

MACROECONOMIC DETERMINANTS OF INTERNATIONAL MIGRATION FROM PAKISTAN

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Abstract. Income inequalities and poverty are the main causes of international migration. The Pakistani workers were found in several countries of the world. Nearly half a million economic workers are working overseas, mostly in Middle Eastern countries because of oil boom. The outflow of workers varied in the year 1973 through 2005. The fluctuation behavior of international migration in Pakistan was mainly attributed to the economic conditions of home as well as the host countries. Pakistan is over populous country mired with unemployment, abject poverty and inflation. The unemployment rate in the country is nearly 9 percent, nearly one third of the population lives below poverty line which is further exacerbated with 10-12 percent food inflation. In the early 1970s, lots of unskilled workers left the country to Middle Eastern countries. There is hardly any study which documented the determinants of migration in Pakistan. This paper investigated the determinants of international migration in Pakistan. The time series data were analyzed to identify the determinants of migration. The stationary properties of each time series used in the study were tested and each was found to be integrated of order one. Therefore, Cointegration and vector error correction models were used to establish the long run and short run relationship among the parameters of the determinants.

The analysis revealed that the migration from Pakistan was found positively related with inflation and unemployment rate in the country and was negatively related with real wage rate. Thus inflation, unemployment and declining wage rate were the push factors for international migration from Pakistan. Moreover, the findings of the research paper showed that the international migration was also influenced by the inflow of the remittances positively. The size and amount

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of remittances was mainly dependent upon the economic conditions of the host country. Therefore, the inflow of remittances was safely considered as the pull factor of international migration from the country. Based on research results, it seems important to introduce labour friendly migration policies and the Manpower Ministry should find niche markets for potential workers. The government should also consider providing different skills and trades to compete with workers of other countries. This will further augment the flow of remittance in the country.

I. INTRODUCTION

The people living in one part of the world basically moved to other parts for their livelihood and Pakistan is no exception. There were also, a number of other reasons for migration, for instance, war and lawlessness in the home country. Mostly researchers have focused on explaining why people move from one area to another. There were several theories to explain international migration. One of the most important economic considerations was fetching higher income through the process of migration. There were also other factors that affect the decision to emigrate, such as family and friendship networks. The most important models by (Stark, 1990; Massey *et al.*, 1994; Bauer *et al.*, 1998) and other researchers attempted to explain why international immigration occurs.

The Push-Pull theory of migration traced out the economic factors of migration in the sending country as well as in the receiving country. The factors of migration include but not limited to demographic pressure, high unemployment and low living standards in the home country. . These factors were identified as push-factors. The factors of migration in the receiving country included the demand for labour, promising economic opportunities, and political freedom and these factors were identified as pull factors. Migration, any type, whether documented or undocumented, forced or voluntary, can be explained in terms of push-pull factors (Datta, 1998). Push factors attribute to the negative characteristics operating at the center of origin whereas pull factors identify the positive characteristics (Datta, 2002) at the center of destination.

The economics of migration focuses on the expectation of a higher income abroad as a main cause of decisions to emigrate. There were also other variables that exert an important influence on decisions to migrate, including non-economic reasons, such as war, ethnic discrimination and political persecution at home. The choice of country of destination was also often influenced by the existence of a network of family and friends who have migrated previously to a specific country (Solimano, 2002).

More systematically, the magnitude and direction of international migration flows were influenced by the following factors (Solimano, 2002): (a) Per capita income or real wage differentials between sending and receiving countries for a given skill; (b) the state of the business cycle and economic prospects in both sending and receiving countries; (c) Network effects; (d) Immigration policies; (e) Costs of migration; (f) Cultural differences between countries; and (g) Geographical distance and proximity. Empirical analysis of migration flow (Hatton and Williamson, 1998; Borjas, 2001) showed that migrants tend to attach a high value to the existence of friends and relatives in their choice for selection of the country of destination because family, friends and ethnic/national networks constituted an important support factor for migrants.

