

Original Research Article

Input Availability and Use under Poultry Import Prohibition: A study of Southeast Nigeria

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Abstract

The broad objective of the study is to examine input availability and use under poultry import prohibition in southeast Nigeria from 1994-2009. The specific objectives include: to determine whether there is increased demand for poultry feed, drugs and day old chicks before and since the ban; to determine the effect of input supplied on domestic poultry production. The study adopted trend analysis of before (1994-2001) and since (2002-2009) the ban to examine the variations in poultry input and supply. Three states were sampled out of the five states that made up the zone. Data were collected through the use of a questionnaire. A total of sixty respondents were used, 20 persons each from the three states selected. The results showed that feed demanded has a mean value of 141.75 tons before the ban and 82.19 tons since the ban indicated a decrease in demand for feed. While day-old chicks demanded has a mean value of 310.47 birds before the ban and 466.3 birds since the ban indicated an increase in the demand for day-old chicks. The mean value of Drugs was 266.7 grams before the ban and 299.3 grams since the ban, indicating an increase in demand for drugs. There was also a significant variation in the standard deviation and also in both maximum and minimum values over the time period in feed, day-old chicks and drugs. The major constraint is input availability. The study concluded that there was an increase in demand for day old chicks since the ban.

Keywords: Demand; input; poultry; questionnaire.

INTRODUCTION

Nigeria's agricultural policy aims at ensuring food security, promoting domestic trade, enhances foreign exchange earnings and promoting export diversification (FMC, 2002). Agricultural policy also seeks to enhance access to agricultural raw materials, encourage participation in preferential trade arrangements, and promote the use of modern technology and quality of agricultural exports. Trade policies as well as fiscal and monetary policies are measures which Government and policy makers employ to achieve such policy objectives as stimulating economic growth, income distribution, generation of employment and resource use as well external trade balance.

In the agricultural sector, which is mostly a private activity, government support is focused on supply of inputs, provision of extension services, stabilization of market prices for certain goods and provision of financial assistance. Protection for agricultural products are relatively high, and average applied tariff is 15%/15.5% approved between 2008 and 2012, United State Trade (UST, 2012). Furthermore, import bans have been placed on several agricultural goods, to stimulate domestic production and in the long run lead to food self-sufficiency that could encourage food security. Export taxes apply to some agricultural products. Some of the trade policies of Nigeria include import substitution,

trade liberalization, export promotion, import prohibition, taxes and tariffs. Nigeria is a net importer of food, the major agricultural imports being wheat, rice, milk, meat and fish. Regular supply of these goods helps to meet the raw materials needs of agribusinesses and ensures food security for Nigerian households. Poultry and poultry products are major imports. In 2011, food and live animals accounted for some 13.3% (\$4.0 billion) of import expenditure and exports to all countries at about \$650 million (CBN, 2012).

Poultry is the most common agribusiness investment in Nigeria over the years, producing chicken and eggs. Poultry refers to all domestic birds that are beneficial to man and thrive under his care. Poultry birds are characterized according to the purpose of keeping. Food and Agricultural Organization (FAO, 2002), shows that Africa and South Asia consume the least quantity of meat compared to the global average of 38 kg per person per year. This supports the fact that the average in-take of animal protein is as low as 15 g per a day (Komolafe et al., 2000). Poultry has been acknowledged by the Food and Agricultural Organization as the second most important sub-sector, after grain production in the agricultural sector of most developing countries.

Inadequate animal protein intake is a major problem in most developing countries (FAO, 2010; Sarman et al., 1985; Nwajiuba et al., 2001). Adult intake of 0.8 g protein per kg body weight per day is required to meet the deficiency goal of

15- 20 percent of total energy (Oladewage, 2012). Reasons for inadequate animal protein include deficit supply, high cost and poor consumer purchasing power. Consequently, the Nigerian government encouraged domestic poultry production and many poultry farms were established. However, many of these farms collapsed since the mid 1980s synonymous with economic decline, and then the commencement of Structural Adjustment Programme (SAP) in Nigeria in 1986.

