

WP/97/33

INTERNATIONAL MONETARY FUND

African Department

**The Effect of Increasing Government Employment on Growth:  
Some Evidence from Africa**

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March 1997

**Abstract**

In contrast to the experience in industrial countries, government sectors in a number of African countries grew rapidly in relative size through the 1980s and early 1990s, implying a differential between measured GDP growth and growth of private sector activity. In these countries, the government sector was also an important source of employment growth. Leaving aside issues of crowding out, boosting growth in this way raises questions of fiscal sustainability. It also urges caution in interpreting growth performance.

**JEL Classification Numbers:** H5, O1, O4

**Keywords:** growth, government employment, Africa, Wagner's Law

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<sup>1</sup>The author is now in the Asian and Pacific Department. He would like to thank numerous colleagues who provided comments, including Charles Adams, Vivek Arora, Ben Bingham, Pierre Dhonte, Peter Doyle, Abdikarim Farah, G.G. Johnson, Diep Nuven, David Orsmond, Mark Plant, Mahmood Pradhan, and Franek Rozwadowski. Helpful comments were also received from the Statistics Department. The author is responsible for remaining errors.

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## Summary

This paper shows that expanding the government sector has tended to increase GDP and employment growth in certain parts of Africa for extended periods of time and sometimes by significant amounts. But, on the assumption that crowding out dominates, these effects on growth should be viewed as upper limits of the true effects.

A simple model is analyzed that suggests that one should keep an eye on the ratio of government debt to GDP when attempting to link current growth performance to what is sustainable; growth that is inflated by expanding the government payroll is unlikely to be permanent. Nonetheless, growth in certain African countries does appear to have been boosted in this way. This phenomenon seems to have been less prevalent in other parts of the world, such as Asia.

The existence of a growth differential between the government and nongovernment sectors has implications for assessing GDP growth performance in general and the impact of structural adjustment on GDP growth in particular. Restoring fiscal sustainability by cutting government employment will initially depress overall growth of output, particularly in relation to a period when the government sector grew unsustainably. In such cases, a more meaningful assessment of growth performance would focus on the growth of nongovernment GDP.

This paper also shows that in the African countries studied, the government's contribution to employment growth tends to considerably exceed its weight in output; the short-run employment costs of structural adjustment may therefore be large. Indeed, with the labor force growing at up to 3 percent a year in these countries, and the existence of already substantial unemployment, it is unsurprising that cutting the government payroll is meeting resistance.

## I. INTRODUCTION

There is evidence to suggest that the tendency for the size of government to grow over time, often referred to as Wagner's Law, has persisted for longer in Africa than elsewhere in the world. For example, whereas Saunders (1993) finds that the growth of government expenditures in OECD countries had been halted by the mid-1980s, Lim's (1993) evidence shows that the ratio of government consumption to GDP in Sub-Saharan Africa continued to increase through the 1980s.<sup>2</sup> One implication of the government expanding in relative size is that it will boost measured growth performance above the rate of growth of the private sector,<sup>3</sup> and this effect is clearly visible in the sample of African countries shown in Table 1. However, on a priori grounds, the boost to growth which can be obtained by expanding the number of government employees would be expected to be neither large nor long-lasting. Nevertheless, Table 1 shows the growth of the government sector in these African countries to have exceeded the growth of the rest of the economy for long periods of time and sometimes by significant amounts.

Many studies have examined the effect of government consumption and investment expenditures on GDP growth (see, for example, Barro and Sala-i-Martin, 1995). The focus in this note, by contrast, is on the government's contribution to growth measured from the output side (by sector or kind of economic activity) rather than from the demand side (by expenditure components).<sup>4</sup> Section II below examines some African evidence for the existence of a differential between the growth of government and nongovernment activity. Section III develops a simple model to show the implications of such a differential for fiscal sustainability; it considers both an illustrative case where there is no crowding out and the more realistic case where government activity crowds out private activity. Section IV examines the extent to which there is also a government-nongovernment employment growth differential. Finally, Section V draws some conclusions.

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<sup>2</sup> For a skeptical view of the existence of Wagners' Law in industrial countries even before the 1980s, see Hondroyiannis and Papapetrou (1995).

<sup>3</sup> Since government value-added is primarily civil service wages, this growth differential arises from rapid expansion of the numbers on the government payroll. Real wage increases for civil servants, by contrast, should only serve to increase the government value-added deflator rather than real government activity.

<sup>4</sup> The distinction between growth of government value added and growth of value added outside government does not appear to be commonly made in the growth accounting literature. For example, studies ranging from Denison (1967) to Young (1995) focus on growth of aggregate GDP. If anything is excluded from GDP, it tends to be value added in the agricultural sector.

