

CROWDING IN OR CROWDING OUT? GOVERNMENT SPENDING AND PRIVATE INVESTMENT: THE CASE OF NIGERIA

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Abstract

This paper uses the multiple regression analyses to investigate the extent to which government spending crowd in or crowd out private investment in Nigeria. The analysis is conducted using 34 years of annual data for Nigeria. The paper lays emphasis on disaggregating the capital and recurrent spending of the federal government and examining their separate effect on private investment. The analysis suggests that effective macroeconomic management be ensued in order to cushion the adverse effect of rising inflation on private investment.

Keywords: Government Spending, Crowding out, Crowding in

Background to the study

There is a dilemma between the current call for a private sector led economic growth process for a reduction in government participation in the Nigerian economy, and the call for government domination in the economy. Government expenditure represents an important policy instrument through which an enabling environment can be created for a greater private sector participation in the economy.

However, against the background of deepening economic crises that began in the 1980s following the oil market glut and world economic depression, the Babangida Administration introduced the structural adjustment programme (SAP) in 1986. The SAP programme, which was packaged on the basis of neoclassical doctrine, had, as part of its

policy recommendation a reduction in government spending and greater role for private sector in the economy. It is therefore important to demonstrate the role government could play to enhance and sustain private sector investment in the economy. This calls for a thorough analysis of the relationship between government expenditure and private investment in Nigeria.

Though earlier studies conducted, analyzed the effect of government spending on private investment without decomposing different categories of government spending into their subsector component parts and determine their separate effects on private sector investment as done in this study. Therefore this study is necessary as it examine the impact of government spending on private investment, and give measures that will enhance the investment climate in Nigeria. It will also form a basis for further research investigations as well as contributing to available findings that could be used by policy makers in designing and implementing policies targeted at economic growth via investment.

Review of the Relationship Between Government Spending and Private Investment

The objective of this section is to investigate the possible relationship between public spending and private investment. Theoretically we expect to have a positive relationship between government size and private investment behavior. This is because increase in government size is likely to have a positive effect on economic growth as it increases the tempo of economic activities. The relationship between private and public spending goes back as early as Bailey (1971) and Buiters (1977). These two studies were mainly concerned with the crowding-out effect of public expenditure and the degree of substitutability and complimentary relationship between private and public spending. To analyze the relationship between government spending and private investment requires bringing many pieces together in a rather complex puzzle. The detailed explanations are as follows:

Keynesian analysis justifies government intervention in the economy on the basis of market failures. Keynesian economics argue that private sector decisions sometimes lead to inefficient macroeconomic outcomes and therefore, advocates active policy responses by the public sector, including monetary policy actions by the central bank and fiscal policy actions by the government to stabilize output over the business cycles (Wikipedia, . org/Keynesian economics).

Chete and Akpokodje (1997), noted that it was the central role of private investment to growth revival that has necessitated governments' attempts to influence the level of investment in developing countries. Where private investment is low, government has to undertake serious monetary and fiscal policies to gear it up.

Olison (1984), noted that government expenditure might directly enter into private sector production such as education and infrastructures. Also government outlays may indirectly influence the efficiency of private sector allocation of inputs and productive activities. This is in such a way that government spending corrects market failures, guarantees property rights and enforcement of contracts, and provides essential public goods.

Nevertheless, in theoretical study of the effect of government spending on private investment, the central concern is with the crowding – out or crowding – in effect of government spending on private investment, and the degree of substitutability or complementarity between them (Monadjemi, 1995), Bailey (1971), and Buitter (1977),. Thus it can be observed that government spending may crowd out/crowd in private investment.

Aschaver (1989a), and Monadjemi (1995), noted that an examination of the effect of government spending on private investment requires making a distinction between the different categories of government expenditure. Government expenditure such as expenditure on infrastructure (roads, electricity), education, airports, and research may increase the productivity of the private sector and hence complement private investment. On the other hand, certain types of government expenditure such as those on consumption, food and health may substitute for private investment.