To fill the supply shortfall, reliance was heavily tilted towards importation. Subsequently, poultry products importation becomes a thriving business in Nigeria. For instance, in 2012 Nigeria spent \$40.0 billion on food importation (USDA, 2012). Nigeria government felt obliged to check its importation and drain on foreign exchange and balance of trade. In August 2002 poultry products import were banned, despite the fact that Nigeria is a signatory to the World Trade Organization (WTO) agreement which prohibits such ban, but allowed tariffs as a trade policy instrument. Despite this physical restriction on imports, imported poultry products are still available in the Nigerian market, thereby questioning the efficiency of that approval. How effective that policy intervention has been is therefore not known.

Protectionism as a means of promoting domestic production is not new. In this context, the ban on poultry products importation is expected to stimulate domestic production. Domestic producers are expected to expand production to take advantage of the supply gaps, and benefit from likely price incentive but supply response to price incentive is subject to the resource ability of producers to respond. Consequently, it is not yet established how poultry input has fared under these varying policy regimes, especially in the Southeast Nigeria. The study used before and since the ban scenario, starting from 1994 – 2001 and 2002 – 2009. The objective of this study is to determine the input availability and utilization under Poultry Import Prohibition: A study of Southeast Nigeria. The specific objectives includes: 1. To determine whether there is increased demand for poultry feed, drugs and day-old chicks before and since the ban. 2. To determine the effect of input supplied on domestic production. A null hypothesis that demands for inputs has no effect on supply of poultry products also guided the study.

MATERIALS AND METHODS

The study was carried out in Southeast Nigeria, Southeast is one of the six geo political zones of the country. The Southeast zone is made up of Abia, Anambra, Ebonyi, Enugu and Imo States. Southeast has a projected population density of about 632 persons per square kilometer (NBS, 2006). It is bounded on the East by Cross river and Akwa-Ibom states, on the West by Edo and Delta states and on the South by

River state and on the North by Kogi and Benue states. The zone lies between latitude $5^{\circ} 10'$ and 7° N of equator and between longitudes 7° and $8^{\circ} 2'$ E of Greenwich (Duze et al., 1990). Agriculture is the main occupation in the zone. There are many livestock farm among which is poultry production. Out of the five states that made up southeast zone of Nigeria, three states were selected. They are Anambra, Ebonyi, and Imo states. Imo and Ebony were selected based on the poultry agribusiness dominant in the area. While Anambra state was purposely selected for a good representation of Southeast zone. The Poultry farmers Association of Nigeria (PFAN) and Agricultural Development Programme (ADP), records were used to identify the farmers, this constituted a sample frame, from which 20 respondents were randomly selected from the chosen states. A total of 60 respondents were obtained out of which 52 valid questionnaires were returned and used for the study. Objective one was realized using Trend analysis. Averages while objective 2 was realized using multiple regression. The model for the regression of objective 1 in implicit form is $Y = f(x_1, x_2, x_3, e)$, where, Y = Quantity of input; x_1 = Price of day old chicks in Naira (₦); x_2 = Price of Drugs (₦); x_3 = Quantity of feed (kg); e = error team. The *a priori* expectation of the dependent variables (Y) with the independent variables ($X_1 - X_3$) in objective 1 model is as follows:

X_1 , Price of day-old chicks (₦) is hypothesized to be negatively related to the quantity supplied (Y). This assumption is based on the expectation that at higher price the poultry farmers will demand less quantity.

X_2 , Price of drugs (₦) is hypothesized to be positively related to supply. This assumption is based on the expectation that at higher price the more quantity supplied.

X_3 , Quantity of Feed (kg), is hypothesized to be positively related to the output for the larger the quantity of feed the more the producers stock their farm; there is the tendency of *ad libitum* feeding.

