Determinants of Firm Growth in Poultry Enterprises in Rivers State, Nigeria

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Abstract: This study was necessitated by the dearth of poultry enterprises in the Rivers State of Nigeria; a relatively industrialized state with per capita income above the national average. It was expected that the relative high income elastic good such as poultry will predominate but the reverse was the case. The objective of this study was therefore to find out the determinants of poultry firm growth in the survey area. A static model in which firm growth was a function of the determinants such as total equity/total liability, owner's equity, interest rates, rate of return, taxes and home consumption or owner's withdrawal. Econometric analysis using ordinary least square show owner's equity, rate of return on investment and interest rates were significant determinants of growth ('t'>1.96). Taxes and home consumption or withdrawal were non-determinants. Suggestions for growth included adequate attention paid to the management aspects of the industry and importantly management training. Significantly interest rates were not significant in the growth potential. We recommend that the status quo with respect to taxes be maintained.

Key words: Poultry enterprises, firm growth, determinats, econometric analysis, Nigeria

INTRODUCTION

Livestock production and consumption is deficient in Nigeria. The average consumption of 6.5g day^{-1} falls short of the World Health Organization (WHO) recommended level of 27g/capita/day, (Adewumi, 1993). The estimate of livestock resources as reported by Resource Inventory and Management (RIM, 1993) indicates that there are 103 million indigenous poultry and 15 million commercial (exotic) poultry in the country. Extracts from the Nigeria Food Balance sheet also show that the supply of livestock from domestic sources fell short of the demand between 1985 and 1995 by 722.97 thousand metric tones grain equivalent (Olayemi *et al.*, 1986). This estimate was under an assumed growth rate of 3.5% the deficit was put at 1,000,000 (a million) metric tones of grain equivalent as at 1995. Efforts made to bridge this gap from domestic production have been rhetorical as livestock importation particularly poultry seem to be dominant in our local markets.

Ordinarily, importation would not be considered a problem in bridging the gap between livestock demand dollars; the need for conservation of scarce foreign exchange and internal acceleration of livestock production becomes imperative. Poultry business lends itself as a potential area of expansion in the livestock sector because of its apparent advantage over cattle in terms of production requirements. These advantages include efficiency of feed conversion, consumer preference, high level of protein, devoid of taboos and relative case of establishment, Balogun and Alawa (1989). Little capital outlay is required in the establishment of a poultry farm. In the sixties, the backyard poultry industry dominated but by the seventies the poultry industry seriously declined with many medium to large scale poultry enterprises folded or at best reduced their operation (Abe, 1981). The factors responsible for this decline was feed related which culminated into low output; low profit and consequently low rate of return on investment.

Others depose that management constraint was responsible for demise of the poultry industry leaving few large-scale producers in business (Ihumodu, 1986). Even public sector imposition of direct and indirect taxes on the agricultural sector may also be responsible for the position of the poultry industry today (Gonzalez-Vega, 1984). Yet the subsidy withdrawal for the agricultural sector inputs and the ban of certain inputs in agricultural production may also be, responsible or partly responsible for the predicament of the poultry industry (Chukuigwe and Orlu, 1994). In other to proper address the problem of the growth of Nigeria Poultry Industry, there is the need to assess these determinants of growth with respect to the poultry firms.

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The overall objective of this study is to ascertain the determinants of firm growth in poultry enterprises in Rivers State. The specific objectives of the study are to:

- Determine the proportion of the total capital employed by poultry enterprises that is borrowed by operators of poultry business in Rivers State and by implication the owner's capital (owner's equity).
- Ascertain the amount from total earnings that is used to meet costs of non-equity capital in poultry enterprises in the survey area.
- Determine the proportion of the total earnings from poultry-enterprise that is used to meet various tax obligations.
- Ascertain the amount of income in cash and kind as that withdraw from the business and used for household consumption.
- Compare the relative implication of interest rate, consumption, taxation and leverage on the growth of poultry firms in Rivers State.