Accordingly, Serven (1998), argued that the heterogeneity of government spending must be taken into consideration when analyzing the effect of government spending on private investment. He made a distinction between government infrastructure investment and non-infrastructure capital expenditure. He also argued that an increase in public infrastructure raises the long run private capital stock by reducing the cost of capital to the private sector. On the other hand, an increase in non infrastructure capital spending might lower or raise private investment, depending on how close substitutes are the final goods supplied by the private and public sectors. The higher the degree of substitutability the more likely it is that an expansion in public non-infrastructure spending will result in crowding – out of private investment. Essentially, Serven, focused on the competition between government investment and private investment in output and factor markets.

Incorporating government spending in standard macro investment model was first undertaken by Aschaver (1989a). He based his analysis on the neoclassical model in which private non –residential investment was assumed to be determined by government investment, government consumption expenditure and the rate of return on private non-financial corporate capital. The attempt was to estimate the separate effects of various categories of government expenditure on private investment.

In accordance with their belief in the free enterprise system, the neoclassical school opposes government spending for the purpose of influencing private investment. The argument was caged firmly in the crowding out theory. Atkinson (1991), observed that the most obvious case of crowding out is that, the government, having enormous resource at its disposal, would engage in activities which would otherwise be provided by the private sector. Hence public investment spending would simply crowd out i.e. reduce or replace private investment spending.

Mitchel *et al*, (1974) also observed that David Ricardo and neoclassical economists like F.A. Hayek and R.G. Hawtrey opposed government spending. He said that Hawtrey believed that weather government spending came out of taxes or loans from private savings, the increased government spending would replace private spending. Government spending out of new bank credit would be inflationary, forcing up the rate of interest. This would adversely affect private enterprise.

The view of the neoclassical economists outlined above continues to be reemphasized by the monetarists. They maintain that government spending and taxation only redirect resources to the government and thus crowd – out private investment expenditure. The view of Mitchel *et al* (1974), complements the belief in say's law of markets. Say's law simply stated as “supply creates its own demand” illustrates a situation in which the economy is at full employment with all resources fully employed. In such a situation, each amount of additional government spending would require a transfer of resources from the private sector to finance government activity. Thus increased government spending can only, crowd out the same amount of private spending. This is however unlikely to be the case when economy is at less than full employment, as in the case in the developing countries like Nigeria. With idle resources, and a risk averting private sector in investment venture, the government would be the logical agent of raising the level of aggregate investment, which the private sector could pick up from as a result of the positive externality effect of government spending.

The Keynesian theory however favors government spending both for the purpose of promoting growth of private investment and economic growth. Keynes (1936), argued that government spending has a multiplier effect on the economy. The Keynesian position is that not only an additional amount of government spending raise national income by the original amount spent by the government, but that this would have a multiplier effect of several amount.

The increase in household consumption raises the demand for firm's products. The increased demand for firm's products is a signal to firms to raise production. Therefore, the

firms would increase their investment demand for capital goods. Hence increase in government spending leads to increase in private investment. This mechanism is identified as a micro foundation for the effect of government expenditure on aggregate investment (Olaniyan, 2000).

Arestis (1979), noted some of the criticisms leveled against the Keynesian analysis by the neoclassical economists, He stated that the analysis pay little attention to how government budgets are financed. Government spending financed by means other than money creation may reduce private spending. This is referred to as the crowding – out of private expenditure by fiscal actions. Thus since government would either borrow or tax to finance its expenditure, public spending would only represent a resource transfer from the private to the public sector.

Atkinson (1991), examined the cases of deficit financed government spending that is not accompanied by new issues of money. He noted that the need for government to float debt issues would compete with private debt instruments in financial markets result in upward pressure on the rate of interest. This would reduce private investment spending which are interests elastic. Atkinson maintained that there is no theoretical controversy over this type of crowding – out because it is an integral part of the Keynesian theory, and is as well not disputed by the monetarists.

Lipsey *et al* (1990), observed that the crowding effect is more likely when the economy is close to full employment level. He noted that if the economy were at less than full employment level, the rise in income following government expenditure multiplier effects, would lead to increased household saving. In this case, the new saving generated will help to finance the deficit so that less crowding – out of private sector borrowing occurs.

