

**RURAL-URBAN MIGRATION AND PRODUCTIVITY IN  
THE NIGERIAN AGRICULTURAL SECTOR**

by

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## **Abstract**

This project examines the relationship between agricultural productivity and rural-urban migration in Nigeria. This relationship is first explored by estimating an agricultural productivity model on country level data covering the years between 1970 and 2002. The relationship is further explored by reviewing case studies and empirical studies. In general, the findings support the theory that rural-urban migration negatively impacts agricultural productivity through the loss of productive members of the rural areas. In addition, the results support policies aimed at increasing access to credit in rural areas. Four policy options are designed and the resulting recommendation is the modification of the status quo to include the creation of cooperatives for rural women-headed households who have lost a significant portion of the men in their households to cities.

# **Executive Summary**

## **Purpose and Scope**

This study investigates the relationship between agricultural productivity and rural-urban migration in Nigeria. The relationship is based on theory which proposes that rural-urban migration occurs as a response to differences in expected earnings and standard of living between both areas. This move compounds the problem in the agricultural sector through the loss of productive members of the rural population. Therefore, designing targeted policies aimed at curbing the incidence of rural-urban migration will go a long way in increasing agricultural productivity in Nigeria.

## **Method and Analysis**

This study employs the following methodologies. First, I estimate an empirical model developed in the literature where agricultural productivity is a function of traditional conventional capital inputs (land and livestock), traditional conventional labour input (agricultural labour force) modern conventional capital inputs (fertiliser) and non-conventional inputs (crude oil price, lagged agricultural productivity and rural-urban migration rate). The results support conventional thinking that the discovery and dependence on the oil sector is partly responsible for the deterioration of the agricultural sector. The results also support the presumption that the size of the available labour force in the agricultural sector is a crucial determinant for promoting agricultural productivity. More importantly, the results provide support for the proposed theory that migrants do have an immediate impact on agricultural productivity when they leave rural areas.

Second, studies are presented from Africa and Asia on the impact of rural-urban migration on agricultural productivity. They also highlight the negative relationship between agricultural productivity and rural-urban migration resulting from the absence of the productive members of the rural population. Women are described to be working longer, harder and performing tasks once handled by men. Also, they show that increased cost of agricultural inputs, especially labour is prevalent in areas experiencing large rural-urban migration. Finally, the findings point to the importance of credit reform as a means of improving agricultural productivity.

## **Recommendation**

Based on the findings of the analysis, the following four policy options are developed. First, establish cooperatives for rural women-headed households who have lost a significant portion of the men in their households to cities. Second, establish micro-finance institutes that provide services to migrant farmers. Third, establish cooperatives that provide services to migrant farmers. Finally, establish education and training institutes in urban areas for potential farmers wanting to gain the necessary skills before migrating to their respective rural areas.

Four criteria, effectiveness, public acceptance, political commitment and institutional coordination and cost, are used to evaluate each of the proposed alternatives and based on the evaluation, this study recommends that immediate steps be taken to modify the status quo to include cooperatives for rural women-headed households. In other words, including cooperatives for these rural women is likely to improve the effectiveness of the current efforts in revitalising the agricultural sector.

## **Dedication**

To everyone who is family to me, thank you.



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## **Glossary of Acronyms**

ADB	African Development Bank
ADP	Agricultural Development Project
A-PSF	Agricultural Policy Support Facility
CARE	Cooperative for Assistance and Relief Everywhere
CBN	Central Bank of Nigeria
CLUSA	Cooperative League of the USA
DFID	UK Department for International Development
FAO	Food and Agriculture Organisation of the United Nations
FBT	Food, Beverage and Tobacco
FDC	Federal Department of Cooperatives
FGN	Federal Government of Nigeria
FMARD	Federal Ministry of Agriculture and Rural Development
FOFAN	Federation of Farmer's Association of Nigeria
GDP	Gross Domestic Product
GFS	Government Finance Statistics
IFAD	International Fund for Agricultural Development
MFI	Micro-Finance Institution
NACRB	Nigerian Agricultural Cooperative and Rural Development Bank Limited
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organisation
OLS	Ordinary Least Squares
OPEC	Organisation of Petroleum Exporting Countries

PRSP	Poverty Reduction Strategy Paper
RFIP	Rural-Finance Institution Building Programme
SAP	Structural Adjustment Program
UN	United Nations
USAID	United States Agency for International Development
WB	World Bank
WDI	World Development Indicators
WIA	Women in Agriculture

# 1 Introduction

A large percentage of the world's poor live in rural areas. According to estimates by the International Fund for Agricultural Development (IFAD), the percentage of the rural poor is close to 75% of the world's poor and a majority live in developing countries in South Asia, East Asia and sub-Saharan Africa (IFAD, 2001). One of the similarities among these developing countries is that small-scale subsistence farming is the most prominent occupation in their rural economies. For example, in Nigeria, small farm-holders account for approximately 81% of the total farm holdings (DFID, 2004). This suggests that policies aimed at improving the agricultural sector will have a significant impact on the standard of living of the majority of the world's poor. In other words, agriculture is an important channel for encouraging pro-poor growth in developing countries. This view is supported by governments and international organisations, particularly the World Bank which reports that a 1% increase in agricultural growth results in an increase in incomes of the poorest by twice as much as the same investment in the service sector (Peacock, 2004).

The state of global agricultural production and productivity reveals some similarities as well as differences across regions. In general, agricultural outputs increased by about 101% while the population of economically active persons in agriculture increased by around 40% between 1970 and 2000 (Majid, 2004). However, the trend in growth in agricultural productivity suggests improvements in China and the rest of Asia but not sub-Saharan Africa. Similarly, per capita growth in agricultural output as well as value of crops has been modestly positive in the developing world, except for sub-Saharan Africa where the trend has been stagnant.

To encourage economic growth and mimic the performance of China and the rest of Asia, African leaders are intensifying efforts to find sustainable solutions to hunger and poverty. The main framework for this undertaking is the New Partnership for Africa's Development (NEPAD).<sup>1</sup> NEPAD, along with heads of African regional economic groups and African and international multilateral organisations, developed the *Comprehensive Africa Agriculture*

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<sup>1</sup> The vision of NEPAD is to provide an integrated socio-economic development framework for Africa. NEPAD was initiated by five African Heads of State in 2001.



*Development Programme* in 2003 as a framework for accelerating agricultural development and food security on the continent. Also, during the African Union Agriculture and Food Security Summit in 2006, African leaders re-committed to allocating at least 10% of national budgetary resources for agriculture and rural development within 5 years (AU, 2006).

Developing a comprehensive and sustainable approach for the agricultural sector on the African continent requires that the nuances of the problem be fully understood and addressed at the country level. To that end, this study examines why agricultural productivity has fallen in Nigeria. This question is addressed by exploring the link between agricultural productivity and rural-urban migration. The relationship is based on the proposition that rural-urban migration negatively impacts agricultural productivity through the loss of productive members of the rural communities. Therefore, policies aimed at mitigating the incidence of rural-urban migration will go a long way in increasing agricultural productivity in Nigeria and the African continent.

This study proceeds in the following way. Section 2 formally states the policy problem and provides a brief synopsis of the approach of the study. Section 3 provides an overview of the agricultural sector as well as the incidence of rural-urban migration in Nigeria. Section 4 discusses the existing literature on agricultural productivity and rural-urban migration. Section 5 provides a detailed discussion of the three methodologies employed in the study. Section 6 presents four policy alternatives aimed at increasing agricultural productivity by reducing rural-urban migration. Section 7 presents the criteria that are used to evaluate proposed policy alternatives against the status quo and the recommendation.

## **2 Policy Problem**

Over the years, Nigeria has experienced a decline in agricultural productivity even though different strategies have been adopted to revitalise the agricultural sector. The importance of addressing the problem of the agricultural sector is still on the national policy agenda as the current Nigerian president, President Olusegun Obasanjo, acknowledged that African leaders are increasing their efforts to find sustainable solutions to hunger and poverty through the NEPAD as it highlights the importance of promoting growth in the agricultural sector (Harsch, 2004).

One reason why Nigeria has experienced a decline in agricultural productivity is the high rate of rural-urban migration. It is commonly argued that rural-urban migration occurs as a result of the perceived difference in income and standard of living between both areas. As more citizens move to cities, the agricultural sector is impacted as the movement depletes the existing pool of labour available for subsistence farming. Therefore, to address the policy question, “Why has agricultural productivity fallen in Nigeria?” I explore the link between agricultural productivity and rural-urban migration.

This project examines the relationship between rural-urban migration and agricultural productivity by surveying the relevant literature, estimating an agricultural productivity model and reviewing case studies and empirical studies. The conclusions are then used to develop alternative policies as well as to make recommendations for policy makers and stakeholders, including government officials, NGOs and private sector financial institutions.

## **3 The Nigerian Economy**

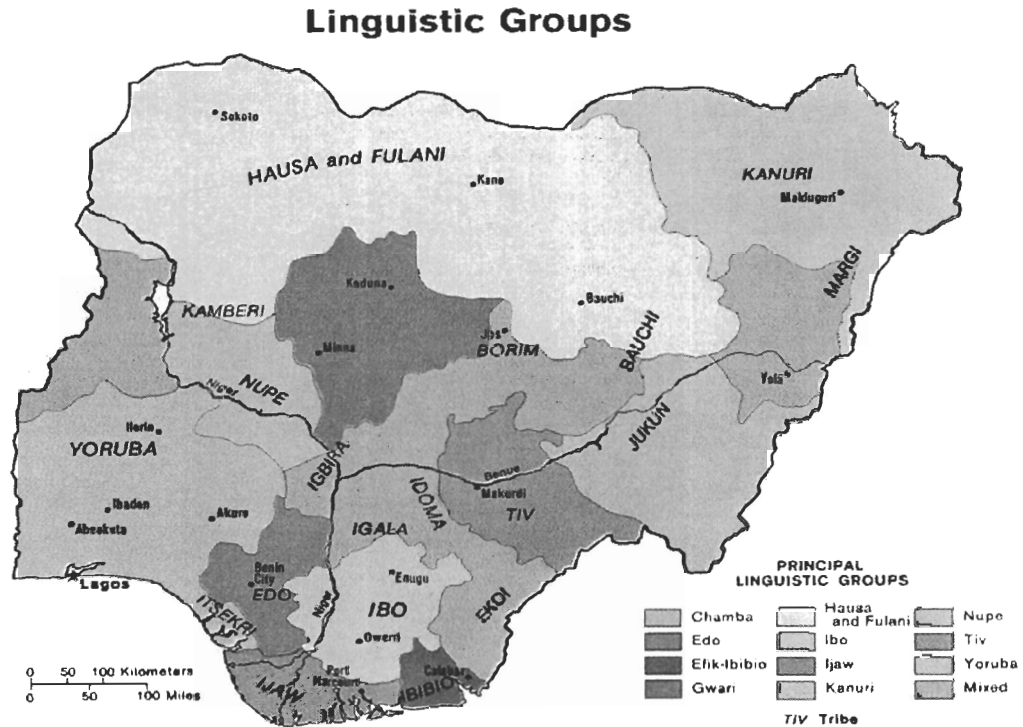
In this section, I provide a brief demographic and economic overview before discussing the incidence of rural-urban migration in Nigeria.

### **3.1 Demography**

Nigeria is located in West Africa and is bordered by the Republic of Niger, the Republic of Cameroon, the Atlantic Ocean and the Republic of Benin at the north, east, south, and west respectively. Nigeria consists of 36 States and a Federal Capital Territory. After its independence in 1960, Nigeria spent over twenty-nine years under military rule and only returned to democratic rule in 1999.

In 2004, the UN estimated the population of Nigeria to be around 132 million making it the most populous country in Africa. Nigeria has 389 ethnic groups (the three major groups are Hausa and Fulani 29%, Yoruba 21% and Igbo 18%). It is estimated that Nigeria has around 500 linguistic groups as some ethnic groups speak more than one language and the major linguistic groups are shown in Figure 1 (World Facts, 2004). The existence of numerous ethnic and linguistic groups results in multi-dimensional differences in customs, religions, languages and traditions that manifest themselves through political and economic tensions that constantly test the capabilities of the country's nascent democratic government.