Table 1: Average Growth Rates of Output in a Sample  
of African Countries

(In percent)

	Share of government sector in GDP 1/	Average Annual Growth Rates		
		Government Value-added	Nongovernment Value-added	GDP at factor cost
<b><u>Botswana</u></b>				
1975/76-1994/95	21.6	11.4	8.8	9.3 2/
1975/76-1984/85	13.4	10.6	11.6	11.5 2/
1985/86-1994/95	21.6	12.3	6.0	7.1 2/
<b><u>Kenya</u></b>				
1973-92	13.4	5.2	3.7	4.0
1973-82	12.6	6.0	4.1	4.3
1983-92	13.4	4.5	3.4	3.6
<b><u>Namibia</u></b>				
1990-95	26.2	6.0	3.4	4.0
<b><u>South Africa</u></b>				
1961-95	14.1	3.5	3.1	3.2
1961-70	11.4	4.6	6.0	5.8
1971-80	11.8	3.9	3.5	3.5
1981-95	14.1	2.5	1.0	1.2
<b><u>Zimbabwe 3/</u></b>				
1980-93	18.5	4.7	2.6	3.0

Source: Data provided by national authorities.

1/ End of period.

2/ At market prices.

3/ Government sector includes public administration and defense, education and health.

## II. THE EVIDENCE

In the five countries shown in Table 1, the average growth rate of GDP at factor cost has consistently exceeded the average growth rate of nongovernment value-added.<sup>5</sup> A striking example is Namibia, where in the six years after independence, average annual real growth in GDP at factor cost is estimated to be 0.6 percentage points higher than the average growth rate of nongovernment activity. But in Botswana, Kenya and Zimbabwe, average GDP growth over the whole sample period exceeds average growth of nongovernment activity by 0.3-0.5 percentage points.<sup>6</sup>

In the case of South Africa, where a long time-series is available, the average rate of real growth in GDP at factor cost over a thirty-five year period is only slightly above the average rate of real growth of nongovernment activity. Moreover, Table 2 shows that the boost that government growth has made to average GDP growth in Namibia has decreased in every year since independence. These observations are suggestive that while high government growth may be able to boost overall growth in the short to medium term, the best predictor of the long-run growth rate of the economy is likely to be the long-run growth rate of nongovernment activity.<sup>7</sup>

Table 1 also reports growth rates in various subperiods. For both Botswana and South Africa the sample period is divided up to show an initial subperiod when government value-added grew more slowly than the rest of the economy and a more recent period during which the opposite relationship was observed. The experience of Kenya and South Africa was that when growth in the rest of the economy fell, the growth rate of government activity fell less rapidly, thus serving to cushion the effect on overall growth.

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<sup>5</sup> The sample of countries is not random; its composition was dictated partly by data availability, but also so as to include a number of countries where governments had been under pressure to increase employment. Time periods considered were the longest for which data were available.

<sup>6</sup> Isolating the government growth differential in this way is inaccurate if budgetary funds are being used to support loss-making public enterprises. Were it possible to calculate the true rate of growth of private activity, i.e., completely outside the public sector, the government growth differential might be even more pronounced. This caveat applies particularly to Zimbabwe and Kenya, where public enterprises are ubiquitous.

<sup>7</sup> In Zimbabwe, there is also a puzzling tendency for GDP at market prices to grow faster than GDP at factor cost; of Zimbabwe's average real growth of GDP at market prices of 4.5 percent over the period 1980-90, over half a percentage point is attributable to the adjustment to factor cost. One possible explanation for this phenomenon is a trend over time towards increased purchases of highly taxed commodities (which have a larger weight in GDP at market prices than they do in GDP at factor cost). See Allen (1980). Alternatively, there may be a statistical bias in the process of deflating nominal GDP, whereby changes in net indirect taxes and subsidies are not fully captured by the deflator.

Table 2: Namibia--Growth Performance since Independence

	1990	1991	1992	1993	1994	1995 est.
	(In percent)					
<b>Growth in:</b>						
Government value-added	7.7	14.8	8.6	3.6	1.1	1.0
Nongovernment value-added	-2.1	6.0	8.2	-4.4	8.9	4.4
GDP	0.2	8.2	8.3	-2.2	6.7	3.5
<b>Average growth since 1989 in:</b>						
Government value-added	7.7	11.2	10.3	8.6	7.1	6.0
Nongovernment value-added (A)	-2.1	1.9	3.9	1.8	3.2	3.4
GDP (B)	0.2	4.1	5.5	3.5	4.1	4.0
Government growth boost (B - A)	2.3	2.3	1.6	1.7	1.0	0.6
	(In percent of GDP)					
<b>Memorandum items:</b>						
Government balance 1/	-2.8	-3.7	-6.4	-4.4	-2.2	-4.3
Government debt 2/	12.7	14.0	13.4	16.5	21.1	19.8

Source: Bank of Namibia, Quarterly Bulletin; and staff estimates.