Mayda (2007) investigated the determinants of migration inflows into fourteen OECD countries by country of origin, between 1980 and 1995. The effect of average income and income dispersion in destination and origin countries on migration was analyzed. The impact of geographical, cultural, and demographic factors as well as the role played by changes in destination countries' migration policies was captured in the study. Walsh (1974) estimated the determinants of migration in the Ireland. The results showed that Irish net migration was responsive to relative labour market conditions in Ireland and Britain. The wage differentials and unemployment differentials were found significant determinants of the net migration from Ireland.

The Pakistani workers were found in a number of countries of the world. The flow of migrant workers from Pakistan was 12300 in 1973, 16328 in 1974 and 23077 in 1975. This outflow of migration was reached to 129847 in 1980, 115520 in 1990, 110136 in 2000 and 143329 in 2005 (Bureau of Emigration and Overseas Employment, GOP, 2006). The high rate unemployment (9 percent), food inflation (10 percent) and nearly one third of the population below the poverty line (GOP, 2006) forced the workers to migrate abroad. In the decade of 1980s, majority of economic workers migrated to the Middle East. The migration of Pakistani worker to the Middle East was unique in many ways. Firstly, the primary migrants were young males who sent a bulk of the earnings to their families in Pakistan. Secondly, the migrants were unskilled workers from the low-income households which enabled their families to set up small businesses, acquire real estate and make substantial improvements in their standard of living. However, the construction boom in the Middle East was slowed down in the early 1990s (*Economic Survey*, 2001-02). This resulted decrease in employment opportunities overseas for migrated to these countries for higher earnings.

The out flow of migrant workers showed a cyclical behaviour from the year 1973 through the year 2005. This has puzzled the policy makers in the Ministry of Labour. There could be some push and pull factors causing these fluctuation.

Thus, the study of the determinants of migration was quite important for policy maker to understand a broad spectrum of migration. The present study provides useful parameters for making labour policies and enabling environment for productive investment in the home country. The intent of this paper was to explore the major macroeconomic determinants of international migration from Pakistan and to suggest recommendation for migration policy formulation in the country.

II. DATA AND METHODOLOGY

Time series data were used in estimating the macroeconomic determinants of international migration in Pakistan from the year 1973 through the year 2005. The data was taken from the Federal Bureau of Statistics, Islamabad and Bureau of Emigration and Overseas Employment, Islamabad. Augmented Dickey Fuller (ADF) unit root test was used to determine the order of integration of the variables used in the analysis. All the variables used in the model were found integrated of the same order, *i.e.* I(1). Therefore, Johansen (1988) and Johansen and Juselius (1990) maximum likelihood estimation approach was used to test the Cointegration and all variables were found cointegrated. The results of unit root tests and co integration were provided in the appendix. Hence, their long run relationship was estimated via ordinary least square method (OLS). Vector Error Correction Model (VECM) was used for the estimation of short run adjustment of the variables toward their long run relationship.

A migration model was specified for estimating the macroeconomic determinants of the international migration from Pakistan. The functional form of the migration model was:

$$NW = F(INF, RREM, UR, RWR) \quad (1)$$

The econometric model for the estimation was:

$$LNW = \beta_0 + \beta_1 LUR + \beta_2 LRWR + \beta_3 LINF + \beta_4 LRREM + e_t \quad (2)$$

Where:

LNW = Log of number of workers;

- LUR = Log of unemployment rate;
 $LRWR$ = Log of real wage rate;
 $LINF$ = Log of inflation rate;
 $LRREM$ = Log of real remittances (Rs. Million); and
 e_t = shows error term.

In this econometric model, migration was considered a flow variable. Therefore, the number of workers going abroad every year was used to denote the migration. The migration was a dependent variable in the model. The explanatory variables were: unemployment rate, real wage rate and inflation rate in the country. The migration process was also dependent upon the amount of remittances received by Pakistan every year.