RESULTS AND DISCUSSION

Trend of the input (feed) demanded before the ban

Data from the quantity of feed demanded before the ban (1994-2001), shows that the quantity of feed demanded before the ban was highest in 1997 (Fig. 1). There was a steady demand for feed from 1994-1996 with a sharp increase in 1997. After 1997 the trend also had a sharp decline and tilted towards zero in 2001. The trends coefficient value is 1.355 confirming decreasing trend and is not statistically significant. The coefficient of correlation has a value of 0.22 showing a weak relationship between demand for feed and time and non-significant. The maximum and minimum values are 495.50 and 51.53 (Table 1). This might be attributed to low tariff and heavy importation due to trade

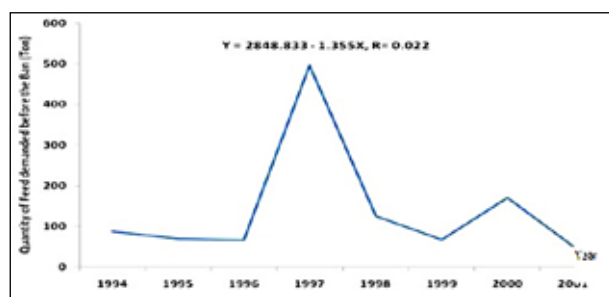


Figure 1. Trends of quantity of feed demanded before the ban.

Source: Field Survey Data, 2010

liberalization coupled with high inflation rate of 14.5% and 16.5% of 2000 and 2001, respectively. This almost grounded production. This agrees with Ogunkola (2003) that there is a wide disparity in tariffs rates between agricultural and manufactured goods.

Table 1. Analysis of feed demanded before the ban

Feed Demanded	Value (kg)
Mean (kg)	141.75
Maximum	495.50
Minimum	51.53
Standard deviation	148.18
Trend	-1.355
Correlation	-0.022

Source: Field Survey Data, 2010

Average cost of feed before the ban

The average cost of feed demanded before the ban kept increasing by 50 percent within a period of three years (Fig. 2). This implies that cost of feed made domestic producers unable to compete with imported poultry, consequently abandoned production. The dependency on the Northern Nigeria for cereal grains couples with inflation exacerbated the high cost of feed. This agrees with Iheme (1985) that feed take nearly 85% of the total cost of production.

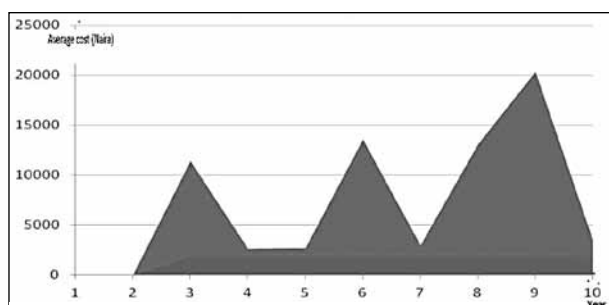


Figure 2. Average cost of feed before the ban

Source: Field Survey Data, 2010

Trend of feed demand since the ban

The quantity of feed demanded since the ban was highest in 2008. From 2002 the demand for feed progressed and the peak was between 2007- 2008. From 2009, demand for feed started to decline. The trend coefficient is 7.896 and is significant. The coefficient of correlation has a value of 0.933, showing a high degree of association between demand for feed and time and also significant (Fig. 3). The maximum and minimum values are 109.68 and 55.58 (Table 2). The strong relationship could be attributed to inward sourcing of raw materials for production as projected by Adalemo (1993). Inflation was brought to a single digit after 2003 of 23.8% to 8%; 5% and 7.4% of 2005, 2006 and 2007, respectively. The growth in non-oil sector of which agriculture contributed the most was attributed to sound monetary and fiscal policies as well as favourable credit conditions, which supported the financing of the private sector (CBN, 2007).

