

Extended Abstract

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Paper/Poster Title	DYNAMIC AGRICULTURAL SUPPLY RESPONSE UNDER AGRICULTURAL TRANSFORMATION AGENDA IN NIGERIA
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**Abstract prepared for presentation at the 97th Annual Conference of the
Agricultural Economics Society, The University of Warwick, United Kingdom**

27th – 29th March 2023

Abstract	200 words max
<p>Nigeria has been facing diminishing agricultural productivity for two decades despite implementation of several programs to enhance agricultural production. Agricultural Transformation Agenda (ATA) was implemented in 2011. In this study, we evaluated the ATA's impact on six main Nigerian crops. We used secondary Nigerian data from 1980-2019. Growth model, VECM, and GMM estimator were used to examine crop supply response for endogeneity and simultaneity bias. This study found that crop acreage, productivity, and yield changed more throughout the Agricultural Transformation Agenda timeframe (ATA). Other than cassava, yield growth rates were appalling for the remaining five crops, with negative rice rate indicating inadequate production during ATA. Production and farmland (acreage) grew steadily during the ATA period. Increased cassava prices reduce short- and long-term maize production. Short- and long-term own-price inversely affects rice output. Non-price variables affecting maize production were acreage, currency rate, fertilizer usage and school enrollment. Rainfall, crop production index, exchange rate, and enrollment affect rice production. Some parts of the SAP period should be accepted and incorporated into a new intervention project, notably those that increased production and acreage, while preserving those that improved yield for all crops in the ATA period.</p>	
Keywords	Agricultural Transformation Agenda, Supply response, Crop yield, VECM, GMM, Nigeria
JEL Code	Macro Economics Q1



Introduction	100 – 250 words
<p>The Agricultural Transformation Agenda (ATA) (2011-2015) implemented was focused on revamping the agriculture sector to ensure food security, job creation, diversify the economy and enhance the foreign exchange earnings (Yusuf & Tenon, 2019). ATA aimed at achieving sustainable development through the import substitution agricultural development; export-oriented agricultural sector; growth value-added agro-processing sector; and backward integration into higher value-added manufacturing (Ekpo, 2012). The Agricultural Transformation Agenda was unique in the sense that it focused on the development of the agricultural value chains and aimed to change the orientation of the actors in the field of agriculture from being development-inclined to a business-like perspective (Federal Ministry of Agriculture and Rural Development, 2011). Indeed, the demand-supply gap in agricultural products can only be filled through the formulation of appropriate policies that promote production. Unfortunately, despite this laudable policy, it remains unclear whether ATA was effective in stimulating supply.</p> <p>Given the need to examine whether or not the government’s subsidy intervention in agricultural products through ATA was able to improve the supply response of farmers who participated in this program through the various incentives made available for them, it becomes necessary to determine the trend in the production, yield and acreage of selected crops under Agricultural Transformation Agenda policy; determine the yield, acreage and supply response of selected crops to price incentives under the Agricultural Transformation Agenda policy; and determine the yield, acreage and supply response of selected crops to non-price incentives under the Agricultural Transformation Agenda policy.</p>	
Methodology	100 – 250 words
<p>This study was based on panel secondary data obtained from various sources spanning 1980 to 2019. They are obtained from various editions of an online database maintained by Food and Agriculture Organization (FAO), National Bureau of Statistics (NBS), Central Bank of Nigeria’s Economic and Financial Review and Statistical Bulletin covering various years. In addition, the climatic data of temperature (C°) and precipitation (mm/season) was obtained from Agroclimatic database management system and Nigerian Metrological Agency, NIMET Nigeria. Data on rice, maize, cassava, yam, soybean and groundnut prices per metric tonne, quantity of crop supplied (estimated by the annual quantity of agricultural produce), planted acreage, harvested acreage, production, and yield for all crops, output prices, as well as different types of fertilizer prices and price indices were obtained. Coincidentally, the</p>	

qualified crops were confirmed by Agriculture bodies as the most important across the zones in Nigeria.

Exponential growth model was used to determine the trend in acreage, yield and production of selected crops.

Vector Error Correction Model (VECM) was used to determine the yield, acreage and supply response of selected crops to price incentives under Agricultural Transformation Agenda policy. The estimation approach will be used to tackle the problems of spurious correlation that are frequently encountered when working with non-stationary panel data.

A generalized method of moments (GMM) estimator was employed to determine the yield, acreage and supply response of selected crops to price non-incentive under Agricultural Transformation Agenda policy.

Results

100 – 250 words

The result provides cointegrating coefficients for production (tons), yield (kg/ha), and area (acres). The coefficient's sign is flipped. Normalizing the logs of each dependent variable (1.0), crop prices have a statistically significant long-run association with all three variables at the 1% level. Long-term, logged prices reduce productivity, yield, and acreage. This refutes the no-cointegration-equation null hypothesis. The results also indicates the short run supply reaction. A percent change in the lagged production variable decreases production by 0.05% in the present period, all else equal. Yield (-0.22) and acreage also declined (-0.06). In the short run, the lagged crop price variable had a negative impact on dependent variables. A percent change in the lagged crop price correlates to 0.04%, 0.03%, and 0.002% changes in current output, yield, and area under production, respectively. Short-run price elasticity to each dependent variable shows a smaller rate of change than long-run, supporting Nkang et al. (2006) and Ojiako et al (2014). The previous period divergence from long run equilibrium is rectified in the present period at an adjustment speed of 0.9%, 0.3% and 1.3% for each of production, yield and acreage accordingly. The two non-price variables affect the level of cassava production in the period under review which are cassava area under production (0.281), and crop production index (CrPI) (1.111). When the area brought under production of cassava increases, the level of cassava production increases. This agrees with theory of production. A unit increase in crop production index leads to 1.11% increase in cassava production.

Discussion and Conclusion

100 – 250 words

This study had contributed to the existing knowledge by intending to fill these gaps which

determined the effect of Agricultural Transformation Agenda on the supply responsiveness of the selected crops. Based on the main findings of this study, the following conclusions were reached: Aside from the cassava crop, yield growth rates was abysmal for the remaining five crops with rice rate negative indicative of poor productivity during the ATA period. Also, Production was steady with high growth rates, same as land devoted for production (acreage) under the ATA period; There is no sufficient information to suggest the specific components of the ATA that led to the low growth rates for production and acreage comparatively; In both the short run and the long run, price negatively influenced production, yield and acreage in the period under review; Fertilizer usage and rainfall positively affected crop yield response, while adversely impacting production and acreage response in the long run; Likewise, the exchange rate boosted local production, while the increase in school enrolment and ATA period saw positive yield responses in the long run. In the same vein, the short-run response witnessed a positive linkage between exchange rates and production.