

The Impact of Net Migration on Agricultural Output and Foreign Direct Investment in Nigeria

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Abstract

The spatial movement of an educated and skilled labour force from one geographical unit to another is probable due to the mobility characteristic of labour; however, studies have expounded numerous benefits and drawbacks of such moves, especially international ones. To this end, this study investigates the influence of net migration on agricultural output and FDI inflows in Nigeria. Using the Autoregressive Distributed lag model (ARDL) on quarterly data from the Central Bank of Nigeria Statistical bulletin and Macrotrends website for the period 2010 to 2021; the results reveal that in the short-run, a one-lag change in net migration, one period change in agricultural output and FDI are statistically significant at 5% level of significance. Furthermore, in both the short and long run, the impact of the explanatory variables on net migration are the same, with FDI having a negative influence on net migration while agricultural output has a positive impact. As supported by other indications, the negative relationship between FDI and net migration may be as a result of a low inflow of earnings from migrants. This paper, therefore, suggests amongst others that government should encourage the inflow of FDI by improving financial services and ensuring proper documentation of earnings.

Keywords: Migration, FDI, Agriculture, ARDL, Nigeria.

Introduction

In many developing countries, agricultural produce is a very important source of household income which is gotten from sales of the products derived from farms. In Nigeria, more than 70 percent of her population depends on agriculture. However, agriculture contributes roughly 25 percent of the GDP and 60 percent of non-oil exports (Ekin & Nwaokedibe, 2018). The agricultural sector is seen as a major way out of poverty and achievement of long-term economic development in developing nations (Ezihe, Agbugba & Idang 2017). This output from farms is also an important input for industries

Migration is a form of spatial mobility from one geographical unit to another involving a permanent or temporary change of residence. It is also the movement of people or animals from one place to another (Ogunleye, Adeyemo, Bamire & Binuomote 2013). Migration can be within or across international boundaries. It is fuelled by some factors which could be educational, economic, job-related or marital. When migration occurs, there is usually a change in labour supply at both the origin and destination ends of the migration spectrum. Thus, migration affects labour supply for both agricultural and non-agricultural purposes. Generally, models of migration have discovered that economic motivation for migration

prevailed over other reasons (De Haa, 2008). These economic motivation factors may include the search for so-called greener pastures.

Migration and economic development are closely connected. The workforce of poorer nations migrates for better employment and economic opportunities in the developed nations. Through this, they generate income sufficient enough to cater for their family members at home. Thereby returning some of their income home for investments in both large (in form of Foreign Direct Investments FDI) and small forms for direct consumption as well as investment in business by the families left at home. FDI is an investment in the form of a controlling ownership in a business, in real estate or in productive assets such as factories in one country by an entity based in another country. This definition does not change irrespective of the origin of the investment and whether it involved the buying of an existing company or the expansion of the same. (Wikipedia, 2023).

Adams (2003) established that migration is a hindrance to development in less developed countries (LDCs) because it has denied them of vital human resources. The brain drain is huge and continues to grow creating a clearer picture of the increasing issues in developing countries whose citizens continue to migrate. These issues include deteriorating health facilities, deteriorating wage rates, heavy inflation and many more. Recent studies have submitted that migration is merely a sign, rather than a reason for deteriorating amenities (Danmola & Abba, 2013)

International migration is an important channel of physical material for the improvement of the lives of individuals and their offspring. This movement which is usually from LDCs to richer countries has a substantial impact in several ways including productivity at various levels in the migrant home country. First, it allows the migrants themselves to achieve higher income as a result of their higher productivity in the destination country and also increases the expected income for their families left behind. Secondly, it affects the destination country through the impact on labor markets, productivity, innovation, demographic structure, fiscal balance, and criminality. Third, it can have a significant impact on the countries of origin. It may lead to loss of human capital, but it also creates a flow of remittances and increases international connections in the form of trade, FDI, and technological transfers (Zsoka, Giovanni, Magali & Dmitriy, 2021)

Apart from the fact that the labour supply was lost through migration, as they send funds back home, they can also end up pulling away their families from contributing to agricultural production. Migration and Agricultural Productivity are related. Migration is radically changing the socio-economic, demographic and development profile of developing countries like Nigeria. This has a far-reaching implication on agricultural output/productivity (Ogunleye et al, 2013). This study therefore, examines the impact of net migration on agricultural output and Foreign Direct Investment.

