

# Two-Fold Aspect of Brain Drain in Pakistan: An Empirical Investigation

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## Abstract

*Brain drain is the crucial point of all societies due to astonishing outflow of competent and skilled hands. Flourishing Nations always focus on human growth and development but the dilemma of developing countries is the migration of advanced and highly skilled individuals like scientist, doctors and IT professionals to developed countries with an increasing trend. Pakistan is also victim of this painful and hurting phenomenon. Many discussions present the effects of Brain Drain on economy of Pakistan. We have reconsidered some empirical studies showing clues of brain drain in Pakistan. This research article examines empirical influences of remittances, political instability and unemployment on brain drain phenomenon in Pakistan by employing Johanson co-integration technique. Annual time series data is used over the time period of 1980-2013. Our empirical results show that all independent variables have positive and long run relationship with brain drain phenomenon.*

**Keywords:** Brain Drain, Political Instability, Unemployment, Remittances, Cointegration

## Introduction

Human capital has always been a great source of development of any nation. Wise nations always care of them and use their skills accordingly. Kobayashi (2014) found that skilled migration cause to increase the growth rate of host countries in developing Asian countries but in case of native country it shows the negative relationship with skilled migration and economic growth. 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. In a newspaper article, it is claimed that about six million exceptional brains migrated to developed countries in the last three decades from Pakistan.

Movement of individual with knowledge or any technical skill to other countries is not a new thing. Although many countries have restricted visa policy to avoid flow of migrants yet highly skilled and intellectuals are always welcomed and encouraged to western countries. Outflow of educated people not only creates negative impacts but positive as well, in the sense of remittances. Remittances are big source of foreign exchange earnings which can be used to make current account deficit in a better position. Pakistan Institute of Legislative Development and Transparency published a report on significance and issues of Migration in 2008. It was mentioned that although brain drain is a good in sense of remittances and improve living standard of the society but it is argued that brain drain deprive the country by valuable human capital which may help to increase the progress of a country. Javid et al., (2012) have found positive and significant relationship between remittances and poverty reduction. Migrants send money in their home countries, which is the cause of improvement in living standard of their dependents. But the loss of human capital, which considered as assets of any economy, is it's the other side. People get skills and education in

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their home country but contribute their part in the development of other countries. Now question arises, what are the reasons that people migrate from their home country to other countries? This question is also raised by Khan et al., (2012) in their research. They came to know through questionnaire method that there are many political, economic and social problems which are the cause of migration with the reference to Pakistan.

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. 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. According to Eggert et al., (2007) poor regions of any economy display the combination of lower wages and high unemployment rate. And it is very strong reason for migration of skilled labors to richer regions. Due to unemployment people are unable to get sufficient income and then education. In this situation, people feel hesitation to invest in education. It is difficult to choose for a poor common man either he feed his children or to get educate them. 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 & Rinkevičius (2006), this is not the only reason of brain drain. Rather, different factors in different countries affect the brain drain phenomenon. Due to increased demand of highly skilled labor in international labor market, less developed countries are suffering a lot due to brain drain.

Political instability has also been a factor behind brain drain. It has worsened the problem of brain drain. Political instability is more evident in democratic countries like Pakistan. Pakistan is the 6<sup>th</sup> world largest populous country. Due to inefficient use of resources, most developing countries specially Pakistan always been in problem of poverty, inflation and unemployment. A poor person cannot fulfill his/her basic needs. Unemployment definitely leads to the poverty and anxiety. According to the migration theory of new classical, it is believed that better income in other countries is the cause of migration. This is quite obvious that people are often interested in working where they could get more facilities and wages. In this paper some push factors of brain drain are discussed

## Literature Review

Sajjad (2012) found many causes of intellectual migration by using questionnaire method. The author concluded that 33% respondents wanted to leave their homeland due to political instability and life securities issues. In 2008, author conducted another study for the purpose of know how of causes and solution of brain drain in Pakistan. She has selected primary data research methods and found that majority of people has job dis-satisfaction, professional isolation and poor wages along with lack of proper planning for manpower as a push factor for their movement to abroad.

Khan et al., (2012) explained many factors that are forcing the people to migrate like life security issues, inflation, lack of job opportunities etc. They suggested that government should provide comforts of life, life securities, and infrastructure especially for rural areas. Job opportunities and other incentives for better earnings should also be offered to avoid the problem of brain drain.

Akram et al., (2008) analyzed the determinants of migration in Pakistan with the help of time series data. They found positive relationship between immigration and unemployment and same results were proved with inflation, whereas inverse relationship with real wage rate by using cointegration and vector error correction model.

Haider & Hussain (2006) got the direct relationship between migration and unemployment in case of Pakistan by using log linear regression model for 1980-2005.