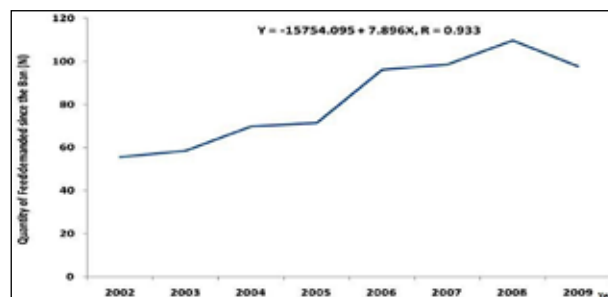


Figure 3. Trend of Feed Demanded Since the ban

Source: Field Survey Data, 2010

Table 2. Trend analysis of feed since the ban

Feed Demand	Value
Mean (kg)	82.19
Maximum	109.68
Minimum	55.58
Standard deviation	20.71
Trend	7.89
Correlation	0.93

Source: Field Survey Data, 2010

Average cost of feed since the ban

Since the ban of poultry importation, feed cost has drastically improved (Fig. 4). This implies that increase in poultry production has stimulated production in the poultry input sector, consequently the reduction in feed cost. This agrees with Ekunwa et al. (2006) that import ban stimulate domestic production.

Trend of quantity of day old chicks (Docs) demanded before the ban

Data from the quantity of Docs demanded before the ban

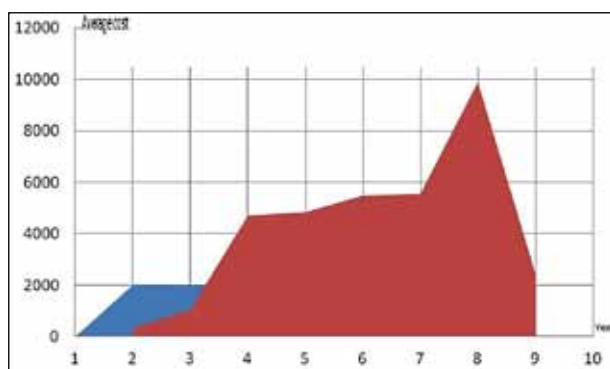


Figure 4. Average cost of feed since the ban
Source: Field Survey Data, 2010

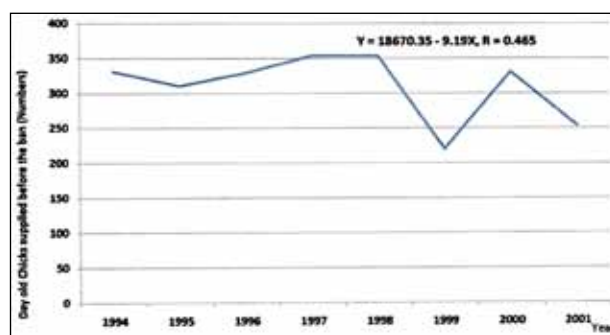


Figure 5. Trend of Quantity of Docs Demanded before the ban
Source: Field Survey Data, 2010

Table 3. Trend analysis of Quantity of Docs Demanded before the ban

Day old chicks	Value
Mean	310.47
Maximum	354.00
Minimum	219.89
Standard deviation	48.50
Trend	-9.19
Correlation	0.47

Source: Field Survey Data, 2010

(1994-2001), shows that the quantity of Docs demanded was highest in 1998. The trend coefficient is 9.19, indicating a decreasing trend while the coefficient of correlation is 0.465, showing a weak relationship between Docs and time and statistically non-significant (Fig. 5). The maximum and minimum values are 354.00 and 219.89 (Table 3). This agrees with Apankuta (2006) that available poultry technologies were not commensurate with production of quality chicks.