Statement of the problem

In recent times, the level of migration by Nigerians has been alarming. The so-called 'jakpa' system is seeing a heavy outflow of educated and skilled Nigerians to the developed countries of the world. In the past, the migration flow was from rural to urban but today it is international migration. As noted by Ogunleye et al (2013) migration is radically changing the development profile of countries like Nigeria. As people migrate to developed countries the impact can be viewed in two ways, in terms of the funds they return home. Some of the funds are used to expand family income by directly investing in productive activities including agriculture. In another way, the funds make more people get out of farming activities –seeing it as tedious n meant for only those without alternatives. These effects may be mixed.

If the funds received by Nigerian migrants abroad are returned for investment purposes, what is the impact of migration on FDI inflows? What is the impact of migration on the labour force productivity of agricultural products in Nigeria? Should Nigeria fold her hands and watch the further migration of her people? If migration cannot be curbed, how can Nigeria harness the positive benefits of migration to improve her economy through improved agricultural production? what if the funds are not being returned home but expended abroad by Nigerians on assets in the destination country, what can the government of Nigeria do to ensure that the repatriation of these funds especially in the form of FDI is not for mere consumption?

Research questions

This study is guided by the following research questions:

- a. Does net migration have any significant impact on agricultural output in Nigeria?
- b. Has net migration had a significant impact on FDI inflows in Nigeria?

Objectives of the study

The main objective of this study is to determine the impact of net migration on agricultural production output and FDI in Nigeria. The specific objectives are to:

- a. Unravel the relationship between net migration and agricultural output;
- b. Examine the relationship between net migration and FDI in Nigeria

Scope of the study

The study seeks to find the relationship between migration and agricultural output as well as migration and FDI inflows. The study concentrates on the recent years between 2010 and 2021 using quarterly data. The data is obtained from various sources like the Central Bank of Nigeria Statistical bulletin and Macrotrends website. The method of analysis is Autoregressive Distributed lag model (ARDL).

Literature Review

There is a dearth of research on the impact of migration on agricultural output and FDI. However, a few were gotten that treated the subject-matter along one line. That is looking at migration and either FDI or agricultural output.

Raju, Chandan & Naveen (2014) in their study on the Nepal economy revealed that remittances have not only defined household consumption and investment patterns but have also transformed the structure and dynamics of the country's overall economy. They used cross-sectional national-level household data in their 2-stage least square analysis. They discovered that migration has a negative impact on agriculture yield and remittance-receiving agricultural households have not demonstrated improvements in agriculture productivity, despite increased household incomes. They concluded that this induces labour shortage in the agricultural sector and households receiving these remittances should be encouraged to invest

Faruk & Abdullahi (2022) examined the net migration-economic growth nexus in Nigeria using time series secondary data spanning the period of 1970 to 2017 by the Autoregressive Distributed Lag (ARDL) Bounds testing approach. Their study revealed a negative significant long-run relationship between net migration and economic growth. FDI had a negative insignificant relationship with net migration. Therefore, the study recommended that the push factors such as poor wage and incentive structure in Nigeria need to be addressed. Moreover, the pull factors, such as good quality of life abroad need to be provided in Nigeria, to discourage people from leaving the country.

Adeseye (2021) used quantitative data and evaluated it through descriptive statistics and multiple linear regressions on Statistical Package for Social Sciences (SPSS). The study revealed that a significant relationship exists between remittance and gross domestic product. The study, therefore, proffered some recommendations aimed at utilizing the influx of remittance for economic growth in Nigeria.

Danmola & Abba (2013) in their study employed the use of seemingly unrelated regression (SUR) analysis and Error Correction Model. The result established a significant relationship between net remittance and economic growth. They recommended better organization of financial institutions so that funds can be remitted through official channels.

