

AN EMPIRICAL INVESTIGATION OF SOCIO-ECONOMIC DETERMINANTS AND ECONOMIC CONSEQUENCES OF BRAIN DRAIN IN PAKISTAN

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Abstract

The statistical investigation of Pakistan's highly skilled labor force migration to other countries is the focus of this study. We look into push and pull factors as the primary drivers of cross-border migration of highly skilled individuals. Using time series data from 1980 to 2023, we apply ARDL analysis to find out the short- and long-term effects of brain drain on Pakistan's economy. The empirical conclusions lend credence to the demand-supply and gravity models of migration. According to our discoveries, brain drain has a negative influence on economic growth, but remittances sent home by foreigners to Pakistan have a positive impact, and the remaining control variables show the same patterns as the theories. We can summarize the findings by saying that developing nations like Pakistan prioritize planned brain exports over unplanned brain drains.

Keywords: Total employed labor force, Gross fixed capital formation, Secondary school enrollment, ARDL, Bound Test.

INTRODUCTION

1.1 Background and Rationale

Brain drain mentions to the migration of highly skilled professionals from their home countries to foreign destinations in exploration of superior opportunities, often resulting in the loss of valuable human capital (Akram, Shahzad, & Hussain, 2017). As it affects the nation's economic progress, creativity, and social development, brain drain has become an important worry for Pakistan (Haq & Raza, 2016). Pakistan's potential to achieve sustainable growth has been hampered by the emigration of talented workers, which has contributed to a shortage of knowledge across several industries (Zaidi & Yousafzai, 2020). Investigating the push factors that are causing the brain drain from Pakistan is therefore essential, as is creating plans to lessen its negative impacts.

Pakistan has recently seen a noticeable increase in brain drain as many highly qualified professionals choose to leave the nation in quest of better opportunities abroad. More than 765,000 Pakistanis are expected to emigrate for work in 2022, according to the Bureau of Emigration and Overseas Employment. These migrants work in a range of professions, including education, medical, nursing, engineering, information technology, agriculture, and accounting. While the migration of workers to the Gulf States boosts remittances, the loss of skilled workers has caused anxiety. This problem of brain drain is influenced by numerous causes. Limited economic opportunities, the general sense of pessimism, anticipated long-term economic difficulties, and the allure of better quality of life and future chances for themselves and their families abroad are some of the main causes. Political unrest, unequal access to opportunities, problems with peace and order, unfavorable working conditions, and failing healthcare and educational institutions all contribute to the issue's complexity. Additionally, there are few opportunities for progress and economic instability for the highly educated.

The main issue facing developing nations is brain drain. Political instability, poorer growth prospects, inadequate health care facilities, low living standards, and low wages are some of the causes of the brain drain from developing nations. People with education and skills move abroad in search of better living conditions and higher incomes. The

term "brain drain" defines the exodus of highly competent people from developing nations to other nations. Recently, this circumstance has led to a significant economic issue. The high expenses and unfavorable effects of brain drain currently burden African nations. Everyone wants to live and work in his or her home country, which is understandable, but sadly, many competent people are leaving their home country in search of a higher standard of living because of social, economic, and political factors.

The tendency of highly educated, talented, skilled, and knowledgeable individuals to leave a nation or organization and relocate elsewhere is known as "brain drain." Brain drain is detrimental to any state or institute because it results in a lack of skilled workers. Brain drain mostly affects developing countries (Marchiori et al., 2013; Ali, 2022). Globalization, growing information strength, and the upsurge of developing economies have prepared talent a exclusive resource and a dynamic power that can determine organizational success and provide long-term competitive advantage (Beamond et al., 2016; Khilji & Schuler, 2017; Ali, 2022). Businesses and countries engage in a "war for talent," which results in macro-level talent problems like brain drain and talent scarcity. Due to the nonexistence of worldwide barricades, brilliant and artistic entities have additional options than ever before to vacate their home country in hunt of improved living environments and professional prospects in developed nations (Beine et al, 2008). Brain drain jeopardizes a country's economic growth by lowering its human capital and competitiveness. Numerous push and pull factors, such as social, economic, demographic, and political ones, affect talent migration (Beine et al., 2007; Ali, 2022).