Trend of Quantity of Docs Demand since the ban

The quantity of Docs demanded was highest in 2009 (Fig. 6 and Table 4). It implies that there is an increase in the domestic producer's demand for day old chicks. The trend coefficient is 49.58x, indicating a strong relationship

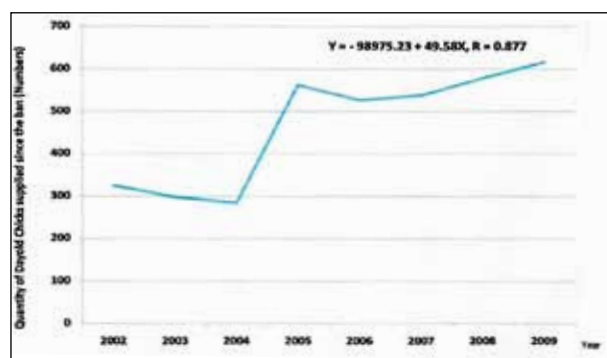


Figure 6. Trend Analysis of Quantity of Docs Demanded since the ban
Source: Field Survey Data, 2010

Table 4. Trend analysis of Quantity of Docs demanded since the ban

DOC'S	Value
Mean (kg)	466.29
Maximum	616.83
Minimum	284.59
Standard deviation	138.54
Trend	49.58
Correlation	0.877

Source: Field Survey Data, 2010

between Docs and time. Since the demand for Docs increased since the ban, it implies that the ban in importation of poultry production has a positive effect on demand of Docs. The coefficient of correlation has a value of 0.877, showing a strong relationship between Doc and time and is statistically significant. This agrees with Ekunwa et al. (2006) that import ban stimulate domestic production.

Trend of the Quantity of Drugs demanded before the ban

Quantity of drug demanded before the ban was highest in 1996. There was a sharp decline in 1997 and in 2001 the demand started to increase. The trend coefficient is 3.90, indicating a decreasing trend and statistically insignificant.

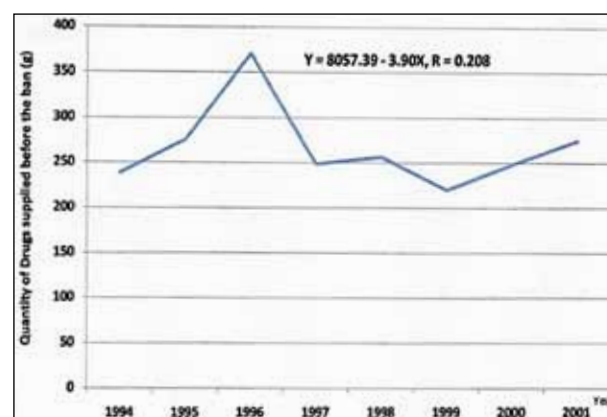


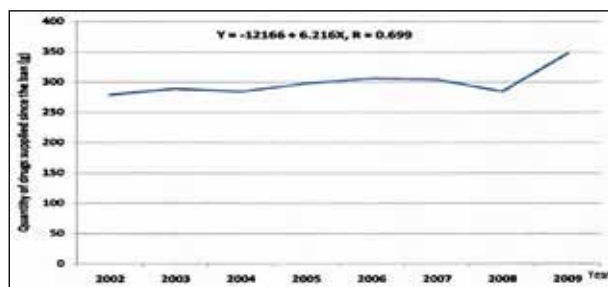
Figure 7. Trend of drug demanded before the ban.
Source: Field Survey Data, 2010

Table 5. Trend analysis of drugs demanded before the ban

Drugs	Value
Mean (kg)	266.67
Maximum	371.00
Minimum	219.89
Standard deviation	45.95
Trend	-3.90
Correlation	0.21

Source: Field Survey Data, 2010

The coefficient of correlation has a value of 0.208 showing a weak relationship between demand for drug and time (Fig. 7). The maximum and minimum values are 371.00 and 219.89 (Table 5). This might be due to high cost of drugs due to inflation. This agrees with Devendra and Fuller (1979) that incidence of diseases necessitate increase in medication.