Figure 1 Major Linguistic Groups in Nigeria



Source: Perry-Castaneda Library Map Collection- University of Texas Libraries.

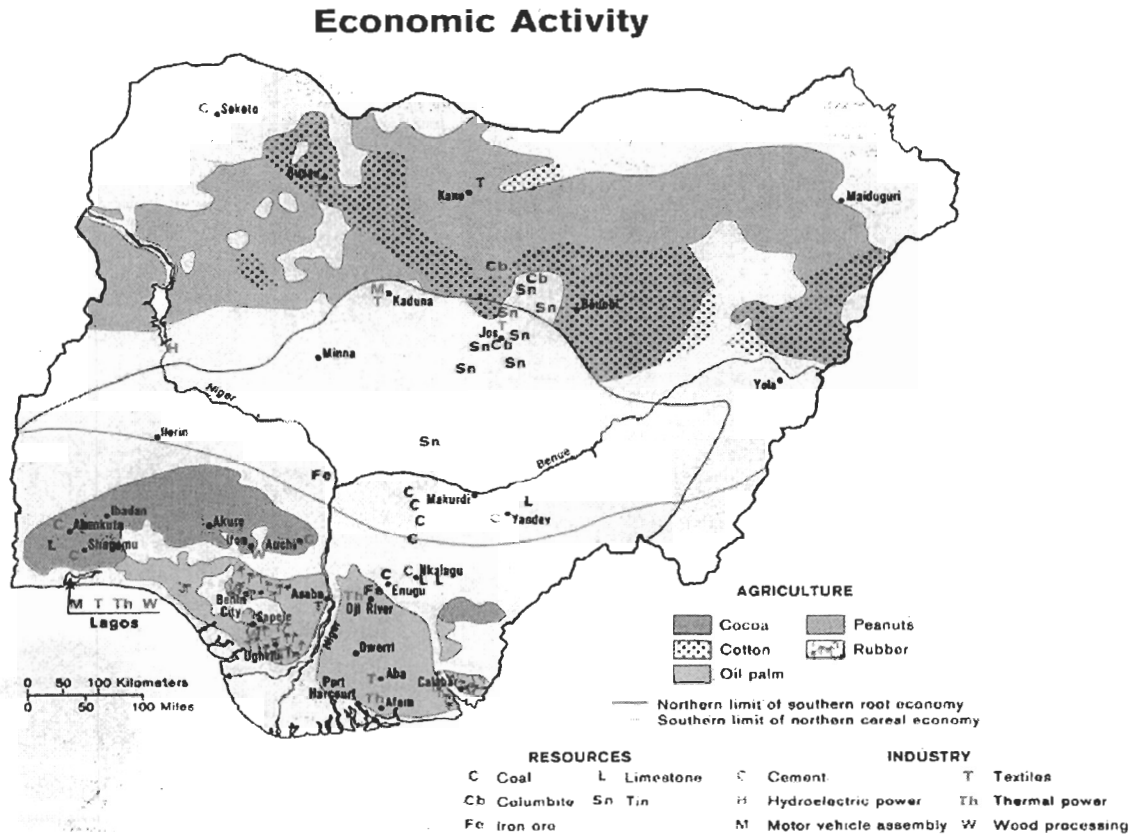
### 3.2 Economic Sectors: Agriculture and Oil

The Nigerian economy and its people have historically been highly reliant on agriculture. Since the 1960s, agriculture has been second to the oil sector as the most important economic sector in terms of its contribution to the GDP and export revenue earnings. Agriculture is also an important employment generator. In 2003, more than 70% of the working adult population worked in the agricultural sector directly and indirectly. However, a large majority of agricultural farming is subsistence farming as small farm-holders account for around 81% of the total farm holdings (DFID, 2004).

Nigeria's supply of arable land and favourable soil provides a thriving environment for agriculture. In 1965, estimates indicated that around 76% of the total land area was arable and

this figure has remained relatively stable since (WDI, 2006). Nigeria's soil is rated from low to medium in productivity, however, the Food and Agriculture Organization of the United Nations concluded that most of the country's soil could have medium to good productivity if managed properly (Eboh et al, 2006b). The differences in both soil types and climatic conditions results in the production of variety of crops across the country. Crop production can be divided into two main groups: food crops and cash crops. Food crops are produced mainly for consumption by individual households and examples of important food crops are yam, millet, rice, soybeans, and maize. Cash crops are produced mainly for export to other countries and examples of important cash crops are cocoa, rubber, ground nuts, tobacco, oil palm. However, the production of these different crops is mostly unique to each region. As evident from Figure 2, the northern zone is suitable for growing sorghum, millet, groundnuts and cottons. The northern zone is also the principal livestock-rearing area, accounting for over 75% of the small animals and a greater share of large animals (cattle, camels and donkeys). The middle belt and the south-west are suitable for growing root and tuber crops, maize, plantain and sorghum. The southern part of the south-west also produces cocoa and palm oil. The south-south and the south-east are noted for fisheries and the production of maize, tuber crops, cocoa, oil palm and rubber.

Figure 2 Economic Activity in Nigeria.



Source: Perry-Castaneda Library Map Collection- University of Texas Libraries.

Oil was discovered in commercial quantity in the mid 1950s. In 1971, Nigeria became a member of the Organization of the Petroleum Exporting Countries (OPEC). By that time Nigeria had become the world's 7th largest petroleum producer. The dependency on oil as a major source of foreign exchange happened relatively quickly; in 1961, crude oil accounted for only 7.1% of total exports but it climbed to 95% in 1979 (Petters, 2003). This increase in oil exports was mostly a response to the dramatic increase in oil prices world wide between 1971 and 1977. This period is commonly referred to as the 'oil boom' era in Nigeria.<sup>2</sup>

<sup>2</sup> During the peak of the oil boom Nigeria's premium crude, the Bonny Light (37° API), was sold around \$40 per barrel (Petters, 2003).

There appears to be a strong correlation between the discovery and subsequent dependence on oil and the situation in the agricultural sector. Currently, less than 50% of the country's cultivable agricultural land is under cultivation. Also, smallholders and traditional farmers have limited access to modern inputs and therefore use rudimentary production techniques to cultivate most of the land. They are also constrained by limited access to credit, poor infrastructure and inadequate access to markets (NLSS, 2004). As a result, the agricultural sector is no longer the once thriving sector it used to be; agriculture's percentage contribution to the GDP has declined significantly from around 55% in 1965 to about 17% in 2004 (WDI,2006). Similarly, the percentage contribution of agricultural raw materials to merchandise export has fallen significantly from around 11% in 1965 to about 0.01 % in 2003 (WDI,2006).

The situation in the Nigerian agricultural sector appears to be dire when compared to sub-Saharan and developing regions. Between 1983 and 2002, average annual growth of livestock and crop production in Nigeria suffered a bigger loss than the sub-Saharan African countries and developing countries' averages. The average annual growth of livestock and crop production fell from around 0.2, 1 and 4 percentage points for developing countries, sub-Saharan Africa and Nigeria respectively (FAO, 2004). Similarly, between 1993 and 2002, cereal yields grew by around 1% and 2% in developing countries and sub-Saharan African but fell by 1% in Nigeria (FAO, 2004).

### **3.3 Rural-Urban Migration Facts**

Another consequence of the large inflow of oil wealth was the development of other sectors of the economy, especially the industrial sector. This triggered a move from rural areas as the majority of the opportunities associated with the oil boom were located in cities. Other factors such as better social opportunities and government policies favourable to cities have helped sustain migration from the rural areas to urban centres since the oil boom. As evident from Table 1, between 1970 and 2004, the percentage of the total population in urban areas increased dramatically from around 20% to around 48%. This proportion of urban population is quite close to the highest proportion of urban population in sub-Saharan Africa ( in several of the francophone countries in Central Africa, for example, close to 50% of the population live in major city or cities). Also, Nigeria has more large cities than any sub-Saharan African country (World Facts, 2004).

*Table 1 Selected Nigerian Demographic Statistics: Selected Years*

	1960	1970	1980	1990	2000	2004
Urban Share of Total Population (%)	15.2	20.3	26.9	35	44.1	47.5
Rural Share of Total Population (%)	84.8	79.7	73.1	65	56	52.5
Total Fertility Rate (births per woman of child bearing age)	6.9	6.9	6.9	6.7	6.0	5.6
Foreign Born Share of Total Population (%)	0.2	0.3	1.9	0.5	0.6	----
Annual Total Population Growth Rate (%)	2.4	2.7	3.1	2.8	2.4	2.2
Annual Urban Population Growth Rate (%)	5.3	5.1	5.5	5.4	4.5	4

*Source: WDI (2006).*

Admittedly, other components of urban growth such as an increase in natural growth (i.e. birth rate) and international immigration could provide alternative explanations for the rapid increase in urban growth. However, these explanations do not hold much weight as Table 1 shows that between 1960 and 2000, the fertility rate has remained relatively stable while the share of international immigrants have fluctuated between a high of around 2% and a low of 0.2%. This finding is substantiated by the trend of the total population growth rate, a construct that captures both natural increase and international immigration, as it decreased slightly from 2.4% to 2.2% during the same time period. This suggests that rural-urban migration is the principal component of rapid growth of urban population in Nigeria.

Rural migrants appear to be mostly young males. Also, rural migrants are made up of individuals with different levels of skill as individuals from all skill classes are likely to migrate (USAID, 2000). Low-skilled individuals usually move to the cities to find manual jobs they may not find in rural areas while educated workers usually move to cities because they can earn more in the cities (Lanzona, 1998 and Agesa, 2001). Finally, rural migrants appear to have a preference for state capitals. In 1990, twenty-one out of thirty-six state capitals, were each estimated to have more than 100,000 inhabitants; fifteen of these, plus a number of other cities, had populations exceeding 200,000 and five cities had a population of more than a million (US Library of Congress, 1982). Virtually all of these were growing at a rate that doubled their size every fifteen years (US Library of Congress, 1982). Projections suggest that the number of people living in towns and cities in Nigeria will reach 100 million by 2020 (DFID, 2004).



The best example of a city experiencing significant growth is undoubtedly Lagos. Around 85% of the country's industrial activity is located in Lagos and it is one of the fastest growing cities in the world. Its annual growth rate was estimated at almost 14% during the 1970s and its current population is estimated to be around 10 million (DFID, 2004). Projections suggest that by 2020 it will be the third biggest city in the world (DFID, 2004). Many large cities, such as Onitsha, Owerri, Enugu, Aba, Port Harcourt and Calabar, grew very rapidly as well.

Rural-urban migration has a significant impact on unemployment levels of the destination cities. Between 1998 and 1999, urban unemployment rose from 5.5% to 6.5%, a rate higher than the national unemployment which increased from 3.9% to 4.7% during the same period (USAID, 2002).<sup>3</sup> A consequence of this shortage of employment in urban areas is an increase in urban poverty; in 2000, around 15 million urban dwellers (around 30% of the urban population) were below the poverty line (DFID, 2004). It appears that the continual incidence of poverty and unemployment in urban areas are correlated with the crisis in the industrial and public sectors. As evident from Table 2, between 1993 and 2003, the average annual growth of real manufacturing value added, a common measure of industrial performance, was consistently lower than the average of sub-Saharan countries and developing countries. Also, government programs such as the Structural Adjustment Program (SAP) adopted in 1986 under the guidance of General Ibrahim Babangida have led to a reduction in the number of public service and industry workers.<sup>4</sup> Onyeonoru (2003) shows that a number of industries suffered major contraction as a result of SAP. For example, the number of Food, Beverage and Tobacco (FBT) companies declined from 80 companies in 1986 to 69 in 1992, six years after the introduction of SAP. Out of 69 surviving companies, only 26 were profitable. In the FBT sub sector, the beverage industry suffered a serious hit as the number of companies fell from 40 in 1986 to 25 in 1992. Cities disproportionately experienced the employment impact of SAP as these industries as well as a large majority of industries in other sectors are located in urban areas.<sup>5</sup>

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<sup>3</sup> The largest proportion of the unemployed in urban areas (consistently 35% to 50%) was secondary-school graduates (USAID, 2002).

