THE IMPACT OF MIGRANTS' REMITTANCES ON ECONOMIC GROWTH EMPIRICAL STUDY: CASE OF ALGERIA (1970-2010)

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Abstract

This paper aims to study the impact of Migrants' remittances on the Algerian economy in the short and long term, using Vector Error Correction Model (VECM).

The model included some variable which are: The dependent variable represented by GDP per capita and independent variables represented by Remittances (R), Gross fixed capital formation,(GFCF) and Household final consumption expenditure(HFCE).The results show that the remittances have a negative impact on Algerian economy in both short and long term, since the increase in remittances by 1% will lead to a decline in GDP per capita by 0.02 % in the short term, and by 0.006 % in long term and this corresponds with previous studies and approaches.

Keywords: Migrants' Remittances, GFCF, HFCE, VECM

Introduction

Migration is a global phenomenon, it is defined as the movement of people from one place to another, either seeking for a better life or escaping from bad situation. Talking about the economic side, migration can have positive and negative impacts on the exporting countries of migrants and the host countries as well .The exporting countries lose their people and suffer mainly from what is known as brain drain, this leads to the loss of competencies which can contribute largely in the economic growth. On the other side, the positive aspect of migration can be confined to a large extent on the remittances which have played an effective role in the economies of

the developing countries, especially in their financial and economic policies. In fact the Arab countries are considered to be among the first regions in the world that receive those remittances which amounted to 35 billion dollars in 2011.In the forefront of the Arab countries which receive the remittances in terms of the total volume: Egypt by 14 billion dollars, Lebanon by 7 billion dollars, and Morocco by 6.21 billion dollars. However, in the remittances rate of the gross Domestic Product (GDP), we find in the first rank Lebanon by 22%, Palestine by18% and Yemen by 5.2%. But these figures represent only the official channels thus they do not reflect the true situation of the total remittances' volume directed to the Arab countries, which can be found in the non-official channels. Algeria, like other Arab countries receives very considerable sums of money annually; for example in 2010, Algeria received the value of 196 million U.S. $ as records show. Due to this important of remittances and their contribution to the economy, we decided to put the following problematic:

To what extend do the migrant's remittances affect the economic growth in Algeria?

The objective of this study is centering on measuring the impact of remittances on the Algeria's economy over the period (1970 – 2010) using VECM model while ensuring:

This article is build following these steps: model presentation, statistical data analysis, study of the stationary and estimate ECM model.

Literature review of Migrant Remittances

There are many studies concerning the impact of remittances on the economic growth. These studies are divided into two parts: some views saw that remittances have positive impacts on the receiving countries whereas other concluded that migrants' the remittances have negative impact on the economies of the host countries.

Positive impact of remittances

In a study done by (Rocher & Pelletier, 2008), to highlight the impact of remittances on some countries, they noticed that there is always a positive impact of these remittances on the economic growth, either through investing this money and creating jobs, or by consumption, which increased the demand of goods, this leads to the increase of supply and thus increasing the economic growth.

The study of Ratha2003 was in the same context, stating that every one U.S. $ transferred to Mexico would contribute in increasing the GDP by $ 2.69 if remittances were addressed to people who reside in the city and by $ 3.17 if they were addressed to those who live in rural areas. This was interpreted that when financial resources increase through remittances this

leads to contribution in the increase of GDP, in the same context, some researchers argue that there is an indirect impact of remittances on economic growth, through investments. Among the important studies in this side, the study of (Ledesma, Miguel, & Piracha, 2001)which was based on the analysis of 11 European countries the results showed that there was an positive impact of remittances on the increase of investments.

Negative impact of remittances

(Adams, 1991) saw that remittances have a negative impact on the economies of the countries which receive these remittances, Through his research which was done in Egypt he concluded that these remittances raise the inflation level in the price of agricultural land which reached 600% during six years, this led to reduced agricultural production, and made the Egyptian economy raised agricultural imports, which affected the economic growth negatively.

