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An Empirical Analysis of the Socioeconomic Causes of Brain Drain and its Effects on Pakistan's Economy

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Abstract

The empirical analysis of Pakistan's highly skilled labor force emigration to other countries is the focus of this study. Researchers looked 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, Scholar applied ARDL analysis to determine the short- and long-term effects of brain drain on Pakistan's economy. The empirical findings lend credence to the demand-supply and gravity models of migration. According to our findings, brain drain has a negative impact 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: Taxes, Broad Money, Remittances. Trade, ARDL, Unit Root Test, Bound Test

Introduction

Background of Study

Brain drain is the biggest problem facing developing countries. A number of factors, including low living conditions, low salaries, weak development prospects, political instability, and inadequate health care facilities, cause the brain drain from developing countries. Skilled and educated individuals relocate overseas in pursuit of better living conditions and greater wages. "Brain drain" refers to the movement of highly skilled individuals from emerging countries to other countries. This situation has recently resulted in a serious economic problem. African countries are currently burdened by the high costs and negative consequences of brain drain. Everyone wants to live and work in his or her own country, which makes sense, but due to social, economic, and political issues, many qualified people are regrettably departing from their home nation in pursuit of a greater standard of living. The tendency of highly educated, brilliant, professional, and informed individuals to leave a nation or organization and relocate elsewhere is known as "brain drain." Brain drain is detrimental to any country or organization since it results in a shortage of skilled individuals. Brain drains mostly affect developing countries (Marchiori et al., 2013; Ali, 2022). Globalization, increasing information intensity, and the rise of emerging economies have made talent a unique resource and a driving force that can decide organizational success and give long-term competitive advantage (Beamond et al., 2016; Khilji & Schuler, 2017; Ali, 2022). Businesses and countries engage in a "battle for talent," which results in macro-level talent problems including brain drain and skill scarcity. Due to the lack of international barriers, talented individuals have

more possibilities than ever before to leave their home country in search of better living conditions and professional prospects in industrialized nations (Beine et al, 2008). Brain drain jeopardizes a country's economic progress by lowering its human capital and competitiveness. Numerous push and pull variables, such as social, economic, demographic, and political ones, affect talent movement (Beine et al., 2007; Ali, 2022). The goal of talent management (TM), a subfield of human resource management (HRM) study and practice, is to make sure that there is an adequate supply and demand for talents and their human capital because of competition for talent at both the macro and micro levels (Khilji et al., 2015; Ali & Ahmad, 2016). TM is a set of programs developed and implemented by governmental and non-governmental organizations at the national level to attract, develop, and retain talent in order to increase the competitiveness, performance, productivity, and innovativeness of local businesses and to provide social benefits (Metcalfe et al., 2021; Ali & Audi, 2018). In actuality, TM also discusses the factors that affect both persons and corporations. As such, it can be used to global talent concerns such as talent mobility and brain drain. Highly skilled workers are constantly migrating from developing to developed nations in this age of globalization; this phenomenon sparks intense discussion and policy debate about the benefits and drawbacks of the brain drain. Everywhere in the world, there is a need for highly skilled workers, including engineers, technicians, and medical professionals. Developed nations recruit skilled workers by offering them better living conditions, higher wages, access to cutting-edge technology, and more stable political systems. . However, because they have invested in their education and training and have paid high opportunity costs, developing countries suffer significant losses when these professionals migrate, while the host country directly benefits because it did not have to pay for their education. Given the significance of human capital in the process of growth, brain drain is becoming a global concern. A nation's greatest asset is its educated population, and the trend of highly educated people migrating abroad causes this valuable resource to be lost, which has an impact on the economy and society at large. Since the native country's investment in higher education and training is lost when highly educated and skilled individuals leave and never return, it has been noted that the flight of intelligent and highly educated people poses a significant obstacle to the development of poor countries (Bhagwati & Hamada, 1974; Bhagwati, 1979; Durrani & Mir, 2007; Kousar, Rehman et al., 2014; Monteleone & Torrisi, 2010). Kobayashi (2014) asserts that while brain drain would increase economic prosperity and growth rates in the host nation, it would have a negative impact on the process of economic growth in the home or native countries. Twenty million of the 59 million migrants in the OECD countries alone are highly skilled and originate from Bangladesh, Sri Lanka, and Pakistan, according to Pedersen et al. (2008). Two percent of the brain drain from home nations to other countries was professional or skilled, according to Lucas's (2005) research of the migration of persons from 1977 to 2000. 18% of the population worked as masons, carpenters, or electricians, but as these economies grow every day, so does their demand for highly skilled labor and certified personnel. Developed nations also provide a number of incentives, including scholarships, the US H1-B visa program, the UK and Australia's High talented program, and Germany's Green Card Scheme for Technology Experts, to entice highly talented individuals from poor nations. For Pakistan, a poor country, unemployment and slow economic growth are the main problems. It is widely accepted that skilled and semi-skilled workers' migration contributes to economic growth and the resolution of the unemployment problem because they send money home. It is only effective temporarily, though, as Pakistan will eventually face a professional deficit, especially in the areas of health and education, as well as social and economic losses due to the emigration of highly skilled people.

