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Government and Economic Growth in a Developing Nation: The Case of Ghana*

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This paper examines the role of government in economic growth of a developing nation. Using time-series data for Ghana, from 1963 to 1984, it is shown that the impact of government on economic growth was unambiguously negative. The provision of public goods by the government was so inefficient that the positive externality effects of public goods were overwhelmed. Furthermore, there were the usual negative effects associated with revenue-raising and spending mechanisms of government.

Ⅰ. Introduction

The role of the state in economic development has captured the attention of development economists for a long time. Although the literature on the role of government in economic growth and develoepement is enormous, and the theoretical views are diametrically opposed, there are few empirical investigations. Ironically, studies using data for developing countries are quite few, despite the fact that almost all governments in those nations, whether they are succesful or not, are interventionists. The purpose of this paper is to examine the role of government in economic growth in a developing nations, using time-series data and a simultaneous equation approach.

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There are basically two different views on the effects of government on economic growth. One view, based on the neoclassical political economy literature, is that government has negative effects on economic growth. Various reasons are given for this hypothesis. First, the operations of government are often conducted less efficiently than the private sector because the activities typically lack a profit motive, face no competition, and involve centralized decision-making. Second, the regulatory process involves an enormous waste of resources in rent-seeking activities. And, finally, most of the macroeconomic policies of government tend to distort economic incentives and therefore lower the productivity of the economy.

On the other hand, there are arguments that government, compared to the private sector, can promote economic growth if there are market failures. The market equilibrium is not Pareto efficient if there are market failures; therefore, the efficiency of the private sector is not absolute. In this regard, it is usually asserted that government has a comparative advantage in providing public goods. Public goods, which have the characteristics that they have many consumers (nonrivalrous in consumption) and are nonexcludable, include such activities as maintenance of law and order (including enforcement of contract), the provision of information to facilitate learning, and acquisition of technological capability, and the provision of basic infrastructure (such as roads, schools, communications). Also, if market failures result from "structural rigidities" (that is, the lack of responsiveness to price signals), then economic growth will be hindered unless government intervenes to remove the impediments. This is the core of the "structuralists" argument for the interventionist role of government in the development process.

Theoretically, the net effect of a government's provision for public goods on total output is ambiguous (Ram, 1986). It depends on two factors: the factor productivity differential between the public sector and the private sector, and the externality effect of government on the private sector. The former effect is ambiguous while the latter is positive.

Empirical studies of the impact of government on economic growth suggest that, generally, there are no significant differences in the results between developed and developing nations. Ram (1986) investigated the relationship between government size (measured by the growth of real share of government to real GDP) and economic growth (measured by the growth rate of real GDP) using cross section and time-series data. The results indicated that in developing

countries, as well as in developed countries, the effect of government on economic growth was generally positive, in the 1960s and 1970s. Earlier, Rubinson (1977), using cross-country data also concluded that a larger government size (measured by the share of government revenue in GNP) has a positive impact on economic growth, especially in the poorer, less developed countries.

On the other hand, Laudau (1983), using cross-country data, showed that a larger government size (measure by the share of government consumption in GDP) adversely affects the growth of per capita income in both developing and developed countries. Also, Grossman (1990), using cross-country data, concluded that government does have positive effects on economic growth, but there are also significant negative effects. The net effect of government, however, appears to be marginally negative. The results did not differ between the developed and developing countries.

Diamond (1989) examined the contribution of government to the growth performance of developing countries. His cross-country analysis indicated that aggregate level of government spending does not appear to influence real economic growth. But, the different functional components of aggregate capital spending and of a aggregate current spending have different impacts on economic growth. Thus the use of aggregate government expenditures may confound the relationship between government and economic growth. Using limited time-series data for the countries in his sample, he obtained that the effects of aggregate government expenditures on economic growth were generally mixed in the developing countries, but consistently negative in the developed countries. Grossman (1988a, 1988b,) examined the effects of government on economic growth using time series data for the U.S. and Australia, respectively. The results showed that, in developed countries, the effect of government on economic growth is virtually zero.

The implication of the results from previous studies is that the effects of government on economic growth are generally similar in both developed and developing nations. While some studies indicate that government have positive effects on economic growth in both developed. and developing nations (for example, Rubinson, 1977; Ram, 1986), other studies show that the effects are negative (for example, Landau, 1983; Grossman, 1990). These results are surprising for the following reasons. First, the size of government (measured as the percentage of real GDP devoted to government) is generally lower in developed nations compared to developing nations. See Summers and Heston (1984). Given that there is a socially optimum level of government size, it is expected that the

impact of government will differ between developed and developing nations.

