



Brain Drain and Economic Growth: An ARDL Analysis

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Abstract

This study is focus on empirical analysis of highly skilled labor force emigration from Pakistan to across world. We investigate that pull and push factors are the main cause of highly skilled migration across countries. Applying ARDL analysis, we find out the short-run and long-run effects of brain-drain on economy of Pakistan by using time series data over the period 2000-2022. The empirical results support the gravity model and demand -supply theories of migration. On the basis of our finding's migration of brain-drain influence negatively economic growth but remittances that receive Pakistan from overseas nationals contributes positively to economic growth while remaining control variable have same signs explained by theories. We can recap the results that developing countries like Pakistan, focus on planned brain-export rather unplanned brain-drain.

Keywords: Total employed labor force, Trade, Gross fixed capital formation, Secondary school enrollment, Taxes, Broad Money, Remittances

1. Introduction

Brain drain is the major problem of the developing countries. There are different reasons for the brain drain of the developing countries such as political instability, worse growth opportunities, poorer health care facilities, low living standard, and low wages. Educated, skilled people migrate to other countries to improve their living standard and earn more income. Brain drain is referred to the depleting of the highly skilled individuals from developing countries to the other countries. This situation has recently caused a serious economic problem. Brain drain comes along with high costs and some negative consequences, which is now a burden to the African countries. It is easy to understand that everybody wants to live and serve in their home country but unfortunately due to some social, economic and political factors many capable people are leaving their home country for the sake of better living standard.

The tendency of leaving a country/organization of high educated, skilled, talented, and knowledgeable individuals from one country/ organization to another are called Brain Drain. Brain Drain is not favorable for any country or organization because it develops a shortage of skilled workers. Brain drain is an obstacle predominantly faced by developing countries (Marchiori et al., 2013; Ali, 2022). Globalization, increasing knowledge intensity, and the rise of emerging economies have made talent a unique resource and a driving force that can contribute to achieving long-term competitive advantage, as well as determining organizational success (Beaumont et al., 2016; Khilji & Schuler, 2017; Ali, 2022). This entails companies and countries engaging in a "war for talent," which determines macro-level talent challenges such as brain drain and talent shortage. Because of the lack of international barriers, talented individuals have more opportunities than ever before to leave their home country in search of better living conditions and career opportunities in developed countries (Beine et al, 2008). Brain drain threatens countries' economic development by lowering human capital levels and competitiveness. Diverse social, economic, demographic, and political push and pull factors determine talent migration (Beine et al., 2007; Ali, 2022).

Talent management (TM) (an area of human resource management (HRM) research and practice) is for ensuring an adequate supply and demand of talents, and their human important tool capital, within firms and countries due to competition for talent at the micro and macro levels (Khilji et al., 2015; Ali & Ahmad, 2016). At Macro level TM is a set of activities developed and implemented by governmental and non-governmental organizations to attract, develop, and retain talent at the national level to improve productivity, innovativeness, performance, and the competitive advantage of local firms, as well as social benefits (Metcalfe et al., 2021; Ali & Audi, 2018). In fact, TM deals with the macro-level environment and the forces in which companies and individuals operate so it can be applied to global talent challenges such as talent mobility including brain drain.

HRM practices in organizations are proposed to mitigate the influence of push factors that make employees emigrate. When compared to HRM practices, firm-level TM practices are more focused on the creation of talent pools for filling key positions within organizations. It is possible to hypothesize that TM practices implemented at the firm level may mitigate the influence of talent migration determinants on individuals' migration intentions (Beaumont et al., 2016 and Collings, 2014). In turn, better developed and widely implemented TM practices in local organizations will contribute to the enhancement of a country-level TM system that ultimately enhance the cross-country talent. High demand for human capital and talent shortages force companies around the globe to compete in attraction and retention of the best and brightest employees (Khilji et al., 2015).