This study is intended to reveal the impact of net migration on FDI and agricultural output in Nigeria using data spanning 2010Q1 to 2021Q4.

Theoretical framework

The New Economics of Labor Migration Theory

The New Economics of Labor Migration theory emerged in the 1990s as a fundamental response to previous migration theories, especially the Neoclassical ones. The New Economics of Labour Migration Theory posits that migration selection is no longer an individual's choice. It is a collective choice made by migrant families. Migration choices are made to maximize household income, as well as to reduce the dangers and alleviate the constraints associated with market failures. Remittances in the form of FDI can serve as an

insurance plan for future risks, as the home depends on unique sources of income. By sending a loved one away from home, a family gets a loan that they will pay until migrants begin to send in money. They believed that if humans migrate to increase their income, they must send remittances to their homes (Stark & Bloom, 1985). The theory adapts well to the Nigerian situation in which a family gathers resources to send a member of the family out of the country with a declared agreement and expectation to remit money home as soon as possible.

Taylor and Martin (2001) expressed migration from the family perspective. When people migrate, they are no longer breaking ties with their homeland. The family tries to maximize utility rather than the individual. Migration can have considerable consequences on the financial activities of families. Families who send migrants regularly receive remittances from these migrants.

The theory argues that the wage gap is no longer a tenable reason to opt for migration due to the fact that global migration no longer gives up when wage changes disappear. The principle shows that migration comes from open market disasters. They argue that unproductive, badly positioned or malfunctioning economies are the prerequisites for labour migration (Taylor & Martin, 2001). Although harsh economic circumstances may also be an explanation for migration, the family region must have a specific phase of development for family investments to be effective. As a result, fewer or more remittances are sent to underdeveloped communities.

Model specification and method of analysis

The model for the study is given by

$$NMGQ = f(LnAGPQ, FDIQ)$$

Where

NMGQ = Quarterly Net migration

AGPQ = Log of Quarterly Agricultural output

FDIQ = Quarterly FDI remittances

The short-run Autoregressive Distributed Lag (ARDL) model is specified as

$$\Delta NMGQ_t = \beta_0 + \sum_{t=1}^p \beta_1 \Delta NMGQ_{t-1} + \sum_{t=1}^q \beta_2 \Delta LnAGPQ_{t-1} + \sum_{t=1}^q \beta_3 \Delta FDIQ_{t-1} + \varepsilon_{1t2}$$

Long run model:

$$\Delta NMGQ_t = \beta_0 + \partial_1 NMGQ_{t-1} + \partial_2 LnAGPQ_{t-1} + \partial_3 FDIQ_{t-1} + \varepsilon_t$$

Where p, q are the lag length of the dependent and independent variables respectively while the Error Correction Model (ECM) is specified as

$$\Delta NMGQ_t = \beta_0 + \sum_{t=1}^p \beta_1 \Delta LnAGPQ_{t-1} + \sum_{t=1}^q \beta_2 \Delta FDIQ_{t-1} + \partial ECM_{t-1} + \mu_t$$

Using the Augmented Dickey-Fuller unit root test, the stationarity of each series was determined. ARDL technique was employed to enable the performance of a bounds test as the series were a mixture of I(0) and I(1) variables. An ADRL model is advised for models with different orders of integration, with the proviso that none be integrated of order 2 (Shrestha and Bhatta, 2018; Nkoro and Uko, 2016; Pesaran and Shin, 1999). The variables were tested for co-integration using the Bounds F-test to determine the long-run relationship among the variables of interest, after which least square was used to estimate the error correction model obtained from the ARDL to determine the speed of adjustment after a shock.