MATERIALS AND METHODS

The conceptual framework and model were derived from the static firm growth equation. The firm growth itself is premised on the fact that the net income must continue to be positive.
The following notation is used:

A = Total capital invested.
D = Non-equity capital.
i = Cost of non-equity financing.
c = Proportion of after-tax income needed to meet family consumption.
L = Leverage = D/E.
t = Tax rate.
E = Amount of owner equity.
r = Rate of return on total capital invested.

Following the notation above, the gross earnings of total capital (before payment on interest and taxes) is equal to the rate of return on total capital invested times total capital invested which is given by (riD). The earnings on total capital (rA) minus cost of non-equity capital (iD). If the income tax is t, then the net-after earnings will be $(rA-iD)(1-t)$.

The net after income is the amount available for family consumption and reinvestment in business. If the operator and his family use the proportion c of their after tax income for consumption, the amount which can be reinvested in the business is g where $g = (rA-iD)(I-t)(I-c)$.

Therefore, to find the rate of change g^1 in owner equity (E) and by implication the growth rate we set g^1 or g/E given by:

$$g^I = \frac{g}{E} = \left[\frac{rA - iD}{E} \quad \frac{}{E} \right] (1-t)(I-c) \qquad (1)$$

Since $L =$ we can simplify Eq 1 to read

$$g^I = [L (r - i) + r] (I-t) (I-c)$$

This equation can be used to estimate the rate of growth in owner equity for any combination of return on capital, cost on non-equity and vice versa. Also, increase in the proportion of income used for consumption c and/or income tax rate t, cause a reduction in the rate of growth in owner equity and vice versa.

The model: The model applied in this research assumes firm growth in poultry enterprises to be a function of explanatory variables such as interest rate, return on capital used etc. The general form of the relationship can be represented as $Y = X_1, X_2, X_3, \ldots X_n e$

Where

Y = Firm growth in poultry enterprise.
X_1 = Interest rate charged on borrowed funds.
X_2 = Income tax paid by the enterprise.
X_3 = Home consumption or owner withdrawal from the business.
X_4 = Leverage = Borrowed Funds/Owners Equity.

Furthermore, the multiple regression model was employed in the estimation of the firm growth using the ordinary least square (OLS) technique. The function form was of the Cobb-Douglass after trying others and stated as:

$$Y = Ax_1^{b1} x_2^{b2} \ldots \ldots x_7^{b7} e$$

kY is the firm growth while the x_s are the independent variables as stated above. b_1–b_7 are parameter estimates while e is the error term.

Sampling frame/population of the study: The area of study, which is Rivers State of Nigeria, has a total of 23 local government areas in all. However, poultry enterprises at business level were not evenly distributed among all the local government areas. A sample frame of 120 poultry firms on broiler production and egg production, cutting across 8 local government areas was identified. Names of local government areas used were

obtained from the Rivers State Ministry of Agriculture and Natural Resources and they include: Obio-Akpor, Oyigbo, Tai, Eleme, Port Harcourt, Okirika, Emuoha and Etche local government areas.

Sample was drawn from the 120 poultry firms. Having identified eight local government areas, 6 broiler producers and 4 egg producers were randomly selected from each local government area. This means that 10 poultry farms were sampled from each of the local government areas giving a total of 80 poultry firms as the sample size.

Primary data collection was by interviews through discussion of question and answer sessions and by questionnaire. Secondary source of data such as income statement (profit and loss account) of individual firms were utilized as well as textbooks, journals, periodicals, seminar papers, dailies, newsletters and bulletins.

RESULTS AND DISCUSSION

Flock size and distribution of egg producers in rivers state: The distribution of egg producers according to the flock size is given in Table 1. From the table, it can be inferred that majority of the producers (90%) are small-scale producers having a flock size of 1600 or less birds.