Methodolgy

Multiple regression analysis was used in investigating the relationship between government spending and private investment. Aschaver (1989a), noted, this relationship depends on the type of government expenditure being considered. Thus in the methodology we disaggregated government spending into its various component parts and examined their separate effects on private sector investment using regression analysis. Thus, the estimated coefficients serve to indicate the extent of crowding in and crowding out between government spending and private investment. Thus capital and recurrent expenditures were also decomposed into their sub sectoral components such as capital spending on Administration, Economic services, social and community services and Transfers. Their separate effects on private sector investment were therefore examined. The SPSS package

was used in the analysis were private investment were regress on different categories of government spending to identify the categories of government spending that crowd in private investment and those that had crowding out effect. Data will be generated in line with the period covered by the study which is 1975-2009. The study used time series data set. The sources of data for this study are mainly secondary in nature. These include CBN statistical bulletin published by the central bank of Nigeria, federal ministry of finance, and international finance corporation.

Model Specification

This study adopts the model used by Aschauer (1989a), and Serven (1998),. All the studies disaggregated government expenditure into its various components and examined their separate effects on private sector investment. Adopting this pattern therefore, the present study specifies the following models where the response of private investment to the sub sectoral components of federal government capital Spending is estimated in equation 1 as follows;

$$PI_t = \omega_0 + \omega_1 CADm_t + \omega_2 CECO_t + \omega_3 CSOC_t + \omega_4 CTRF_t + \omega_5 INF_t + \mu_t \dots\dots\dots (1)$$

Where: PI_t = Gross Domestic private investment. ω_0 = vector of the parameter. ω_1 = vector of the parameter Adm in equation 1 $CADm_t$ = Capital spending on Administration as percentage of total capital spending. ω_2 = vector of the parameters of CECO in equation 1 $CECO_t$ = Capital spending on Economic services as percentage of total capital spending. ω_3 = vector of the parameters of CSOC in equation 1 $CSOC_t$ = Capital spending on social and community services as percentage of total capital spending. ω_4 = vector of the parameters of CTRF in equation 1 $CTRF_t$ = Capital spending on transfer as percentage of total capital spending. ω_5 = vector of the parameters of INF in equation 1 INF_t = Inflation rate. μ_t = error term t = time subscript.

Similarly, the response of private investment to the components of recurrent expenditure was also examined. This relationship is specified in equation 2 below;

$$PI_t = \theta_0 + \theta_1 RADM + \theta_2 RECO + \theta_3 RSOC + \theta_4 RTRF + \theta_5 INF + \mu_t \dots\dots\dots (2).$$

Where; P_{it} = Gross domestic private investment. θ_0 = the intercept term θ_1 = the intercept term of the parameters of RADM in equation 2 $RAdm_t$ = Recurrent spending on Administration as percentage of total recurrent spending. θ_2 = the intercept term of the parameters of RECO in equation 2 $RECO_t$ = Recurrent spending on Economic services as percentage of total recurrent spending. θ_3 = the intercept term of the parameters of RSOC in equation 2 $RSOC_t$ = Recurrent spending on social and community services as percentage of total recurrent spending. θ_4 = the intercept term of the parameters of TRF in equation

2RTRF=Recurrent spending on transfer as percentage of total recurrent spending. θ_5 = the intercept term of the parameters of INF in equation 2
 INF = Inflation rate, μ_t = Error term, t = time series subscript.

Presentation And Analysis Of Result

The result of estimation of equation 1 is as follows–(data contained in Table 1, and 3).

Table 4.1: Regression result of the estimate of equation 1

<i>VARIABLE</i>	<i>COEFFICIENT</i>	<i>STD ERROR</i>	<i>SIGNIFICANT T</i>
CTRANS	3562.402542	7785.781642	.6508
INF	-10824.31383	7150.358505	.1413
CADM	62727.495571	13273.41181	.0001
CECO	2007.493115	9074.055590	.8265
CSOC	-27622.39473	18958.47487	.1562
CONSTANT	-333459.5602	903976.2928	.6988
R Squired	.59596		
Adjusted R Squired	.52380		
Durbin Watson Test	.25593		

The final result of the estimation of equation 2 were as follows – (data contained in Table 2 and 3)

