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International Migration and Economic Development in Nigeria: A Preliminary Assessment

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Abstract: This is a time-series study that empirically investigates the impact of international migration on economic development in Nigeria for the period of 1970-2000. The study uses both the White-hetero-scedasticity consistent estimation and a Johansen cointegration test to confirm whether international migration has any long-run impact on economic development in the country. The study finds no empirical evidence for any longrun stable relationship between the two variables for the period under review. The study concludes that minimum threshold of migration control measures, improved institutional quality and infrastructural development are necessary in order to reap the benefit of international migration in the country.

Key words: International financial markets, human capital, economic development, cointegration test, Africa

INTRODUCTION

International Migration (IM) has been a serious concern in both policy arena and academic circles; it has gained prominence in the literature due to the perception that a small increase in global migration has a profound effect on economic performances in many countries and also that remittances have been a critical form of financing balance of payments in many developing countries. Despite this observation, international migration issue has often attracted contrasting comments and recommendations. However, there has not been a study that empirically analyses this issue in Nigeria, a vacuum which this study tries to fill. Thus, this study tries to investigate the effects of international migration to the rich countries on the economic development of Nigeria.

Background to the study: As at mid1980s, Africa had lost nearly one-third of its skilled workers to Europe and North America (UNDP, 1992) however, this figure has been increasing (Teitelbaum and Russel, 1999). The stock of international migrants in the world doubled in the early 2000 and almost 10% of people residing in the developed regions are international migrants (Lucas, 2005). He further observes that nearly one-third was in Europe, 23% in North America and 9% in Asia.

Furthermore, the world now has about 3% of its population as foreign born individuals (nationals of the developed countries through foreign birth). Some factors that account for this great exodus include economic, political and social factors but overriding factor has been a great differential in earning opportunities between home and abroad. International mobility of highly skilled takes several forms which include application for permanent residence on point basis (basis of education or occupation, temporary work visas, work permits, students' visa and lottery, etc.

Whatever the mode of movement, some studies have documented the negative impact or cost of international migration popularly known as the Brain drain syndrome (Lucas, 1990; Todaro and Smith, 2007). These costs include productivity losses (loss of potential human resources for national development), intergenerational loss due to the visible absence of the qualified personnel to train the future generation, enlightened elites may further promote political stability and human rights and also fiscal loss as the nation is deprived of their net contribution to fiscal balance and also due to universal subsidisation of education, the emigrants also exports returns on this public investment. It may also have a 3rd party effect or externality especially where the migrant workers possess special skills that are hard to replace and whose absence may diminish the productivity of other workers at home, hence may render others jobless or temporarily create structural unemployment on others. It may also deepen absolute poverty at micro level (within families), absence or far from home may allow the family head to renege on his prior financial commitment. Other social impacts include lack of family cohesion especially when full family accompaniment is not accessible or affordable, child rearing cost, changing attitudes and lifestyle (changes in consumption pattern in favour of goods and services from developed countries, this is evidenced by high import bills) and imbibing new cultures and values epitomised by high corruption levels. Also, it constitutes a high resource constraint on future economic

development in most developing countries. Others succinctly bring to the fore the positive impact of international migration popularly known as brain gain. Foremost among these scholars include Romer (1989), Barro and Sala-I-Martin (1999), Temple (1999), Hojo (2003), Lucas (2005) and World Bank (2007). The protagonists of international migration often argue that net migration is a strong component of human capital in any country, thus it enhances the stock of human capital available to the domestic countries through three channels, firstly it facilitates transfer of new knowledge through international experience, it also enhances gross capital formation for development through net transfers or net remittances which has been a veritable source of capital for development in most developing countries. Net remittance has also been an effective poverty alleviation strategy for many households.

Furthermore, through social networks of professionals in diaspora, this has further facilitated the attraction of foreign direct investment and foreign portfolio investment to these countries (World Bank, 2007). This network also facilitates social capital among emigrants and further accentuates transfer of knowledge and skills to home countries. Hence to these protagonists, international migration could actually enhance national development through these aforementioned sources.

This study, empirically investigates the impact of international migration on the economic development in Nigeria for the period of 1970-2000. In particular, the study tests 2 hypotheses:

- Does international migration have any impact on economic development in Nigeria?
- Does international migration lead to brain drain or brain gain in Nigeria?

For the 1st hypothesis, it suffices to say that international migration has an impact on the economic development if the coefficient of IM is statistically significant. The 2nd hypothesis is a test to confirm whether IM enhances or retards economic development in Nigeria or whether the IM confirms brain drain or brain gain syndrome in Nigeria. A positive (negative) coefficient of the IM on the economic development suggests that international migration has led to brain gain (brain drain) in the country.