The firm having a flock size of 100 birds or less are 66% while those having 600 birds or less. Constitute 34% of the total producers. Small-scale operation may be efficient with respect to the level of managerial capacity but it is less likely that gains from economics of scale and size can be realized. From this low level of operation, it can also be inferred that such low level of operation may not be able to withstand fluctuations in input prices (feed) and demand. It may well partly explain the collapse of industry in the survey area.

Table 1: Distribution of poultry producers according to flock size in Rivers state

Group No.	Flock size	Average Flock size	Frequency	Distribution (%)
1	200-600	480.2	29	36
11	600-1000	830	21	30
111	1001-1600	1356	19	24
1V	1601-above	4350	8	10
Total			80	100

Table 2: Average capital, utilized rates of return, taxes, interest rate and home consumption (in ₦)

Owners funds	1,646,380
Borrowed funds	1,078,849
Tax rate	0.15 (15%)
Consumption	0.32 (32%)
Rate of return	0.21 (21%)
Interest rate	0.155(15.5%)

Source: Survey data

Total capital earnings, taxes and household consumption: Table 2 shows the average total capital employed and is made up of owners and borrowed funds. It also shows the mean total earnings, taxes and household consumption of the poultry output (owner's withdrawal), interest rate charged on producers borrowing and the rate of return on the producers' investment. The few (10%) large producers heavily influenced the mean value of the funds employed. Table 1 shows that majority of the producers are small-scale producers (40%, 1600<).

An analysis of Table 2 shows that tax paid by producers (15%) is not as significant as rhetorically portrayed as a constraint to growth (Gonzalez-Vega, 1984). Even family withdrawal or consumption (32%) is low. However the rate of return of only 21% is very low and cannot take care of consumption, interest rate and taxes (32, 15.5, 15%) let alone return to owner's equity, hence the collapse of the industry. We can infer that the problem is poor management, which did not take care of the industry's micro and macro-economic of environment as earlier noted Chukuigwe (1988), Chukwuigwe and Orlu (1994).

Econometric analysis: The relative implications of interest rate, consumption, taxation and leverage on the growth of poultry farms in the survey area, was also analyzed and an econometric estimation of the model using the Ordinary Least Squares (OLS) technique, 14 variables were sequentially entered with one (firm growth) as dependent variables and 13 others as independent variables. On the basis of model significant using F-test, only 8 variables entered the final model estimation with one as the dependent and 7 as independent variables.

The final model used in the analysis is given by:

$$Y = a_1 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + e$$

Where,
Y = Firm Growth
a = Constant Term
x_1 = Net Income
x_2 = Owners Equity
x_3 = Borrowed fund
x_4 = Interest Rate on borrowed fund
x_5 = Rate of return in investment
x_6 = Tax rate
x_7 = Consumption rate
e = Error term

The result of the estimation was given by:

$$Y = 0.013 - 1.47x_1, + .70x_2, - 0.51x_3 - 0.70x_4$$
$$(-3.10)^* \ (3.36)^* \ (-1.92)^* \ (-4.94)^*$$
$$+1.09x_5 + 0.05x_6 + 0.10x_7$$
$$(6.33)^* \ (0.38)^* \ (0.69)^*$$
$$R^2 = 0.73 \ F \ 7.48$$

t =   Statistics in parenthesis
       *Significant at 5% level
       Source: Survey Data 2001

From the result of the econometric estimation, all the variables behaved expectedly with the anticipated correct signs. One important result of this estimate is that (x_6) (x_7) namely taxes and home consumption were not significant and cannot be said to affect the growth of the poultry firm in the survey area. In economic development literature, Adams *et al.* (1984); Mckinnon (1973). Gonzalez-Vega (1984), generally inferred that the agricultural sector is over-taxed in favour of industrial development or other sectors of the economy and therefore cannot grow. The burden on agriculture may have to be found in other macro-economic policies such as restrictions on agricultural exports than the over-taxation of agricultural sector.