**Figure 8.** Trend of Quantity of Drugs Demanded since the ban
Source: Field Survey Data, 2010**Table 6.** Trend analysis of Quantity of Drugs demanded since the ban

Drugs	Value
Mean (kg)	299.30
Maximum	347.47
Minimum	219.89
Standard deviation	45.95
Trend	-3.90
Correlation	0.21

Source: Field Survey Data, 2010

Trend of the quantity of drugs demanded since the ban

Data from the quantity of drugs demanded since the ban (2002-2009) show that the quantity of drugs demanded since the ban was highest in 2009 (Fig. 8). There was a steady demand from 2004-2007. In 2008, there was sharp decrease in demand. The trend coefficient of correlation has a value of 0.699, showing a strong relationship between demand for drug and time. The maximum and minimum values are 299.30 and 347.47 (Table 6). The implication for the increasing trend might be that the farmers have increased domestic production due to the ban on poultry product importation.

Effects of input supplied on domestic production

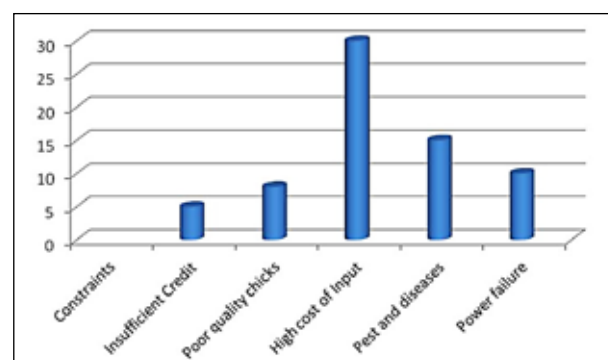
In order to determine the effects of input supplied on domestic production, a model was subjected to multiple regression analysis in four functional forms (linear, semi log, double Log and exponential). Exponential returned zero result and was not included. The semi log form was chosen as the lead equation ($Y = -614.831 + 645.606 + 317.488 + 104.276$), for further discussion because it has the highest R^2 value of (0.551), and also the highest F-ratio value of (17.474). The result of the semi log forms shows that the independent variables (X_1 - X_3) jointly explained 55% of the variations in domestic production. The interpretation of the results of the regression was as follows;

Day old chicks (X_1), is positively related to output implying that as feed increases output of poultry product increases, and vice versa. This is not in line with the *a priori* expectation. This effect is statistically significant at 5% level as t - calculated value (13.40) is greater than t - tabulated (1.886).

Drug (X_2), is positively related to output implying that as drug increases output increases and vice versa. This is in line with the *a priori* expectation. This effect is statistically significant at 1% level as t - calculated value (12.811) is greater than t - tabulated (critical t) (6.965).

Feed (X_3), is positively related to output implying that as feed increases, output increases and vice versa. This agrees with the *a priori* expectation. This effect is statistically significant at 5% as t - calculated value (8.795) is greater than t - tabulated (2.920).

F - Ratio which determines the overall significance of the regression is statistically significant at 1% level as F - calculated value (17.474) is greater than F - tabulated value (6.965). We therefore reject the null hypothesis which states that the demand for inputs has no effect on the supply of poultry products and conclude that there is a significant relationship between demand for inputs and supply of poultry products.

**Figure 9.** Constraints encountered in poultry production
Source: Field survey Data, 2010

Constraints encountered in poultry production

Poultry production has the cost of input as the highest constraints followed by pest and diseases (Fig. 9). This implies that farmers might not take advantage of the ban to increase production due to inadequate capital. This has impact on consumers and the economy. This finding agrees with Anthony (1990) that cost of feed accounts for up to 65% - 85% of cost of poultry production.

CONCLUSION

Government should subsidize cost of inputs, by granting loans. This will empower farms to produce feed materials and thereby lessen the dependency on the Northern Nigeria for feed materials.

The research was limited to Southeast zone of Nigeria and data from poultry farmers drawn from the three states were used for the study. The results showed that demand for poultry input was highest in 1997 and 2008 before and since the ban, respectively. There is increase demand in input (feed) and prices have drastically improved. Demand for Drugs and Doc showed an increasing trend since the ban and statistically significant. The independent variables jointly explained 55% of the variations in quantity of input. Demand for inputs has effect on the supply of poultry products.

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