In (2008) Ahouré proved that the migrant's remittances increased the imported goods by the families who received these remittances and reduced the demand of local products .this would led to increase the prices and to reduce the purchasing power, Thus to reduce the volume of domestic investment (Ahouré, 2008).

In other studies stated that migrant's remittances have negative impact on economic growth through changing the idea (Chami, Fullenkamp, & Jahjah, 2003), which says that work creates value, so   remittances becoming a source of the migrant's family instead of work (Karagöz, 2009).

Empirical Study: The impact of remittances on economic growth
Model specification

This study aims to analyze the relationship between the following independent variables (Gross fixed capital formation (GFCF), Remittances, Household Consumption) and GDP per capita as dependent variable through the following equation:

$$\log(PPPt) = a_0 + a_1 \log R_{it} + a_2 \log X_{it} + \varepsilon_{it}$$

Where:

PPP: Gross Domestic Product at Purchasing Power Parity per Capita.

R: Remittance.

X: Matrix composed variables control for economic growth such as:

(GFCF): Gross fixed capital formation.

(HFCE):Household final consumption expenditure.

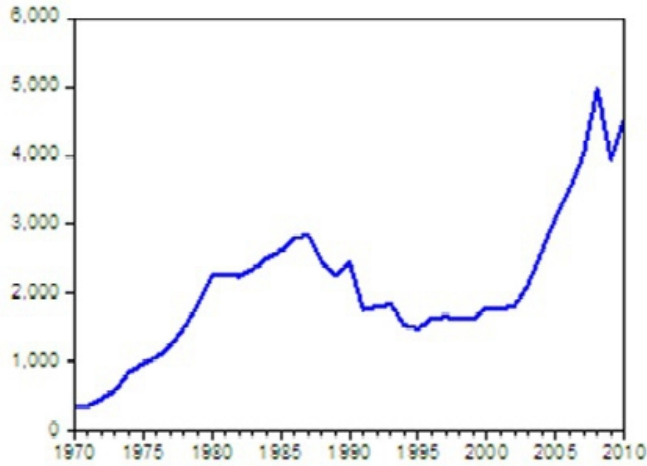**Description of statistical data during the period (1970-2010)**
GDP per capita

Figure 01.Evolution of GDP per capita

Figure 01 shows a remarkable change in GDP per capita in Algeria which increased from $ 230 per capita in 1970 to $ 2,800 per capita in 1986 .the was explained to be a result of the increase in oil prices. We also note that during the period 1986 to 1999 the GDP per capita witnessed a remarkable decrease from $ 2,800 in 1986 to 1616 dollars in 1999 this was due to the decline of oil prices in 1986 the change of economic policies and the orientation f the market economy. In addition the black decade which happened in Algeria which affected all the sectors of the county the GDP per capita witnessed a positive increase during the Period 1999 to 2010, due to the increase of oil process from 1616 U.S. $ to 4566 U.S.
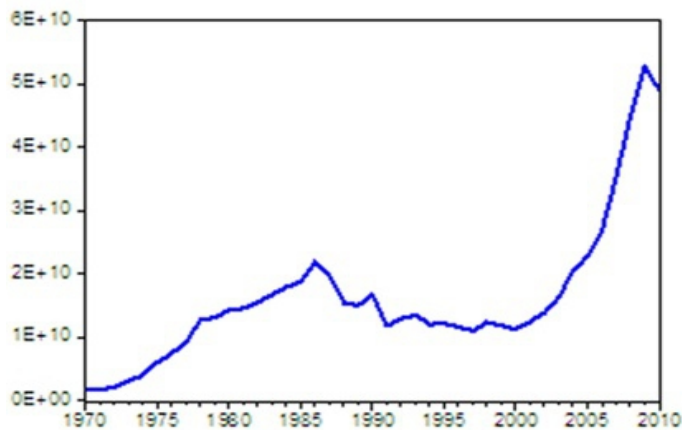
Gross fixed capital formation