MATERIALS AND METHODS

The empirical model: Thus, we specify a log-linear equation for economic development in Nigeria:

$$\ln Y_t = \beta_0 + \beta_1 \ln IM_t + \beta_2 \ln KS_t + \beta_3 \ln HC_t + \varepsilon_t \quad (1)$$

Where:

Y = The real GDP per capita an indicator of economic development in the country
IM = Proxy for international migration
HC = The level of human capital in the country measured as the education attainment in the country
KS = The stock of physical capital measured using perpetuity method of valuation

These specification is a test of the 1st hypothesis. A necessary condition to conclude that international migration has an impact on the economic development in the country requires β_1 to be statistically significant. To test the existence of brain drain or gain, a positive (negative) sign in the coefficients of β_1 suggests brain gain (drain), respectively. The coefficients of both KS and HC have apriori theoretical expectation of positive values.

Data: The study uses three indicators to capture the effects of international migration on the economic development, these are Net Remittances (NR) is the ratio of net remittance to GDP, the Foreign Direct Investment (FDI) as a ratio of the GDP and Foreign Portfolio Investment (FPI) as a ratio of the GDP.

In consonance with previous research of Thirwall (2006) and Todaro and Smith (2007), the study used real GDP per capita as an indicator of economic development. Heston *et al.* (2002) observe that the real GDP per capita is a reliable indicator of economic well being is prone to fewer errors than the GDP figures and also aids inter-temporal comparison. The majority of the data are sourced from the World Bank Tables (WBT); World development indicators (various issues), data on human capital was from Bosworth and Collins (2003) based on the average of educational attainment of both Barro and Lee (2001) and Cohen and Soto (2001). All the variables in the data set are first transformed into the natural logarithm for obvious statistical reason of standardisation and equalisation of the variables. The study spans through 1970-2000, thus it consists of 31 annual observations.

RESULTS AND DISCUSSION

The preliminary investigation starts by examining the stationarity properties of the variables. We test for the order of integration using the Augmented Dickey-Fuller test (Dickey and Fuller, 1979) for unit root. Though, ADF is most commonly used in empirical research but it has been observed that the ADF corrects for higher order

Table 1: Unit root tests for the variables for the period 1970-2000

	ADF		Phillips-Perron		Dickey-Fuller -GLS		
Variables	Level	1st difference	Level	1st difference	Level	1st difference	Order of integration
LIM/Y	-1.99	-5.65***	-1.96	-7.34***	-1.38	-5.63***	I (1)
LFDI/Y	-2.29	0.83	-2.14	-9.89***	-0.85	1.43	I (1)
LHC/Y	0.15	-1.38	2.79	-1.38	-0.96	-0.95	I (2)
LKS/Y	0.67	-4.64***	-3.89*	-1.47	0.67	-2.62**	I (1)
Lyp	-3.37*	-2.78*	-1.93	-5.71***	-3.51*	-1.37	1 (1)
LFPI/Y	-4.91**	-8.67***	-4.93***	-23.10***	-3.61***	-1.41	I (())
LNI/Y	0.55	-6.00***	-3.52***	-11.10***	-3.36**	-9.55***	I (0)

*, **, *** indicate that we reject the null hypothesis of unit root at 1, 5 and 10%, respectively. All variables are stationary at 1st difference and most significant at 1% level in 1st difference

serial correlation by adding lagged difference terms on the right hand side and in small samples the reduced degrees of freedom can affect the power of the test. Hence, we apply the Phillip-Perron (PP) to confirm the results. The PP test is better in this regards, thus both tests are often used in empirical research and if they confirm each other then greater confidence can be placed on the results (Enders, 2004). However, one potential problem with both ADF and PP tests is that they take a unit root as the null hypothesis. Unit root tests have a high probability of falsely rejecting the null hypothesis of non-stationarity when the data generation process is close to stationary process. This is because in finite samples, some unit root processes display behaviour closer to stationary white noise than to a non stationary random walk while some trend stationary processes behave more like random walks (Harris and Sollis, 2003). Unit root tests with high power against any stationary alternative will have a high probability of a false rejection of the unit root when applied to near stationary processes. In lieu of this, we also utilise the DF-GLS test to confirm the validity of the ADF and PP test results.

The results from the unit root tests are shown in Table 1. If a variable is confirmed to be I (1) by the three tests, then we use it in the cointegration tests if however, there is ambiguity concerning the stationarity, we use the DF-GLS result. The null hypothesis for each of the three tests is that the variable in question contains a unit root and the alternative hypothesis is that the variable is trend stationary. All the three tests suggest that most of the variables are I (1).