Table 4.2: A regression result of the estimates of equation 2

<i>VARIABLE</i>	<i>COEFFICIENT</i>	<i>STD ERROR</i>	<i>SIGNIFICANT T</i>
INF	7093.021080	4316.756063	.1112
RADM	-26192.00600	62271.72833	.6771
RECO	-370149.5278	84327.50946	.0001
RSOC	56543.439501	65788.73750	.3971
RTRANS	-140015.1145	62660.79678	.0333
CONSTANT	12672306.512	6253891.286	.0520
R Squired	.85961		
Adjusted R Squired	.83541		
Durbin Watson Test	.38535		

Discussion Of Result

The impact of the components of capital expenditure on private investment was analyzed. In these connection capital expenditure in terms of its various components expenditure on transfer, administration, economic services and social and community services were analyzed. The empirical result of the estimate of equation 1 however reveals that government capital expenditure on administration crowd in or complemented private investment. The positive effect is also significant at 1% level. And the rest of the components of capital expenditure on transfer, inflation, economic services and social and community services crowd out or substituted for private investment with insignificant t values.

The estimate of equation 2 however indicates that both recurrent expenditure on economic services, social and community services and transfer crowded in or complement private investment with significant t values. And the remaining recurrent expenditure on

administration and the coefficient of inflation crowded out or substituted private investment with insignificant t values.

Moreover these findings confirmed with the previous studies conducted by Aschauer, (1989b), where he noted the precise effect of government expenditure on private investment depends on the type of government expenditure being considered. Similarly the study conducted by Ekpo, (1996) further confirmed these results, when he disaggregated capital expenditure into its various categories and examined the separate effects of each on private investment. He equally found that capital expenditure on transport and communication, agriculture, health and education crowded in private investment, while construction and manufacturing crowded out private investment. And finally the finding of this study goes in line with the existing literature reviewed as most of the relationship between government expenditure and private investment were mainly concerned with the crowding out effect or crowding in effect of public expenditure on private investment as outlined by both the Keynesian and neoclassical economist.

Response of Private Investment to the Subsectoral Component of Capital Spending of the Federal Government.

Equation 1 estimates the effect of the components of capital expenditure on private sector investment. The estimates of these effects on private investment can be seen from the estimated coefficients. The coefficient of capital expenditure on transfer is 3562.402542 indicating a positive relationship, but the relationship is not significant indicating that the coefficient of capital expenditure on transfer crowded out or substituted private investment. The insignificance of this relationship can again be deduced from the t-value .6508. The coefficient of inflation -10824.31383 shows a negative relationship with insignificant t value of .1413. The coefficient of capital expenditure on administration is 62727.495571 indicates a positive relationship that capital expenditure on administration crowds in or complement private investment. This positive relationship is significant even at 1% level as indicated by the t value .0001.

Furthermore, the coefficient of capital expenditure on economic services is 2007.493115 indicates a positive relationship, but the relationship is not significant. The insignificance of this relationship is indicated by the t-value .8265. Therefore capital expenditure on economic services crowd out or substituted private investment. The coefficient of capital expenditure on social and community services is -27622.39473. It shows that capital expenditure on social and community services crowd out or substituted for private sector investment. It also shows that a ₦1billion increase in government capital

expenditure on social and community services leads to a 27622.39473 billion reduction in private investment in that sector. The t value is .1562 which means that capital expenditure on social and community services did not significantly crowd out or substitute for private investment in that sector. And finally, the coefficient of constant -353459.5602 is negative and not significant as the t-value is .6988. This indicates that even all other variables are zero; an increase in capital expenditure on different sectors of the economy will reduce private investment by 353459.5602.

The goodness of fit of the regression model indicated by equation 2 is also given by the value of R^2 . The R^2 value is .59596. That is 59.5% of the variation in private investment is explained by the variation in the components of capital expenditure CTRANF, INF, CADM, CECO and CSOC. However, the adjusted R^2 value is .52380 correct for the defects of R^2 as measures of goodness of fit in our regression model. The adjusted R-square shows the R-Squared value even after taking care of other errors in the estimation not captured by the R^2 value. The F statistics test the significance of R^2 value. The F value is 8.25984 and significant at 1% level. These indicate that our model is adequate and significant. The Durbin-Watson statistics test is indicated as .25593. This shows an absence of autocorrelation, either positive or negative within the series variables.