Figure 2. Gross fixed capital formation

Figure 02 represents the accumulation 's evolution of the Gross fixed capital formation of the Algerian economy during the period 1970 to 2010, we note that accumulation rate decreased between 1987-1997 due to the deterioration of investment spending, moreover the fluctuation of its pace was a result of the vagaries of the Algerian economy because it depends on hydrocarbon revenues so the more those revenues improve they reflect positively on the accumulation of the Gross fixed capital formation and vice versa.
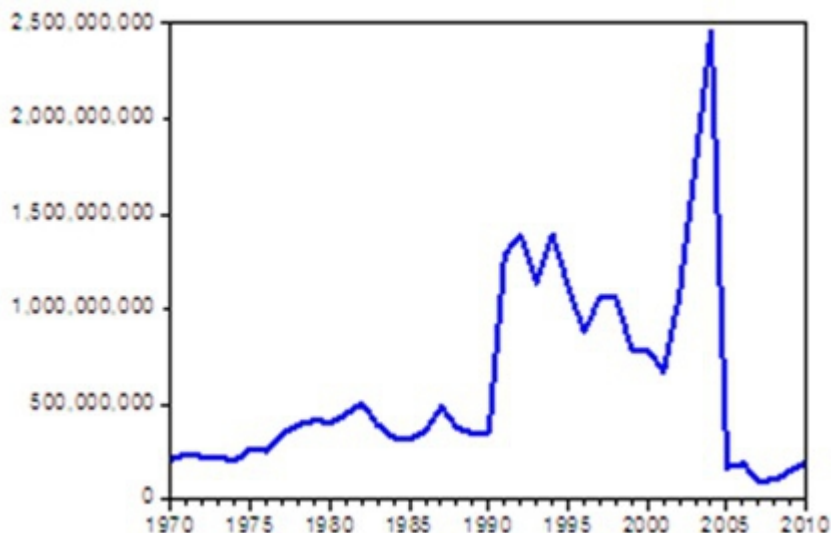
Migrants' Remittances

Figure 3. Migrants Remittances

Figure 3 shows the weakness of migrant's remittances to Algeria in over the period 1970 to 1989 since it did not exceed half a million dollars due to the policy tightening and the poor Algerian banking system. However, migrant's remittances witnessed a qualitative leap with the beginning of the nineties, and reach 1.5 million dollars as a result of the high proportion of migration and the interest of migrants in helping their family, who were suffering from political and economic conditions in that time, this coincided with the opening-up policies and economic reforms that facilitate the transmission of these remittances from abroad to Algeria., However, in year 2001 the remittances witnessed a decrease as a result of 11th September events . Where the world banking system tightened funds transfers in order to fight against financing terrorism in the world. In 2004, the remittances recorded highest level, reaching 3% of GDP. We can ascribe this to the stability of economic situation and security in the country, which prompted the return of migrants and lead them to transfer some of their financial assets