Objective of the study

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

1. To investigate that pull and push factors that are the main cause of highly skilled migration across countries.
2. To assess the impact of political and governance factors on skilled professionals' decision to leave Pakistan.

Significance of Study

Policymakers and other important stakeholders must comprehend the factors causing the brain drain from Pakistan. The results of this study will help develop ways to lessen the brain drain phenomena and support evidence-based decision-making. Pakistan can attract and retain qualified professionals by addressing the root causes and promoting social progress, economic expansion, and technical innovation.

Literature Review

The brightest and most talented minds in the world are a tremendous asset, claim Davis and Hart (2010). Some claim that although developing countries lost talent, wealthy economies ended up gaining it. As a result, there were more skilled people trying to enter the workforce and fewer jobs available. The world's largest supplier of skilled labor is still the United States. Leon-Ledesma and Piracha (2004) have studied the role of foreign remittances on skilled worker migration in emerging economies. According to the study's findings, skilled worker out-migration reduces the unemployment rate in the country and boosts remittance inflow, both of which encourage activities connected to self-employment. Foreign exchange reserves therefore increase and enhance domestic investment, accelerating the rate of economic growth in developing nations. A private infrastructure provides the necessary inputs for the private sector to raise its production level, claims Macdonald (2008). He also pointed out that, contrary to what many others have said, governmental investment affects private productivity. Businesses view public capital as an unpaid production element to optimize their profits. Mamatzakis (2008) demonstrated the existence of scientific trends in infrastructure investment. One of the most important indicators for evaluating Greece's economic performance was infrastructure investment. According to the author's calculations, public infrastructure would save money while simultaneously enhancing production and growth. According to Straub (2008), infrastructure investment promotes growth in two ways: economies of scale and scope. The author also tried to make it clear that better transportation infrastructure will lead to healthier economic management and cheaper transportation expenditures. The same conclusions were drawn by Li and Li (2008), who claim that infrastructure investment is essential for boosting China's economy between 1997 and 2006. Canning and Pedroni (2004) used panel data from 1950 to 1992 to investigate the relationship between infrastructure and GDP. The findings indicated a long-term relationship between infrastructure and a country's GDP. It continues by stating that workers are moving because infrastructure affects per capita income. It suggests that we can use simple panel tests that are robust to the presence of unknown, diverse short-term causal links to distinguish the signs and directions of the long-term influence of infrastructure on income. The study's conclusions offer compelling evidence that infrastructure improvement usually has a lasting impact on growth. The brightest and most talented minds in the world are a tremendous asset, claim Davis and Hart (2010). Some claim that although developing countries lost talent, wealthy economies ended up gaining it. As a result, there were more skilled people trying to enter the workforce and fewer jobs available. The United States remains the world's top destination for skilled workers due to its strong infrastructure. Migration from poor countries is encouraged by the possibility of high income, according to Solimano's (2002) research. He added that a variety of additional factors, such as racial biases, political instability in the nation of origin, and hostilities, impact the decision to migrate. Bang and Mitra (2011) assert that the quality and legitimacy of domestic political institutions have a major impact on skilled labor migration. Therefore, the evidence indicates that the main factors influencing