This study seems to have a different outcome with the implication that taxes at the current rate do not negatively affect the growth of the poultry industry. It was observed in the survey that farmers hardly pay any taxes on their produce except indirect taxes such as the general local government environmental taxes. The same conclusion is arrived at with respect to home consumption or owner's withdrawal. This outcome is particularly important for agricultural loan to small-scale producers. Many in the literature earlier cited attribute agricultural loan delimit to the initial need to satisfy home consumption need. That does not seem to be case in this study while it may be relevant in the Survey area as the proportion of total poultry production withdrawn for home consumption was insignificant.

We expected the firm growth to be positively correlated to total investment $(x_2 + x_3)$ but that was not the case. The total investment variable X_1 was in fact negatively correlated which points to a managerial problem in terms of how the capital was used. When we separated owner's equity from liabilities variable (x_3) the owners equity variable (x_2) was significantly positive as expected because retained earning increases should increase the size of the balance sheet. The negative relationship observed between growth and total capital invested can be attributed to borrowed funds either in terms of quantity, the cost of borrowing (interest rate) or

both and therefore, to poor management of external equity factors. The conclusion was that terms and quantity of borrowed funds needed to be made more attractive to poultry growth in the survey area. There is also a need for management training for poultry operators in the survey area since good management can be limited to good management education.

The interest rate variable (x_4) was significant and negatively correlated to firm growth. Lower rates of interest will categorically increase investment in the sector according to the result of estimate. How low it should be, will be a matter of the rate charged being able to cover both cost funds and administrative costs. Variable x_5, which is the rate of return, had the right sign and was the most significant judging from the t-value of 6.33. Of course, the higher the rate of return, the more attractive will be investment into this sector. However, the parameter estimate was high implying a low rate of return in the industry. The product (poultry) is income elastic and with the depressed income for most Nigerians for the greater part of the 80's and 90's, it was not surprising that poultry demand may have also been affected. However, with current improvements in the general income level as a result of democratization and salary enhancement in the public sector (the greatest employer of labour), it was expected that demand for poultry products will also pick up. Part of this expectation was explained by the current inundation of the Nigerian market with imported frozen poultry products.

The overall objective of this study was to ascertain the determinant of firm's growth in poultry enterprise in Rivers State. This was carried out by ascertaining the impact of the various variables that contribute to poultry firm growth in the survey area. These were total capital invested, taxes and household consumption. The methodology involved a stratified random sampling culminating into the use of 30 farms with a weighted average size of 1176 birds. An econometric estimation was also carried out with variables having the appropriate explanatory signs.

The results of the study show that taxes and home consumption were irrelevant to firm growth in the survey area and cannot be the reason for poor performance of the poultry firms. External equity, interest rates and low rate of returns accounted for the poor performance of the poultry firms. The unfavourable terms of loans in term of interest rate and size of loans may have contributed. However, the low rates of returns to invested capital border on poor management and to some degrees the inability of the firms.

CONCLUSION

For the home poultry industry to grow, there is need to pay attention to the management aspect of the industry. There is also the need to continue the concessionary policies for the sector but effort has to be made to ensure the efficient delivery of loanable funds to this sector. Growth in this sector can save Nigeria considerable foreign exchange and facilitate the diversification of the economy.

RECOMMENDATIONS

Based on the results of this study, the following recommendations are made:

- There is the need to intensify the training of poultry production manpower in the state. This should not be restricted to the formal educational sector but also the informal sector through extension. Emphasis should be placed on the management and economics of resources because farmers who paid attention to this aspect are still in business.
- The poultry sector and indeed the agricultural sector should still be regarded as a special sector that needs concessionary interest rate and special loans. Major studies (Adams *et al.,*, 1984; Gonzalez-Vega, 1984 and Yaron 1994) are not against this, rather they insist on proper or efficient loan delivery to avoid the diversion of loans for the purposes other than that for which the loans were made.
- We still recommend that the status quo in the tax regime for the poultry sector (if any) should be left as it is because it did not impact negatively on the firm growth.

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