Brain drain, an excess of a country's human capital outflow over its inflow (Salt, 1997), is experienced in particular by developing countries where wages, living conditions, and career opportunities are less attractive for highly-skilled individuals than those in developed countries (Artuc et al., 2015; Marchiori et al., 2013; Shah & Ali, 2022).

There is a controversy regarding brain drain outcomes for countries of origin (COO). An optimistic approach states that brain drain may be beneficial for COOs due to remittances, human capital gain and increased foreign direct investment

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(FDI) activities between COOs and destination countries (Gao et al., 2013; Phyo et al., 2019). According to a pessimistic approach, brain drain leads to a decrease of human capital and competitiveness erosion of domestic knowledge networks, negative welfare effects in COOs, and a subsequent decrease in firms' performance. Talent migration is determined by a wide variety of socio-economic, natural, climatic, ecological, demographic, and political factors. One of the most widely used classifications of talent migration determinants consists of push and pull factors (Baruch et al., 2007; Van Hear et al., 2018; Ali & Audi, 2023).

It has worsened the problem of brain drain. Political instability is more evident in democratic countries like Pakistan. Pakistan is the 6th world largest populated country. Due to inefficient use of resources, most developing countries specially Pakistan always been in problem of poverty, inflation, and unemployment. These economic issues are major causes of migration. People move to other countries not only for income but also due to economic and social circumstances. Another reason known as political instability also creates not only law and order situation in any country but also creates adverse economic environment. That's why they prefer to move towards developed countries. Due to unemployment people are unable to get sufficient income and then education. Therefore, decrease in unemployment level can change the decision of migration of labors to developed countries. It is also common thinking that migration exists due to the wage difference among different nations. But according to Kazlauskienė & Rinkevicius (2006), this is not the only reason for brain drain. Rather, different factors in different countries affect the brain drain phenomenon. Due to the increased demand of highly skilled labor in the international labor market, less developed countries are suffering a lot due to brain drain. Although many countries have restricted visa policy to avoid the flow of migrants, highly skilled and intellectuals are always welcomed and encouraged to western countries. The outflow of educated people not only creates negative impacts but positive as well, in the sense of remittances (Shah & Ali, 2023). Remittances are a big source of foreign exchange earnings which can be used to put the current account deficit in a better position.

2. Literature Review

The necessary, integral part of the process of planning, and designing effective, relevant research is based on review of literature. So, this section is devoted to previous literature summarized in table form related to dependent and all the independent variables.

Previous studies indicate mixed positive as well as negative outcomes on economic growth. One side of the picture is that decrease in human capital in home country due to migration of trained, educated, and skilled persons cause to deterring potentially output loss and innovation. So, destination countries receive experts and skilled persons and consequently achieve economic growth and technological advancement. On the other side brain drain has positive influence on the domestic economy of home country. Their migrants learn new knowledge, foreign exposure, and skills, which cause enhance remittances and domestic investment. Moreover, migrants at the end return to home country with experience and cause to increase domestic output due to technological learnings from abroad.

Finally, net effect of migrants on economic development of home country is mixed and based on how much outflow of human capital is maintained. That's way we pic the issue to highlight the net influence of brain drain on economic growth in case of Pakistan. Summary of previous literature is present in Table 1.

3. Data Model and Methodology

In this section, we're going to explain about the sources of data and methodology which we used for the estimation with the help of outcomes and table. This examine became based totally on secondary source of data. This study is based on the secondary source data that is time series data of statistics for all the related determinants the data. Data have been gathered from the subsequent source as, World development indicators (WDI).

3.1. Description of variables

3.1.1. Dependent variable

Gross domestic product growth rate (GDPG) is the dependent variable. It is basically the value of final goods and services produced for the market within a nation's borders, during a given period. GDP is a value measure, i.e., measured in currency units.

3.1.2. Independent variables

Total employed labor force (EMP), Gross fixed capital formation (GFCF), secondary school enrollment (SSE), total skilled and unskilled members (TLM), TAX, money multiplier (M2), remittances (REM), and trade are the independent variables that are used in this study for estimate the results.