skilled labor migration are political instability and illegality. However, this study contributes to the body of current work by examining the role of governance in the brain drain using a multidimensional governance measure. Three facets of governance—political instability, corruption, and the rule of law—were used in this study to compute the governance index. Drawing from the previously listed literature, this study formulates the following hypothesis for empirical investigation.

The Global Brain Drain Phenomenon

The widespread effects of skilled migration on sending and receiving countries are highlighted by the global context of brain drain. The sending countries' progress is hampered by the loss of qualified experts brought on by brain drain (Docquier & Marfouk, 2006). On the other hand, receiving nations gain from the inflow of highly skilled people who support their innovation and economic growth. Regional variations in brain drain patterns reflect each region's distinct possibilities and difficulties in managing skilled migration (Kundu & Kundu, 2018).

Data and Methodology

The elements influencing Pakistan's economic growth (GDP) were investigated. Tests and special variables will be used to predict the determinants. We will also investigate the relationship between financial boom and human capital using a range of variables. To determine whether the variables are stationary, we first apply the unit roots test. Bounds tests are used to test long-term existence, while ARDL analysis is used to estimate both short- and long-term parameters.

Data Collection Procedure

With the aid of the results and table, the researcher described the data sources and methods we employed for the estimation in this section. The secondary source data used in this study were the time series statistics for all relevant data determinants. The following sources of information were examined: World Development Indicators (WDI).

Data Analysis

The proper statistical methods will be applied to the analysis of the gathered data. Percentages and frequencies will be used in descriptive analysis to give a general picture of the respondents' demographic traits. Regression analysis and other inferential analysis will be used to investigate the connections between the push factors and the decision to immigrate. The statistical package for social sciences, or SPSS, will be the program used to analyze the data.

Model Specification

For Pakistan, the Unrestricted Errors Correction Models (UECMs) are used to describe the connection between human capital and financial growth. The following list of Unrestricted Errors Correction fashions (UECMs) explains how Pakistan's economic growth and human capital are related. Unlike the short-run dynamic coefficients of the ARDL models, the parameters are the matching long-term multipliers.

The shape of econometric model is articulated as follows.

C = Constant

GDPG=f(TAX, M2, REM, TRADE)

$GDPG=\beta + \beta_1 TAX + \beta_2 M2 + \beta_3 REM + \beta_4 TRADE + \mu_i$

M2 = Broad Money (M2)

TAX= Taxes

REM= Remittances

T = Trade

e = Error Term

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
The following independent variables were used in this study to estimate the results: trade, remittances (REM), money multiplier (M2) and tax.

Definition of variables:
Broad money (M2)
Broad money includes other securities such as commercial paper and certificates of deposit, bank and traveler's checks, demand deposits other than those of the central government, and time, savings, and foreign currency deposits of resident sectors other than the central government. It is measured as a percentage of GDP.

Trade
Trade is the buying, selling, or trading of goods or services between people, companies, or countries. It is measured as a percentage of GDP.

Remittances
Remittance is the act of sending a certain amount of money from one party to another. Though they also include transfers within the same country, most people consider money transfers overseas to be remittances

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 unit root, ARDL bounds, short-, and long-term analysis results are intercepted in this section.