<sup>4</sup> Industry workers were affected because a significant portion of industries in different sectors were owned and operated by the government.

<sup>5</sup> A large number of industries in Nigeria are mostly located in the following cities: Lagos, Ibadan, Jos, Port Harcourt, Kano, Kaduna, Onitsha, Nnewi and Aba (Ikpeze et al, 2004).

Table 2 *International Comparisons of Industrial Performance: 1993-2003.*

	Period	Nigeria	Sub-Saharan Africa	Developing Countries
Manufacturing Value Added (MVA), average annual real growth rate (%)	1993-1998	1.3	4.2	5.4
	1998-2003	2.4	3.0	4.4

Source: UNIDO (2006).

Apart from high levels of urban unemployment and poverty, social and ecological problems have also developed in cities as a result of the increase in population and activities. This is mainly the reason why migration is thought to be undesirable by many governments. The UN(1994) notes that in the early 1990s, approximately half of the governments in the world, mostly those of developing countries, considered the patterns of population distribution in their territories to be unacceptable and desired to have them changed. Also, Waddington (2003) shows that 23 out of 44 country Interim PRSPs consider migration a negative phenomenon and seventeen of these PRSPs mention migration as a cause of degradation of rural and urban resources.<sup>6</sup> Furthermore, some countries specifically attribute rural-urban migration as the cause of urban poverty while others associate an increase in crime with migration. This conclusion is supported by research for the United States. For example, South (1987) studies the impact of rapid migration to metropolitan areas on the quality of life by examining the effects of immigration and emigration over the period of 1975 and 1980 on the rates of suicide, violent crime, property crime and divorce for all United States. His results indicate that rapid immigration is associated with high rates of all four of these social problems.

From reviewing this evidence, it is not premature to conclude that the high incidence of rural-urban migration experienced in Nigeria has been instrumental in sustaining poverty and reducing productivity in both rural and urban areas. It should be mentioned that the situation is not all bleak in urban areas as urban dwellers have been known to improve their livelihoods by working or creating new economic activity in the 'informal economy'.<sup>7</sup> However, these informal

<sup>6</sup> The poverty reduction strategy papers (PRSPs) are prepared by governments in low-income countries. A PRSP describes the macroeconomic, structural and social policies and programs that a country will pursue to promote growth and reduce poverty.

<sup>7</sup> The informal economy refers to market sectors where certain types of income and their sources are unreported or regulated by legal and social frameworks of the society. Examples of activities in Nigeria usually entail petty trading in numerous goods and services (e.g. car repair, street peddling).

job opportunities are not sufficient to improve urban poverty and productivity. Instead, they inadvertently compound the problem as they lead to even more rural-urban migration since rural workers interpret them as signals of higher probabilities of urban jobs (Todaro, 1994). Furthermore, this increased movement further exacerbates the problem in the agricultural sector as more able bodied individuals leave the rural areas for cities.

## **4 Literature on Agricultural Productivity and Rural-Urban Migration**

In this section, I survey the body of literature on the two main issues of concern: agricultural productivity and rural-urban migration and classify them based on their content. First, the literature on agricultural productivity discusses the importance of the agricultural sector in promoting growth of the economy and the recent initiatives by the Nigerian government aimed at boosting the agricultural sector. Second, the literature on rural-urban migration discusses the reasons for rural-urban migration and the implication of rural-urban migration on rural and urban areas.

### **4.1 Agricultural Productivity and Growth**

In the early literature, agriculture was viewed as a sector that could encourage development in the industrial sector (Lewis, 1954; Ranis and Fei, 1961). In other words, growth in the agricultural production was viewed as an essential condition or precondition for growth in the rest of the economy. The intuition behind this theory is very much alive today as the recent growth literature still provides evidence that supports the view that agricultural growth promotes poverty reduction (Ravallion, 1996; Wichmann, 1997 and Kanwar, 2000). Growth in agricultural productivity has been shown to alleviate poverty through at least two channels. First, Irz and Roe (2000) show that technological advancement in agriculture increases agricultural productivity which in turn reduces the price of food. This reduction in the price of food enables households to be able to afford a larger bundle of food and still have money left over, thereby inducing them to increase their savings and improve their standard of living. Second, Dasgupta (1998) shows that lower price of food increases the productivity of the farmers as well. This is because with a higher nutritional intake, they are able to work and learn more and this has a dynamic effect on their standard of living and the alleviation of poverty.

Also, in a review of poverty reducing growth strategies for Africa, Fafchamps et al. (2001) argue that only a handful of African countries are able to benefit from a growth in export manufacturing (the sector often claimed to be the best sector to support poverty reducing growth).<sup>8</sup> The large majority of African countries do not have booming export sectors and must rely on other engines of growth: agriculture, mining, tourism or a combination of these. It is worth noting that for many African countries, agriculture appears to be the most viable sector to promote and sustain the needed level of economic growth.

Apart from the importance of agricultural productivity, there is research on various factors that affect agricultural productivity and the following are from African countries. First, Imahé et al (2005) focus on the determinants of agricultural productivity and the outputs of major agricultural commodities in Nigeria. The results highlight the importance of intensifying dry land irrigation, the existence of affordable loans for small-scale farmers, a reduction in importation of food items and an increase in capital investment in the agricultural sector. The authors prescribe these as alternative policies that should be considered by the Nigerian government and private investors.

Second, looking at Kenya, Owuor (2001) describes agricultural productivity across households and identifies strategies for enhancing smallholder agricultural productivity. His results show that, in general, poor households perceive the markets to be too risky for the purchase of their food needs. In addition, there appears to be a positive correlation between off-farm income and crop value per unit of land as poor households are reluctant to shift to cash crops unless they are assured of income for purchasing food in the transition process. Also, there appears to be a negative correlation between imports of certain crops and agricultural productivity. To increase agricultural productivity, he suggests that the costs in the food system should be reduced so farmers can diversify by shifting to higher-valued crops without putting their families in jeopardy of acquiring food. Also, he recommends the development of basic water infrastructure and policies that encourage off-farm income and agricultural productivity.

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<sup>8</sup> International trade, specifically export promotion, is often considered an important strategy for promoting growth as it encourages countries to export goods that they can produce relatively cheaply thereby promoting local industries and improving the livelihoods of their citizens.

## 4.2 Agricultural Productivity Policies in Nigeria

Since the new millennium, the importance of increasing agricultural productivity has been recognised at the federal level as there has been a shift in policy thinking towards increased state intervention in supporting the agricultural sector. This has resulted in the development of initiatives by the federal government aimed at increasing agricultural productivity with the aid of the international community. First, in 2001, the Federal Government of Nigeria (FGN) partnered up with several international organizations (the World Bank (WB), United States Agency for International Development (USAID), African Development Bank (ADB) and International Fund for Agricultural Development (IFAD)) to discuss strategies for improving the livelihood and living conditions of rural communities. It was agreed by all international partners that community-driven development will be the most efficient and effective approach to poverty alleviation and this led to the initiation of the *Community Based Agriculture and Rural Development Programme*. The programme will be implemented in four northern states and is expected to contribute to the sustainable management of the natural resource base and to substantially increase food production and farm incomes.

Also in 2001, the FGN with assistance from the ADB, WB, IFAD and Food and Agriculture Organization of the United Nations (FAO) financed the *Review of Rural and Agriculture Sector Institutions* with the aim of streamlining the activities to ensure efficient provision of technical services to the agriculture sector. The review was conducted by the FAO and was finalized in 2003. The major recommendation of the review is the fundamental need to rationalize the existing institutional arrangements to enhance efficiency in planning, implementing, monitoring and evaluating agricultural development activities and initiatives.

In 2004, the WB, ADB and FAO established the *Agricultural Policy Support Facility (A-PSF)* to harmonise the activities of the various departments of the Federal Ministry of Agriculture and Rural Development and their interventions in the agricultural sector. The A-PSF is specifically geared towards improving the design and implementation of agricultural policies to promote sustainable development. At present A-PSF is at appraisal stage and once implemented should strengthen capacity in carrying out practical and applied research as well as improve linkages and consultation between government and key stakeholders.

Finally in 2006, the FGN and IFAD initiated the *Rural Finance Institution-Building Programme*. The goal of the programme is to advance the microfinance policy pursued by the

FGN in 2005. The programme also seeks to develop linkages between non-banking micro-finance institutes and formal financing institutions. The beneficiaries of the programme will include woman-headed households and small rural entrepreneurs, such as farmers, craftsmen, petty traders, the physically challenged and youth.

### **4.3 Rural-Urban Migration Theory**

Rural to urban migration has historically been an important part of the urbanization process and continues to be significant in scale in developing countries. Internal migration accounted for at least half of all urban growth in Africa during the 1960s and 1970s and about 25% of urban growth in Africa in the 1980s and 1990s (Brockerhoff, 1995). In Brazil, it is estimated that over 20 million people moved from rural to urban areas between 1950s and the 1970s. Similarly, around 21 million people in India (30% of the national urban growth) moved from rural to urban areas in the 1990s (Census of India, 2005).

The decision to migrate involves 'push factors' which force migrants out of rural areas as well as 'pull factors' which attracts migrants to urban areas. The earlier model explaining rural-urban migration is developed in Todaro (1969) Harris and Todaro (1970). The model explains rural-urban migration as a response to the expected rather than current income differential between rural and urban areas. In other words, workers will continue to migrate from rural to urban areas until wages they expect to earn in urban areas are equal to the wages they expect to earn in rural areas. Numerous empirical research have built on this foundation to examine individuals' motivation to migrate from rural to urban areas and majority reveal that the primary motivation is indeed economic considerations (e.g. Brigg, 1973; Connell et al. 1977 and Baril et al, 1986). Some studies indicate that economic push factors (for example, lack of rural credit, unemployment, lack of land, general rural poverty) are most important while others suggest that economic pull factors (e.g. perception of high wages from urban employment) are predominant. A number of other motivations for rural-urban migration including educational opportunities offered in urban areas, marriage and joining the family already at the destination are cited in the literature. Also, a few studies suggest that rural-urban migration is facilitated by the concentration of migrants of same origin in the destination city (Mora and Taylor, 2005).

Along with a discussion of the motivations for rural-urban migration, it is necessary to examine the experiences of these migrants in the destination cities and research shows the following. Migrants often have a difficult time finding jobs in cities as they are more likely to have only imperfect information about the type or quality of job opportunities they face (Banerjee, 1984a). To find a job, they usually go through friends, family and other informal networks (Banerjee and Bucci, 1995). In addition, Yamauchi and Tanabe (2003) argue that finding a job is often facilitated if there is a large network of people from the same origin as the migrant at the destination but this could also reduce the probability of finding a job if these migrants have to compete for the same jobs.

It is also important to understand how rural-urban migration evolves over the development process but the available research is limited and inconclusive. The UN (1980) estimates a significant positive relationship between rural-urban out migration rates and the standard of living of citizens. On the other hand, Ledent (1982, p. 531-532) concludes that the evolution of rural-urban migration rate and standard of living follows the following pattern: “it first increases, reaches a maximum and then decreases towards a value of zero.” These two papers raise a number of issues such as small cross sectional sample sizes and restricted estimation techniques, all of which are addressed by Cook (1999) who uses a different estimation technique and a larger sample of countries to predict migration rate patterns. Although he confirms that the evolution of rural-urban migration and standard of living initially increase before falling towards a value of zero, the pattern initially predicted by Ledent (1982), he argues that both models are not entirely comparable as his estimation technique provides a better prediction of the migration patterns of a wider array of countries including less developed countries.

The existing research on the impact of rural-urban migration on development in Nigeria is also limited and inconclusive. Fadayomi (1998) reveals that internal migration has a negative impact on the quality of rural life because it reduces the number of individuals in rural areas. Migration of young adults from the rural areas places a greater burden on the remaining farmers as they now have to work harder and longer to cover the same area of land thus depriving them of some of their leisure time. On the other hand, Ijere (1994) reveals that rural-urban migration has a positive impact on urban growth and social development and this helps generate employment, educational facilities and transportation infrastructure for the migrants. However, this argument



is questionable when one considers the fact that it has been shown that urban areas in Nigeria are plagued with social problems, unemployment, poverty and a deficit of infrastructure.