Second, in developed nations the operations of government involve primarily the provision of public goods, but, in developing nations governments' operations include, in addition to the provision of public goods, exceptionally high-cost public sector enterprises which are traditionally operated by the private sector. These operations include state marketing boards, state ownership of retail shops for the distribution of food and other "essential" items, and government's activities in the directly productive sectors (for example, mining, manufacturing). See Krueger (1990). Since it can be argued that government's operations in public enterprises are often conducted less efficiently than by the private sector, the impact of government will differ between developed and developing nations.

Third, the cost of government activities is higher in a developing nation because of limited administrative and organizational resources. It is therfore risky to draw conclusions for developing nations from results for developed countries. This is a major theme of this paper.

The specifications of the models used by Landau (1983), Ram (1986), and Rubinson (1977) captured the aggregate positive or negative effect of government on economic growth. But Grossman (1988a, 1988b, 1990) used models which distinguished between the positive effects and the negative effects of government on economic growth. The results indicate that such a specifications is a promising way to investigate the relationship between government and economic output.

The model used in this paper distinguishes between the potential positive effects, and the negative effects of government on economic growth, as in Grossmam (1988a). It is however different from Grossman's because the focus is on a developing country. This paper which is based on time-series data also differs from the previous studies on developing countries which used cross-country data. Although a cross-country analysis could have broad implication, it imposes strong parametric restrictions across countries which differ a lot in terms of their economic structures and stages of develpment.

The rest of the paper is as follwes. This paper is based on Ghana, a Sub-Saharan Afican country. In the next section, I discuss Ghana's fiscal performance from the 1960s to the early 1980s. The model used for the estimation is outlined in Section Ⅲ. Section Ⅳ presents the data and the regression estimates of the effects of governmment on economic growth, using data on Ghana from 1963 to 1984. Sections Ⅴ comprises concluding remarks.

Ⅱ. Ghana's Fiscal Performance : 1960s to Early 1980s

In April 1983, Ghana adopted an economic recovery program in conjunction with the IMF and the World Bank. Before 1983, inappropriate domestic policies and adverse external shock (including droughts in 1975-77 and 1981-83, oil price shocks in the 1970s, and a sharp decline in the terms of trade) resulted in a protracted economic decline. Fiscal policy is one of the major policies that influenced economic proformance from the 1960s to the early 1980s.[1] The government used money creation to finance large fiscal deficits resulting in high rates of inflation and increasingly overvalues exchange rates. From 1963 to 1984, the government consistently run budget deficits which were as high as 11 percent of the Gross Domestic Product (GDP) in 1980.[2] There was massive expansion of the role of the public sector through the establishment of a large number of state enterprises. It is estimated that by the early 1980s, Ghana had more than 300 public enterprises (one of the largest in Africa), and the government accounted for most of the formal sector wage employment. Wages and salaries accounted for 26 percent of total government expenditure.[3] Apart from the large size of the government, there was heavy government intervention in the economy through controls over producer prices of agricultural exports, restictions of private sector competition in key areas, and fairly extensive price controls in many sectors. These developements induced black market activities including unrecorded cross-border trade (smuggling), thereby causing a collapse of the taxable capacity of the economy. Tax revenue as a percentage of GDP was less than 10 percent with most of the revenue from taxes on international trade and transactions.

From 1963 to 1984, the average annual growth rate of GDP was 0.9 percent while the average annual growth rate of the government's share of the GDP was 3 percent.[4] It is estimated that Ghana's per capita real income fell at an average annual rate of 1.3 percent between 1960 and 1982, which is at least a 25 percent decrease in real living standards before the impact of the recessions of the 1980s. See Krueger (1990).

[1] Other major policies that influenced economic performance include monetary, and trade and exchange rate policies.

[2] See Kapur et al. (1990, table 10, p.33), and International Financial Statistics, IFS, selected issues.

[3] The share of defense in total government expenditure was 6 percent.

[4] See Table A.1 (b).