to their homeland. In addition to the great interest of the community living in abroad to purchase lands and invest in real estate, but this big amount of remittances did not last long time , in 2005, it's declined due to the financial and economic crisis in Europe and other host countries of Algerian migrants.
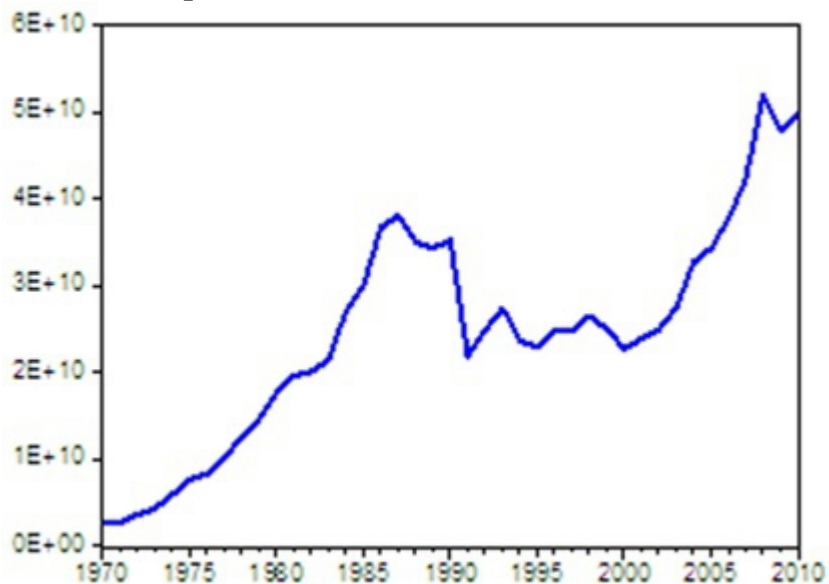
Household consumption

Figure 4. Household final consumption expenditure

Figure 04 represents the evolution of household consumption during the period 1970 to 2010, in this period we note that the household consumption recorded changes which differed according to GDP per capita, since the years which recorder an increase in GDP per capita witnessed an increase in the household consumption .This leads to the increase in the demand for consumable items, which contributed to the lifting of restrictions put on foreign trade and in order to cover the large demand on these commodities . Then Algeria witnessed the Petroleum crisis in 1986 and the decrease in oil process which led the country to change its economic policy and adopt a market economy system. As a result of the pressures practiced by IMF on Algeria , the Algerian authorities were forced to take a set of procedures in order to reduce public spending. Such as the policy of privatization and laying off workers from public institutions .These procedures had an obvious impact on the reduction of household consumption which continued until 1999, then it increased continuously due to the improvement of economic situation of the country.

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Estimation of ECM

This study will be done by using the integration approach and testing the existence of short-and long-term relationship between remittances and economic growth likewise the direction of causality in the short and long term through the vector error correction model VECM.

The optimal lag period of vector error correction model

In order to determine the optimal lag period we relying on a series of tests such as AIC, HQ, SC, which yield the best estimate of the vector error correction model, and Table 4 shows that the optimal lag period is one, Where the values of the tests used took less value at lag period one

Table1. The optimal lag period

Lag Period	SC	HQ	AIC
0	1.773928	1.661172	1.599775
1	-3.128903	-3.692684	-3.999670
2	-1.010484	-3.050804	-3.603378
3	-0.146958	-2.476314	-3.274477

The stationary test

The stationary test is very important in order to ensure the stationary of the time series and their integration. Many studies proved that a lot of time series are characterized by instability because they contain a unit root. Thus if we find a unit root, it means that the difference between the means and the variation of the variables under study is very big. Therefore, the time series which contain a unit root in the econometric models make a false correlation between them. We can find several unit root tests such as those of Fuller (1976) and Dickey-Fuller (1979-1980). The Dickey-Fuller tests are parametic. These tests are based on an estimate of an autoregressive process. Through our study, we used Augmented Dickey Fuller (ADF) for the detection of the stationary of time-series variables. Table1 show test stationary at the level, and the results illustrated that all of the variables used in the model are not stationary at the level , thus we find that the absolute value of the statistic (t) calculated for all variables is less than the absolute critical value at 5% level of significance.

Table2. Augmented Dickey-Fuller test (Level)

Variables	(t) calculated	critical value at 5%	Hypotheses Accepted
Log PPP	-1.104667	-1.961409	H0
Log HFCE	-1.026628	-1.956406	H0
Log R	-1.447335	-1.961409	H0
Log GFCF	0.071794	-1.949609	H0

For this reason we will try to test again the stationary of the variables taking into account the first difference, Table 02 shows the results of Dickey Fuller developer at first difference. the results show that the calculated values of the variables are all bigger than the critical values (in absolute terms) therefore we reject the null hypothesis and accept the alternative hypothesis in the view that there is no unit root that any variables under study are stable in the first difference at 5% level of significance.