Definition of variables:

3.1.3. Total employed labor force (EMP)

The People who supply the production of goods and services during a specified period are said to be employed persons. It includes people who are currently employed and people who are unemployed but seeking work as well as first-time job-seekers. Its unit of measurement is percentage of total labor force.

Table 1: Summary of Previous Studies

Sr. No.	References	Countries	Time period	Methodology	Model specification		Main Results
					<i>Dependent Variables</i>	<i>Independent Variables</i>	
1	Haider & Hussain (2006)	Pakistan	1980-2005	linear regression	Migration	Unemployment	+
2	Özden (2006)	Latin American countries	1982-2003		Economic Growth	Income level, Education and job satisfaction	-
3	Eggert et al. (2007)	Germany		Tow region Model	Brain Drain	Education, Unemployment, Interregional migration.	-
4	Barua (2007)	Bangladesh	1993 to 2005	GLS method with cross-section specific weights	Economic Growth	income differential, real interest rate differential, Inflation, Remittances, Devaluation of domestic currency.	+
5	Sajjad (2012)	Pakistan		Questionnaire method	Brain Drain	Life securities issues, political instability.	+
6	Docquier et al (2012)	Africa	1960-2005	Growth model	Economic Growth	Human Capital Formation, Remittances and Diaspora Networks.	- +
7	Altaf et al (2015)	Pakistan	1980-2013	Johanson co-integration technique	Brain Drain	Political Instability, Unemployment, Remittances.	+
8	Chort & Rupelle (2016)	Mexico-U. S	1995–2012	Pannal Data techniques	Brain Drain	Economic factor (Foreigners Income), Environmental factors(droughts), Social factors (Violence)	-
9	Adel & Toka (2016)	Egypt		OLS simple regression model	Economic Growth	remittances and income level	+
10	Laila et al. (2018)	Pakistan	1980 to 2013	Johanson co-integration technique +Augmented Dickey–Fuller (ADF) statistic	Brain Drain	Political Instability, Unemployment, Remittances.	+
11	Kousar et al (2020)	Pakistan	1990 to 2018	Autoregressive Distributed Lag (ARDL)	Brain Drain	long run governance, financial stability, the standard of living, and infrastructure	-
12	Kousar et al (2020)	Pakistan	1996 to 2017	“Push” and “Pull” theory	Brain Drain	Financial stability, FDI, Foreign remittances and Exchange rate	-
13	Abdu Dawud (2020)	Pakistan	1972 to 2013	Johansen Co-integration technique	Economic Growth	Human capital, infrastructure development, Education, health.	+
14	Tasinda & Imanche (2021)	Africa	2009 to 2018	Autoregressive distributed lag (ARDL)	Economic Growth	Foreign Direct Investment, Remittances and Foreign Aid	+ -
15	Arif (2022)	122 countries	1990 to 2000	gravity model using OLS	Brain Drain	Pull and push factors of corruption	+

3.1.3. Gross fixed capital formation (GFCF)

It consists of resident producers' investments, deducting disposals, in fixed assets during a given period. It also includes certain additions to the value of non-produced assets realized by producers or institutional units. Its unit of measurement is %age of GDP.

3.1.4. Total skilled and unskilled members (TLM)

Skilled Labour often requires extensive experience or advanced knowledge of practices and procedures. Unskilled Labour typically requires no pre-existing knowledge or expertise to perform the position's functions.

3.1.5. Secondary school enrollment (SSE)

Gross enrollment ratio for secondary school is calculated by dividing the number of students enrolled in secondary education regardless of age by the population of the age group; this officially corresponds to secondary education, and multiplying by 100. Unit of measurement is gross.

3.1.6. Broad money (M2)

Broad money is the sum of currency outside banks; demand deposits other than those of the central government; the time, savings, and foreign currency deposits of resident sectors other than the central government; bank and traveler’s checks; and other securities such as certificates of deposit and commercial paper. It is measured as the %age of GDP.

