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Brain Drain in Pakistan

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ABSTRACT

This study investigating the factors that contribute to brain drain in the Islamic Republic of Pakistan. From 1997 through 2022, yearly time series data were used in the research. The current study used several econometric methodologies as descriptive statistics, Variance inflation Factor, Serial Correlation LM Test, The Breusch-Pagan-Godfrey Test and Ordinary Least Square (OLS) to get the results. OLS results show that MIG and REM have positive and significant impact on Pakistan' s GDP. But the TER, INF and UN have negative impact on Pakistan's economy. Furthermore, GFCF has no effect on the economy of Pakistan. The current study suggests that unfortunately, the lack of prospects for career advancement in Pakistan has led to a major increase in brain drain during the past several years. Additionally, our economy does not have enough room to handle the enormous number of talented workers that join the labor market each year.

Introduction

The term "brain drain" defines the emigration of highly educated as well as competent people from one country to another, frequently in search of better prospects, higher wages, or a more favourable working environment. In the case of Pakistan, brain drain has been a significant issue for many years, with several skilled as well as educated individuals leaving the nation in search of better chances**.**

The brain drain in Pakistan is caused by a number of factors. The scarcity of employment options and low wages are two important contributing factors. Finding a job that matches their education and skill set can be challenging for many highly qualified and educated people. As a result, many search for jobs abroad where they may make more money and work in a better setting.Terrorism has had a huge impact on Pakistan's brain drain. For many years, the country has been afflicted by terrorist operations, which has resulted in a fall in economic growth, insecurity, and instability. Terrorism has had a significant impact on brain drain in Pakistan by instilling fear and insecurity among the population. Many people believe that their safety is under jeopardy, which has reduced their quality of life. As a result, many competent and educated people have fled the country in pursuit of more secure conditions in which to establish a brighter future for themselves and their families.

In Pakistan, inflation has a huge impact on brain drain. Inflation is defined as the gradual rise in the cost of goods and services, which reduces people's purchasing power. Inflationary pressures produce a climate of economic uncertainty and instability, which can lead to brain drain. One of the key effects of inflation on brain drain in Pakistan is a decrease in standard of life. When the prices of products and services rise, people are unable to maintain the same standard of living as previously, and their purchasing power falls. Individuals may

get frustrated and despairing as a result of this, leading them to seek better possibilities elsewhere. Furthermore, rising inflation leads to a slowing of economic growth. When inflation is high, firms find it difficult to function successfully, and attracting foreign investment becomes problematic. A lack of economic possibilities can result in brain drain, as many competent and educated persons seek better work chances and higher incomes in other countries.

Remittances refer to the money that is sent by persons employed overseas to their families in their homebased country. Remittances are a significant source of revenue for several countries, including Pakistan. Though, remittances can also have an impact on brain drain in Pakistan. In addition, remittances can also have a positive impact on the economy of Pakistan. When individuals receive remittances, they are able to spend more money, that can increase economic growth as well as create more opportunities of job. This can help to address the underlying issues that contribute to brain drain, such as a lack of economic opportunities and low salaries. Overall, brain drain is a major issue for Pakistan since it results in the loss of highly trained and educated persons who may make substantial contributions to the country's growth.

Literature Reviews

Malokani, Mehmood and Munir (2022) stated that Countries are able to achieve their objectives for sustainable development with greater ease because businesses have access to cutting-edge technology. Countries should provide incentives for technological investments in this context. Qualified workers won't have to leave the country to work for companies that have the latest technology. Renewable energy projects will be able to expand even further as the country's skilled workforce expands. On the other hand, these knowledgeable individuals will also be able to come up with innovative concepts for improving energy efficiency. These circumstances will make it easier to achieve sustainability objectives. a novel model has been built to look at how to cut down on brain drains and make emerging economies more sustainable. First, the essential components of the balanced scorecard approach are used to determine the necessary criteria. These factors are evaluated using the golden ratio and the BOFQ M-SWARA method. Second, the performance of BOFQ ELECTRE as well as the golden ratio in reducing brain drains in seven emerging economies is examined. An assessment is additionally made with IFSs as well as PFSs to test the legitimacy of the results. The outcomes are the same for each and every fuzzy set. This situation indicates that the findings are quite coherent as well as reliable. Technical competence is found to be the most important factor in reducing problem of brain drain.