Table 3. Augmented Dickey-Fuller test (first difference)

Variables	(t) calculated	critical value at 5%	Hypotheses Accepted
Log PPP	-9.649365	-1.961409	H_1
Log HFCE	-6.631899	-1.962813	H_1
Log R	-6.044454	-1.949856	H_1
Log GFCF	-5.277150	-1.949856	H_1

Johansen test for co- integration

The test of unit root showed that the variables of the model are stable at the same level I (1), thus we will estimate co-integration model using the method of johansen (1988).

To estimate the number of co-integration vectors, Johansen suggests tow tests, maximum value test and the trace test, and through this study we will use only the trace test since its fit the small samples, as well this test is very important in the theory of co-integration, as its indicates that in the absence of co- integration, the relationship equilibrium between variables can be unrealized.

Table.4 Trace test

Hypothesized No. of CE(s)	Trace Statistic	Critical Value 5%	Prob
None *	49,55	47,85	0.0343
At most 1	27,07	29,79	0.0997
At most 2	14	15,49	0.0829
At most 3	3,58	3,84	0.0582

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level

Through the trace test results shown in Table 04 we conclude that there is at least one co-integration, therefore in this case, we reject the null hypothesis and accept the alternative hypothesis which said that there is at least one co- integration between the variables and we can explain this result saying that there is equilibrium relationship in long-term between GDP per capita and the independent variables of household consumption, investment and remittances .so this leads us to say that it is possible to use error correction model (ECM).

Result

This model separates between the relationship in short long and term, it is practical model   in the case of small samples, The parameter estimated in the model is more coherent than those used in other methods, such as the Engel Granger method (1987). And to test to which extent the simultaneous integration between the variables is realizing under (ECM).(Pesaran (2001) provide an approach to test the equilibrium relationship in short-and long-term between the variables in the error correction model. Since it is characterized by the possibility of practice , whether the independent variables are stationary on the level I (0) or on the first difference I (1), it can be applied in the case of small samples, unlike previous traditional methods (Greene, 2003).

Long-term

Results show that the estimate of co-integration using vector error correction model is as follows:

$$(\log PPP) = -1.881 (\log HFCE) - 0.0067 (\log R) + 1.986 (\log GFCF) + 7.258$$
$$(-3.30) \qquad\qquad (0.37) \qquad\qquad (2.98)$$

$$F_{cal} = 5.28 \qquad\qquad R^2 = 0.36$$

Where : ( ) student calculated value

The results of this equation show that there is a positive relationship between Gross fixed capital formation and GDP per capita, where the increase in the Gross fixed capital formation by 1% effects the GDP per capita with an increase of 1.98%, and the relationship between each of the migrants' remittances, household consumption and GDP per capita was an Inverse relationship, where the increase in remittances by 1% would lead to a decline in GDP per capita by 0.006%, and The increase in household consumption by 1% would lead to a decline in GDP per capita by 1.88%.

The results also indicate that the model parameters are all significant except remittances, where the calculated t value was smaller than the critical value and this explains the non validity of the variable in the interpretation of the model.

The results show that the value of the coefficient of determination $\overline{R}^2$ adjusted had reached 0.36 ($\overline{R}^2 = 0.36$) Which mean that 36% in changes that occur in GDP per capita are explain by the variables put in the model however they remained 64% can be explained by other variables which are not included in the model.