1/ Fiscal year beginning April 1; excluding grants.

2/ At end of fiscal year (March 31).

Nevertheless, a number of caveats are necessary in interpreting these results. To begin with, and abstracting from the issue of crowding out, it is worth noting that the growth "boosts" shown in Tables 1 and 2 are a real rather than a statistical phenomenon; government workers derive income and spend income in the same way as workers elsewhere in the economy and, at least in this sense, growth in their value added should not be discounted as being of lower value. It is possible that some government workers are relatively unproductive and that output in the government sector would not be as high if valued at shadow prices rather than on a cost basis. However, the rigor of shadow prices would probably also give very different value-added estimates if applied to nongovernment sectors of the economy.

More fundamentally, with regard to crowding out, the results shown in Tables 1 and 2 do not, of course, necessarily mean that GDP growth rates in the sample were actually boosted by expanding government. To know this would require calculating what private sector growth would have been were it not for the higher taxation, borrowing or inflation which was necessary to finance the growth of government. This is a difficult question to answer and no attempt is made to do so here. But in interpreting the results, it should be recognized that as a result of crowding out, the true effect of government growth on overall growth was most probably lower than that shown and might even have been negative.<sup>8</sup>

### III. THE MODEL

A simple model is constructed to throw some light on the questions raised in the previous section. Output,  $y$ , is the sum of value added outside government,  $z$ , and value added by government,  $g$ :

$$y = z + g \tag{1}$$

with all variables in real terms. Assume that value added by government is only civil service wages (if there are government enterprises, this requires that they make zero profits). For simplicity, assume further that the government makes no capital expenditure. Then after paying interest on its stock of debt,  $B$  (at nominal rate  $i$ ), the government can cover its payroll either by borrowing or collecting taxes. That is,

$$qg = \dot{B} + \tau qy - iB \tag{2}$$

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<sup>8</sup> It is possible that government activity crowds in the private sector, but this seems unlikely when governments are already large and when the focus is on government consumption rather than investment (as it is here). Moreover, Karras (1996) finds that the marginal product of government activity is less than unity in Africa, which implies that crowding-out effects dominate any crowding-in effects.



where  $q$  is the price index,<sup>9</sup> dot notation indicates a change with respect to time, and  $\tau$  is the constant tax rate (including perhaps an inflation tax).

Next assume that government policy involves expanding the civil service wage bill, subject to the self-imposed constraint that:

$$\dot{\beta} = \gamma \quad (3)$$

where  $\beta = B/qz$  is the debt to nongovernment GDP ratio,<sup>10</sup> and  $\gamma$  is a constant. The constraint (3) implies that the government is prepared to tolerate an increase in the debt to (nongovernment) GDP ratio of  $\gamma$  per period. It also implies that:

$$\dot{B} = \gamma qz + (\pi + \dot{z}/z)B \quad (4)$$

where  $\pi$  is the assumed constant rate of inflation. Substituting (4) into (2), and using (1), yields:

$$(1-\tau)g = [\gamma + (\dot{z}/z - r)\beta + \tau]z \quad (5)$$

where  $r$  is the real rate of interest (and the Fisher equation,  $i = r + \pi$ , has been used). To place an upper bound on the positive effect that expanding government can have on overall growth, first consider a world in which private activity is unaffected by the size of government.

(a) The case of zero crowding out

Assume that both  $\dot{z}/z$  and  $r$  in (5) are constant at rates  $\alpha$  and  $\rho$ , respectively. These assumptions--which imply that both nongovernment growth and real interest rates are unaffected by either the level of taxation or the level of borrowing (i.e., zero crowding out)--are obviously unrealistic, but are made for purposes of illustration. Under these assumptions, the only variable in the coefficients on  $g$  and  $z$  in (5) which is time-dependent is  $\beta$ . If all coefficients in (5) were constants, then both  $g$  and  $z$  (and hence  $y$ ) would grow at the same

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<sup>9</sup> For simplicity, a common price deflator is assumed to apply to government and nongovernment value added.