Presentation and interpretation of results

Table 1: Descriptive statistics

	NMGQ	FDIQ	AGPO
Mean	-0.329583	4.111667	23374.50
Median	-0.331500	3.319531	20516.91
Maximum	-0.285594	9.048125	42264.88
Minimum	-0.376750	0.675000	12850.69
Std. Dev.	0.026418	2.327998	8962.925
Skewness	0.007989	0.666075	0.748005
Kurtosis	1.880393	2.430548	2.309966
Jarque-Bera	2.507548	4.197800	5.428383
Probability	0.285426	0.122591	0.066259
Sum	-15.82000	197.3600	1121976.
Sum Sq. Dev.	0.032802	254.7200	3.78E+09
Observations	48	48	48

Source: Authors extraction from E-views 9 output

The table presents a dataset that is all platykurtic (meaning more of the values are lower than their mean). All the variables are also positively skewed (that is the right tail of the distribution is longer than the left). Their mean values also fall within the maximum and minimum values which shows that none of the values are outrageously large. The standard deviations also reveal that the values of most of the variables are clustered around the mean. The values are not widely distributed, making them more reliable. The probability values of the Jarque-Bera being greater than 5% also attest to the normality of the data used for the study.

Table 2: Unit root tests

Variables	ADF computed value at level	5% Critical value	ADF computed value at 1 st difference	5% Critical value	Conclusion
NMGQ	-3.919034	-1.94868	-		I(0)
LnAGPQ	-2.559252	-2.926622	-6.525800	-2.943427	I(1)
FDIQ	-4.033661	-2.931404	-		I(0)

Source: Authors extraction from E-views 9 output

The table shows that two of the variables were stationary at level while one was stationary after first differencing.

Table 3: Bounds F-test

Test stat.	Computed value	Lag	Sig. levels	Critical values	
				Lower bounds	Upper bounds
F-statistic	3.581272	2	10%	2.26	3.35
			5%	2.62	3.79
			2.5%	2.96	4.18
			1%	3.41	4.68

Source: Authors extraction from Eviews 9 output

The table reveals that there exists a long-run form for the model since the computed F-value (3.58) is greater than the critical upper bounds value (3.35).

Table 4: ARDL Results

Dependent variable is NMGQ

Short Run form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(NMGQ(-1))	0.474975	0.136257	3.485869	0.0013
D(NMGQ(-2))	0.229055	0.140864	1.626077	0.1124
D(LNAGPQ)	0.012204	0.003459	3.527944	0.0011
D(FDIQ)	-0.001093	0.000343	-3.181425	0.0030
D(FDIQ(-1))	0.000468	0.000310	1.509252	0.1397
CointEq(-1)	-0.202027	0.055770	-3.622512	0.0009

Long Run form

LNAGPQ	0.060410	0.002455	24.608668	0.0000
FDIQ	-0.001702	0.000383	-4.443940	0.0001
C	-0.924892	0.025991	-35.584967	0.0000

Source: Authors extraction from E-views 9 output

The table above reveals that in the short-run a one-lag change in net migration is statistically significant (having a prob value of 0.0013 which is lower than 5%). A one-period change in Agricultural output and FDI are individually statistically significant at the 5% level of significance. However, the impact of FDI is negative. A 1% change in FDI reduces net migration by .01%. A 1% change in agricultural output increased net migration by 1.2%. In the short run a one-period lag of net migration, agricultural output and FDI are statistically significant. The system returns to equilibrium after a shock at a speed of 20.2%. This is also statistically significant at the 5% level as well.

In the long run result, it is revealed that agricultural output and FDI are statistically significant. LNAQP has a positive impact on net migration while FDI has a negative impact. The impact of the independent variables is the same in both the short and long run. The negative relationship between FDI and net migration could be explained that the earnings of migrants are not coming home to Nigeria as corroborated by Danmola & Abba (2013).

Conclusion and recommendations

From the findings of this study, it is safe to conclude that net migration has a significant impact on agricultural output and FDI inflows in Nigeria. We therefore recommend the following

- a. Proper documentation of FDI inflow as well as the provision of improved financial services to encourage migrants to remit and invest back in Nigeria.
- b. Government has to encourage agricultural output to improve even as migration swells. This can be achieved by creating opportunities for migrants to invest in agriculture in Nigeria.

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