FOOD SECURITY, INCOME GROWTH AND GOVERNMENT EFFECTIVENESS IN WEST AFRICAN COUNTRIES

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Abstract

While direct policies can ensure food security, this study poses that indirect policies can hinder or spur the expected success. Thus, the study examines the roles of government effectiveness and income growth on food security in West African Countries. Specifically, the study employed fixed effect Pooled Ordinary Least Square (OLS) method using annual secondary data between 1990 and 2014. Data on food security, income growth and government effectiveness were obtained from the ERS International Macroeconomic Data Set, World Bank Databank and World Governance Indicators respectively. The study finds positive relationship among food security; government effectiveness; and income growth. This relationship was only statistically significant for income growth and food security. This result suggests that, the influence of government effectiveness and income growth in ensuring food security in West Africa is pertinent in promoting food security. The study recommends that policies and programs that ensure quality civil service, policy formulation, implementation and credibility of governments' commitment to such policies are fundamental for long-term food sustainability in West Africa.

Keywords: Food security; Income Growth; Government effectiveness; West Africa

Introduction

The rank of food security in the sustainability of every society is incontestable. In West Africa, large proportions (60-65%) of people engage in farming, yet, many are food insecure since supply is unstable. About 60.8% of the population is suffering from malnutrition. An estimated 4.5

million children are affected by global acute malnutrition yearly in West Africa (West Africa FSNWG GAM database, 2009). It has been noted that, on average, out of 280 million people living in West Africa, 17 percent are still food insecure, about 30 percent live below the poverty line, 33 percent of children under five years of age are stunted, 28.3 percent are underweight, and 10 percent are wasted (IFPRI, 2005).

With favourable circumstances such as large hectares of fertile land, relatively stable climate and growing youth population in West Africa, food import is still a common feature, threat of hunger and poverty alongside increased unemployment of able-bodied adults and youths persist. The genesis of the rise in food security threat worldwide started in 1995, and all attempts at curbing it seem unfruitful at least in different regions. More than one billion out of over six billion of the world population are undernourished in 2009, (Food and Agriculture of the United Nations (FAO), 2009). Some of the major factors militating against the attempts at curbing food insecurity are: climate change, increased demand for the use of food crop as a source of biofuel and soaring food prices (Tirado, Cohen, Aberman, Meerman and Thompson, 2010 and Rosegrant, 2008) and government ineffectiveness (Pardey et al., 2006; Elias, 1985; Hazell and Throat, 2000).

Historically, West African Countries relied on international and regional trade for the assurance of food security. Some of these countries encouraged national food self-sufficiency in the 1980s. By the early 1990s, most of them had adopted a broader notion of food security that built upon historical regional and international trade patterns based on comparative advantage. For example, Mauritania, Senegal and Sierra Leone based their food strategies on large imports of Asian rice combined with imports of coarse grains (millet, maize and sorghum) from neighbouring countries, while exporting cash crops and mineral resources. Nigeria became major importers of rice, wheat, and some coarse grains, as her economies and population grew faster than domestic agricultural output; Mali and Burkina Faso also import rice from Asia.

While many developed countries were having sleepless night over the issue of ensuring food security, it seems most developing countries were taking it very lightly. Governments in developing countries find it difficult to spend largely on programmes that are likely to promote food security and improved nutrition. For example, according to World Bank (2007), the governments of low-income countries devote 19% of their budget to military expenditures and less than 5% to agriculture. Military expenditures account for 2.6% of GDP in low-income countries compared 1% for public health. This shows the level of their commitment on the promotion of food security. Unfortunately, developing countries in sub-Saharan Africa and South Asia have been considered the most vulnerable to the threat of food security (see

Easterlin et al., 2007; Yohe et al., 2007 and Cruz et al., 2007). Recently, the International Food Research Institute (IFPRI) has warned against the likely threat of food security in Nigeria and ten other countries in West Africa. The institute noted that food crises is likely to be unavoidable, except, government and private sectors make necessary and deliberate intervening efforts in the region. Even though, some of these countries were intensifying efforts to spend more on direct programmes to improve food security, results seem not substantial.