Short-term

The existence of co integration between the variables of the model, means that the addition of *Error Correction* Term, will adjust the imbalances in short-term into equilibrium state in the long term moreover the *Error Correction* Term represents the effect of causal relationship in the long term, through the model obtained the *Error Correction* Term value amounted 0.12 this means that there is equilibrium relationship in the long-term correct imbalances that occur in the short term by 12 % in the long term) .we can summarize the results of the model in the short term as follows

Table.5 Vector Error Correction Estimates

	D(Log PPP (-1))	D(Log HFCE (-1))	D(LogR(-1))	D(Log GFCF (-1))
CointEq1	-0,127666	-0,149004	-0,114478	-0,112265
D(Log PPP (-1))	0,15391	0,173463	-0,653396	0,497131
D(Log HFCE (-1))	-0,294931	-0,055746	0,052307	-0,323122
D(Log R(-1))	-0,022121	-0,012316	-0,138106	-0,001201
D(Log GFCF (-1))	0,18354	-0,185971	-0,077705	0,067257
C	0,06422	0,083579	0,037244	0,07367

Through the table above we can formulate the model equation as follows:

D(logPPP) =0.105 D(logPPP(-1)) -0.294 D(logHFCE(-1)) – 0.022 D(logR(-1)) + 0.183D(logGFCF(-1)) + 0.064

(0.42443)   **(-1.09543)**   **(-0.61117)**   **(0.87465)**   **(2.89067)**

through the error correction model equation in the short term, it is obvious that all model parameters were not significant as t calculated values were smaller than t critical value at 5% level of significance, which means that there is no causal relationship from independent variables to the dependent variable represented by GDP per capita . however this does not prevent the effect of the independent variables on the GDP per capita in the short term so this model appears the values of the change in GDP per capita in time t as a result of change in his self and the others independent variables in t-1, , Where we note a directly proportional between the change in GDP per capita at time t and the change in himself and Gross fixed capital formation in t-1, as the increase in the in GDP per capita in t-1 by 1% will lead to an increase in the change in GDP per capita in t by 0.105% and the increase in Gross fixed capital formation in t-1 by 1% will lead to an increase in the GDP per capita in t by 0.183%.

As for the relationship between the change in each of the remittances and household consumption in t-1 and the GDP per capita in t was Inverse relationship, so if the remittances increases in t-1 by 1% will lead to a decline in the GDP per capita in t to 0.02%, and the increase in household

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consumption in time t-1 by 1% would lead to a decline in GDP per capita in t to 0.294%.

Economic interpretation of the model

We note that the variable of remittances, are not significant in long and short-term nevertheless in both terms there is a negative effect of this variable on the Algerian GDP per capita .

In the short term, as we mentioned before, the change in remittances will affect the GDP per capita by 0.02%, and we can be ascribe this Inverse relationship effect that remittances will increase the demand for immovable goods such as land and agricultural lands suitable for building and this lead to an increase in prices.

(Adams, 1991)in a study conducted in Egypt, showed that the remittances of Egyptians led to inflation in the prices of agricultural lands this, inflation was estimated by 600% in six years. On the other hand, according to a study done by Ahouré (2008) This Inverse effect of remittances on GDP per capita could be due to the increase of the purchasing power of households that will lead to increase the demand for imported consumer goods at the expense of domestic production, which contributes to the depletion of reserves of foreign currency due to higher imports which cause a decline of national currency.

Regarding the impact of remittances on GDP per capita in the long term, we note that there is an inverse relationship between them which can be explained by the migration of labor, especially the qualified ones to search for privileges and encouragements (improvement in the standard of living), which resulted a decrease in the human capital and these results agree with the studies that have focused on this subject.

The modern classical model, through studies of (Qaisar & Peck, 1960-2003)inspired from the model of Solow(1956) concluded that the increase in the accumulation of human capital for individuals improves their productivity and thus increases the levels of GDP per capita, while internal growth models of Lucas(1988) Romer (1986) Helpman (1991) ((Krosnick, Narayan, & Smith, 2004)did not differ from the previous ones in terms of results, they concluded that the GDP per capita depends on the growth of human capital, which is depends on the time allocated for the formation.