Long Run Results of Overseas Labor Migration and Economic Growth

Dependent Variable: GDPG				
Variables	Coefficient	Std. Error	T-Statistic	Prob.
TAX	-0.757779	0.227725	-3.327606	0.0091
M2	0.757779	0.227725	3.327606	0.0071
REM	0.327027	0.197818	1.653172	0.1156
TRADE	0.344660	0.165521	2.082277	0.0542
C	24.09838	14.14866	1.703228	0.1087

Table 4.1 (Researcher's own contribution WDI)
To ascertain the link between the Gross Domestic Product (GDPG) and additional variables, including M2, REM, TRADE TAX, etc., researchers employed the auto Regressive Distributed Lag (ARDL) model. This model is used to ascertain whether there are long-term links between variables in multivariate time series models. The advantages of the ARDL methodology, such as

its use of a single equation setting that makes it simpler to comprehend than other conventional methods, led to its selection. The estimations of the long-term outcomes in table 4.1 indicate that trade and the money multiplier (M2) have positive and statistically significant associations with GDPG. Nonetheless, a statistically significant negative association exists between GDPG and taxes (TAX).

Bounds Test Analysis

To investigate the relationship between the variables, we employed the ARDL bound test technique. Using the ARDL bound test, we ascertain whether cointegration is present or not. The ARDL bounds test result is shown below.

Bounds Test based on F-Test

Model	**F-statistic**	**I0 Bound**	**I1 Bound**
GDPPC/ TAX, M2, REM, TRADE	7.86	1.85	2.85

Table 4.2 displays the Bounds test results based on the F-Test. The F-Statistic value of 6.54 exceeds the upper bound at the 5% level of significance. This finding suggests that the variables are cointegrated and have a long-term relationship.

Dependent Variable: GDPG				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
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

Error Correction Analysis

When the model is disrupted, how many times does it take to recover this error? Table 4.3 above has this mistake correction analysis. This brief analysis of error correction illustrates the pace at which changes are created. It is evident by comparing the independent and dependent variables that some have a positive impact while others have a negative one. The coefficient of Coint Eq (-1) was -1.105, which was statistically significant and negative, according to the short-term data. The value indicated that there had been a model disturbance and that it would take the model about 1.1 years to recover. The findings point to speed convergence.

Conclusions and Policy Recommendations

"Brain Drain" is the term used to describe the movement of highly educated, gifted, competent, and informed people from one country or organization to another. Brain drain is one of the primary factors influencing the economic growth of developing countries. The brain drain from poor countries is caused by a number of factors, including political instability (lack of consistent policies), improved growth prospects, improved health care facilities, greater living standards, and high earnings. Skilled and educated individuals relocate overseas in pursuit of better living conditions and greater wages. Brain drain is caused by political instability in most developing countries; highly educated and competent people move to more developed countries where they can benefit from superior economic prospects when there is no government. People from underdeveloped countries migrate to industrialized countries in greater numbers as a result. Everyone wants to live and work in their own country, which makes sense, but due to social,

economic, and political issues, many qualified people are regrettably departing their home nation in pursuit of a greater standard of living. Similarly, the primary causes of migration are inflation, unemployment, and poverty. In addition to financial gain, social and economic conditions are among the many reasons why people move to other countries. Compared to underdeveloped countries, affluent countries offer more employment opportunities. Brain drains has a detrimental effect on the expansion of any economy. In pursuit of better possibilities or advantages, people with education, ability, and skill travel to other countries. This study has statistically and experimentally investigated economic growth and brain drain factors that influence the countries' economic growth. Analyze the effects of different factors on economic growth. The ARDL exam was used to analyze the data. The purpose of this study section is to offer a synopsis of the results and suggestions for policy. The study concludes that time series data from 1980 to 2021 was used to get the conclusions. expansion of the economy. The study's dependent variable is GDP, whereas the independent variables used to compute the results were trade, wide money, commonly referred to as the money multiplier (M2), and tax. This study illustrates the variables' immediate and long-term impacts. The study's findings show that trade, taxation, and the money multiplier (M2) all have statistically significant impacts on economic growth. The money multiplier (M2), commerce, and taxes (TAX) all exhibit positive coefficient indications, according to these findings.

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