Talent Management is a collection of programs developed and implemented by governmental and non-governmental organizations at the national level to attract, develop, and retain talent in order to improve the competitiveness, performance, productivity, and innovation of local businesses and to yield social benefits (Metcalf et al., 2021; Ali & Audi, 2018). Actually, TM addresses the forces that influence businesses and individuals as well. Thus, it can be used to address global talent issues like brain drain and talent mobility.

It is suggested that HRM practices be implemented in organizations to lessen the impact of the push factors that cause employees to leave. Firm-level TM practices are more concerned with building talent pools to fill important roles within organizations than are HRM practices. One could speculate that firm-level TM practices could lessen the impact of talent migration factors on people's migration intentions (Beamond et al., 2016 and Collings, 2014). A country-level TM system will be improved as a result of more advanced and extensively used TM practices in local organizations, which will ultimately improve cross-country talent. Companies worldwide are forced to compete for the best and brightest employees due to a lack of talent and a high demand for human capital (Khilji et al., 2015).

In developing nations, where salaries, existing surroundings, and livelihood chances are fewer appealing to highly skilled individuals than in developed nations. Brain drain is the excess of a nation's outflow of human capital over its inflow occurs. The results of brain drain for countries of origin (COO) are controversial. According to an optimistic perspective, remittances, the gain of human capital, and an increase in foreign direct investment (FDI) between COOs and destination countries may make brain drain advantageous for COOs. According to a pessimistic perspective, brain drain causes domestic knowledge networks to become less competitive, reduces human capital, has detrimental welfare effects on COOs, and ultimately lowers firm performance. Numerous socioeconomic, natural, climatic, ecological, demographic, and political factors influence talent migration. Push and pull factors make up one of the most popular categories of talent migration determinants.

It has made the brain drain issue worse. In democratic nations like Pakistan, political instability is more noticeable. Pakistan is the sixth most populous country in the world. The majority of developing nations, particularly Pakistan, have long struggled with unemployment, inflation, and poverty because of inefficient resource use. One of the main reasons for migration is these economic problems. People relocate to other nations for a variety of reasons, including social and economic conditions in addition to financial gain. Another factor, political instability, contributes to both a bad economic climate and a state of law and order in any nation. For this reason, they would rather relocate to developed nations. Unemployment prevents people from earning enough money to pay for their education. As a result, a drop in unemployment may influence workers' decisions to migrate to developed nations. It is also widely believed that the disparity in wages between countries is the reason for migration. However, Kazlauskienė & Rinkevicius (2006) assert that this is not the sole cause of brain drain. Instead, the brain drain phenomenon is influenced by various factors in various nations. Less developed nations are suffering greatly from brain drain as a result of the global labor market's increased demand for highly skilled workers. Highly qualified and intelligent people are always encouraged to travel to western nations, despite the fact that many have restrictive visa policies in an effort to stop the migration flow. In the form of remittances, the exodus of educated individuals has both beneficial and negative effects (Shah & Ali, 2023). One significant source of foreign exchange earnings that can be utilized to improve the current account deficit is remittances.

1.2 Objective of the study

The primary objective of this investigation is to identify and examine the push factors that drive skilled professionals to migrate from Pakistan. The specific objectives are:

1. To look into the push and pull factors that are primarily responsible for the international migration of highly skilled

individuals.

2. To assess the impact of political and governance factors on skilled professionals' decision to leave Pakistan.
3. To provide evidence-based recommendations for policymakers to address brain drain and promote the retention of skilled individuals.

1.3 Significance of the Study

For policymakers and other important stakeholders, it is essential to comprehend the driving forces underlying the brain drain from Pakistan. The results of this study will help develop solutions to lessen the brain drain phenomena and support evidence-based decision-making. Pakistan can retain and attract qualified professionals by addressing the root problems, promoting economic growth, technological innovation, and social development.

2.1 LITERATURE REVIEW

According to Akram et al. (2017), "brain drain" is the term applied to define the exodus of highly trained people from their native nations in exploration of healthier opportunities overseas. A number of social, political, and economic elements influences a complicated phenomenon. The push factors, or the reasons why people leave their home countries, are the main emphasis of the conceptual framework used to analyze brain drain. Exploring the causes and effects of brain drain begins with understanding its terminology and philosophical underpinnings.