3.1.7. Trade

Trade is the activity of buying, selling, or exchanging goods or services between people, firms, or countries. It is measured as the %age of GDP.

3.1.8. Remittances

Remittance refers to the act of transferring or sending certain amount of money by one party to the other. Most often people consider the transfer of funds overseas as remittance but the transfer within the country also comes under the same.

4. Methodology and model

In methodology we are going to examine the determinants of economic growth (GDP) of Pakistan. We predicted the determinants with unique variables and tests. We used distinct variables to test the effect of human capital on financial boom. To begin with we start from descriptive and correlation analysis after that we apply unit roots test to test the stationarity of variables. Long run existence is test through bounds test and finally short run and long run parameters are estimated through ARDL analysis.

4.1. Model Specification

The Unrestricted Errors Correction fashions (UECMs) to provide an explanation for the connection of human capital and financial increase for Pakistan equations are given. The Unrestricted Errors Correction fashions (UECMs) to provide an explanation for the connection of human capital and economic growth for Pakistan equations are given below. The parameters are the corresponding long-term multipliers whereas the short run dynamic coefficients of the ARDL models.

$$GDPG=f(EMP,GFCF,SSE,TLM,TAX,M2,REM,TRADE)$$

$$GDPG=\beta_0+\beta_1EMP+\beta_2GFCF+\beta_3SSE+\beta_4TLM+\beta_5TAX+\beta_6M2+\beta_7REM+\beta_8TRADE+\mu_1$$

GDPG =

EMP =Total employed labor force (EMP)

Trade =

GFCF= Gross fixed capital formation (GFCF)

SSC= Secondary school enrollment (SSE)

TLM=Total skilled and unskilled members (TLM)

TAX= Taxes

M2= Broad Money (M2)

REM: Remittances

In the above equations parameters associated with the summation signs constitute the short run parameters and the coefficient of ECM in each equation constitute () indicates the rate of adjustment closer to the long-run equilibrium. Coefficient of adjustment should be horrific and statistically extensive for convergence.

5. Results and Discussions

In this section investigate the relationship between factors of brain drain and the economic growth of the economy. We find that when brain drain increases from the economy then economic growth decrease in this economy. Different factors increase or decrease brain drain that affect the economic growth of the economy. In this section, we intercept the results of descriptive statistics and correlation analysis, Unit root analysis, ARDL Bounds analysis, short run and long run analysis.

5.1 Descriptive Statistics

It is a set of descriptive coefficients which reviews a given data set which can be demonstration of whole population or sample and the measure used to define this data set are measures of central tendency and measures of dispersion.

Mean is the central average value of the data. Center is known as the middle value of a range of values and the mode is most repetitive value in a data. The total observations of each variable are 42. The mean value of the Gross Domestic Product (GDPG) is 4.75 that indicate that the percentage of annual growth is 4.75% of the economy. And the median value of variable GDPG is 4.79. the maximum value is 10.22 and minimum value is 1.01. skewness means that measure of symmetry distribution of the data. The skewness value of GDPG is 0.039. The standard deviation means that to explain the variation for central valve. The value of standard deviation of GDPG is 2.04.

The mean value of the total employed labor force (EMP) 35.19 million, the median value of EMP is 36.23, similarly the maximum value of this variable is 45.87 million and minimum value is 25.98 million.

The mean value of Gross fixed capital formation is (GFCF) is 15.81% of the GDP, and the median value of GFCF is 16.41%, and standard deviation is 1.91%. Similarly, values of descriptive statistics of all the variables are shown in table 1.