Moreover the policies pursued by Algeria, contributed in the improvement of the general level of economic openness and the banking system, especially with the end of the eighties and early nineties .Studies which dealt with these two variables as proved by the structural school that the development in the banking system will lead to an increase in financial institutions, this will contribute in the increase of GDP per capita (Goldsmith, 1970).This was also confirmed by the neo-liberal school which

urges that the liberalization of the financial system in the country leads to increase the GDP per capita and thus economic growth when the state abandons the determination of the interest rate (Shaw, 1973) (McKinnon, 1973)((Levine, 1997) .All this factors contributed in the existence of such a positive relationship between Gross fixed capital formation and GDP per capita in Algeria. This result is compatible and significantly with economic theory, where all economic schools concluded that the increase in Gross fixed capital formation rates will lead to an increase in GDP per capita .

Briefly speaking, we can say that the migrant's remittances do not have a significant impact on economic growth in Algeria because the country relies on oil revenues dramatically. Unlike countries which rely on the migrants' incomes to activate the economic movement, such as Morocco, which has no sources of income from natural resources.

Conclusion

This paper presents an empirical study about the impact of migrants' remittances on the Algerian economy in the short and long terms using Vector Error Correction Model (VECM). We can summarize our results as follows:

1- The migrants' remittances in Algeria are directed to consume the imported goods at the expense of the domestic production, or to buy the immovable goods such as agricultural lands and lands available for building. This has a negative impact on the national economy through the rise in imports or the inflation of agricultural lands' prices.

2- The impact of migrants' remittances is not significant because the Algerian economy depends on oil revenues by 97%.

3- It is difficult to limit the remittances' size in Algeria due to the existence of a parallel market for foreign currency; this leads the migrants to transfer this money through non-official channels.

References:

Adams, R. H. (1991). *The Effects of International Remittances on Poverty, Inequality and Devlopment in Rural Egypt.* International Food Policy Research .

Ahouré. (2008). Migrations, Liberté de Circuler et Développement. *Migrations, transferts, gouvernance et croissance dans les pays de l'UEMOA Une analyse à partir de données de panel.* Dekkar: l'Université Ouverte .

Chami, R. C., Fullenkamp, & Jahjah, S. (2003). *Are Immigrant Remittance Flows a Source of Capital for Development?* International Monetary Fund.

Engle, R., & Granger, C. (1987). co integration and error correction: Representation, estimation and testing. *Econometrica* , 55.

Goldsmith, R. (1970). Financial Structure and Development. *Revue économique* , 491-492.

Greene, W. H. (2003). *Econometric Analysis* (éd. 5th Edition). New Jersey ، USA: Prentice Hall،.

Johansen, S. (1988). Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models. . *Econometrica* .

Karagöz, K. (2009). Workers' remittances and economic growth: evidence from turkey. *Journal of Yasar University* , 1891-1908.

Krosnick, J. A., Narayan, S. S., & Smith, W. R. (2004). *Satisficing in surveys.*

Ledesma, L., Miguel, & Piracha, M. (2001). *International Migration and the Role of Remittances in Eastern Europe.* Kent: University of Kent, Department of Economics.

Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature* , 688–726.

McKinnon, R. I. (1973). *Money and Capital in Economic Development.* Washington: Brookings Institution Press.

Pesaran, H. M., Yongcheol, S., & Richard, J. S. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics* , 289–326.

Qaisar, A., & Peck, J. F. (1960-2003). Human Capital and Economic Growth: Pakistan,. *The Lahore Journal of Economics* , 1-27.

Ratha, D. (2003). *Worker's Remittances: An Important and Stable Source of External Development Finance.* Global Developing Finance 2003, World Bank.

Rocher, E., & Pelletier, A. (2008). *Les transferts de revenus des migrants :quels impact sur le développement économique et financier des pays d'Afrique subsaharienne ?* france: Banque de France .