Akusoba (2014) conducted a study on the reasons behind Nigerian university employees' migration to developed nations. He came to the conclusion that the main reasons people leave their country for a more developed one are high unemployment, low wages, and inadequate leadership. Political instability, high inflation, and the inability of citizens to obtain good jobs due to a lack of job opportunities have been the main topics of Khan et al. (2012). They also recommended that in order to reduce the number of people who relocate overseas, the government should give all of its citizen's better facilities.

According to Hashmi et al. (2012), political and economic changes are causing intellectuals in all sciences to migrate from their home countries to the United States, Europe, Japan, and America. Germany was the victim of this brain drain in 2005, as this study also explains. Due to unstable political and economic conditions, approximately 144814 people reportedly left their home country; this is the highest rate of migration since the end of World War II.

According to Afzal et al. (2012), people migrate to developed nations because of unsafe and uncertain conditions at home as well as illegal circumstances. Using a questionnaire, Sajjad (2011) analyzed the various causes of intellectual migration and concluded that nearly 33% of people are fleeing their home countries because of political unrest and a lack of security in their lives.

According to a study on Pakistan by Ahmad et al. (2003), the country consistently promotes policies that benefit investors in an effort to draw in more of them. Because it wants to build basic infrastructure and create jobs domestically to prevent skilled labor from leaving the country, Pakistan offers its investors dividends, capital gains, and full repatriation of profits. The majority of the literature attempted to link infrastructure to economic growth, but it ignored the fact that people migrate from underdeveloped nations with inadequate infrastructure to developed nations with established infrastructure. (Dovlo, 2005; Kapur & McHale, 2005); therefore, it is imperative to look into infrastructure as a driving force behind skilled labor migration. Consequently, this study is an effort to look into the effects of fundamental infrastructures like energy production, roads, and the quantity of hospitals. This study develops the following hypothesis for empirical research based on the literature mentioned above.

2.2 The Global Brain Drain Phenomenon

The widespread effects of skilled migration on both sending and receiving countries are made clear by the global context of brain drain. The sending nations are hampered in their efforts to develop because of the loss of trained professionals caused by brain drain (Docquier&Marfouk, 2006). On the other hand, receiving nations gain from the infusion of highly skilled people who support their innovation and economic progress. Varied regions experience varied patterns of brain drain, highlighting their particular potential and problems in managing skilled migration (Kundu&Kundu, 2018).

2.3 Brain Drain in Developing Countries

Due to their insufficient access to resources and employment prospects, developing nations face substantial issues as a result of the brain drain (Zaidi & Yousafzai, 2016). According to Zaidi and Yousafzai (2020), these nations frequently experience a "brain drain dilemma" where the exodus of talented people widens already existing development gaps. High-skilled workers leaving emerging nations have an impact on industries including healthcare, education, and technology, slowing down their development and ability to meet the requirements of their populations (Rizvi & Naqvi, 2017). The literature on the exodus of brains from developing nations emphasizes the necessity for efficient policies and plans to keep qualified workers there while promoting equitable growth.

3.1 DATA AND METHODOLOGY

We will investigate Pakistan's economic growth determinants (GDP). Using special variables and tests, we will forecast the determinants. We will also test the relationship between human capital and financial boom using different variables. We start by testing the stationarity of the variables using the unit roots test. Bounds tests are used to test long-term existence, and ARDL analysis is used to estimate short- and long-term parameters.

3.2 Data Collection Procedure

With the aid of the results and table, we will describe the data sources and methodology that we employed for the estimation in this section. The secondary source data used in this study is time series data of statistics from 1980-81 to 2022-23 for all relevant data determinants. The following sources of data were used: World Development Indicators (WDI).

3.3 Data Analysis

The proper statistical methods will be applied to the analysis of the gathered data. Regression analysis and other inferential analysis will be used to investigate the connections between the push factors and the choice to immigrate. SPSS (Statistical Package for Social Sciences) will be the software tool utilized for data analysis.

3.4 Model Specification

The Unrestricted Errors Correction Model (UECMs) are presented to explain the relationship between financial growth and human capital for Pakistan. The following are the Unrestricted Errors Correction Model (UECMs) that explain how economic growth and human capital are related for Pakistan. In contrast to the short-run dynamic coefficients of the ARDL models, the parameters are the corresponding long-term multipliers.