Response of Private Investment to the Subsectoral Component of Recurrent Expenditure of the Federal Government.

The estimated equation 2 shows the effects of the components of total recurrent expenditure on private investment. The coefficient of inflation 7093.021080 indicates a positive relationship, but the relationship is not significant as indicated by the t value .1112. The coefficient of recurrent expenditure on administration -26192.00600 shows a negative relationship on private investment. As such recurrent expenditure on administration crowd out or substituted for private investment in that sector. It means that ₦1billion increase in expenditure on Administration lead to an ₦26,192.006.00 reduction in private investment. However, this relationship is not significant as can be inferred from the t value of .6771.

Furthermore, the coefficient of recurrent expenditure on economic services - 370149.5278 indicates a negative relationship but the relationship is significant even at 1% level as indicated by the t value .0001. This shows that recurrent expenditure on economic services crowd in or complement private investment in that sector. The coefficient of recurrent expenditure on social and community services 56543.439501 indicates a positive relationship. But the relationship is not significant as indicated by the t value .3971. The insignificance of the t value indicates that the coefficient of recurrent expenditure on social

and community services crowded out private investment in that sector. A ₦1b increase in recurrent expenditure on social and community services will reduce private investment by ₦56, 543.439501 in that sector. The coefficient of recurrent expenditure on transfer is estimated at -140015.1145. the negative sign of the coefficient indicates a negative relationship, but the relationship is significant at 5% level, this shows that recurrent expenditure on transfer crowd in or complement private investment in that sector. Thus ₦1b increase in recurrent expenditure on transfer leads to ₦140015.1145 increase in private investment in that sector. Finally, the coefficient of constant is 12672306.512, positive and significant at 5% level. This indicates that even if all other variables are zero, an increase in government expenditure on other components of recurrent expenditure, will increase private investment by ₦12672306.512.

The R^2 value estimated for equation 3 is .85961. This R^2 value indicates that 85.9% of the variation in private investment is explained by the variation in the components of recurrent expenditure. However, R^2 value is a measure of goodness of fit of the regression model. Also, adjusted R^2 value is .83541 corrects for the defects of R^2 as measure of goodness of fit in our regression model. The adjusted R squared shows the R square value even after taking care of other errors in the estimation not captured by the R^2 value. The F statistics is used in the multiple regressions to verify the adequacy of the model. The F value is 35.51471 and significant at even 1% level which shows our model is adequate and significant. The durbin watson test value is .38535 which shows absence of auto correlation in the residuals.

Summary, Conclusion And Recommendations

The study empirically investigated the impact of federal government spending on gross domestic private investment using a time series data set for Nigeria for the period of 34 years using a multiple regression analysis to examine the extent of crowding in and crowding out of different categories of government spending on gross domestic private investment in Nigeria. The result indicates that certain categories of government spending crowded in private investment, while others crowded out private investment. The study concluded that the result of the analysis confirmed the basic findings of some earlier studies that the actual impact of government spending on private sector investment varies depending on the type of government spending under consideration.

Given the outcome of the research therefore, the following policy recommendations are proposed:

- i. Government should give more priorities to spending that crowd in private investment, rather than spending on expenditures that crowd out private investment.
- ii. Government spending cannot be separated from its macroeconomic effects. Therefore effective macroeconomic management must also be ensured in order to cushion the adverse effect of rising inflation on private investment.

Appendix; Table 1,2, and 3.