Aside from the findings of IFPRI, some studies have found government effectiveness to be a key to successful agricultural transformation (Pardey et al., 2006; Elias, 1985; Hazell and Throat, 2000). According to FAO (2015), "The effectiveness of political leadership and governance, the quality of the policies and strategies in the food and agricultural sector, the soundness of macro environment, the inclusiveness of economic growth and the degree of economic integration or interconnectedness are among the key factors driving progress". Others such as Skoufias et al., (2009) in Mexico, Ecker and Qaim, (2011) in Malawi, and Abdulai and Aubert, (2004) in Tanzania see income growth as a precondition to food security.

In the race to achieve the Millennium Development Goal 1 (MDG1), recent records showed that the performance of West African Countries compared to other sub-Saharan African Countries is high based on their achievement of MDG. For example, West Africa has been noted to have successfully reduced 60% of people suffering from hunger. This has led to 24.2% reduction in 1990-9.2 to 9.6% in 2015 (FAO, 2015). While this achievement is commendable, it is still considered insufficient, based on the World Food Summit (WSF) whose target is halving the number of people undernourished by 2015. However, with recent increase in economic growth of most West African Countries, trending along with increased food insecurity; and the argument that government effectiveness is pertinent in promoting food security, the question on whether government's effectiveness have anything to do with food security or not and the doubtful connection between income growth and food security globally, needs to be answered in West Africa, especially that studies in this area are few (see Vander Veen and Tagel, 2011).

Most studies on food security emphasize more on the importance of government policies that are directly targeted at promoting food security. In this study, we argue that government policies that are not directly targeted at enhancing food security, but depict government effectiveness in areas such as the quantity and the quality of infrastructure development, education, administrative capacity, and law and order can contribute to the promotion of food security. This is because food insecurity is often associated with weak

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institutions, or state failure to adopt measures that will protect citizens' legal or extralegal exchange of entitlements in times of conflict, war, drought, or floods, (Sen, 1981). For example, it has been noted that financial mismanagement both on the part of the Malawian government and the IMF in the sale of the country's strategic grain reserve played a significant role in spurring the worst famine experienced in Malawi in 1949 (Clover, 2003). Specifically, this study intends to determine the extent of contribution of income growth and government effectiveness to food security in West Africa. The paper is structured into four sections. Section two briefly review the literature, section three deals with data and methodology while section four discusses the findings and conclusions.

Brief Literature Review

Understanding the bailout from the shock from food security requires the knowledge of Engel's law that explains the importance of absorption capacity in time of food crises (Anderson and Roumasset, 1996). This is what distinguishes developing countries from developed ones. Food insecurity is a consequence of many factors such as productive and non productive assets; human capital; social claims; and income-earning activities that guarantee accessibility to food consumption. When individuals lack these entitlements, they face various types of risks such as market risk; climate change risk, risk break in market network, risk of institutional failure etc., which can only be addressed by public policy (Dreze and Sen, 1989). According to Badiane (1988), existence of food security can be ensured in the form of excessive cost incurred by the economy. It has also been documented that a necessary condition for food security is through efficient allocation of resources (Zhou, 2002). Since it is believed that sometimes, market may fail in the allocation of resources, the next thing is to seek for the intervention of public policies. These policies may be those that are directly or indirectly affect food security. For example, policies that promote healthcare or protect state against war are likely to affect food security directly or indirectly. The effect of these policies on food security is determined by their effectiveness.

Also, many studies have shown that, each unit increase in agricultural activity leads to approximately 1.5 units of economic growth (see Haggblade, et al., 1989 as cited in Cleaver, 1993; Stoneman and Robinson, 1988). However, the role of economic growth in spurring food security is less clear. While some studies find positive relation between economic growth and food security (Skoufias et al., 2009; Ecker and Qaim, 2011), even though, economic growth reduces income poverty more than promoting food security (Headey, 2013), some find negative relation in some regions of

the world (World Bank, 2014) and others find no relation between the two (Breisinger et al., 2012).