The shape of econometric model is as follows.

$$GDPG = f(EMP, GFCF, SSE, TLM,)$$

$$GDPG = \beta_0 + \beta_1 EMP + \beta_2 GFCF + \beta_3 SSE + \beta_4 TLM + \mu_i$$

$$\beta_0 = \text{Constant}$$

GDPG = Gross Domestic Product Growth Rate

EMPL = Total Employed Labor Force

GFCF = Gross Fixed Capital

SSE = Secondary School Enrolment Ratio

TSLM = Total Skilled and Unskilled Members

e = Error Term

3.3 Description of variables

Dependent variable

The gross domestic product growth rate (GDPG) is the dependent variable. It is the total value of completed goods and services produced over a given time period for a nation's domestic market. GDP is a value measure since it is expressed in monetary units.

Independent variables:

Total employed labor force (EMP)

Employees are defined as those who contribute to the production of goods and services over a given time period. It comprises first-time job seekers, those who are currently employed, and those who are unemployed but looking for work. The percentage of the total labor force is used as its unit of measurement.

Gross fixed capital formation (GFCF)

It includes the investments made by resident producers in fixed assets over a specified period, less any disposals. It also encompasses specific additions made by producers or institutional units to the value of non-produced assets. The percentage of GDP serves as its unit of measurement.

Total skilled and unskilled members (TLM)

Skilled labor frequently calls for a great deal of experience or in-depth familiarity with protocols. Usually, unskilled labor does not need any prior knowledge or experience to carry out the duties of the job.

Secondary school enrollment (SSE)

By dividing the total number of students enrolled in secondary school, regardless of age, by the population of the age group that is officially equivalent to secondary education, and then multiplying the result by 100, the gross enrollment ratio for secondary schools is determined.

RESULTS AND DISCUSSIONS

The researcher will examine the connection between brain drain factors and economic growth in this section. We discover that economic growth declines when brain drain from the economy increases. Brain drain is influenced by various factors that either increase or decrease economic growth. The short- and long-term ARDL Bounds analyses will be intercepted in this section.

Long Run Results of Overseas Labor Migration and Economic Growth

Dependent variable GDPG				
Variables	Coefficients	Standard Error	T-Statistic	Probability
EMPL	1.212356	0.361237	3.356123	0.0051
GFCF	1.071547	0.263968	4.059382	0.0003
SSER	1.314776	0.193474	6.795621	0.0001
TSLM	-0.612122	0.215557	-2.839722	0.0116
C	25.186497	14.03644	1.794365	0.1087

Table 4.1 (Researcher's own contribution WDI)

We applied the auto Regressive Distributed Lag (ARDL) model to determine the association between the Gross Domestic Product (GDPG) and other variables, such as EMP, GFCF, TLM and SSE. In multivariate time series models, it is used to determine whether long-term relationships between variables exists or not. The ARDL approach was chosen due to its benefits, which includes the use of a single equation setup, which makes it easier to understand than other traditional methods. Total employed labor (EMP), gross fixed capital formation (GFCF), secondary school enrollment (SSE) all have positive and statistically significant relationships with GDPG, according to estimates of the long-term results shown in table 4.1. However, there is a negative and statistically significant correlation between GDPG with total skilled and unskilled members (TLM) and Tax. The coefficient of EMP was 1.212, meaning that a 1% increase in EMP causes GDPG to rise by 1.212%. The implication is that if the economy's total employed labor force grows, so does the country's output and economic expansion takes place. Similarly, the coefficient GFCF had a value of 1.071, indicating that a 1% increase in GFCF results in a 1.071% increase in GDPG. The coefficient of the SSE (Secondary School Enrolment) is 1.31 implying that if 1 % change in school enrolment causes 1.31 % change in GDPG. The coefficient for total skilled and unskilled members had a value of -0.61, meaning that a 1% increase in the number of skilled and unskilled members results in a 0.61% drop in the economy's GDPG. It implies that if the number of children and elderly people who are unable to work in the economy rises, economic growth will fall.