Ⅲ. The Estimating Model

In this section, a model which helps to capture the relationship between government growth and total output growth is outlined, based on Grossman (1988a). It is assumed that the relationship between government growth and total output growth can be approximated by the following equations.[5]

$$Y_t = a_0 + a_1K_t + a_2L_t + a_3G_t + a_4R_t + a_5Zl_t \quad (1)$$

Y_t is growth in total output, in period t; K is growth in capital stock; L is growth in labor supply; G is growth in government sector component of total output; R is growth in the relative size of government (which is the ratio of total government expenditures to total output); and Z1 will capture other exogenous factors. The a_is are coefficients.

In Equation (1), government can affect total output both directly and indirectly. The most obvious contribution of government to total output is the direct impact of government output of final consumption goods. This effect will be positive if government output does not substitute for private sector output. The coefficients a_1 and a_2, which are weighted sums of the factor productivities in the private and public sectors, will reflect the direct impact of government on total output. Thus the coefficients a_1 and a_2 are expected to be positive.

The government can also influence total output indirectly through its interaction with the private sector. The government's provision of public goods enhances the productivity of the private sector, thereby increasing total output. This is th positive externality effect of government. But, the public goods may be provided inefficiently resulting in a decrease in total output. This will be the case if the productivity of the public sector is lower than the private sector. These two effects are expected to increase with the absolute size of government. G is used to measure the absolute size of government. (See Grossman, 1988s, 1990). The effect of G is therefore ambiguous since it captures two potentially opposing forces. The government also influences total output indirectly through its revenue-raising and spending mechanisms. The activities

[5] Diamond (1989) used the growth accounting model of Denison (1974) to indicate the possible channels through which government expenditure can influence economic growth. They are: growth in physical capital, growth in human capital, technical change, and change in the efficiency of the use of resources.

of the government may also promote 'unproductive' rent-seeking behavior. The likelihood of these effects is likely to increase with the relative size of the government. (See Grossman, 1988a, 1990). R is used to capture these effects which are expected to be negative. Finally, Z1 represents other exogenous variables which may affect total output. These factors will possibly include factors such as the degree of openness of the economy, and the cost of external borrowing. (See, for example, Diamond 1989).

As in Grossman (1988a), since both G and R are likely to be functioins of Y, R is also likely to be a function of G, equations are specified for G and R to avoid a potential simultaneous bias problem. G is assumed to be a funtion of the growth in the labor employed in the public sector L^G, growth in total output Y, growth in total output, lagged one-period Y_{t-1}, growth in population P, and other exogenous variables represented by Z2. Thus, it is assumed that:

$$G_t = b_0 + b_1 L^G_t + b_2 Y_t + b_3 Y_{t-1} + b_4 P_t + b_5 Z2_t. \quad (2)$$

The demand of civil servants and politicians for greater government output is captured by L^G. These actors are usually concened with their self-interest just as individuals in the private sector. Their self -interest may be motivated by the need for survival, re-election, promotion, or other rewards. Y is proxy for Wagner's hypothesis that total output may affect government output. Y_{t-1} captures the assumption that government output may not respond instantaneously to changes grows. Z2 represents other exogenous factors which may affect government output, such as the type of regime (authoritarianism or democracy), and specific government policies which have significant spending implications. The effects of the explanatory variables in Equation (2) are experted to be positive, except Z2.

Finally, the growth in the relative size of the government R is assumed to be represented by the following equation:

$$R_t = c_0 + c_1 G_t + c_2 Y_t + c_3 Y_{t-1} + c_4 Z3_t \quad (3)$$

G and Y are included in Equation (3) because they enter the numerator and denominator of the dependent variable, respectively. Also Y and Y_{t-1} are included for the same reasons as in Equation (2). Z3 represents similar influences as Z2 in Equation (2). The effects of the explanatory variables in Equation (3) are expected to be positive, except Z3.

Ⅳ. Data and Regression Results

The model outlined in the previous section is estimated using time-series data for Ghana, a developing country, from 1963 to 1984. The sample starts from 1963 because of data limitations. And the data do not go beyond 1984 because in 1983/84 Ghana pursued a comprehensive program of financial and structural reforms. The reforms included significant fiscal adjustments which has resulted in a major reduction in fiscal activities and in an expansion of capital expenditure for the rehabilitation of economic infrastructure. All the value variables used are real, 1975 constant-price, annual growth rates. Y is GDP. K is gross fixed capital formation. G is the government sector component of GDP. R is measured by the ratio of total government expenditures to GDP.[6] P is the population. Z1 is represented by E, the ratio of exports plus imports to GDP. It measures the degree of openness of the economy. Both Z2 and Z3 are represented by REG, a dummy variable for the type of government (civilian=1, military=0), and, DP, a dummy variable for Development Plans (1, if a Development Plan was implemented, 0 otherwise). All the data, except R, are from Huq (1989), Tables A.3 and A.4.[7] The data for the labor force employed (L) and the labor employed in government (L^G) were not available.