Although, it is argued in the literature that the relationship between food security and economic growth is less clear, examining the main premise of this essay: "an early escape from hunger-achieving food security at the societal level-is not just the result of one-way causation from economic growth generated by private decisions in response to market forces. Improved food security stems directly from a set of government policies that integrates the food economy into a development strategy that seeks rapid economic growth with improved income distribution (Timmer, Falcon, and Pearson, 1983)" shows that such policies will cause economic growth and food security to reinforce each other. Documented evidence of success in East and Southeast Asia showed that poor countries using the same strategy will escape hunger in two or less than two decades, more so, that the proceeds from policy-stimulated food security cannot be separated from overall performance of the economy. For example, it has also been documented that an increase in overall gross domestic product (GDP) emanating from agricultural labour productivity is on average 2.9 times more effective in improving the incomes of the poorest quintile in developing countries than an equivalent increase in GDP emanating from non-agricultural labour productivity (Bravo-Ortega and Lederman, 2005).

**Data description, Theoretical framework and Methodology**

From ERS International Macroeconomic Data Set, World Bank Databank and World Governance Indicators, we obtain data on real GDP, food security and government effectiveness. Government effectiveness is defined as the perceptions of the quality of the civil service and the degree of interdependence from political pressures, the quality of policy formulation and implementation and the credibility of governments' commitment to such policies. Our Data on food security was measured using food availability per capita (Total Grains/Cereals and Root Crops (R&T) and they were obtained from Food and Agriculture Statistics (FAOSTAT). The dataset comprises 13 West African Countries, over the period 1995-2014. Defining food security is a complex concept. Approximately 200 definitions and 450 indicators of food security are available. For example, Maxwell and Frankenberger (1992) list 194 different studies on the concept and definition of food security and 172 studies on indicators. Another review that updates this literature provides an additional 72 references, (Clay, 1997). Food security in the mid-1970s focused on aggregate food supplies at national and global levels, with analysts advocating production self-sufficiency as a strategy for nations to achieve food security, e.g., in the Food Availability Decline theory (Sen 1981, Devereux 1993). At this period, focus is on supply side of food

production, while demand side was ignored especially people's income and purchasing power which happened to be the generating power for consumption ability. There was a shift from global and national level again to households and individual levels in the 1980s, which led to the 1996 new definition of World Food Summit. This definition sees food security as a situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets dietary needs and food preferences for an active and healthy life (FAO, 2002). These definitions pave way for the importance of income, whether in form of people's production or other activities in the determination of household's ability to secure food, thus, it remains an important variable explaining the characteristics of food secure and food insecure household (Holden et al. 2004).

Based on the above, food security, income growth and government policy can be linked with Sustainable Livelihoods (SL) framework. Within the department for International Development in the UK, it forms the basis of development approaches. In this framework, the Livelihood outcomes are people's activities (formal and informal jobs, self-employment), assets (ownership and access to five types of assets: human, social, natural, physical and financial), and entitlements (pensions, social safety nets, unemployment insurance, human rights). The framework is hinged on the notion of poverty reduction. It explicitly emphasizes the relationship between food security and nutritional outcomes. SL criteria emphasize capacity to cope with and recover from shocks and stress (adaptive capacity), economic efficacy, social equity and gender, and ecological integrity. Its approach placed emphasis on assets rather than needs, self-empowerment, visioning of improved futures in measurable terms (using existing methodologies like appreciative enquiry and other approaches than emphasize visioning), and local action supported by outside help. Attention is also placed on policy linkages and processes across the micro, intermediate and macro levels, governance, technology and investment (Helmore & Singh, 2001). Summarily, (SL) Framework emphasizes the different types of livelihood assets (human, social, natural, physical and financial) as well as the range of livelihood outcomes (more income, increased well-being, reduced vulnerability, improved food security).

Aside from the SL framework, the food security learning framework presented in the diagram below by M & E Harmonization Group of Food Security Partner (2013), clearly shows the link between food security, income growth and government policy intervention.