Table 2: Descriptive Statistics of Key Variables

	GDPG	EMP	GFCF	SSE	TLM	TAX	M2	REM	TRADE
Mean	4.75	35.19	15.81	72.23	270696	10.85	42.30	5.00	34.07
Median	4.79	36.23	16.41	70.82	151055	11.10	42.09	4.60	33.94
Maximum	10.22	45.87	19.24	100.19	946571	13.12	49.19	10.25	38.91
Minimum	1.01	25.98	11.58	47.89	58002	8.57	36.71	1.45	28.13
Std. Dev.	2.04	7.73	1.91	17.21	234365	1.36	3.33	2.17	2.30
Skewness	0.39	0.00	-0.55	0.12	1.33	-0.07	0.30	0.40	0.02
Kurtosis	2.85	1.18	2.43	1.40	3.69	1.63	2.14	2.41	3.18
JB	1.12	5.82	2.68	4.57	13.24	3.33	1.91	1.70	0.06
Probability	0.57	0.05	0.26	0.10	0.00	0.19	0.39	0.43	0.97
Obs	42	42	42	42	42	42	42	42	42

Source: Author's calculations

5.2 Correlation Analysis

Correlation means that to explain the strength of relationship between two variables. The meaning of word correlation is relationship between two variables. Correlation can be positive and negative respectively, either association between the variable is strong or weak. Correlation can be positive when both values rise together. It will be negative when one value increases in the opposite direction of other. The value of that correlation lies between +1 to -1. There are three classifications of correlation and these are stronger correlation, mediocre correlation and weak correlation. The value of 1 means that the correlation between the variable exists and the value of zero means that there is no correlation between the variables. Table 3 shows the correlation matrix

Results of the correlation matrix show there is a positive as well as negative correlation between different variables. The value of the correlation between GDPG and EMP is -0.35 indicates that there is a negative relationship between these variables. Similarly, the value of correlation between GDPG and M2 is -0.01 indicates that there is a negative as well as a weak relationship between these variables. The value of correlation between SSE and TLM is 0.76 indicates that there is a positive and strong relationship between these variables.

Table 3: Correlation Matrix of Key Variables

Correlation	GDPG	EMP	GFCF	SSE	TLM	TAX	M2	REM	TRADE
GDPG	1.00								
EMP	-0.35	1.00							
GFCF	0.28	-0.51	1.00						
SSE	-0.45	0.89	-0.67	1.00					
TLM	-0.23	0.51	-0.76	0.76	1.00				
TAX	0.35	-0.79	0.11	-0.59	-0.02	1.00			
M2	-0.01	-0.03	0.45	-0.14	-0.47	-0.31	1.00		
REM	0.48	-0.16	-0.17	-0.14	0.23	0.49	-0.41	1.00	
TRADE	0.14	-0.57	0.58	-0.40	-0.26	0.47	0.25	-0.06	1.00

Source: Author's calculations

5.3 Unit Root Analysis

Unit root method is commonly working to check the stationarity of the data set and it is authoritative before the estimate of data. There are two techniques work to check the stationarity of the data that are ADF (Augmented Dickey Fuller) test and PP (Phillips-Peron) test. Time series data said to be stationary if these conditions are current mean, variance, and covariance all are found to be invariant time series data is depending on time.

Table 5.3 shows the results of Augmented Dickey Fuller test; Augmented Dickey Fuller test shows that some variables are stationary and some are non-stationary at level and some variables are stationary at first difference. These results show that total skilled and unskilled members (TLM) and trade are stationary at level. GDP total employed labor (EMP),

Gross fixed capital formation (GFCF), Secondary school enrolment (SSC), tax, money multiplier (M2), Remittances, and trade all are stationary at first level. Due to mixed order of integration we used ARDL bound test approach.