Linking agricultural productivity and rural-urban migration, Todaro (1969) and Harris and Todaro (1970) show that rural-urban migration in less developed countries is a function of the difference between expected wage from migration (urban wage) and the agricultural wage. In effect, a rise in agricultural wages as a result of an increase in productivity will reduce the wage differential between urban and rural sectors and stem the flow of rural-urban migration. This led to a suggestion by Byerlee (1974) that the most consistent policy for decreasing rural-urban migration should be built on improving agricultural per capita earning because rural workers compare their income with what they might obtain if they migrated to the cities.

## 5 Methodology

In this section I estimate a model of agricultural productivity, present case studies and empirical studies to assess the link between agricultural productivity and rural-urban migration in Nigeria. I begin with a discussion of the agricultural productivity model.

### 5.1 Agricultural Productivity Analysis

To identify the link between agricultural productivity and rural-urban migration, I modify a production function that was developed by Goldsmith et al. (2004) where agricultural productivity is a function of land (A), livestock (S), fertiliser (F), agricultural labour force (L), agricultural education (E), infrastructure capital (I), oil price (O) and rural-urban migration (M).<sup>9</sup>

In the literature, agricultural productivity is commonly measured using the aggregated agricultural output value added per unit of an input. However, the available Nigerian data set based on this measure appears to be inconsistently measured over time and so does not exhibit fluctuations that are conducive for lengthy time series estimation. Therefore, I employ a disaggregated measure of agricultural productivity by examining individual productivity of six different crops. Three cash crops (cocoa, groundnut and tobacco) are chosen because of their geographic representation; cocoa is produced in the south while groundnut and tobacco are produced in the north. More importantly, cocoa and groundnuts were Nigeria's two major exports until 1965 when they were both surpassed by oil (Metz, 1991). Only cocoa managed to retain its importance to the point that Nigeria was once the world's fourth largest exporter of cocoa beans. In 1990/91, the sales of cocoa beans accounted for about 7.1% of the world trade in cocoa beans (Aregheore, 2005). Although Nigeria's world share of the cocoa market has been substantially reduced in recent years, it still manages to contribute significantly to export earnings. Though tobacco and groundnut both provide moderate contributions to exports, they are not currently considered major cash crops. However, they are included in the analysis as I

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<sup>9</sup> Machinery is found to be highly correlated with other explanatory variables and an example of such variable is livestock. This is intuitive as one of the key roles of livestock is a source of power for traction. Therefore, machinery was left out of the estimation as its key role is already captured by included explanatory variables

was unable to find reliable data on other more important cash crops. Three cash crops (yam, millet and rice) are chosen because they are produced in most areas of the country and are considered important staple crops for the major regions. Yam and millet are important food crops in the south and north respectively while rice is staple food across the country.

The analysis covers the period between 1970 and 2002.<sup>10</sup> For this time period, I was not able to find consistent Nigerian data on infrastructure capital (I) and education (E) so I estimate a simplified version as follows:

$$Y = f(A, S, F, L, O, M) \quad (1)$$

Quantity of each crop produced is deflated by its respective area harvested to derive productivity for each crop. In each model, I also use the respective area harvested for each crop to deflate fertiliser and livestock. Finally, I estimate the double logarithmic version so the resulting model can be written as:

$$\ln y_t = \beta_0 + \beta_1 \ln y_{t-1} + \beta_2 \ln s_t + \beta_3 \ln f_t + \beta_4 \ln L_{t-1} + \beta_5 \ln O_{t-1} + \beta_6 m_t + \varepsilon \quad (2)$$

Where  $s_t = \frac{S_t}{A_t}$ ;  $f_t = \frac{F_t}{A_t}$ ;  $y_{t-1} = \frac{Y_{t-1}}{A_{t-1}}$ , t represents years and  $A_t$  is area harvested for each crop.

Lagged crop productivity ( $y_{t-1}$ ) is measured as quantity of a crop produced per hectare of harvested area in the previous year. Fertiliser ( $f_t$ ) is measured as the quantity of plant nutrients used per hectare of area harvested for each crop. Livestock ( $s_t$ ) is measured as the number of animal units available for agricultural production per hectare of area harvested for each crop. Agricultural labour force ( $L_{t-1}$ ) is the share of the rural population between the ages of 15 and 64 in the previous year. Oil price ( $O_{t-1}$ ) is measured as real price of crude oil world wide in the previous year. Rural-urban migration rate ( $m_t$ ) is estimated using two measures. First, it is measured as the ratio of the urban share of the total population to the rural share of the total

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<sup>10</sup> The production function estimated is a Cobb-Douglas production function. I used a Cobb-Douglas production function because it is the most popular production function in empirical research in this area. It is mostly linear in the logarithms so that the resulting coefficients can be easily interpreted as indicating the elasticities of production with respect to inputs. I chose to lag agricultural labour force and oil price to reflect the idea that agricultural productivity of the current year will be determined in part by the previous year's values of these variables.

population in the previous year multiplied by the difference of the annual growth rate and natural growth rate of the urban population in the current year. Second, it is measured as the difference in the annual growth rate and natural growth rate of the urban population in the current year. Table 3 below provides a detailed discussion of the hypothesized signs of these explanatory variables.

*Table 3 Summary of Variable Hypotheses.*

Variable	Hypothesized Sign
Crop productivity ( $y_{t-1}$ )	An increase in crop productivity in the previous year should <b>increase</b> crop productivity in the current year.
Livestock ( $s_t$ )	An increase in available livestock units should <b>increase</b> crop productivity.
Fertiliser ( $f_t$ )	An increase in fertiliser adoption should <b>increase</b> crop productivity.
Oil Price ( $O_{r-1}$ )	An increase in crude oil price in the previous year should <b>decrease</b> crop productivity in the current year.
Agricultural Labour Force ( $L_{t-1}$ )	An increase in the agricultural labour force in the previous year should <b>increase</b> crop productivity in the current year.
Rural-Urban Migration Rate ( $m_t$ )	An increase in rural-urban migration should <b>decrease</b> crop productivity.

I was not able to find reliable data on agricultural education (E) and infrastructure capital (I). Agricultural education would have been used to measure the quality of the agricultural labour force and capture the fact that educational outcomes are different in rural and urban areas in Nigeria with rural areas having lower outcomes.<sup>11</sup> Infrastructure capital would have been used to measure the investments and expenditures on agricultural infrastructure to highlight the fact that the amount of resources dedicated to the agricultural sector is crucial for increasing agricultural productivity and developing the rural economy.

It is likely that I have a mis-specified model since I excluded important explanatory variables due to data availability. This would not be a problem if the included explanatory variables are not correlated with the missing explanatory variables. However, it will be difficult to argue here that: for example, the educational level of a farmer does not have an impact on his/her use of fertiliser. This correlation will result in an omitted variable bias that will affect the predicted results of some of the included variables. Furthermore, measuring agricultural productivity at the crop level limits the generalizability of my findings. Therefore, the prediction of the impact of rural-urban migration on agricultural productivity will not be robust. I remedy this by presenting case studies and empirical studies in the following sections to substantiate my results on the impact of rural-urban migration on agricultural productivity.

I estimate the model of agricultural productivity with Ordinary Least Squares (OLS) using 31 annual observations. I use this time period because it is the longest number of observations over which all the variables are available. I estimate the impact of the five independent variables on each of the six crops using both measures of rural-urban migration. In crop models where there is evidence of autocorrelation, a common occurrence in time series estimation, I introduce the lagged dependent variable to mitigate the impact on the results.<sup>12</sup> The estimated results are presented in Tables 4 and 5.

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<sup>11</sup> In 2004, the national average of those who could read and write in English was around 52%. However, the percentage of the population in the rural areas who could read and write in English was around 40% while it was 67% percent in the urban areas (NLSS, 2006).

<sup>12</sup> Autocorrelation appears to still be present in one of the models after introducing the lagged dependent variable. It is worth noting that estimated coefficients remain unbiased in the presence of autocorrelation. In other words, the predicted signs of the estimated coefficients are unaffected. However, the standard errors of the estimated coefficients are no longer reliable. Consequently, significance predictions are ignored.

Table 4 First Measure of Rural-Urban Migration Regression Results.

Variable	CASH CROPS				FOOD CROPS		
	Cocoa	Groundnut	Tobacco	Yam	Rice	Millet	
Constant	27.22 (0.79)	-52.04 (-1.56)	-50.19 (-1.42)	-28.75 (-1.23)	33.59 (1.38)	-17.80 (-0.95)	
Livestock (ln si)	-0.14 (-0.23)	0.58** (4.29)	-0.66** (-2.20)	0.30* (1.89)	-0.29** (-2.44)	0.56** (4.38)	
Fertiliser (ln fi)	0.01 (0.10)	-0.09** (-2.08)	0.06 (0.57)	-0.02 (-0.27)	0.21** (4.21)	-0.06 (-1.25)	
Agricultural Labour Force (ln Li-1)	-1.22 (-0.63)	3.22 (1.60)	3.80* (1.78)	1.74 (1.23)	-1.42 (-0.10)	1.09 (0.95)	
Oil Price (ln Oi-1)	-0.25** (-2.51)	-0.34** (-3.02)	-0.05 (-0.40)	-0.23** (-2.87)	-0.01 (-0.11)	-0.03 (-0.40)	
Rural-Urban Migration Rate (ln mi)	1.05 (0.99)	-0.61 (0.62)	-1.57 (-1.47)	-0.53 (-0.72)	0.09 (0.13)	-0.29 (-0.50)	
Crop Productivity (ln Yi-1)	----	----	0.25 (1.49)	0.69** (6.48)	----	0.29* (2.04)	
Adj. R <sup>2</sup>	0.50	0.67	0.41	0.72	0.48	0.81	
N	31	31	31	31	31	31	
Durbin Watson Statistic (DW)	1.95	2.77	----	----	2.10	----	
Lagrange Multiplier Statistic (LM)	----	----	5.51	19.14	----	5.22	

Note: dependent variable is crop productivity. Numbers in parentheses are t-statistics. \*  $p < 0.1$ ; \*\*  $p < 0.05$ . Two tests for autocorrelation. First, if  $DW < 1.07$ , then autocorrelation exists; if  $DW > 1.83$ , then there is no evidence of autocorrelation; if  $1.07 > DW > 1.86$ , then the test is inconclusive. The Durbin Watson upper and lower critical values are for a sample size of 30 at the 5% significance level (Lomn, 1992). Second, if  $LM > 5.99$ , then there is strong evidence of serial correlation. The LM critical value corresponds to the 5% critical value in a chi-square distribution with 2 degrees of freedom (Wooldridge, 2003).

Table 5 Second Measure of Rural-Urban Migration Regression Results.