Shabnum, Iqbal, and Khan (2021). Stated that one important aspect of development economics and demographic transitions is brain drain. Human capital can be exported by a populous nation. The flow of human capital (HCO) is influenced by a plethora of factors. Economic, social, and political drivers appeal to some. The impact of various classes of variables on the HCO is compared in this study. In addition, it offers suggestions for controlling HCO based on these findings. Questionnaires are used to collect data from three urban and three rural areas of Peshawar. The sampling method is random. Probit models are utilized for contrasting the meaning of factors. The study demonstrates that HCO is significantly influenced by both previously unknown religious and environmental factors in addition to the traditional variables of economic, social, and political importance. By considering even more factors that affect the HCO, the upcoming researchers can conduct additional research. They are able to carry out research at various scales and in various areas. By considering the resulting significant and insignificant factors of brain drain, economic policies can be developed. The findings of this study indicate that the primary requirements are the creation of employment opportunities, the payment of a reward for hard work, the provision of a lower cost of living, a stable currency, controlled inflation, improved health facilities, equal rights for all people regardless of social status, religion, language, or ethnicity, free

elementary and high school education, government support for dependents, a favorable environment for personal development and exposure, political stability, life security, the rule of law, freedom of expression, a solution to minority issues, cheap and healthy food.

Surani (2021) stated that the study investigated how diaspora engagement could be used to turn Pakistan's brain drain into brain gain. To decide how emerging countries, as Pakistan may use its diaspora's knowledge for its own growth., it was essential to interview diaspora. A total of in-person interviews with Pakistani immigrants who have made the Greater Toronto Area their home were conducted for the purposes of this study. The study's conclusions indicate that Pakistan has a major chance to engage its more than seven million diaspora members for capacity building. The study found that life stages and the number of years spent in a new state influence diaspora knowledge transfer. Individuals who are new to a country are less inclined to share knowledge than those who have lived there for an extended amount of time. Mutual trust, a disciplined approach to diaspora participation, and, most crucially, sending nations' varied perspectives were all deemed necessary conditions for a successful diaspora engagement plan. Pakistan has a chance and a need to reconsider how it views its diaspora and the potential growing roles they might not just play for money sent home.

Ahmad, Kousar, and Bukhari (2020) use data from 1990 to 2018 to examine the factors influencing Pakistan's brain drain. The study incorporates variable indices to assess the possibility of factors leading to migration from Pakistan to other developed economies. The World Development Indicator (WDI) and the Bureau of Emigration and Overseas Employment (BEOE) have provided secondary data. According to the study, infrastructure, financial stability, standard of life, and governance all have a long-term, negative, and significant impact on the dependent variable, brain drain. Over time, brain drain is not significantly impacted by social openness. According to the study's findings, brain drain in developing countries is a significant issue that needs to be given top attention. The study aids in the formulation of regulations aimed at reducing the exodus of highly trained workers.

Methodology

World Bank is the main secondary data source that are used to collect the data about the dependent and each independent variable used in the specification of the model in this study. Era of this study is 26 years from 1997-2022 for the investigation. Current study used the methodology approach as OLS regression analysis.

$$GDP = \beta_0 + \beta_1 MIG_t + \beta_2 REM_t + \beta_3 TER_t + \beta_4 GFCF_t + \beta_5 INF_t + \beta_6 UN_t + \varepsilon_t$$

GDP = Gross Domestic Product

MIG = Net migration

REM = Remittances

TER = Terrorism

GFCF = Gross Fixed Capital Formation

INF = Inflation

UN= Unemployment

ε = Error term

Results and Discussion

This section presents the results and analysis of the study, where the data related to the selected Asian countries will be analyzed by conducting the necessary econometrics tests.

	GDP	MIG	REM	TER	GFCF	INF	UN
Mean	3.962809	-7.18887	4.736659	1.137741	14.87613	8.38393	1.996322
Median	4.260088	-5.78225	4.447783	0.606	14.62289	7.692156	0.64
Maximum	7.54686	9.40739	8.990918	3.923	17.73199	20.28612	6.55
Minimum	-1.27409	-22.9041	1.310692	0.051	12.52063	2.529328	0.4
Std. Dev.	1.9555	8.221256	2.143391	1.174924	1.523932	4.674998	1.975905
Skewness	-0.51171	-0.28074	0.130245	1.059429	0.392875	0.970622	1.024227
Kurtosis	3.293048	2.47324	2.158058	2.828119	2.097271	3.678908	2.676084
Jarque-Bera	1.274937	0.666831	0.873812	5.083992	1.611365	4.758016	4.838721
Probability	0.528629	0.716473	0.646032	0.078709	0.446783	0.092642	0.088978
Sum	106.9959	-194.1	127.8898	30.719	401.6556	226.3661	53.9007
Sum Sq. Dev.	99.42345	1757.315	119.4473	35.89158	60.3816	568.2457	101.5092
Observations	27	27	27	27	27	27	27

The mean value of GDP is 3.962809, the mean value of MIG is -7.18887, the mean value of REM is 4.736659, the mean value of TER is 1.137741, the mean value of GFCF is 14.87613, the mean value of INF is 8.38393, the mean value of ER is 88.06737 and the mean value of UN is 1.996322. The maximum value of GDP is 7.54686, the maximum value of MIG is 9.40739, the maximum value of REM is 8.990918, the maximum value of TER is 3.923, the maximum value of GFCF is 17.73199, the maximum value of INF is 20.28612, the maximum value ER is 204.8672 and the minimum value of UN 6.55. The minimum value of GDP is -1.27409, the minimum value of MIG is -22.9041, the minimum value of REM is 1.310692, the minimum value of TER is 0.051, the minimum value of GFCF is 12.542063, the minimum value of INF is 2.529328, the minimum value of ER is 36.07868 and the minimum value of UN is 0.4.

