixed Capital Formation (GFCF) has a negative relation with poverty and its value is -1.3660. an increase in GFCF will also reduce poverty(David, 2000).The coefficient of the social development index harms poverty and its value is-0.3980. It explains that an increase in average household per capita will increase real income growth by an increase in the social development index. Higher per capita income growth in a society leads to total income growth of a country which a cause to reduce in poverty. Therefore, the research demonstrates a negative relation with poverty because the increase in social development index like living standard will reduce the poverty in a country.

**Model 2:** Analysis of the impact of unemployment on poverty. The coefficient of the Unemployment rate is positively related, and its value is 0.2246. It demonstrates that an increase in the unemployment rate would reduce the labor force and also increase poverty. Therefore, the study proved a negative correlation between the unemployment rate and poverty. Trade openness has a negative relationship and its value is -71.3396.The impact of trade openness boosts growth in developing countries. An increase in GDP growth will also increase trade openness and poverty will automatically reduce which proves a negative relation with poverty (Riaz et al., 2020). The outcome of the study match with (Sandler, 2013). The health index is a negative relationship and its value is -0.1091. Furthermore, an increase in the health index would decrease poverty and proved a negative correlation in Model 2.

**Model 3:** Analysis of the impact of education and unemployment on poverty. The unemployment rate has a positive and its value is 0.6752. But it is statistically insignificant as proved by its probability which is 0.2025. The education index is a negative impact and has a value is -0.4286. It is significantly related by which its probability is 0.0120.Population growth harms poverty and its value is -20.4497. Because an increase in population growth would reduce employment opportunities that will also reduce resources and harm poverty. That is showed negative relation in Model 3, the impact of education and unemployment on poverty. The health index has a negative relationship and its value is -0.1724. An increase in life expectancy rate including health care and medical services would reduce the poverty (Kingdon & Knight, 2004). The social development index is negatively related, and its value is -0.1437. Improvement in social development indexes such as infrastructure, unemployment, malnutrition, domestic violence, and child labor would decrease the poverty in a country. That is proved a negative relation between the social development index and poverty. Polity2 is negatively relatedto TP P, and its value is -0.2263. It is statistically significant as shown by its probability of 0.0011. The

P-ISSN: 2204-1990; E-ISSN: 1323-6903
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coefficient of polity2 indicates that a 1 unit increase in the value of polity2 would enhance poverty. It means that a better political regime has a positive impact on poverty. Becausepoor democracies with high levels of inequality may perhaps greatly depress poverty.

**d) Diagnostic Test**

Diagnostic tests are applying to inspect the heteroscedasticity, Correlation, and misspecification in the model. The current study analyzed the Breusch-Godfrey serial correlation LM test to check the presence of autocorrelation in the Model. Various diagnostic tests for models are given in table 4.

**Table 6.4: Diagnostic Test for Model**

| Name of test | F-Statistic | Probability |
|---|---|---|
| **Breusch-Godfrey Correlation LM Test** | 0.4085 | 0.6283 |
| **ARCH Test Heteroscedasticity** | 0.0285 | 0.8667 |

Source: Author's calculation by using (E-Views 9.5)

In the diagnostic test model, two tests are used. The F-Statistics value of the Breusch-Godfrey serial correlation LM test is 0.0485 with a p-value is 0.6283 while the F-statistics value of the ARCH test is 0.0285 and the probability is 0.8667. The probability of F-statistics values regarding two tests like Breusch-Godfrey Correlation LM Test and ARCH Test for Heteroscedasticity is greater than 5% (0.05) at a 95% confidence interval. It means that there is no autocorrelation in this model. Heteroscedasticity does not exist in the models and the model is correctly specified.

**5) Conclusions and Policy Implications**

The study investigates the impact of poverty on education and unemployment in Pakistan. The secondary time series data is used for the period 1976-2020. The generalized Method of Moment (GMM) technique is used for empirical analysis. Augmented Dickey-Fuller (ADF) test is used to check the stationarity of the data. The study has looked at four different ways to analyzed and compared them with the growth path of Pakistan for the period under study 1990-2020 by providing the integrated approach. This research concluded that education has an impact on unemployment and poverty, and all have an impact on economic growth in the long run. It shows that there is a fundamental association between the gross domestic product (GDP) and poverty (POV) and among Education enrollment. The findings of the research confirmed the positive effect of Education, Trade on economic growth, and unemployment have a negative influence on determining economic growth. This study is of particular concentration to policymakers as it helps to formulate comprehensive economic policies to support economic development.

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without any restrictions. GMM analysis done by using the 3 models in which poverty retain the same as the dependent variable and Gross Domestic Product (GDP) Per Capita Growth, Education Index (EDI), Population Growth (PG), Gross Fixed Capital Formation (GFCF), Social Development Index (SDI), Unemployment Rate (UNR), Trade Openness (TO), Health Index (HI), Inflation (INF), Foreign Direct Investment (FDI) as GDP Ratio and Autocracy and Democracy Index (Polity2) taken as explanatory variables on overall the models. The results find that poverty has a positive and significant impact on unemployment whereas inversely related to education levels in Pakistan.

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