III. RESULTS AND DISCUSSION

The Augmented Dickey-Fuller (ADF) residual-based test approach suggested by Engle and Granger (1987) and the Johansen's Full Information Maximum Likelihood (FIML) approach proposed by Johansen (1988) and Johansen and Juselius (1990) were used to test Cointegration in the research paper. The variables in the research study were cointegrated exhibiting a long run relationship. The long run relationship was determined with the help of ordinary least square (OLS) method. The results of the OLS estimates were given in Table 1. No serial correlation among the residuals was detected as DW was ranged in between 1.5 to 2.5).

The result revealed that the migration was positively related with the unemployment rate in the country. The coefficient of unemployment rate was 0.709 and was highly significant at 0.01 per cent probability level. The magnitude of the parameter was high showing a large impact on migration. This explained that when there was unemployment in the country; people were compelled to leave the country for livelihood and sustenance. Resultantly they move to foreign countries at very high psychic and unbearable logistic costs.

The migration was negatively related with real wage rate in the home country. The estimated coefficient was -1.58 and was highly significant. The low wage rate forced the workers to move out and caused a massive brain drain from the country especially the skilled and professional workers. The recent initiative of the Higher Education Commission to provide salary package commensurate with international level, attracted qualified people to teach in the home country.

The results of the study were compared and contrasted with other studies. Walsh (1974) estimated the determinants of migration in the Ireland and concluded that the wage differentials and unemployment differentials were significant determinants of the net migration from Ireland. The results were comparable with the present study.

Migration was found positively related with inflation rate in country and was highly significant at 0.01 per cent probability level. Therefore, people started to migrate abroad for fulfilling their basic needs through earned remittances. The worker from the low income segments of the society migrated to foreign countries due to high inflation, unemployment and abject poverty.

The estimates of unemployment rate, real wage rate and inflation in Pakistan amply supported the push-pull theory of migration. In order to arrest the out migration, the government needs to generate employment opportunities, control inflation and reduce poverty.

TABLE 1
Regression Results Relating Migration with Independent Variables
in Pakistan

Variable (ln)	Coefficient	Std. Error	t-Statistic	Prob.
ln <i>C</i>	9.444	2.094	4.509***	0.0001
ln <i>INF</i>	0.453	0.143	3.167***	0.0037
ln <i>RREM</i>	0.562	0.111	5.052***	0.0000
ln <i>RWR</i>	-1.580	0.485	-3.255***	0.0030
ln <i>UR</i>	0.709	0.153	4.616***	0.0001

R^2 0.80

Adjusted R^2 0.77

Durbin-Watson 1.82

*Indicates that the coefficient was significantly different from zero at 0.10 per cent probability level.

**Indicates that the coefficient was significantly different from zero at 0.05 per cent probability level.

***Indicates that the coefficient was significantly different from zero at 0.01 per cent probability level.

The migration was positively related with the size of the real remittances received in the country. The estimated coefficient was 0.562 and was highly significant. It indicated that the increased volume of remittances due to favourable economic conditions in the host countries provided incentives for the migration. The flow of real remittances in the Pakistan might be considered the pull factor of migration. The people decide to migrate abroad due to better economic conditions prevailing in the host countries. The promising economic conditions in the host countries boost the remittance and people further move abroad. Therefore, the results of the study were comparable with the theory of migration.

The results of the error correction mechanism were reported in Table 2. The first difference of number of migrated workers, *i.e.* migration was the dependent variable with the first difference of some selected explanatory variables in Pakistan.

TABLE 2

The Regression Results Relating First Difference of Migration with the First Difference of Independent Variables in Pakistan

Variable (ln)	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.010	0.047	-0.226	0.822
ΔINF	0.272	0.114	2.380**	0.024
$\Delta RREM$	0.442	0.182	2.423**	0.022
ΔRWR	-0.717	0.497	-1.441	0.161
ΔUR	1.283	0.366	3.505***	0.001
$E_t(-1)$	-0.544	0.175	-3.095***	0.004

R^2 0.76

Adjusted R^2 0.73

Durbin-Watson 1.75

*Indicates that the coefficient was significantly different from zero at 0.10 per cent probability level.