Variable	CASH CROPS				FOOD CROPS		
	Cocoa	Groundnut	Tobacco	Yam	Rice	Millet	
Constant	11.45 (0.57)	-24.47 (-1.65)	23.76 (1.12)	16.64 (1.26)	26.01 (1.78)	-1.37 (-0.13)	
Livestock (ln s)	0.45 (0.73)	0.61** (4.12)	-0.61* (-1.96)	0.22 (1.58)	-0.28** (-2.21)	0.56** (4.60)	
Fertiliser (ln f)	0.01 (0.07)	-0.09* (-1.94)	0.11 (0.97)	0.07 (1.10)	0.20** (3.17)	-0.04 (-0.67)	
Agricultural Labour Force (ln L <sub>t-1</sub> )	-0.51 (-0.39)	1.56* (1.89)	-0.63 (-0.51)	-0.80 (-1.16)	-0.99 (-1.28)	0.13 (0.22)	
Oil Price (ln O <sub>t-1</sub> )	-0.29** (-3.11)	-0.32** (-3.12)	0.01 (0.09)	-0.24** (-3.83)	-0.01 (-0.15)	-0.04 (-0.46)	
Rural-Urban Migration Rate (ln m <sub>t</sub> )	-0.41 (-0.96)	-0.21 (-0.54)	-0.52 (-1.18)	-0.65** (-2.67)	0.10 (0.43)	-0.16 (-0.75)	
Crop Productivity (ln Y <sub>t-1</sub> )	----	----	0.28 (1.64)	0.64** (6.57)	----	0.30** (2.11)	
Adj. R <sup>2</sup>	0.50	0.67	0.25	0.77	0.48	0.81	
N	31	31	31	31	31	31	
Durbin Watson Statistic	2.02	2.75	----	----	2.17	----	
Lagrange Multiplier Statistic (LM)	----	----	2.90	19.14	----	5.22	

Note: dependent variable is crop productivity. Numbers in parentheses are t-statistics. \*  $p < 0.1$ ; \*\*  $p < 0.05$ . Two tests for autocorrelation. First, if  $DW < 1.07$ , then autocorrelation exists; if  $DW > 1.83$ , then there is no evidence of autocorrelation; if  $1.07 > DW > 1.86$ , then the test is inconclusive. The Durbin Watson upper and lower critical values are for a sample size of 30 at the 5% significance level (Lomn, 1992). Second, if  $LM > 5.99$ , then there is strong evidence of serial correlation. The LM critical value corresponds to the 5% critical value in a chi-square distribution with 2 degrees of freedom (Hwooldridge, 2003).

Table 4 provides the results using the first measure of rural-urban migration and shows the following. First, livestock is found to have a positive impact on the productivity of three of the six crops and this relationship is significant for two of the three crops. This is consistent with theory that livestock contributes to agricultural productivity by providing financial security, power for traction and organic manure for subsistence farmers. However, livestock is also found to have negative impact on the productivity of the remaining three crops and this relationship is significant for two of the crops. This contradictory result severely limits the inference that can be made on the role of livestock in promoting agricultural productivity.

Second, the impact of fertiliser on crop productivity also produces conflicting results. Fertiliser is found to have a positive impact on productivity of three of the six crops and this relationship is significant for one of the crops. This is consistent with what is known about fertilizer use in less developed countries. Fertiliser use increases productivity by its nutritive properties. Also, fertilizers are readily adopted because they can be applied by a single worker. However, fertiliser is also found to have a negative impact on productivity of the remaining three crops and this relationship is significant for one of the crops. The existence of a negative correlation is even more surprising when one considers the fact that fertilizer use in Nigeria was steadily declining during the sample period. This phenomenon of reduced fertilizer use is not limited to Nigeria as it has also been documented in other sub-Saharan countries. WDI(2006) reports that overall fertiliser use in low and middle income countries in sub-Saharan Africa declined by 2% over the period 1979/1981 to 1995/1997, while rates of use per hectare declined by 18%. Therefore, a predicted increase of fertiliser consumption should have a positive and significant impact on crop productivity.

Third, the results predict that oil price has a negative impact on the productivity of all six crops. This result supports observations from previous sections that the discovery and ensuing dependence on oil played a key role in the deterioration of the Nigerian agricultural economy. However, there does appear to be differences in the severity of impact of the oil sector on crops as the relationship is only significant for two of the crops examined.



Fourth, the predicted results suggest that the size of the agricultural labour force has a positive impact on productivity of four of the six crops and this relationship is significant for one of the crops. The overwhelming positive prediction of this variable is consistent with theory that the quantity of the labour available for subsistence farming for a given year will have a positive impact on agricultural output in the following year. In this context, the more individuals are available to cultivate, manage and harvest the crops, the higher the quantity of crops that will be produced in the following year.

Fifth, the results indicate that rural-urban migration is negatively correlated with productivity of four of the six crops. This finding supports the fundamental hypothesis of this research that as more people leave the rural areas there will be fewer able bodies on the farm and this will have a negative impact on future agricultural output and productivity. Although the results of two of the crops contradict this hypothesis, this is not troubling as they are both not significant at any conventional level. In addition, it is worth noting that this variable is different from the agricultural labour force variable as it captures the impact of the rate of depletion of the agricultural labour force as opposed to the impact of the current size of the agricultural labour force on crop productivity.

Finally, for the three crops affected by autocorrelation, crop productivity of the previous year is predicted to have a positive impact on crop productivity in the current year and this relationship is significant for one of the crops. This makes sense as increased output is likely to have a direct impact on productivity in the current year by providing the opportunity for farmers to be able to afford additional resources that could be directed towards improving the outcomes of their farms. Moreover, it will also have a direct impact on current productivity through improved productivity of the farmers as a result of better nutrition (Dasgupta, 1998).

Table 5 provides the result using the second measure of rural-urban migration and it appears to slightly improve the prediction of the impact of rural-urban migration on crop productivity. Specifically, rural-urban migration is now negatively correlated with productivity for five of the six crops.

From the above interpretations, it is shown that oil price exerts a negative relationship on agricultural productivity as measured by productivity of the six crops. This finding highlights the negative repercussion of the discovery and ensuing dependence on crude oil on the agricultural sector. Also, increasing size of the available labour force in the agricultural sector is shown to be an important instrument for promoting agricultural productivity. More importantly, the results show that rural-urban migration negatively impacts productivity of majority of the examined crops. This is consistent with findings from earlier sections that migrants do have a direct impact on the agricultural sector when they leave rural areas. It is worth noting that this relationship exists for two of the three food crops. This highlights the severity of the impact of the loss of individuals from rural areas as it also limits the ability of the agricultural sector to provide sustenance for the population. Furthermore, the significance of the lagged agricultural productivity variable for three of the crops provides some evidence of the long term impact of rural-urban migration on crop productivity. This is based on the notion that the negative effect of rural-urban migration on past year's crop productivity will also have negative impact on future crop productivity through the link between annual productivities. However, the credibility of my results is questionable because of the exclusion of important variables and weak results from some included variables. Therefore, to substantiate the robustness of my results, I present case studies and empirical studies in the next section that support the existence of a negative relationship between rural-urban migration and agricultural productivity.

## **5.2 Case Studies**

There are not many extensive case studies conducted on the impact of rural-urban migration on agricultural productivity on the African continent. However, I was able to find two such studies and the following is a short description of both. First, David (1995) found that in Passoré, Burkina Faso, the absence of able-bodied men led to a scarcity of labour. As a result, women worked longer and harder in the compound's communal fields and had less time to work their own land. Second, Hirschmann and Vaughan (1983) conduct a micro-level study on 70 women in the Zomba District in Malawi and also show that 45% of women now perform tasks once handled by men. This is not considered a positive finding as women are already overburdened. In addition, remittances are often too low for these women to hire labour to work on their farms. These findings are corroborated by a study from Asia conducted by Islam (1991) where he concludes that the negative effects of migration to the Gulf from villages in Chittagong

district in Bangladesh outweigh the positive ones. Reduced production became prevalent as land became concentrated in the hands of migrants who turned into non-farmers. Also, he reports that the cost of inputs, land and labour, increased as a result of rural-urban migration.

I now present a more detailed study on the impact of rural-urban migration on agricultural productivity conducted in Asia. Ping and Croll (1997) study eight villages in four different provinces of China to draw attention to the impact of migration on the villages of migrant origin. The eight villages studied are from four different provinces: Jiangsu, Anhui, Sichuan and Gansu. They are chosen to illustrate a range of migratory conditions and differences in experiences based on location, scale and trend. Within each province, villages selected were mid-range in socio-development, of varying proximity to provincial capitals in which there had been some transfer to non-agricultural activities within or some distance from the village. In each village, researchers conducted extensive interviews among local government leaders and households that had varied histories of migration or transfer out of agriculture. All field investigations were undertaken between October 1994 and March 1995. In all eight villages, there was a common preference for the movement of labour from agricultural occupations into non-agricultural occupations within and outside the village. Farmers wanted to leave the agricultural sector because of rising costs of agricultural inputs and land scarcity. Rural-urban migration was therefore high as it was perceived as one of the means of achieving this move away from agriculture. Also, the analysis suggests that this growing preference towards migration to urban areas may have a number of short and long term repercussions for agricultural labour supply in all eight villages. In some villages, it was increasingly common for households to experience periods where the available agricultural labour is neither sufficient to cultivate the land or to diversify into new agricultural cropping. Furthermore, they find that remittances did not contribute to village income, development or to the establishment and maintenance of village services including those for facilitating agricultural development.

### **5.3 Other Studies**

Goldsmith et al (2004) explore the relationship between agricultural productivity and rural-urban migration in Senegal. They base their analysis on the presumption that a rise in agricultural wages as a result of an increase in productivity will reduce the wage differential between urban and rural sectors and induce less people in the rural areas to move to urban areas.

<sup>13</sup> Their findings did support the theory that rural-urban migration is positively correlated with the difference in wages in the urban and rural areas. Moreover, their findings show that fertiliser, infrastructure and livestock are inputs that exert positive effect on agricultural productivity. It is also noted that the contribution of livestock as a source of financial security points to the importance of improving rural banking and access to credit for farmers as a key factor in improving the agricultural sector.

## **5.4 Synopsis of the Findings**

All three methodologies provide evidence of the negative impact of rural-urban migration on agricultural productivity resulting from the loss of productive members of the rural communities. More specifically, it can be deduced from the findings that: 1) ignoring the incidence of rural-urban migration significantly limits the impact of initiatives geared towards promoting sustainable growth in the agricultural sector and 2) remittances are often not enough to counteract the impact on the loss of productive members of the rural population or lead to development in rural communities.

Therefore, curbing the incidence of rural-urban migration of farmers is extremely important and it can be achieved through two channels. First, policies can be designed to prevent further depletion of rural communities by addressing the needs of the existing rural farmers. Second, policies can be designed to increase the existing pool of farmers by attracting migrant farmers back to their rural communities. Addressing the problem through the first channel does not preclude the second channel; however, these policies are less likely to have a significant impact on agricultural productivity since they do not explicitly address the current labour constraints in the rural areas. Therefore, I chose to address the incidence of rural-urban migration through the second channel. In other words, I develop policies geared towards attracting migrant farmers back to the rural areas to increase the pool of farmers working the farm lands. These policies are discussed in detail in the next section.

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<sup>13</sup> This was tested using a recursive relationship between agricultural production equation and the rural-urban migration equation linked by agricultural output.

## 6 Policy Objectives and Options

The objective of this study is to propose policies aimed at reducing rural-urban migration by attracting migrant farmers back to their rural communities. It is envisioned that this objective will have the two components. First, proposed policies will have a short run impact of increasing, in a sustainable manner, the pool of productive farmers working on farm lands. Second, the proposed policies will significantly increase agricultural productivity in the long run as a result of this increase in the pool of migrant farmers in the rural areas. Reducing rural-urban migration and increasing agricultural productivity are national objectives and as such proposed policies are aimed at the Government of Nigeria, specifically the Federal Ministry of Agriculture and Rural Development (FMARD).

I chose to tailor my proposed policies towards addressing the problem of access to credit in rural areas for two reasons. First, exploring rural credit reforms ensures that I stay within the framework of recent federal government's comprehensive initiatives for revitalising the agricultural sector. In 2005, the Central Bank of Nigeria issued a policy for the microfinance sector. This policy provides a framework for the future operations of commercial banks, community banks, and microfinance institutions (MFIs). The new policy will also make financial services accessible to groups within the population that would otherwise have little or no access to financial services and promote linkages between the formal and informal financial sectors. Also, in 2006, the International Fund for Agricultural Development (IFAD) and the Federal Government of Nigeria (FGN) launched the *Rural Finance Institution-Building Programme* (RFIP) to exploit the implemented microfinance policy. This programme will give priority to the development of target-group member-based rural microfinance institutions (MFIs). The programme has the following four components: 1) development and strengthening of member-based rural MFIs; 2) support to MFIs; 3) framework conditions for microfinance development and 4) programme management, coordination, monitoring and evaluation.