4.1 Bounds Test Analysis

We used the ARDL bound test technique to examine the relationship between the variables. We determine whether cointegration exists or not using the ARDL bound test. Below is the ARDL bounds test result.

Bounds Test based on F-Test

Model	F-statistic	I ₀ Bound	I ₁ Bound
GDPPC/EMPL, GFCF, SSER, TSLM	5.54	1.75	2.95

Table 4.2 (Researcher's own contribution WDI)

Table 4.2 displays the results of the Bounds test based on the F-Test, which shows that the F-Statistic value is 6.54, which is higher than the upper bound at the 5% level of significance. This outcome demonstrates that there is a long-term relationship and co-integration between the variables.

Dependent Variable: GDPG				
Variables	Coefficients	Standard Error	T-Statistic	Probability
D(EMPL)	-0.214845	0.106742	-2.012750	0.0798
D (EMPL (-1))	-1.146158	0.114191	-10.03720	0.0000
D(GFCF)	0.546196	0.218432	2.500531	0.0014
D (GFCF (-1))	1.121561	0.206423	5.433314	0.0002
D(SSER)	0.025461	0.065321	0.389782	0.7891
D (SSER (-1))	-0.316165	0.079732	-3.965346	0.0036
D(TSLM)	-2.75E-07	1.25E-07	-2.200010	0.0541
D (TSLM (-1))	-7.45E-06	1.41E-06	-5.283687	0.0001
Coint Eq (-1) *	-1.11223	0.104342	-10.66042	0.0000

Table 4.3 (Researcher's own contribution WDI)

4.2 Error Correction Analysis

When a disturbance occurs in the model, how many times is needed to recover this error? This is the analysis of the

error correction in table 4.3 above. This short-term analysis of error correction illustrates how quickly adjustments are made. Finding the association amid the independent and dependent variables reveals that some have a positive impact while others have a negative one. According to the short-term results, the coefficient of Coint Eq (-1) was negative and statistically significant, with a value of -1.105. The value indicates that there was a model disturbance and that it would take about 1.1 years to recover from this shock. The findings imply that speed convergence.

CONCLUSIONS AND POLICY RECOMMENDATIONS

The phenomenon known as "Brain Drain" refers to the exodus of highly educated, talented, skilled, and knowledgeable individuals from one nation or organization to another. One of the main elements affecting the economic development of developing nations is brain drain. Political instability (lack of consistent policies), better growth opportunities, better health care facilities, higher living standards, and high wages are some of the factors contributing to the brain drain from developing nations. People with education and skills move abroad in search of better living conditions and higher incomes. The political instability of the majority of developing nations is the reason behind brain drain; when there is no government in place, highly skilled and educated individuals migrate to more developed nations where they can take advantage of better growth opportunities. As a result, people from developing nations migrate more to developed nations. Everyone wants to live and work in his or her home country, which is understandable, but sadly, a lot of competent people are leaving their home country in search of a higher standard of living because of social, economic, and political factors. In a similar vein, poverty, unemployment, and inflation are the main drivers of migration. People relocate to other nations for a variety of reasons, including social and economic conditions in addition to financial gain. Employment opportunities are greater in developed nations than in developing ones. Any economy's growth is negatively impacted by brain drain. People with education, talent, and skill migrate to other nations in search of better opportunities or benefits. The economic growth and the brain drain factors that impact the countries' economic growth have been statistically and empirically examined in this study. Determine how various factors affect economic growth. The results were analyzed using the ARDL test. This section of the study aims to provide a summary of the findings and policy recommendations. The study's conclusion is that the results were obtained using time series data from 1980 to 20223. The dependent variable in this study is GDP, while the independent variables used to determine the results are secondary school enrollment (SSE), total skilled and unskilled members (TLM), total employed labor force (EMP), and gross fixed capital formation (GFCF). This study displays the variables' short- and long-term outcomes. According to the study's findings, the following factors have a statistically significant impact on the economy's growth: trade, total skilled and unskilled members (TLM), gross fixed capital formation (GFCF), secondary school enrollment (SSE) and total employed labor (EMP). These findings also demonstrate that skilled and unskilled members (TLM) exhibit a negative coefficient sign that is impacted by GDP, total employed labor (EMP), gross fixed capital formation (GFCF), secondary school enrollment (SSE) all have positive coefficient signs.

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