**Indicates that the coefficient was significantly different from zero at 0.05 per cent probability level.

***Indicates that the coefficient was significantly different from zero at 0.01 per cent probability level.

Δ Indicates the first difference of the variable used.

The results in Table 2 indicated that migration was positively related with inflation rate, unemployment rate and real remittances received in the country in the short run. The negative relationship was observed between migration and real wage rate of the workers in the country. The adjustment coefficient was -0.54 showing the dynamic process of long run. The positive coefficient of migration demonstrated the pull push theory of migration.

The elasticities of migration with respect to selected determinants were considered important for policy implications. The results reported in Table 1 and Table 2 were useful for estimating the long run and short run elasticities. The estimates in Table 1 and Table 2 were transformed into equation (3) and (4).

$$\log NW = 9.44 + 0.453 \log INF + 0.562 \log RREM - 1.580 \log RWR + 0.709 \log UR \quad (3)$$

$$\Delta \log NW = -0.010 + 0.272 \Delta \log INF + 0.442 \Delta \log RREM - 0.717 \Delta \log RWR + 1.283 \Delta \log UR - 0.544 e_t(-1) \quad (4)$$

The long run and short run elasticities of migration were calculated by differentiating equation (3) and (4). The sign Δ in equation (4) denoted the short run relationship among the variables. The results of these elasticities were reported in Table 3. The process of migration was very sensitive to determinants having elasticity greater than one. For example, in this study, the elasticity of migration with respect to wage rate in the long run was >1 showing that people will migrate with extended gestation period, however the elasticity of unemployment was greater than one in the short run and people tend to move immediately.

TABLE 3

Long Run and Short Run Elasticities of Migration from Pakistan

Variables	Long Run Elasticities	Short Run Elasticities
<i>INF</i>	0.453**	0.272***
<i>RREM</i>	0.562**	0.442***
<i>RWR</i>	-1.580	-0.717***
<i>UR</i>	0.709***	1.283***

*Indicates that the coefficient was significantly different from zero at 0.10 per cent probability level.

**Indicates that the coefficient was significantly different from zero at 0.05 per cent probability level.

***Indicates that the coefficient was significantly different from zero at 0.01 percent probability level.

IV. CONCLUSION AND POLICY RECOMMENDATIONS

Income inequalities and poverty at home countries are the main causes of international migration all over the world. The Pakistani workers were found in many countries. Nearly over 500,000 workers have migrated to other countries from the year 1973 through the year 2005. The migration was the result of push and pull factors. The high unemployment rate, high incidence and poverty were considered as push factors and inflow of remittance was the pull factor for out migration. This behavior of international migration from Pakistan was due to a number of reasons including the economic conditions at home as well as host countries. The present study examined the effect of various macroeconomic determinants on the outflows of migrant worker from Pakistan.

The results explained that the international migration from Pakistan was positively related with the unemployment rate in the country. The coefficient of unemployment rate was 0.709 and was highly significant. The migration showed positive relationship with inflation rate in the country. The estimated coefficient of the inflation rate was 0.453 and was found significant. The migrants tend to move abroad in case of high unemployment rate and inflation in the home country. The migration was positively related with the size of the real remittances received in the country. The estimated coefficient was 0.562 and was highly significant. It indicated that the increased volume of remittances due to favourable economic conditions in the host countries provided incentives for the migration. The people decide to migrate abroad due to better economic conditions prevailing in the host countries. The better economic and employment opportunities in the host country boosted the remittances and people further moved abroad. Finally, the real wage rates in Pakistan affected the emigration flow negatively and the coefficient of the real wage rate was -1.580 and was significant. The results of the study fully support the push (unemployment, inflation and low wage rate and pull (magnitude of remittance) factors affecting the out migration.

The government labour friendly policies can facilitate the emigration process in Pakistan. The migrated worker will send remittances to their left behind families and it will encourage remittances for longer-term growth and income security in Pakistan. The following measures were suggested for long run promotion of migration in Pakistan.