Second, credit reform is considered a crucial factor in improving the livelihoods of the people in the rural areas and alleviating poverty as evident by the following case study. Pearce

and Reinsch (2005) report on a case study conducted by the Cooperative League of the USA (CLUSA) on Nampula, Mozambique in 1995. In 1995, the Nampula province was characterized by poor transportation networks and communication infrastructure. Also, its farmers were mostly isolated and they engaged in subsistence agriculture so there was almost no economic activity apart from several agribusiness concessions. The CLUSA program ran from 1995 through 2004 and it organized 26,000 improvised and isolated farmers into associations that could market crops to commodities traders. This association enabled its member's access to input credit and short-term crop advances from agribusiness in return for the guaranteed purchase of their output. By the end of the project's first phase in 2001, six years of CLUSA program, average annual sales by farm households participating in an association grew from \$40 in 1996 to \$70 in 2001 (adjusted for inflation). Farm revenues continued to grow in subsequent years reaching an average of \$74 in 2003 (adjusted for inflation). This increased farm revenues went a long way in improving the livelihoods of the participating farmers and their families as well as improving the conditions in Nampula.

However, tailoring policies towards access to credit in the rural areas ignores a pool of migrants in the urban areas that are interested in migrating to rural areas but do not have the necessary skills to ensure their success as farmers. Therefore, the policy alternatives also focus on training and education for potential farmers to cater to this pool of migrants. I begin by reviewing the status quo.

## **6.1 Status Quo**

The Rural Finance Institute Programme (RFIP) established in 2006 is scheduled to benefit 345,000 households living in 12 states within several of the geopolitical zones (.i.e. north, middle belt and south). The target group includes women-headed households, small rural entrepreneurs such as farmers, craftsmen and petty traders, the physically challenged and youth. Admittedly, the RFIP is a relatively new initiative as it is only in its first year of its expected seven year life span; nonetheless, it can still be considered the status quo as it provides a credible benchmark of the federal government's recent comprehensive initiatives in promoting development in the agricultural sector.

The full implementation of the RFIP in Nigeria will be instrumental in revitalizing the agricultural sector in the targeted states; however, a significant number of targeted states in the

RFIP (for example, Lagos, Oyo, Akwa Ibom and Benue) have large cities which I argued previously to be the result of rural-urban migration. Therefore, a targeted focus on migrants is needed to ensure the viability and sustainability of this programme. In other words, programs and policies aimed at attracting migrants back to the rural areas need to be included in the RFIP as the success of the agricultural sector is highly dependent on their return.

## **6.2 Option I: Cooperatives for Rural Women-Headed Households**

This policy recommends that the Federal Ministry of Agriculture and Rural Development establish a cooperative in rural areas that provides services to woman-headed households that have lost a significant portion of their males to urban areas.<sup>14</sup> The basis for this policy is the CARE village and savings model. It is envisioned that households will own and operate their land individually but will pool their resources together to provide common services such as purchasing inputs and processing produce.<sup>15</sup> To develop and maintain a resource base, group members should make agreed upon weekly contributions and group members should collectively determine the guidelines for accessing the group savings fund.

In addition, the cooperative should have the following responsibilities: 1) ensure timely and adequate supply of needed agricultural inputs to members; 2) promote marketing of farm products of members; 3) provide a forum for further education and training for interested members; 4) disseminate agricultural information to members through workshops and seminars; 5) advise the government on matters related to agriculture as it relates to its members and 6) promote the collective interests of members on agricultural matters

This policy is especially relevant as case studies show that women are currently overburdened, over-worked with limited resources to procure necessary inputs, especially labour, to improve the outcome of their farmlands (David, 1995; Hirschmann and Vaughan, 1983). Therefore, providing access to credit to these women should go along way in limiting the financial barriers these women face and give them the necessary tools to improve their farm lands and their livelihood. Also, it should mitigate the physical burden of these women by increasing

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<sup>14</sup> Household includes members of extended families as this family structure is more relevant to the Nigerian environment

<sup>15</sup> CARE is the Cooperative for Assistance and Relief Everywhere, a private international humanitarian organization founded in 1945. The CARE village and savings model is primarily designed for women in low-density and poor rural areas and was initially developed in Niger in 1993. The CARE project help women organize themselves while a village agent provides basic training and monitor the operations of the group. Also, group members make weekly contributions but can also access loans from the group savings fund (Allen, 2002).

the pool of available males in their households. Economic consideration is shown in previous sections as a major reason why migrants move to cities; therefore, providing the means to increase the agricultural potential of their respective farm lands should reduce the likelihood that these men will remain in cities working menial jobs.

### **6.3 Option II: Micro-finance Institute for Returning Migrant Farmers**

I propose that a regulated micro-finance institution (MFI) be established by FMARD for migrant farmers. It should have the standard features of any formal micro-finance institute including implicit screening and monitoring mechanisms, for example, forced saving for a stated initiation period for new members and an incremental borrowing system (Eboh, 2000). Also, like similar schemes, collateral could be tied to yields (based on prevailing current market situation) as this will encourage farmers to move beyond subsistence and provide the means for cultivating a portion of their land for sale. Finally, these rural MFIs should be local in nature in that they will only cater to farmers within a small radius who have established themselves as credible members of the institute. This has the added benefit of ensuring that the success of the institute since it is designed to be receptive to the economic, political and socio-economic environment in the different rural areas.

### **6.4 Option III: Cooperatives for Returning Migrant Farmers**

In Nigeria, farmers can obtain credit from either formal or informal sources. The formal sources are commercial banks, community banks and government-owned institutions. Informal sources include self-help-group money lenders, cooperatives and non-governmental organizations. Evidence shows that informal sources such as cooperatives are more adept to the needs of farmers and small entrepreneurs in rural areas and thus are considered more credible sources of credit. Aryeetey (1997) argues that informal rural financial sources in Africa perform better than the formal system because they have adapted to the high-risk environment.

Therefore, I recommend that a cooperative be created for migrant farmers. The proposed cooperative should be located in rural areas and modelled after FOFAN but should be a



government outfit under the FMARD.<sup>16</sup> The proposed cooperatives should have the following responsibilities: 1) provide a link between members and financial institutions to procure loans; 2) promote the collective interests of its members on agricultural matters; 3) promote marketing of farm products of its members; 4) ensure timely and adequate supply of needed agricultural inputs to farmers; 5) disseminate agricultural information to members through workshops and seminars 6) provide a forum for further education and training for interested members; and 7) advise the government on matters related to agriculture as it relates to its members.

## **6.5 Option IV: Training and Educational Facilities in Urban Areas for Potential Farmers**

This policy is geared towards creating an avenue for migrants in urban areas who are considering returning to the rural areas but need training before migrating back. It is recommended that this program be modelled after the training and visit agricultural extension approach where farmers are formally trained and then visited by training officers in their respective rural areas to address their specific problems. It is envisioned that potential farmers will be trained for a total of 72 hours and these hours can be completed in either full time or part time. Full time requires that farmers be trained for 18 hours per week (3.5 hours per day for 5 days) resulting in a completion time of 1 month. On the other hand, the part time requires that farmers be trained for 6 hours per week ( 2 hours per day for 3 days) resulting in a completion time of 3 months. In addition, during training, potential farmers should be provided with stipends (to help with food and transportation) and free instruction on methods of farming that is relevant to their respective rural areas. After completion of the training requirement, potential farmers should be visited twice a year in their respective rural areas by training officers to assist with their specific problems.

Training and educational facilities should be set up in urban areas by the FMARD in collaboration with agricultural research institutes. In addition, this institute should work closely with other branches under the FMARD to ensure that trainees are exposed to a host of pertinent information and opportunities (such as credit, means of exchanging ideas with other potential

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<sup>16</sup> In 1991, all farmers' association in Nigeria were merged under a national body known as the Federation of Farmers' Association of Nigeria (FOFAN). FOFAN is a private sector-oriented outfit and the Federal Government of Nigeria only plays supportive and facilitative role. One of the major roles of the FOFAN is to act as a liaison with financial institution on behalf of members in terms of loans.

farmers, health care) that will assure their success in all facets of life in their respective rural areas.

## **7 Policy Evaluation**

This section presents a detailed discussion of the criteria and evaluation of each of the proposed alternatives based on a score system and culminates with a recommendation of the emergent dominant policy.

### **7.1 Policy Criteria and Score**

This section presents the policy criteria as well as the evaluation criteria with which the policy alternatives will be assessed. I begin with a discussion of the criteria.

#### **7.1.1 Effectiveness**

This criterion focuses on whether the proposed programs will have their intended effect. In this context, consideration will be given to: 1) whether the proposed alternative attracts a significant portion of migrants back to rural areas in a sustainable manner within a short time frame of one year and 2) whether the proposed policy has a significant positive impact on agricultural productivity within 5 years. In terms of evaluating policies based on this criterion, the most effective policy is one that manages to reduce rural-urban migration within 1 year as well as has a positive significant impact on agricultural productivity within 5 years; a moderately effective policy is one that is likely to reduce rural-urban migration in more than 1 year and thus increase agricultural productivity in more than 5 years and the least effective policy is one that is not likely to reduce rural-urban migration or increase agricultural productivity within the stated time frames.

#### **7.1.2 Public Acceptance**

The incidence of rural-urban migration is experienced differently by remaining citizens within rural communities and migrants but is based on an accepted belief that more and better opportunities are available in urban areas. Therefore, if both groups are not convinced of the benefits of the proposed alternative, there will be little or no gains from implementing such

alternative. This makes public acceptance an important component of evaluating proposed policies. The following stakeholders will be considered when evaluating policies based on this criterion: 1) migrant farmers; 2) rural farmers and 3) rural public. In terms of evaluating alternatives using this criterion, a strong policy is one that is accepted by all the stakeholders; a medium policy is one that is opposed by one out of the three stakeholders and a weak policy is one that is opposed by two or more of the key stakeholders.

### **7.1.3 Political Commitment and Institutional Coordination**

This criterion will assess the commitment of top government administrators to the implementation of the proposed options and the ability of the FMARD to generate the required resources to implement the policies. USAID (2007,p.2) commented that in order to have a successful program “it must be Nigeria-driven and Nigeria-owned with policy makers and researchers at the national and state levels being closely involved in setting project priorities and guiding the process.” In light of this fact, the success of any proposed agricultural policy is also dependent on the collaboration of some or all of the following stakeholders: the FMARD, the Ministry of Finance, the Central Bank of Nigeria, House/Senate Committees on Agriculture and Rural Development, universities and key national and state level agricultural research institutes, the business community and private sector institutions. In terms of evaluating the proposed alternatives using this criterion, a strong policy is one where there is high political commitment and there is minimal institutional coordination involved; a medium policy is one that the political commitment is high but does entail significant institutional coordination and a weak policy is one that has weak political commitment as well as large institutional coordination.

### **7.1.4 Cost**

This criterion is integral to policy analysis and it entails assessing direct monetary costs associated with implementing the proposed alternatives. This involves determining whether each alternative is feasible given the national budget on agriculture and rural development. Key considerations when determining the level of cost for each alternative include: the cost of suggested programs, the cost of additional resources needed to implement the option and the identification of any future costs. Estimates of each proposed alternative is reported in constant 2006 CAN\$. In terms of evaluating each alternative using this criterion, a strong policy is one

that the cost per client is less than \$50; a medium policy is one the cost per client is between \$50 and \$100 and a weak policy is one that the cost per client is over \$100.

### **7.1.5 Score System and Evaluation of Policy Alternatives**

The above qualitative discussion of each criterion is used to form quantitative measures that are used to determine how the alternatives fare on each criterion. The quantitative measure of the policies are based on a three-point scale with point values ranging from 'high', indicating the policy is optimal in terms of that specific criterion, to 'low', indicating the policy fails to satisfy the criteria in any aspect. Table 6 provides a key for interpreting the range of ratings for each proposed criteria. All criteria employed in the analysis are weighted equally. A measurement of high receives a score of '3' and the lowest score on the scale, low, is '1'. With respect to cost, lower cost is preferable and so a low cost option receives the highest score of '3' and vice versa. After reviewing all key considerations, each alternative is given a total score out of 12. Based on this scale, the most preferred policy alternative is the one with the highest total score out of 12. Table 7 summarizes the assessment of the criteria against each policy alternative.