Winter et al., (2004) described the worst impact of brain drain on small economies and concludes that small economies are the victim of this phenomenon instead of large economies.

Dzvimbo (2003) analyzed the push and pull factors of human capital in developing countries. He found many push factors of human capital which are unemployment, inflation, biasedness and discrimination in employment, tribe ethnic discrimination and corruption. Eggert et al., (2007) conducted their study to find the relationship among education, unemployment and migration and calculated a two region model and found that poor region exhibit both low wages and higher unemployment rate for which skilled labor move to rich region. On the other side, brain drain phenomenon provides incentives to other labor force to acquire more skills. This is a good thing but after acquiring higher skills, labor force move to other rich region and in this way it is harmful for poor region by two foldes. Not only brain drain causes in this way but in other way in rich region skilled force is the cause of low wage for semi-skilled labor force.

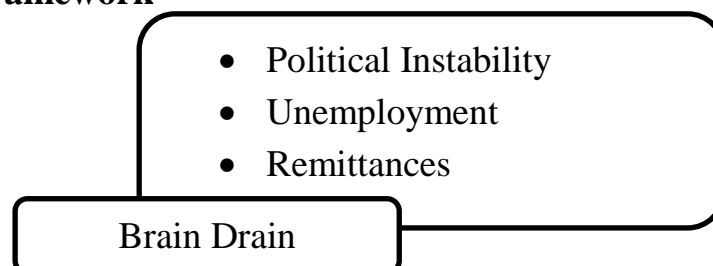
McCulloch & Yellen (1975) analysed income tax conditions and its impact on income inequality and ultimately on brain drain in an economic model for a developing economy. They found that tax depress investment in education sector as well as welfare and earnings of skilled labour force which cause income inequality and ultimately brain drain phenomenon. Along with they found that modern sector employment, output and capital stock also decrease.

Afzal et al., (2012) mentioned in their study that due to insecurity and unlawful situation in country, people move to other developed countries for better and secure future life. Sochacki et al (2006) conducted a survey study relating to the migration according to people perception. They came to know that people leave their home country due to unemployment, poverty, inflation and crime issues.

Katseli et al., (2006) mentioned in their working paper push and pull factors of brain drain in OECD countries. They came to know that better living standard, good government policies and income differences are the pull factors of labors migration whereas rapid increase in population, high unemployment rate, poverty, insecurity and unfavorable economic circumstances are the pull factors of brain drain.

Chigozie (2014) found the push and pull factors of brain drain of Nigerian university's workers to developed countries. He analyzed that due to low salaries, unemployment and poor leadership cause to push the workers to other countries.

## Theoretical Framework



Analyzing the factors which affect brain drain the first and foremost is unemployment. Unemployment discourage workers not only by creating financial but also mental distress, as it is accepted widely that unemployment has further outcomes for both economy and society. So we add unemployment to the factors which cause brain drain, that is;

$$BD = f(\text{UNEM}) \quad f_1 > 0 \dots \dots \dots (1)$$

Ahmad et al., (2008) have observed that brain drain is a positive function of unemployment as it causes brain drain. While considering the factors affecting brain drain, political instability cannot be ignored. Political instability also discourages workers; as a result, they tend to migrate to those countries that are politically stable. So the next variable added to the analysis is political instability, that is;

$$BD = f(\text{UNEM}, \text{PI}) \quad f_2 > 0 \dots \dots \dots (2)$$

The determinants of brain drain are not limited to unemployment, political instability and poverty; when skilled people see that the remittances received by individuals are increasing and more valuable they tend to migrate from the home country for receiving higher earnings. Therefore, inclusion of inflow of remittances to the determinants of brain drain is also necessary, that is;

$$BD = f(\text{UNEM}, \text{PI}, \text{and REM}) \quad f_3 > 0 \dots \dots \dots (3)$$

It is important to note that effect of remittances on brain drain is also positive. There are several theories available that explain the phenomenon of migration but if we consider the brain drain phenomenon no specific theory is developed to explain the factors or process of brain drain especially for Pakistan. It is also noteworthy that brain drain is a global issue yet it has not received much attention. However, we are not denying the fact that brain drain is a form of migration in which skilled individuals which are the asset of a country migrate to reap better benefits abroad. For a developing country like Pakistan there is dire need of finding out the factors that cause brain drain. Now all the factors that we have included in our study have direct association with brain drain.

## Methodology and Sources of Data

In this study, a Johanson co-integration technique is used (as all variables are integrated at 1<sup>st</sup> difference) to check the long run relationship between brain drain (LBD), political instability (PI), unemployment (UNM) and remittance (REM). This study uses annual time series data in case of Pakistan for the time period 1980-2013. And data is collected from secondary source World development indicators (WDI) and Bureau of emigration and overseas employment and Polity IV.