Food Security Learning Framework
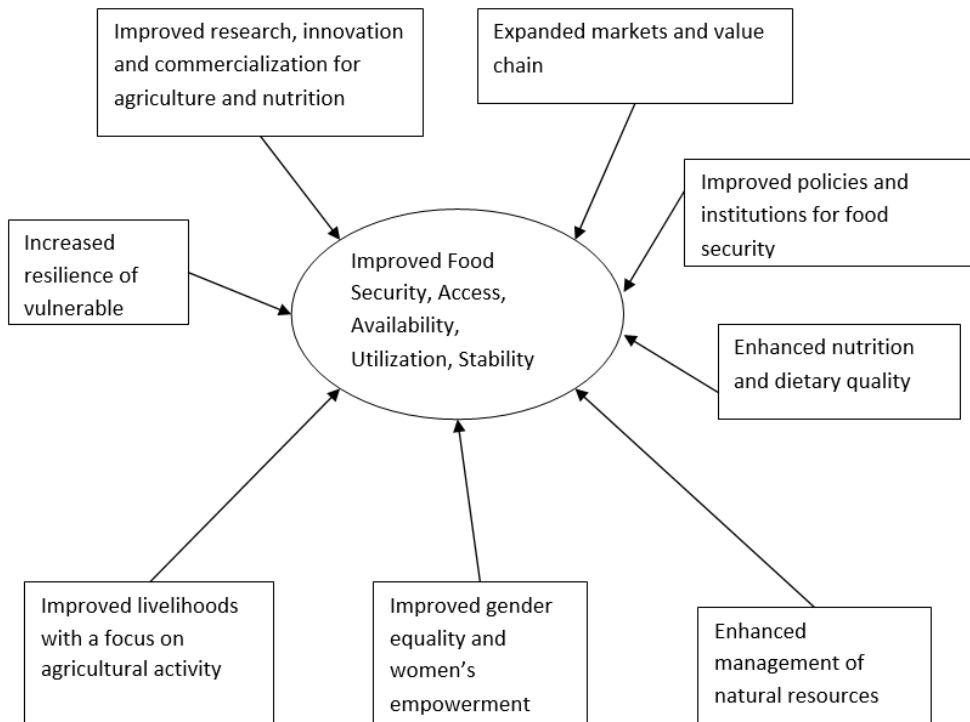
Following the literature, it has been a consensus that, increased income is a necessity for adequate provision of the nutrition for people and people must be involved in the growth process and the benefits therein. The implication is that income growth should involve, and benefit the people in terms of increased income which must be spent to improve both the quality and quantity of consumption goods such as food, education and health. Also, government must use the proceeds from income growth to produce public goods and services such as education, infrastructures, public health and security that will benefit the society. Since governments can make people to benefit from increased income growth through vigorous pursuit of successful implementation of policies, we can specify our model as:

$$Fd_{it} = \alpha \quad + \quad \phi 1 Ge_{it} \quad + \quad \phi 2 Y_i \quad \mu_i + \quad \nu_{it} \tag{1}$$

where Fd is food security; Ge is government effectiveness; and Y is income growth.

The main insight of the above equation is that if the unobserved remains fixed over time, any changes in the food security must be due to influences other than these fixed characteristics (Stock and Watson, 2003).

Discussions of Findings

Before the commencement of our estimation, we examine the summary statistics of our variables to determine the normality of the distribution of our variables. The results of the mean and the median suggest normal distribution of our variables. We also test for the presence of unit root in our data using the first and second generation unit root test of Maddala and Wu (1999) and Pesaran (2007) for the variables in the system. The results show that all variables are not stationary in levels, but in first difference. The results are presented in tables 3 and 4 below.

Table 1.   Unit Root Test

(A) Maddala and Wu (1999) Panel Unit Root test (MW)				(B) Pesaran (2007) Panel Unit Root test (CIPS)			
Specification without trend				Specification without trend			
Variable	lags	chi_sq	p-value	Variable	lags	Zt-bar	p-value
Fd	0	58.165	0.000	Fd	0	-3.791	0.000
Fd	1	48.723	0.002	Fd	1	-1.847	0.032
Fd	2	60.879	0.000	Fd	2	-0.173	0.432
Fd	3	22.559	0.546	Fd	3	0.990	0.839
Y	0	143.375	0.000	Y	0	-6.165	0.000
Y	1	56.854	0.000	Y	1	-2.032	0.021
Y	2	56.844	0.000	Y	2	-1.454	0.073
Y	3	29.144	0.215	Y	3	0.717	0.763
GE	0	70.293	0.000	GE	0	-3.296	0.000
GE	1	115.204	0.000	GE	1	-1.974	0.024
GE	2	115.237	0.000	GE	2	-1.032	0.151
GE	3	20.736	0.654	GE	3	0.295	0.616