Table 6 Criteria Rating Scale Interpretation Key.

Criteria	Interpretation of Ratings		
	3-High	2-Medium	1-Low
Effectiveness	Reduce rural-urban migration within 1 year and increase agricultural productivity within 5 years	Reduce rural-urban migration in more than 1 year and increase agricultural productivity in more than 5 years	Not likely to reduce rural-urban migration and increase agricultural productivity within the stated time frames
Public Acceptance	Opposition is non-existent	Opposition is minimal	Opposition is significant
Political Commitment and Institutional Coordination	High political commitment and low institutional coordination	High political commitment and high institutional coordination	Low political commitment and high institutional coordination
Cost	Cost per client is under \$50	Cost per client is between \$50 and \$100	Cost per client is over \$100

Table 7 Evaluation of Policy Alternatives.

<b>CRITERIA→</b>					
<b>POLICY OPTIONS↓</b>	<b>Effectiveness</b>	<b>Public Acceptance</b>	<b>Political Commitment and Institutional Coordination</b>	<b>Cost (estimates in 2006 CAN\$)</b>	<b>Total (12)</b>
1.Cooperatives for Rural Women-Headed Households	(3) achieves both objectives within stated time frame	(3) Opposition: none	(3) ↑ political commitment and ↓ institutional coordination	(3) \$23-\$50 per client	12
2.Microfinance Institute for Returning Migrant Farmers	(3) achieves both objectives within time frame	(2) Opposition: rural farmers	(3) ↑ political commitment and ↓ institutional coordination	(2) \$80 per client	10
3.Cooperatives for Returning Migrant Farmers	(3) achieves both objectives within time frame	(2) Opposition: rural farmers	(3) ↑ political commitment and ↓ institutional coordination	(1) \$131 per client	9
4.Education and Training Facilities for Potential Farmers	(2) achieves both objectives in longer time frame	(1) Opposition: rural farmers, rural public and migrant farmers	(1) ↓ political commitment and ↑ institutional coordination	(1) \$123 per client	5

Scores are in brackets and can be interpreted as follows: 3- high; 2- medium and 1-low.

### **7.1.6 Option I: Co-operatives for Rural Women-Headed Households**

*Effectiveness:* In 1988, the Women in Agriculture (WIA) programs were created within the existing state Agricultural Development Projects (ADPs).<sup>17</sup> The WIA program targets women's groups and builds their capacity in different ways, for example, it works with pre-existing organisations in which members are already pursuing a specific goal such as credit or communal work. Also, WIA agents help organize women into blocks or cells so that they can receive ADP assistance. Preliminary rural household survey conducted to monitor the progress and measure the achievement of the WIA program showed that the program had benefited both the agricultural sector and the activities of rural women considerably (WB, 1996). However, the study on the WIA program also showed that not enough progress had been made in developing appropriate tools to relieve women farmers of some of their basic labour constraints. Based on this evidence and the strong likelihood this policy will address the labour constraint of these women by attracting the males in their households back to the rural areas within a year, this policy is given a score of 3 in terms of effectiveness.

*Public Acceptance:* Cooperatives that provide services for women currently exist and are widely utilised by women in Africa. The CARE village savings and loan model has achieved impressive outreach since its initial development in Niger in 1993. In Niger, more than 160,000 rural women belong to 5,500 self-managed savings and loan groups. In Zimbabwe, around 5,000 members belong to mixed groups. In Nigeria, about one-third of the women belong to co-operative societies or locally organized associations (WB, 1996). This evidence shows that cooperatives with similar mandates exist and are popular among African women including Nigerian women. Therefore, this policy is likely to be accepted by rural women-households as well as migrant farmers within those households. Furthermore, this policy is geared towards the predominantly female rural farmers so rural farmers as well as the remaining rural community should be in favour since the spill over of this policy on their livelihoods can be easily envisioned. Based on these considerations, this policy is given a score of 3 in terms of public acceptance.

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<sup>17</sup> The ADPs were created in the 1970s with funding assistance from the World Bank.



*Political Commitment and Institutional Coordination:* The WIA program and the RFIP both exist at the national level and both target rural women-headed households. It can therefore be inferred that political commitment exists at the national level for addressing the plight of women in rural areas. Furthermore, the institutional coordination that is required for this initiative is mostly housed under FMARD so the additional coordination requirements for this initiative should be minimal. Based on these considerations, this alternative is given a score of 3 in terms of its political commitment and institutional coordination.

*Cost:* According to Allen (2002), the cost of establishing and supporting the CARE project is estimated between \$23 and \$50 per member. Based on the similarity between the proposed policy and the CARE project, I propose that the cost of establishing the cooperative for these rural women-headed households in Nigeria will also be between \$23 and \$50 per member. This estimate gives the cost of this option a score of 3.

#### **7.1.7 Option II: Micro-Finance Institutes for Returning Migrant Farmers**

*Effectiveness:* In Nigeria, regulated microfinance institutions operate concurrently with informal services. According to the Central Bank Nigeria 2001 survey on MFIs in Nigeria, MFIs have been operating in Nigeria for the past 25 years with branches in both rural and urban areas (CBN, 2003). A notable example of such institution is the Nigerian Agricultural Cooperative and Rural Development Bank Limited which was established in 2000 primarily to finance agriculture as well as small and medium enterprises. It offers a number of microfinance services, including target savings, start-up as well as small holder loan schemes. The bank became fully operational in 2001 and since then its authorized share capital has increased by around 49% (Anyanwu, 2004). Therefore, it can be inferred that the proposed MFI is likely to be successful and sustainable in Nigeria. Furthermore, the proposed MFI is likely to reduce rural-urban migration by one year and so increase agricultural productivity by 5 years as the initiative is directed specifically at increasing access to a crucial agricultural input for migrant farmers. Based on this evidence, this policy alternative is given a score of 3 in terms of its effectiveness.

*Public Acceptance:* It can be garnered that this policy is likely to receive the approval of migrant farmers who have access to farm lands in the rural areas or have the needed agricultural expertise. However, there is a strong possibility that the rural farmers may perceive the return of migrant farmers as posing a danger to their minimal profit margin and so are not likely to support a policy that gives these migrants a direct competitive advantage. Nonetheless, it can be inferred that the remaining rural community will be highly in favour of this policy since its impact on

agricultural productivity by increasing the pool of workers in the rural areas will have a positive impact on their livelihoods. Therefore, this policy is given a score of 2 in terms of its acceptance by the public because of the possibility of significant opposition from rural farmers.

*Political Commitment and Institutional Coordination:* In Nigeria, successive governments have implemented various agricultural and rural credit schemes to address shortage of rural credit, stimulate rural employment and productivity. Under these schemes, institutional resources and government energies were devoted to fund rural entrepreneurs and small farmers (Graham, 1992; Yaron, 1992). Institutional collaboration has been crucial in ensuring the continued existence of this project as it requires the FMARD to work with the Central Bank of Nigeria as well as other financial institutions within the public and private sectors. Therefore, it can be inferred that the political and coordination structures currently exist and this makes collaboration by relevant stakeholders on this proposed policy very likely. Based on these considerations, this policy is given a score of 3 for political commitment and institutional coordination.

*Cost:* Lafourcade et al (2005) provide an estimate of the cost of regulated MFIs in their report on the evaluation of financial and outreach performance of 163 MFIs in 25 sub-Saharan African countries in 2003.<sup>18</sup> According to the report, the average cost per borrower or client among reporting regulated African MFIs is \$80.<sup>19</sup> Admittedly, using operating cost of the sub-Saharan region as a proxy for cost of operating MFIs in Nigeria is an over generalisation that ignores the nuances of the country as well as differences within the country. However, this cost is fairly representative since the institutions analyzed in the countries are of different sizes located in urban as well as rural areas. Also, a large amount of the institutions (about 40%) analyzed in the report are located within a reasonable geographical distance in West Africa. Therefore, this estimate does serve as a valid guesstimate of the operating cost for establishing regulated MFIs in rural areas. To that end, I estimate the average cost per client for Nigerian regulated MFIs to be \$80 per client or borrower resulting in a score of 2.

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<sup>18</sup> The Report was commissioned by the Consultative Group to Assist the Poor (CGAP) and conducted by the Microfinance Information Exchange (MIX).

<sup>19</sup> The operating expense used to calculate these estimates includes financial expense, net loan loss provision expense and operating expense (MIX, 2006). Regulated MFIs include banks, regulated non-bank financial intermediaries and regulated NGOs.

### **7.1.8 Option III: Co-operative for Returning Migrant Farmers**

*Effectiveness:* Several studies have shown the popularity and sustainability of rural informal financial intermediation in Nigeria (for example, Okorie and Miller, 1976 and Eboh, 1995) despite the energy and resources devoted to promoting modern banking practices and government-funded credit schemes in rural areas. This provides an indication that these informal financial intermediaries are better adept to the rural areas and are more likely to succeed as sources of credit for rural farmers. A notable example of such informal financial intermediation is the Uboma Agricultural Development Project which was sponsored in 1964 by Shell Company of Nigeria. The goal of the project was to assist with improving economic life in Shell's area of operation. Farmers were assisted in the organization of farmer's multi-purpose cooperatives and young farmer's clubs within the villages. Assessment reports recorded improvements in cash crops, vegetable production, maize growing, livestock, processing and cooperative movement (Obinne, 1994). Therefore, based on this evidence and the explicit target of migrant farmers, it can be inferred that this policy is likely to meet the target objectives within the stated time frames and so is given a score of 3 in terms of effectiveness.

*Public Acceptance:* Establishing a cooperative for returning migrant farmers will undoubtedly receive approval from migrants in urban areas wanting to return to the agricultural sector but do not have the resources to do so. Also, it can be inferred that the rural communities will also approve of this initiative since the benefits of this well known initiatives have been experienced in various rural communities. However, this policy is likely to receive opposition from rural farmers. This is because the mandate of this cooperative extends beyond increasing migrant farmer's access to credit; it also includes increasing their access to a host of other opportunities that are likely to ensure their success as farmers. Therefore, this policy is likely to be seen as a direct means of increasing the competitive advantage of the migrant farmers over the rural farmers. Therefore, this policy is given a score of 2 in terms of its public acceptance.

*Political Commitment and Institutional Coordination:* In Nigeria, governments have been willing to offer assistance to cooperatives and institutional structures exist and a strong indication of that is the existence of the Federal Department of Cooperatives (FDC) under the FMARD. The mandate of the FDC is to formulate and implement policies and strategies for cooperative development and the promotion of the cooperative movement in Nigeria. Some of the functions of the FDC are to promote, develop coordinate and certify cooperative organizations. This entity is also present at the state level in some states (for example, Lagos).

Based on a review of this evidence, this policy is given a score of 3 for political commitment and institutional coordination.

*Cost:* Lafourcade et al (2005) also provide estimates of the cost of cooperatives in their report on the evaluation of the financial and outreach performance of 163 MFIs in 25 sub-Saharan African countries in 2003. According to their study, the average cost per client for reporting cooperatives in African countries is \$131.<sup>20</sup> The argument of the limitations of this estimate is similar to the argument for option 3. In that, using a sub-Saharan African estimate of the unit cost of operating a cooperative is problematic as it ignores the characteristic differences between countries within the region as well as differences within the country. However, this cost is fairly representative since the institutions analyzed in the countries are of different sizes located in urban and rural areas. Also, a large amount of the institutions (about 40%) analyzed in the report are located within a reasonable geographical distance as they are in West Africa. Therefore, this estimate does serve as a valid guesstimate of the operating cost for establishing regulated cooperatives in rural areas in Nigeria. Based on this conclusion, I estimate the average cost per borrower or client for cooperatives in Nigeria to be around \$131. This estimate gives this policy a score of 1.