Table 4: ADF Unit Root Test Results

Unit Root Test on Level							
Variables	Intercept	Lags	Intercept and Trend	Lags	None	Lags	Conclusion
GDPG	-0.46 (0.16)	1	-0.82 (0.58)	2	-0.50 (0.14)	3	I (1)
EMP	-0.96 (0.75)	1	-1.16 (0.43)	1	1.07 (0.65)	0	I (1)
GFCF	-1.29 (0.98)	1	-1.71 (0.28)	1	-0.20 (0.91)	2	I (1)
SSE	0.81 (0.90)	1	-1.67 (0.77)	1	1.10 (0.93)	1	I (1)
TAX	0.25 (0.50)	1	-0.86 (0.77)	1	-0.98 (0.46)	1	I (1)
M2	-1.14 (0.23)	1	-0.56 (0.98)	1	0.48 (0.19)	1	I (1)
TLM	-5.89 [*] (0.04)	0	-4.29 (0.02)	0	-5.07 (0.07)	0	I (0)
REM	-0.91 (0.24)	0	-1.14 (0.27)	0	-0.67 (0.42)	0	I (1)
TRADE	-4.69 (0.03)	1	-4.53 (0.00)	1	-3.05 (0.09)	3	I (0)

5.4 Bounds Test Analysis

When we check the relationship between variables then we used ARDL bound test technique for this purpose. Due to ARDL bound test we find that the cointegration exist or not. The result of ARDL bounds test is given below.

Table 5: Bounds Test based on F-Test

Model	F-statistic	I ₀ Bound	I ₁ Bound
GDPPC/EMP, GFCF, SSE, TLM, TAX, M2, REM, TRADE	7.86	1.85	2.85

Source: Author calculations

Table 6: Long Run Results of Overseas Labor Migration and Economic Growth

Dependent Variable: GDPG				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
EMP	1.141232	0.380148	3.002070	0.0084
GFCF	1.052436	0.254879	4.129163	0.0008
SSE	1.222557	0.182551	6.697081	0.0000
TLM	-0.601011	0.226639	-2.651840	0.0174
TAX	-0.757779	0.227725	-3.327606	0.0043
M2	0.757779	0.227725	3.327606	0.0043
REM	0.327027	0.197818	1.653172	0.1178
TRADE	0.344660	0.165521	2.082277	0.0537
C	24.09838	14.14866	1.703228	0.1079

Source: Author's calculations

The results of Bounds test based on F-Test are shown in table 5.4 indicate that the value of F-Statistic is 7.86 which is greater than upper bound at 5% level of significance. This result shows that the cointegration exists between the variables and long run relationship exist.

5.5 Long Run Analysis

When we find the relationship between Gross domestic product (GDPG) and other variables like EMP, GFCF, TLM, TAX, etc. then we used auto Regressive Distributed Lag (ARDL) model. This model is used to test the existence of long run relationship between variables in multivariate time series models. The ARDL approach was used because of

its advantage such as the involvement of just a single equation set up making it easy and simple to interpret compare to other conventional techniques.

Table 7: Long Run Results of Overseas Labor Migration and Economic Growth

Dependent Variable: GDPG				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
D(EMP)	-0.235923	0.117657	-2.005173	0.0622
D (EMP (-1))	-1.052436	0.152348	-6.908125	0.0000
D(GFCF)	0.648078	0.239523	2.705705	0.0156
D (GFCF (-1))	1.141232	0.238244	4.790186	0.0002
D(SSE)	0.017624	0.088482	0.199182	0.8446
D (SSE (-1))	-0.327027	0.097426	-3.356682	0.0040
D(TLM)	-2.98E-06	1.47E-06	-2.027174	0.0596
D (TLM (-1))	-8.60E-06	1.83E-06	-4.711847	0.0002
D(TAX)	0.790583	0.382282	2.068062	0.0552
D(M2)	-0.440867	0.079633	-5.536205	0.0000
D(REM)	-0.567211	0.187363	-3.027333	0.0080
D (REM (-1))	-0.545017	0.173916	-3.133794	0.0064
D(TRADE)	-0.098885	0.144570	-0.683997	0.5038
D (TRADE (-1))	-0.344660	0.095650	-3.603335	0.0024
CointEq (-1) *	-1.222557	0.110285	-11.08540	0.0000