Table 2   Unit Root Test

(A) Maddala and Wu (1999) Panel Unit Root test (MW) Specification with trend				(B) Pesaran (2007) Panel Unit Root test (CIPS Specification with trend			
Variable	lags	chi_sq	p-value	Variable	lags	Zt-bar	p-value
Fd	0	64.116	0.000	Fd	0	-2.864	0.002
Fd	1	83.382	0.000	Fd	1	-1.815	0.035
Fd	2	76.601	0.000	Fd	2	0.013	0.505
Fd	3	25.554	0.376	Fd	3	1.496	0.933
Y	0	125.495	0.000	Y	0	-5.176	0.000
Y	1	61.973	0.000	Y	1	-2.339	0.010
Y	2	72.406	0.000	Y	2	-1.070	0.142
Y	3	24.145	0.453	Y	3	1.442	0.925
GE	0	59.587	0.000	GE	0	-2.937	0.002
GE	1	75.701	0.000	GE	1	-0.594	0.276
GE	2	74.208	0.000	GE	2	1.004	0.842
GE	3	10.406	0.993	GE	3	0.767	0.778

Null for MW and CIPS tests: series is I(1).

MW test assumes cross-section independence.

CIPS test assumes cross-section dependence in form of a single unobserved common factor

In estimating the study, we employ pooled fixed effect method. This method provides richer information about data. It gives more opportunity to determine the causal relationships as well as allowing us to control for individual heterogeneity. To check a more efficient model against a less efficient, but, consistent model in order to be sure that the more efficient model also gives consistent results, we employ Hausman test. Hausman test tests the null hypothesis that the coefficient estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. Our results show that fixed effect is the best method for this study. We also proceed to determine whether to include time effects in our model. Our results show that, inclusion of time dummy in our regression model is not necessary. We also examine the serial correction in our model. The results show absence of serial correlation. This then confirms the validity of our estimates. After correcting for panel heteroskedasticity, we obtained the results in table 3 below.

Our results show positive relationship among food security; income growth; and government effectiveness, but only the relationship between income growth and food security was statistically significant. These results suggest that increased income growth is a necessity for ensuring food security in West African Countries. Also, government effectiveness, although, can promote food security but its impact is minimal. Our results corroborate the findings of Timmer (1992; 1995 and 2004) where he found that improvement in agricultural production through government investment in rural infrastructure, agricultural research and extension, irrigation and appropriate price incentives contribute directly to economic growth, poverty reduction and stability. Also, our results support that of Skoufias et al., (2009) in Mexico, Ecker and Qaim, (2011) in Malawi, and Abdulai and Aubert, (2004) in Tanzania where they find that income growth serves as a precondition to food security. The minimal impact of government effectiveness on food security may not be unconnected with corruption and government attitudes toward policies that are beneficial to the society in West Africa.

Table 3. Results of Fixed Effects Analysis

Fd	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
			Robust			
			Y			
D1.	.0008362	.0000482	17.33	0.000	.00073	.0009424
			GE			
D1.	49.66872	37.75418	1.32	0.215	-33.42766	132.7651
_cons	.4216811	.2294509	1.84	0.093	-.083337	.9266993
sigma_u 3.4245416						
sigma_e 12.717853						
rho .06760477 (fraction of variance due to u_i)						

Conclusion

The study concludes that government effectiveness which is defined as the perceptions of the quality of the civil service and the degree of interdependence from political pressures, the quality of policy formulation and implementation and the credibility of governments' commitment to such policies as well as income growth are pertinent in the determination of food security in West African Countries. Thus, the study suggests that, while direct policies such as fertilizer subsidies, farm equipment subsidies, etc. targeted at improving food security may go a long way in spurring food security, policies that are not directly influencing food security, but generally portray good governance may also determine the outcome. The study therefore recommends, that governments in West African Countries should strive more to discharge their expected duties of governance to the society.

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