#### **7.1.9 Option IV: Education and Training Institutes for Potential Farmers in Urban Areas**

*Effectiveness:* Between 1962 and 1970, the Norwegian Church Agricultural Project was introduced in the Eastern Region of Nigeria to tackle agricultural problems. According to Obibuaku (1983), the Project ran an Agricultural School where farmer-trainees received free instruction on modern methods of farming and were provided with accommodation, writing materials, textbooks and a monthly stipend. After training, trainees joined group farms or returned to their homes to operate individual farms. Evidence shows that the group farms helped in the rapid dissemination of agricultural information and brought changes in farm organization and farming methods among participants. However, it should be noted that the policies such as the proposed, is not likely to have significant impact on rural-urban migration within a year since it takes time to train these farmers as well as ensure that they are provided with the necessary resources to assimilate back into rural communities. Therefore, a significant impact on

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<sup>20</sup> According to the report, cooperatives include financial cooperatives and credit unions.

agricultural productivity is not likely to be evident within 5 years. After review of these considerations, this policy alternative is given a score of 2 in terms of its effectiveness.

*Public Acceptance:* This policy is not likely to garner a lot of support from the key stakeholders for the following reasons. First, migrant farmers are likely to be opposed since this policy is tailored towards addressing the demands of potential farmers in urban areas with no direct spill over to their livelihoods. Second, rural farmers are likely to see this as a mechanism for training the new generation of farmers that will obliterate their position in the farming community and destabilize the existing rural hierarchy. Third, rural public are not likely to support this policy as it does not provide an immediate solution for addressing their labour constraints. Therefore, this policy is given a score of 1 in terms of public acceptance.

*Political Commitment and Institutional Coordination:* This policy is likely to require the collaboration of some of the existing 15 agricultural research institutes, 13 federal colleges of agriculture and 1 training institute under the FMARD. In addition, it may entail collaboration with other departments under the FMARD as well as NGOs and academic institutions. Therefore, the likelihood that there will be high political will and institutional commitment from such a diverse group with different objectives and stakes in the agricultural sector is a little uncertain. Based on this evidence, this policy is given a score of 1 in terms of its political commitment and institutional coordination.

*Cost:* Campbell (1995) provides estimates for training fish farmers in West Kenya and reports that the cost of a formal resident training is around \$30 per farmer per training day while the average cost per field day for visiting farmers is around \$88.<sup>21</sup> There are numerous similarities between the training methodologies adopted in training potential farmers in West Kenya and the proposed alternative so these costs are used as estimates for the cost of training and visiting potential farmers in Nigeria. To ensure that this cost is comparable to other alternatives, it is necessary to determine the total cost per client. As suggested, potential farmers should undergo training for 3 days (i.e. 72 hours) making total formal training cost per farmer \$90. For the visiting component, it is suggested that farmers be visited twice a year in the rural areas resulting in a total cost per visiting farmers of \$176. I assume that a training officer can visit as many as 15 farmers since officers will ideally be responsible for farmers within a small geographic radius, reducing the visiting cost per farmer to around \$12. In addition, during training, it is suggested that farmers receive a stipend of \$21 to help with the cost of

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<sup>21</sup> The formal training estimate is based on the training and visit extension approach while the field day estimate is based on the field day extension approach where interested farmers are invited to a particular farmers' field or plot and a short, specific topic is demonstrated and discussed.

transportation and meals.<sup>22</sup> Therefore, the total cost per farmer of this proposed alternative is equal to the total of the training component, visiting components and stipend resulting in an estimate of around \$123 and a score of 1.

## **7.2 Recommendation**

In determining whether to adopt at least one of the proposed alternatives, an important consideration for the Federal Government of Nigeria is whether it is viable to maintain the status quo. Admittedly, the status quo appears to perform well relative to other alternatives on some criteria but it does perform poorly based on the effectiveness criteria. In other words, maintaining the status quo is unlikely to have a significant short term impact on rural-urban migration and as a result will have a limited long term impact on agricultural productivity. Considering the dire state of the Nigerian agricultural sector, it is imperative that an immediate response be designed to directly address the incidence of rural-urban migration. Based on these considerations, I recommend the immediate addition of option 1 to the status quo as the best policy for mitigating rural-urban migration and revitalising the agricultural sector. In other words, establishing cooperatives for rural women-headed households who have lost a significant portion of the males in their households to cities is the dominant policy. Improving access to credit for targeted rural women households is an appropriate step in mitigating rural-urban migration and increasing agricultural productivity as evident by its high rating on effectiveness, public acceptance and cost criteria. Furthermore, cooperatives for these women can be implemented within a short time frame since it was noted in the previous sub-sections that cooperatives that provide services for women are prevalent and popular among women within rural communities in Nigeria.

### **7.2.1 Implementation Suggestion**

Savings are an asset not a liability and so most people prefer savings over loans as a means of protection against unexpected shocks or to plan for predictable expenses. The poor appear to be even more risk averse when it comes to loans as they are described in the literature as being fearful and cautious when offered rural credit. Allen (2002, p.7) discusses the reactions

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<sup>22</sup> The estimated stipend is based on a rate of \$2 per day for transportation and \$5 per day for meals for the stated 3 days of training. This stipend is designed to cover only a portion of the costs that these farmers are likely to accrue as a result of enrolling in the program to ensure that the program only attracts the right pool of migrants.

of the offer of rural credit and notes that “the poor take debt and its attendant risks very seriously indeed. For them it may, quite literally be a matter of life and death.” In other words, the poor are more likely to be much more comfortable investing their personal savings than taking out a loan. Therefore, it is crucial that financial services for the proposed cooperative for rural women-headed households exclusively depend on member savings with no external source of funding from other lending institutions. Furthermore, it is equally important that the program retains its informal nature in order to preserve confidence and transparency and avoid the potential of a shift in focus from the most needy to better off borrowers who can service larger loans. This is likely if the proposed cooperatives are implemented as formal financial institutions or even as intermediaries for established micro finance institutions. However, to mitigate the risk associated with the operation of an informal lending cooperative, it is suggested that the proposed cooperative still be under the Federal Ministry of Agriculture and Rural Development and regulated according to the Central Bank of Nigeria (CBN) micro-finance banking policies found in CBN (2005).

## 8 Conclusion

The importance of the agricultural sector as an engine for economic growth has been shown in a large body of research and is also evident in the current growth trajectories exhibited by China and other Asian countries. However, the experience has not been the same for Nigeria. In this study, I provide evidence that exploring the link between rural-urban migration and agricultural productivity is a worthy avenue as it leads to targeted policies that are likely to provide an immediate increase in agricultural productivity and place Nigeria on a sustainable economic growth path. More specifically, I show that rural-urban migration has an impact on agricultural productivity as a result of the loss of the productive members of the rural communities. Also, I provide evidence that credit reforms can have a significant impact on reversing rural-urban migration. Based on my findings, I recommend that access to credit policies should be targeted at rural women-headed households who have lost a significant portion of the men in their households to the cities. This will be helpful in mitigating the burden on these women in running the farms as well as it will attract the men back to the rural areas as they will now have less incentive to stay in the cities.

This study is not without its shortcomings as concessions had to be made to maintain the scope of the research. Specifically, a simplified version of the agricultural productivity model had to be estimated due to the unavailability of reliable data on important variables. Also, there are no comprehensive documented evidence of the impact of rural-urban migration on agricultural productivity in Nigeria so information had to be extracted from studies from other African as well as Asian countries. All these highlight the information gap that currently exists in Nigeria. The need for comprehensive and credible information at the country level can not be over emphasized as sustainable strategies to revitalise the agricultural sector are less likely to be successful without this key ingredient.



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## **Appendix**

### **Definition and Variable Data Source**

#### **Agricultural Productivity ( $y_t$ ) and lagged agricultural productivity ( $y_{t-1}$ )**

Agricultural productivity and lagged agricultural productivity are measured as harvested production per unit of harvested area for crop products. In most of the cases yield data are not recorded but obtained by dividing the production data by the data on area harvested. The source of the data is FAO (2006b).

#### **Fertiliser ( $f_t$ )**

Fertilizer consumption (per hectare of harvested land) measures the quantity of plant nutrients used per unit of arable land. Fertilizer products cover nitrogenous, potash, and phosphate fertilizers (including ground rock phosphate). The time reference for fertilizer consumption is the crop year (July through June). The source of the data is the WDI (2006).

#### **Livestock ( $s_t$ )**

Livestock (per hectare of harvested land) measures the number of animal units available for agricultural production. Livestock variables such as: milk, meat or skin productions are not included to prevent double counting. Hayami and Ruttan (1985) methodology of aggregating the weight of various kinds of animals in livestock units: 1.1 for camels, 1.0 for horses and mules, 0.8 for cattle and donkeys, 0.1 for sheep, goats and pigs and 0.01 for poultry was adopted. The annual livestock data is from FAO (2006b).

#### **Agricultural Labour ( $L_{t-1}$ )**

Labour force in agriculture is the proportion of the total labour force recorded as working in agriculture, hunting, forestry and fishing. In Nigeria, the workload and income in the agricultural sector is mostly shared by family members. Therefore, a reasonable measure of the human capital in the agricultural sector is the adult share of the rural population (i.e. between the ages of 15 and 64). The source of the data is the WDI (2006).

#### **Harvested Land ( $A_t$ )**

Data refer to the area from which a crop is gathered. Area harvested, therefore, excludes the area from which, although sown or planted, there was no harvest due to damage, failure, etc. It is usually net for temporary crops and some times gross for permanent crops. Net area differs from gross area insofar as the latter includes uncultivated patches, footpaths, ditches, headlands, shoulders, shelterbelts, etc. If the crop under consideration is harvested more than once during the year as a consequence of successive cropping (i.e. the same crop is sown or planted more than once in the same field during the year), the area is counted as many times as harvested. On the contrary, area harvested will be recorded only once in the case of successive gathering of the crop during the year from the same standing crops. With regard to mixed and associated crops, the area sown relating to each crop should be reported separately. When the mixture refers to particular crops, generally grains, it is recommended to treat the mixture as if it were a single crop; therefore, area sown is recorded only for the crop reported. The annual area harvested for each crop is from FAO (2006b).

#### **Oil ( $O_{t-1}$ )**

Oil represents the real world price of crude oil in 1973 US dollars per barrel. The source of the data is OPEC(2006).

### Rural-Urban Migration Rate ( $m_t$ )

In most countries there is no regular collection of data related to rural-urban migration. Therefore, the first measure is obtained by modifying the estimation technique found in Cook (1999) using data from the WDI (2006). The estimation begins with an assumption that, *ceteris paribus*, the number of new rural migrants arriving in urban areas over a year must equal the total increase in the urban population over that year minus the natural increase in urban population, that is:

$$M_t = \Delta U_t - \Delta N_t \quad (1)$$

where  $M_t$  is the number of new urban migrants,  $\Delta U_t$  is the total increase in urban population,  $\Delta N_t$  is the natural increase in the urban population. It is assumed that the total urban population grows at an annual rate of  $\mu_t$  while the natural urban population (total population growth rate is used as a proxy) grows at an annual rate of  $\lambda_t$ . Hence the increases in the total and natural urban populations that occur over a year can be expressed as:

$$\Delta U_t = \mu_t U_{t-1} \text{ and } \Delta N_t = \lambda_t U_{t-1} \quad (2)$$

Substituting (2) into (1) we have:

$$M_t = \mu_t U_{t-1} - \lambda_t U_{t-1} = (\mu_t - \lambda_t) U_{t-1} \quad (3)$$

Dividing through by the rural population  $R_{t-1}$  in the previous year, we obtain:

$$m_t = M_t / R_{t-1} = (\mu_t - \lambda_t) U_{t-1} / R_{t-1} \quad (4)$$

Finally, multiplying and dividing through by the total population we have

$$m_t = (\mu_t - \lambda_t) u_{t-1} / (1 - u_{t-1}) \quad (5)$$

where  $u_{t-1}$  is the urban share and  $(1 - u_{t-1})$  is the rural share in the total population.

The second measure of rural-urban migration is based on a common technique employed by the UNDSO (1996) to estimate the net migration rate. Rural-urban migration rate is calculated as the difference between the annual growth rate of the urban population of  $\mu_t$  and the annual natural rate of growth of the urban population (total population growth rate is used as a proxy of  $\lambda_t$ , that is:

$$m_t = \mu_t - \lambda_t \quad (6)$$