Variance Inflation Factor

Table 2: Variance Inflation Factors

Variance Inflation Factor	
Variable	**Centered VIF**
MIG	4.011227
REM	7.610045
TER	3.096091
GFCF	2.168432
INF	2.487847
UN	5.14052

Variance Inflation factors are also used to test for multicollinearity, and it is generally recommended that the VIF not exceed 10.

Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.996942	Prob. F (2,16)	0.1682
Obs*R-squared	5.193638	Prob. Chi-Square (7)	0.0745

The probability value is greater than 5% so there is no autocorrelation on the data.

Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.761011	Prob. F (7,18)	0.1575
Obs*R-squared	10.56824	Prob. Chi-Square (8)	0.1586

Table 3 shows that probability value is greater than 5% so there is no heteroskedasticity in the data. The result shows that F-statistic is 1.761011. The P-value of is 0.1575, which is greater than 0.05.

Ordinary Least Square (OLS)

Ordinary Least Square Method (OLS) is applied to get the main results.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MIG	0.104962	0.020036	5.23863	0.0001
REM	0.517638	0.22982	6.603605	0
TER	-0.09717	0.205106	-0.47373	0.0414
GFCF	0.457047	0.38141	1.198311	0.0663
INF	-0.35955	0.065143	-5.51931	0
UN	-0.933	0.217803	-4.2837	0.0004
R-squared	0.794508			
Adjusted R-squared	0.636817			
S.E. of regression	1.49046			
Prob(F-statistic)	0.010877	Durbin-Watson stat		2.388653
Prob (Wald F-statistic)	0			

This table shows the Ordinary least square method, the coefficient value of MIG is 0.104962 and the probability value is 0.0001. The probability value is less than 5% means that one unit change in net migration will make 0.104962-unit change in GDP. There is positive and significant impact of net migration on GDP.The coefficient value of REM is 0.517638 and the probability value is less than 5% means that one unit change in REM will make 0.517638-unit change in GDP. There is positive and significant impact of remittances on GDP.The coefficient value of TER is -0.09717 and the probability value is 0.0414 means that one unit change in TER will make -0.09717-unit change in GDP. There is negative and significant impact of terrorism on GDP. The coefficient value of is GFCF is 0.45047 and the probability value is 0.0663 means that there is positive and insignificant impact of GFCF on GDP.The coefficient value of INF is -0.35955 and probability value is 0.0 means that the one-unit change in inflation will make -0.35955-unit change in GDP. There is negative and

significant impact of inflation on GDP. The coefficient value of UN is -0.933 and the probability value is 0.0004 means that one-unit change in unemployment will make -0.933-unit change in GDP. There is negative and significant impact of unemployment on GDP.

Conclusion

This study investigating the factors that contribute to brain drain in the Islamic Republic of Pakistan. From 1997 through 2022, yearly time series data were used in the research. The current study evaluates a number of academic works that are relevant to our investigation. The study determines the causes of brain drain in various nations using earlier literature studies.

The current study then used several econometric methodologies. The study begins by presenting the findings from descriptive statistics. The numbers for the mean, median, maximum, minimum, skewness, and kurtosis are displayed in descriptive statistics. Second, the current study investigates pair-wise correlation findings to see if the problem of multicolinearity among variables exists. The results show that the data are not multicolinear. The research then used the Serial Correlation LM Test to examine the Autocorrelation issue. There is no autocorrelation in the data set, according to the results of the Serial Correlation LM Test. The study also examines the issue of heteroskedasticity in the next stage. There is no autocorrelation in the data set, according to the results of the Serial Correlation LM Test. The Breusch-Pagan-Godfrey Test is used in the following phase of the study to examine the heteroskedasticity issue. There is no heteroskedasticity in the data set, according to the results of the Breusch-Pagan-Godfrey test.

OLS results show that MIG and REM have positive and significant impact on Pakistan' s GDP. But the TER, INF and UN have negative impact on Pakistan's economy. Furthermore, GFCF has no effect on the economy of Pakistan. The current study suggest that unfortunately, the lack of prospects for career advancement in Pakistan has led to a major increase in brain drain during the past several years. Additionally, our economy does not have enough room to handle the enormous number of talented workers that join the labour market each year.

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