In order to estimate the impact of government on total output, disturbance terms are added to Equations (1)-(3).[8] Regresssion results of the total output Y, Equation (1), using a Two-Stage Least Squares (2SLS) method are presented in Table 1.[9] In Table 1, all the variables are highly significant, mostly at the 5 percent level or better. As

[6] Total government expenditures were converted into real terms using the consumer price index(CPI). Source: International Financial Statistics (IFS), IMF, selected issues.

[7] Data for REG and DP are based on Huq (1989, pp. xxvii-xxviii, and pp. 6-12), respectively. Where available, the current-price values of the variables from Huq match the values reported in IFS. Correlation matrix and simple statistics of the variables are given in Table A.1

[8] The disturbance terms are assumed to be identically and independently normally distributed with mean vector zero and non-singular variance-covariance matrix. Each of the equations in the system is (over) identifiable in terms of the rank and order conditions.

[9] All the equations were estimated on the premise of autoregressive error terms using SAS AUTOREG procedure. The full set of instruments used to obtain the 2SLS estimates in Table 1 are K, P, Y_{t-1}, E, REG, and DP. The fitted value for G was obtained using a second-order autoregressive model AR(2), with the first-order term constrained to zero; and the fitted value for R was obtained using an AR(3) model with the first-order and second-order terms constrained to zero.

expected the effect of R is negative and highly significant.[10] This implies that the larger role of government has had negative effects on total output. In Ghana, the governemnts' activities had promoted illegal activities (such as bribery and corruption) referred to as "kalabule." The large-scale and visible corruption often emerged as by-products of government failures. A typical policy of the different governements which created a lot of distortions, and promoted rent-seeking activities was the Prices and Incomes Board (PIB) which was established in 1972. The PIB's controlled prices failed to take into account the scarcity value of the items as reflected in the paralell (black) market.

More importantly, the effect of G on total output is negative and very highly significant in Table 1. The coefficients suggest that a 10 percent increase in G will reduce economic growth by about 2 percent. This is supported by Easterly's (1992) finding that a 10 percent increase in G will typically reduce GDP per capita growth by 1.2 percent in Africa. The results imply that, in Ghana, the provision of public goods was so inefficient and wasteful that it overwhelmed the positive externality effects. The government did a poor job in providing essential public goods such as roads and primary schools. There was a virtural collapse of most public services, and a decay of social overhead capital. Ghana's infrastructure of public sevices were built up largely prior to 1960, and they have run down very rapidly during the following two decades due to lack of maintenance and investments in new projects.

The inefficient operations of government included high-cost public sector enterprises engaged in a variety of economic activities which are traditionally outside the domain of the public sector. In most of the numerous Development Plans which were launched in Ghana, the government was given a greater participation in direct production. The public enterprises were grossly over-manned and were nearly all unprofitable. In four selected years from 1965 to 1980, only about half of the 12 largest state enterprises were profitable, and in three of those four years all the enterprises combined experienced a net loss.[11]

In column (ii) of Table 1, G captures the overall effect of the government on total output since R is excluded. But, in column(i), G captures the partial impact of government on total output. As expected, the (absolute) value of the coefficient of G in column (ii) is, at least, equal to that in column (i). Comparing the results in columns (i) and

[10] A similar result was obtained by Diamond (1989) who estimated a simple regression model for Ghana, from 1960 to 1980.

[11] See Huq (1989, Table 13.6, p. 243). The state corporations included State Farms, State Fishing, Ghana Airways, and State Transport.

(ii), the former results are preferred since the R^2 is improved significantly. This implies that controlling for the relative size of the government is important, as suggested in Grossman (1988a, 1988b, 1990). The negative impact of G in developing nation differs from the ambiguous effect found in developed nations (a la Grossman, 1988a, 1988b).