## Model Specification

Model used in the study is given below:

$$LBD = F(PI, UNM, REM)$$

The econometric model for the estimation is as follows:

$$LBD = \beta_0 + \beta_1 PI + \beta_2 UNM + \beta_3 REM + \epsilon_t$$

Where:

$LBD$  = Log of Brain Drain       $PI$  = Political Instability       $UNM$  = Unemployment  
 $REM$  = Remittances       $\epsilon_t$  = Error term

## Results

**Table1: ADF Test for Stationarity**

Unit Root Test				
Variables	t-Statistics			Stationarity
	Level	1st Difference		
IBD	-1.974384	-4.873211		I(1)
PI	-1.656040	-5.258416		I(1)
UNM	1.741744	-8.149180		I(1)
REM	-2.057110	-5.455304		I(1)
	Critical Values			
	LBD	PI	UNM	REM
At 1% level	-4.262735	-3.653730	-3.646342	-3.653730
At 5% level	-3.552973	-2.957110	-2.954021	-2.957110
At 10% level	-3.209642	-2.61743	-2.615817	-2.617434

## The Augmented Dickey-Fuller (ADF) Test Result

In Table.1 Augmented Dickey Fuller test is used to check the stationarity.

$$\Delta y_t = a_0 + a_1 y_{t-1} + \sum a_i \Delta y_{t-i} + \epsilon_t$$

The result of unit root test in above table indicates that all variables brain drain, political instability, unemployment and remittances are integrated at 1<sup>st</sup> difference. This test is necessary because it is used to avoid the spurious regression possibility as it is reported by Ouattara (2004) that it is the assumption of bound test that variables should be integrated at I(0) or I(1). Now causal relationship among the brain drain, political instability, poverty, unemployment and remittances has been studied by employing Johnson co-integration approach.

**Table2: Unrestricted Cointegration Rank Test (Trace)**

Hypothesized	Eigen value	Trace statistic	5%	Probability
None *	0.638478	53.98038	47.85613	0.0119
At most 1	0.301903	22.43997	29.79707	0.2747
At most 2	0.281728	11.29865	15.49471	0.1938
At most 3	0.033009	1.040548	3.841466	0.3077

Trace test indicates 1 co integrating eqn(s) at the 0.05 level  
 \* denotes rejection of the hypothesis at the 0.05 level  
 \*\*MacKinnon-Haug-Michelis (1999) p-values

The above table.2 suggest the long run relationship between variables as trace value depicts that one equation is integrated at 5% level of significance (53.98038>47.85613).

**Table3: Normalized Cointegrating Coefficients (Standard Error in Parentheses)**

Variable	LBD	PI	REM	UNM
Co-efficient Value	1.000000	-0.100572	-0.260150	-0.379638
Standard Error		(0.01009)	(0.03632)	(0.05227)
t-statistics		-9.9674	-7.1627	-7.2630

In table 3, the t-value of all variables shows the significant results. As the t-values of all independent variables are greater than 2.

Since one cointegrating equation is identified, so a stable equilibrium relationship exists and the value of IBD shows the normalized results. In normalized cointegration process the reverse signs are used to make proper interpretation. (Maggiore & Skreman, 2009). We interpret the coefficients as follows:

- A 1% increase in the political instability (PI) leads to a 0.1% increase in the brain drain in the long run.
- A 1% increase in the remittances (REM) leads to a 0.26% increase in the brain drain in the long run.

- A 1% increase in the unemployment (UNM) leads to a 0.37% increase in the brain drain in the long run.

## Conclusion and Recommendations

Unemployment, political instability and remittances are the main causes of intellectual brain drain phenomenon in Pakistan. Pakistani intellectuals are found in many developed countries due to these factors. This study has reviewed the effects of above mentioned factors on the outflow of brain drain phenomenon from Pakistan. The results have clarified that intellectual brain drain from Pakistan is positively related with unemployment rate, political instability and remittances in the country. All estimated co-efficient are highly significant. It means that our country lacks such institutes that can absorb this intellectual power. The study concludes that the country is misplacing not only its investment in education but also contribution of these intellectuals for the development of the economy. Government should educate common man and give opportunities in related fields. Not only, technical education should be encouraged but technical institutes should also be enhanced in country. People should be aware of such institutes and then those intellectuals should be given opportunities after completing their degrees. Reward for their services should be according to their skills and education. We should give incentives to intellectuals to serve for their own country and individuals. Government should make such training institutes that can guide people for their career. Legislative bodies should make such rules and regulations that a common man can participate in electoral systems. Inherited politics should be discouraged. Therefore, the need of hour is to critically analyze the economic, social, and political conditions of the country for providing security and safety, better working prospects to intellectuals.

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