To avoid spurious regression with the consequence of invalid inferences, the stationarity status of each variable guides in the choice of variables for the regression. The study then tests the effect of the international migration on the economic development by conducting the Ordinary Least Square (OLS) using the White heteroscedaticity-consistent estimation technique. The result is shown in Table 2. Furthermore, given the results of the unit root, we then conduct a cointegration

Table2: Regression results

Economic development proxied by real GDP per capita	A	B	C
Constant	-3.63	-3.47*	-1.20
	(3.03)	(1.96)	(2.42)
ln KS_t	1.00***	0.99***	0.83***
	(0.25)	(0.16)	(0.19)
Ln HC_t	26.8***	27.15***	29.3***
	(2.19)	(1.62)	(1.75)
Ln IM_t	-0.15**	-0.05	-0.07
	(0.05)	(0.06)	(0.09)
R^2	0.97	0.97	0.97
DW	0.48	0.38	0.37
F-statistic	391.6***	346.8***	358.5***

*, **, *** indicate 10, 5 and 1% levels of statistical significance, respectively. Also columns A-C represent estimation results when international migration is proxied by FPI/Y, LNI/Y and FDI/Y respectively. Figures in parentheses are the standard errors of each variable

Table 3: Johansen cointegration test

	Null hypothesis: r = 0, 1			
Variables in cointegration vector	Trace statistic		Maximal eigen value statistic	
	r = 0	r = 1	r = 0	r = 1
LFDI, LYp	9.33	1.38	7.95	1.38
LIM, LYp	5.09	1.64	3.45	1.65
LFPI, LYp	13.4	2.55	10.9	3.84
LNI, LYp	4.94	15.5	4.41	3.84

test to establish a long run stable relationship between the variables of interest using the Johansen (1988)'s maximum likelihood estimation technique. Furthermore, Kramers *et al.* (1992) ascribe the poor performance to the Engel-Granger test due to the relatively low power of the ADF statistics in small samples. The result is shown in Table 3. The null hypothesis is that there is no cointegration vector and the alternative is that there is one cointegrating vector. We report both the trace test and the maximal eigenvalue test.

The estimation results are shown in Tables 2. Most of the diagnostics tests are satisfactory, except the serial correlation test. The coefficients of both human capital and stock of physical capital are both statistically significant and positively signed, confirming the apriori expectation. This implies both human capital and physical

capital are necessary for economic development. However, the coefficient of international migration is not statistically significant when proxied by FDI and Net inflow. However, where it is statistically significant (when using FPI) it is negatively signed.

This suggests that IM may only have a minimal impact on economic development, however the effect is negative. Table 3 reports the cointegration test, the null hypothesis of no cointegration cannot be rejected in all cases, thus signifying no long run stable relationship between international migration and economic development.

A little caution or restraint has to be exercised when interpreting these results as they may be due to the paucity of data set or misspecification error. More importantly that one of the measures of brain gain in the literature is net remittances to home countries, however this often faces two problems since the sources of remittances are both formal (through conventional banking arrangements and institutions) and informal (through friends, families and other informal arrangements). However, the official source is often used for analysis and often greatly undervalued as substantial remittances get to the home countries through the informal route.

The second problem with net remittances is the legal or Money laundering Act in force in so many countries that makes the informal arrangement more preferable at micro level. It may also suggest that international migration only has beneficial effect at micro or individual level and not at macro or aggregate level or simply suggest that the effect of IM on economic development may have delayed effect and not contemporaneous effect as the model specified.

IMPLICATIONS

International migration offers numerous benefits, poses several risks while throwing several challenges, thus there is a need for a policy framework that can harness all these benefits while mitigating the costs. The country may evolve a scheme to encourage remittances, since IM offers a safety valve for employing skilled workers, thus it can not be stopped. Stopping, it would also be tantamount to violation of human rights of individuals however, it may be reasonable that the rich countries compensate the poor countries at least for subsidizing the educational costs of the emigrants. Though, this may not elicit desirable results as receiving countries may argue that public spending on education represents an investment in the export of educated migrants in return for their remittance. Migrants and their families sometimes gain from international migration, through increase in average income, benefits to the nation depends on the marginal contribution of each emigrants to economic development. This also depends on the age, educational level, wealth of experience and right placement in the home country.

CONCLUSION

According to the srudy, the right to emigrate is widely recognized and must be honoured, however to attract these highly skilled individuals for national development, the nation needs to promote stable polity, stem-up level of infrastructures, ensures security of lives and properties, pay living wages to its employees and embrace transparency in its programmes and projects. In particular, this study commends the present regime for setting up a Diaspora forum/Summit where emigrants can effectively look at where they can participate in the national development. At the stage of the national economy, a policy of all-inclusive and none exclusive should be encouraged.

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