Shaw, E. S. (1973). *Financial deepening in economic development.* New York: Oxford University Press.

Toda, H. Y., & Yamamoto, T. (s.d.). Statistical inferences in vector autoregressions with possibly integrated processes. *Journal of Econometrics* , 225-250.

Appendix A

Table A1. VAR Lag Order Selection
              Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-25.59584	NA	5.82e-05	1.599775	1.773928	1.661172
1	93.99389	206.8579*	2.17e-07*	-3.999670*	-3.128903*	-3.692684*
2	102.6625	13.12007	3.33e-07	-3.603378	-2.035999	-3.050804
3	112.5778	12.86312	5.04e-07	-3.274477	-1.010484	-2.476314
4	125.4899	13.95904	7.07e-07	-3.107564	-0.146958	-2.063812

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Table A2. Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.438002	49.55163	47.85613	0.0343
At most 1	0.284844	27.07762	29.79707	0.0997
At most 2	0.234377	14.00268	15.49471	0.0829
At most 3	0.087874	3.587101	3.841466	0.0582

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

Table A3. Vector Error Correction Estimates

Cointegrating Eq:	CointEq1
LOGPIBT(-1)	1.000000
LOGCONS(-1)	1.881100 (0.63119) [2.98023]
LOGTRF(-1)	0.067320 (0.18146) [0.37100]
LOGFBCF(-1)	-1.986665 (0.60191) [-3.30061]

C	-7.258311			
Error Correction:	**D(LOGPIBT)**	**D(LOGCONS)**	**D(LOGTRF)**	**D(LOGFBCF)**
CointEq1	-0.127666	-0.149007	-0.114478	-0.112265
	(0.03397)	(0.03480)	(0.17338)	(0.03960)
	[-3.75851]	[-4.28170]	[-0.66027]	[-2.83498]
D(LOGPIBT(-1))	0.105391	0.173463	-0.653396	0.497131
	(0.24831)	(0.25441)	(1.26747)	(0.28949)
	[0.42443]	[0.68183]	[-0.51551]	[1.71727]
D(LOGCONS(-1))	-0.294931	-0.055746	0.052307	-0.323122
	(0.26924)	(0.27585)	(1.37430)	(0.31389)
	[-1.09543]	[-0.20209]	[0.03806]	[-1.02942]
D(LOGTRF(-1))	-0.022121	-0.012316	-0.138106	-0.001201
	(0.03619)	(0.03708)	(0.18475)	(0.04220)
	[-0.61117]	[-0.33214]	[-0.74755]	[-0.02845]
D(LOGFBCF(-1))	0.183540	-0.185971	-0.077705	0.067257
	(0.20984)	(0.21499)	(1.07112)	(0.24464)
	[0.87465]	[-0.86500]	[-0.07255]	[0.27492]
C	0.064220	0.083579	0.037244	0.073670
	(0.02222)	(0.02276)	(0.11340)	(0.02590)
	[2.89067]	[3.67193]	[0.32843]	[2.84437]
R-squared	0.444529	0.428841	0.030646	0.405047
Adj. R-squared	0.360367	0.342302	-0.116226	0.314902
Sum sq. resids	0.406008	0.426186	10.57837	0.551829
S.E. equation	0.110920	0.113643	0.566177	0.129314
F-statistic	5.281814	4.955453	0.208658	4.493310
Log likelihood	33.67783	32.73199	-29.89597	27.69393
Akaike AIC	-1.419376	-1.370871	1.840819	-1.112509
Schwarz SC	-1.163443	-1.114938	2.096752	-0.856576
Mean dependent	0.065254	0.073760	-0.004978	0.086339
S.D. dependent	0.138690	0.140129	0.535891	0.156232
Determinant resid covariance (dof adj.)	1.64E-07			
Determinant resid covariance	8.40E-08			
Log likelihood	96.33869			
Akaike information criterion	-3.504548			
Schwarz criterion	-2.310196			