Source: Author's calculations

Estimation of the long run results presented as the table 5.5 that indicate that total employed labour (EMP), gross fixed capital formation (GFCF), secondary school enrolment (SSE), money multiplier (M2), trade is the positive and statistically significant indicate that positive relationship with GDPG. While total skilled and unskilled members (TLM), and taxes (TAX) shows the negative and statistically significant relationship with GDPG). The value of coefficient of EMP was 1.141 indicate that one percent increase in EMP leads to increase 1.141% in GDPG. It means that if total employed labour force increases in the economy then they increase the national production in the economy and economic growth increase. Similarly, the value of the coefficient GFCF was 1.052 that shows that 1% increase in GFCF leads to increase 1.052% increase in GDPG. The value of the coefficient total skilled and unskilled members was -0.60 indicate that 1% increases the total skilled and unskilled member's leads to decrease 0.60% of GDPG of the economy. It means that in the economy if child and old aged people that cannot perform work in the economy increase then economic growth decrease in the economy.

5.6 Error Correction Analysis

In the error Correction analysis when analyze that When disturbance accure in the model then how many times required for recover this error. This is the short run analysis error correction shows the speed of adjustment. When we find the result of the independent variables to dependent variables then these shows that some have positive effect and other are negative effect. The short run results reveal that the value of the coefficient of CointEq (-1) is -1.222, that indicate the coefficient was negative and statistically significant. The value shows that the disturbance in the model and approximately 1.2 years required for recovers this shock. The results suggest the speed convergence.

6. Conclusions and Policy Recommendations

The tendency of leaving a country/organization of high educated, skilled, talented, and knowledgeable persons from one country/ organization to another are called Brain Drain. Brain drain is the major factors of the developing countries that are affect the economic growth of that country. There are different reasons of the brain drain of the developing countries such as political instability (lack of consistent policies), better growth opportunities in other countries, Better health care facilities in other countries, Better living standard, and high wages. Educated, skilled people migrate to other countries for improve the living standard and earn more income. Most of the developing countries political instability is the cause of brain drain, there is no of the government for their nation so educated and talented people move to other developed countries where they get more and better opportunities, because in the developed countries better growth opportunities are high as compared to developing countries so individuals of the developing countries more to developed countries. It is easy to understand that everybody wants to live and serve in home country but unfortunately due to some social, economic and political factors many capable people are leaving their home country for the sake of better living

standard. Similarly, Unemployment, inflation and poverty are major causes of migration. People move to other countries not only for income but also due to economic and social circumstances. In the developed countries employment opportunities are higher as compared to developing countries. Brain drain has the negative effect on economic growth of any economy. Educated, talented, skilled individuals migrate to the other countries where they get better benefits or opportunities. This study has statistically and empirically analyzed the economic growth and the factors of the brain drain that affect the economic growth of the countries. Find out the effect of different variables on the economic growth ARDL test was used to analyze the results. In this study this part set to summarize the conclusion of this study and also give the policy recommendations. The conclusion of this study is that time series data during 1980-2021 was used to find the results. Economic growth GDP is used as a dependent variables and total employed labor force (EMP), Gross fixed capital formation is (GFCF), secondary school enrollment (SSE), total skilled and unskilled members (TLM), TAX, broad money or money multiplier (M2), trade are the independent variables that are used in this study to find the results. This study shows the short run as well as long run results of the variables. The results of this study show that total employed labour (EMP), gross fixed capital formation (GFCF), secondary school enrolment (SSE), money multiplier (M2), trade, total skilled and unskilled members (TLM), and taxes (TAX) are statistically significant effect to economic growth of the economy. These results also show that that total employed labour (EMP), gross fixed capital formation (GFCF), secondary school enrolment (SSE), money multiplier (M2), trade has the positive coefficient sign While total skilled and unskilled members (TLM), and taxes (TAX) shows the negative coefficient sign that are affected to GDP.

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