Table 1. Disaggregated capital expenditure of the federal government

Year	CADMIN	CECO	CSOC	CTRAF
1975	23.30	41	28.9	6.8
1976	19.70	55.2	22.3	2.8
1977	20.20	62.4	16.5	0.8
1978	21.40	58	16.7	3.9
1979	18.20	66.6	14.5	0.6
1980	14.80	58.8	24.2	2.2
1981	11.00	55.3	19.8	14
1982	6	39.6	15.1	39.3
1983	22.50	46.9	21	9.6
1984	6.40	16	5.8	71.8
1985	8.40	16.3	21.1	54.1
1986	3.10	12.9	7.7	76.3
1987	28.50	33.9	9.7	27.9
1988	22..8	25.5	20.7	31
1989	17.40	26.1	12.3	44.2
1990	12.10	14.5	8.7	64.6
1991	11.80	11.1	5.3	71.8
1992	12.90	5.9	5.4	75.9
1993	14.80	33.7	6.6	45
1994	12.40	38.2	7	42.4
1995	11.00	35.6	7.6	45.8
1996	7.00	55.3	4.1	33.6
1997	18.40	62.9	2.6	16.2
1998	11.40	65	7.6	16
1999	8.60	65	3.5	23
2000	22.30	46.6	11.7	19.5
2001	11.20	59.2	12.2	17.4
2002	22.90	67	10.1	0
2003	36.40	40	23.1	0
2004	39.20	47.7	8.6	4.5
2005	33.00	51	13.7	2.2
2006	33.50	47.5	14.2	4.8
2007	29.10	48.5	17.3	5.2
2008	29.90	52.5	15.8	1.8
2009	27.10	44.2	10.4	18.4

Source: CBN statistical bulletin, 2009

Table 2. Disaggregated recurrent expenditure of the federal government

Year	RADMIN	RSOC	RECO	RTRAF
1975	22.31	6.08	2.79	68.82
1976	16.76	10.52	2.35	70.36
1977	19.06	6.75	3.51	70.68
1978	20.04	8.02	3.12	68.82
1979	14.20	6.73	1.49	77.59
1980	12.39	5.63	2.26	79.73
1981	18.88	6.08	3.62	-17.42
1982	18.88	6.08	3.62	71.42
1983	18.87	6.08	3.62	71.42
1984	18.88	6.08	3.62	71.42
1985	18.88	6.08	3.62	71.42
1986	18.87	6.08	3.62	71.42
1987	24.56	1.9	4.44	69.09
1988	29.77	10.89	6.29	53.05
1989	24.12	16.27	5.46	54.15
1990	18.05	9.38	4.46	68.11
1991	18.18	6.99	3.41	71.41
1992	16.38	2.52	5.81	75.29
1993	22.36	10.72	5.67	61.25
1994	22.82	11.21	4.35	61.62
1995	22.53	10.83	4.64	62
1996	37.45	12.86	3.82	46.02
1997	35.43	13.91	3.91	46.74
1998	28.45	12.04	6.49	53
1999	40.84	15.87	19.36	23.92
2000	31.31	18.37	6.19	44.13
2001	31.21	13.75	9.15	45.89
2002	38.25	21.84	7.59	32.31
2003	31.29	10.42	9.76	48.53
2004	29.71	13.07	5.69	51.58
2005	35.52	12.39	5.26	46.83
2006	35.52	12.39	5.26	46.83
2007	35.52	12.39	5.26	46.83
2008	34.52	15.72	14.82	34.93
2009	38.63	16.23	15.96	29.18

Source: CBN statistical bulletin, 2009

Table 3. Trends in gross domestic private investment

Year	GDI	Inflation
1975	0	33.90
1976	1.43	21.10
1977	39.44	21.50
1978	9.09	13.30
1979	25.93	11.60
1980	13.75	10.00
1981	69.7	21.40
1982	5.9	7.20
1983	22.23	23.20

1984	31.39	40.70
1985	3.83	4.70
1986	29.01	5.40
1987	34.16	10.20
1988	15.33	56.00
1989	52.75	50.50
1990	49.57	7.50
1991	12.64	12.70
1992	56.7	44.80
1993	36.87	57.20
1994	8.94	57.00
1995	34.43	72.80
1996	43.78	29.30
1997	19.04	10.70
1998	0.27	7.90
1999	4.38	6.60
2000	42.91	6.90
2001	12.41	18.90
2002	34.28	12.90
2003	73.29	14.00
2004	0.33	15.00
2005	6.8	17.80
2006	92.26	8.20
2007	23.85	5.40
2008	6.02	11.60
2009	20.3	12.40

Source: CBN statistical bulletin, 2009

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