Pakistan is over populated country having shortage of job opportunities. Therefore, niche markets for labour must be searched through proactive labour policies.

The saving rate was very low in Pakistan. The saving can be mobilized through the foreign remittances in the country. Therefore, Government must streamline the saving schemes in country to attract the foreign remittances.

The policies must be formulated to create investment climate and provide incentives to the migrants to promote domestic commerce in Pakistan.

Overseas Pakistani Foundation (OPF) should provide investment guidance to migrants for release of information on the available credit facilities, savings schemes and business advisory services. Business counseling should also be provided to the migrant workers for establishing domestic business in productive sectors.

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Appendix Table 1
Unit Root Tests Using Augmented Dickey-Fuller Method

Variables	Without Trend	With Trend
<i>LNW</i>	0.008	-2.54
<i>LRREM</i>	-2.94	-2.56
<i>LUR</i>	-1.51	-2.69
<i>LRWR</i>	-2.80	-2.73
<i>LINF</i>	-2.68	-2.73

- Critical value for the augmented Dickey-Fuller statistic with intercept and without trend was -2.96 ($p = 0.05$ per cent).
- Critical value for the augmented Dickey-Fuller statistic with intercept and trend was -3.56 ($p = 0.05$ per cent).

Appendix Table 2
Unit Root Tests Using Augmented Dickey-Fuller Method

Variables	Without Trend	With Trend
Δ <i>LNW</i>	-2.98	-3.89
Δ <i>LRREM</i>	-3.58	-3.61
Δ <i>LUR</i>	-3.99	-5.25
Δ <i>LRWR</i>	-3.35	-3.28
Δ <i>LINF</i>	-4.62	-4.66

- Critical value for the augmented Dickey-Fuller statistic with intercept and without trend was -2.96 ($p = 0.05$ per cent)
- Critical value for the augmented Dickey-Fuller statistic with intercept and trend was -3.57 ($p = 0.05$ per cent)
- Δ Indicates the first difference of the series.

Appendix Table 3
Selecting the Order of VAR for the Migration Model

List of variables included in the unrestricted VAR:			
<i>LNW LRREM LUR LINF LRWR</i>			
List of deterministic and/or exogenous variables:			
CONSTANT			
Order	AIC	SBC	Adjusted LR test
10	7.49	-1.02	-
9	8.49	0.54	0.005 [.95]
8	5.32	-2.06	2.89 [.24]
7	4.87	-1.93	3.91 [.27]
6	.83	-5.40	7.41 [.12]
5	1.81	-3.86	7.42 [.19]
4	2.15	-2.96	7.89 [.25]
3	1.40	-3.14	9.10 [.24]
2	1.96	-2.02	9.42 [.31]
1	-1.38	-4.78	12.43 [.19]
0	-1.81	-4.65	13.42 [.20]

Note: p-values in the parentheses.

AIC = Akaike Information Criterion, SBC = Schwarz Bayesian Criterion.

Appendix Table 4
Johansen Cointegration Results for Migration Model

Relationship	Hypotheses		Eigen Values	Critical Values
	$H_0 : r$	$H_a : r$		
LNW, LRREM, LINF, LRWR, LUR	0	1	39.58	34.40
	1	2	32.23	28.27
	2	3	19.57	22.04
	3	4	8.61	15.87
	4	5	3.44	9.16

The critical values were given (p = 0.05 per cent) levels for Cointegration.

Appendix Table 5
Johansen Cointegration Results for Migration Model

Relationship	Hypotheses		Trace Values	Critical Values
	$H_0 : r$	$H_a : r$		
LNW, LRREM, LINF, LRWR, LUR	0	1	103.43	75.98
	1	2	63.85	53.48
	2	3	31.62	34.87
	3	4	12.05	20.18
	4	5	3.44	9.16

The critical values were given ($p = 0.05$ per cent) levels for Cointegration.