It has been suggested that external economic factors might help to explain economic growth in developing countries. Different trade-related variables were tried, but only the variable for the degree of openness of the economy, E, was significant: see column (iii) of Table 1.[12] The positive effect suggests that an open economy is favorable to economic growth. The possibility that an increase in imports could promote economic growth, since E is significantly positive, may be rationalized by the fact that almost all governments in Ghana had explicitly (or implicitly) pursued import-substitution policies prior to 1983, whereby priority was given to the imports of capital goods.[13] This policy was couched in the familiar slogan of "self-reliance." When export variables were tried they were not significant because Ghana has not had policies which promoted exports during the period under study.

In previous cross-country analysis (e.g., Grossman 1990, Ram 1986), data on population has been used as a proxy for the labor force. In column (iv) of Table 1, the effect of P is negative, and very significant. This implies that data on population does not appear to be a good proxy for labor force. particularly for time-series data.

Ⅴ. Concluding Remarks

This paper has examined the role of government in economic growth in a developing country. The analysis is based on data for Ghana, from 1963 to 1984. Given the limited data used for the analysis, considerable caution is needed in interpreting the results. At any rate, some tentative conclusions can be made. First, the government's revenue-raising and spending mechanisms had adversely affected economic growth because the government played too much role in the economy by running exceptionally high-cost public sector enterprises and using fairly extensive price controls. Second, and, more importantly, the provision of public goods by the government had been inefficient and wasteful due to the deterioration of economic

[12] Other variables tried were the share of exports, and of imports in total output, and the growth of imports and exports.

[13] The variables K and E are positively correlated; see Table A.1(a)

infrastructure which raised costs for many private (and public) sector activities. These inefficientcies had overwhelmend the positive externality effects of public goods. Essentially, the overall impact of government on economic growth had been negative because the government not only overextended itself by replacing the private sector in many areas, but it performed poorly in providing public goods.

The results indicate that in Ghana, like in most developing countries, the task of reorganizing the economic structure in an attempt to promote growth involved government operations that were too extensive and inefficient. Policy implications from the study include that the provision of public goods should be made more efficient, and there should be a reduction and/or reorientation of the government's intervention in the economy, especially in economic activities not traditionally associated with the public sector.

Finally, it should be remarked that empirical findings from an econometric analysis of possible economic relationships between economic and government may exhibit spurious association due to omitted variables. Also, as data become available it would be interesting to consider the effects of the components of government expenditure on economic growth (a la Diamond 1990), since using aggregate public expenditures may confound the results.

Table 1

2SLS Regression Results : Total Output (Y) Equation

Variable	(i)	(ii)	(iii)	(iv)
G	-0.286[0.016]	-0.296[0.019]	-0.168[0.049]	-0.216[0.026]
R	-0.123[0.084]	-	-0.159[0.031]	-0.180[0.020]
K	0.669[0.031]	0.687[0.039]	-	-
E	-	-	0.179[0.028]	-
P	-	-	-	-21.69[0.031]
Constant	-0.069[0.047]	-0.064[0.085]	-0.067[0.044]	0.550[0.030]
AR (2)	-0.453(0.026)	-0.405(0.038)	-0.475(0.020)	-0.459(0.024)
R^2	0.46	0.35	0.47	0.46
F	3.62(0.026)	3.23(0.047)	3.77(0.023)	3.62(0.026)

Two-Tailed prob-values are in brackets.
One-tailed prob-values are in parentheses.

Table A.1 (a)

Correlation Matrix

	Y	Y_{t-1}	K	G	R	E	P	REG
Y_{t-1}	−0.06							
K	0.07	0.12						
G	−0.45	−0.01	0.43*					
R	−0.26	0.55*	0.01	−0.14				
E	0.16	0.13	0.82*	0.13	0.07			
P	−0.05	−0.11	−0.56*	−0.28	−0.18	−0.55*		
REG	0.13	0.16	0.55*	0.26	−0.27	0.27	−0.31	
DP	0.26	−0.19	0.40	0.09	−0.20	0.23	−0.18	0.30

* Significant at the 5 percents level or better (two tailed).

Table A.1 (b)

Simple Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
Y	0.009	0.058	−0.124	0.085
G	0.031	0.172	−0.183	0.535
R	−0.056	0.196	−0.355	0.269
K	0.119	0.042	0.069	0.222
E	0.396	0.112	0.185	0.593
P	0.025	0.001	0.023	0.027

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