<sup>10</sup> Equation (3) is written in terms of the debt to nongovernment GDP rather than debt to overall GDP so as to make the mathematics tractable.

rate. But this would require that  $\dot{\beta} = 0$ , or that the debt to the GDP ratio remains constant (i.e., fiscal policy is sustainable in the strict sense).<sup>11</sup>

Some further manipulation of (5) illustrates that departing from a sustainable fiscal path can (at least initially) boost GDP growth above the underlying rate of growth of nongovernment activity. Substituting (5) into (1) yields:

$$(1-\tau)y = [1 + \gamma + (\alpha-\rho)\beta]z \quad (6)$$

and hence that:

$$(1-\tau)\dot{y} = [1 + \gamma + (\alpha-\rho)\beta]\dot{z} + (\alpha-\rho)z\dot{\beta} \quad (7)$$

which implies, using (3) and (6), that:

$$\dot{y}/y = \alpha + \frac{\gamma}{\beta + \frac{(1+\gamma)}{\alpha-\rho}} \quad (8)$$

which gives growth in total output as the sum of the (constant) rate of growth of private activity plus the potential boost to growth that can be obtained by expanding the civil service. This does not describe a steady state because the debt/GDP ratio is increasing. From Table 2, this is clearly the effect that the government growth boost has had in Namibia.

From (8), sufficient conditions for government activity to be able to raise overall GDP growth above  $\alpha$  are that  $\gamma > 0$ , and that  $\rho < \alpha$ .<sup>12</sup> If these conditions hold, then the second term on the right hand side of (8)--the potential government growth boost--is positive. Moreover, the growth boost is increasing in  $\gamma$  and decreasing in both  $\beta$  and in  $\rho$  (still assuming zero crowding out). Hence the greater the increase in the debt to GDP ratio the government is prepared to tolerate ( $\gamma$ ), the lower the initial debt to GDP ratio ( $\beta$ ) and the lower the real interest rate ( $\rho$ ), the larger is the government's capacity to boost GDP growth by expanding its payroll.

#### (b) Crowding-out

In reality, equation (8) is likely to show the upper limit on the potential for a government growth boost. Greater government borrowing may cause real interest rates to

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<sup>11</sup> Note that if  $\beta = B/qz$  is constant, then so is  $B/qy$ ; hence no damage is done by focusing on the debt-nongovernment GDP ratio rather than debt-GDP ratio.

<sup>12</sup> The latter is also the condition which makes the sustainable primary balance (including inflation tax revenue) a deficit rather than a surplus.

increase over time, thus decreasing the second term on the right hand side of (8). At the same time, higher interest rates may combine with the prospect of higher taxes (once government borrowing becomes more difficult) to reduce the underlying growth rate of private economic activity ( $\alpha$ ).<sup>13</sup> Indeed, once crowding-out effects are allowed for, the growth effect of expanding the civil service could well be negative; in terms of equation (8), if  $\alpha$  falls over time or  $\tau$  or  $\rho$  rises, then growth can be pushed below the initial value of  $\alpha$ --i.e, the first term on the right hand side of (8) can fall by more than the absolute magnitude of the second term. If this is the case, then the government's willingness to allow the ratio of its debt to GDP to increase ( $\gamma > 0$ ), serves to retard rather than promote growth.

#### IV. GOVERNMENT EMPLOYMENT

The disproportionate influence of government on growth in the sample is even more pronounced when the growth of employment rather than output is considered. Table 3 shows growth of employment in the government sector to have consistently exceeded growth outside government (the exception being Botswana during 1976-92). The South African experience over 1971-93, with average growth in government employment five times as large as the average growth of nongovernment employment, is particularly remarkable.

There are two reasons for the government-nongovernment employment growth differential shown in Table 3. To begin with, as already seen, the sample includes countries where the government sector has tended to grow faster than GDP in total, and, *ceteris paribus*, higher sectoral output implies higher sectoral employment. But there is the additional factor that output growth comes not only from employment growth, but also from productivity growth, which may be lower in the government sector, and, in fact, is often set equal to zero by definition.<sup>14</sup> As a result, employment can be expected to grow slower than output outside government, but about equal to output in the government sector.<sup>15</sup>

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<sup>13</sup> Expanding the government sector may also bid up wages in the private sector and thus retard the growth of employment outside government (see Malley and Moutos, 1996).

<sup>14</sup> Productivity growth tends to be poorly measured in the government sector since output is nonmarketed. If, as is often the case, government employment is used to measure government output, productivity growth is zero by assumption. An alternative is to assume that productivity growth mirrors changes in real wages; see Denison (1967).

<sup>15</sup> This can be illustrated by calculating employment elasticities--defined as the average growth in employment divided by the average growth in output--from Tables 1 and 3. For example, South Africa over 1961-93 has an average elasticity of employment with respect to output of 1.0 in the government sector, but of only 0.4 in the nongovernment sector.

Table 3: Average Growth Rates of Employment in a Sample of African Countries

(In percent)

	Share of government employment in total 1/ 2/	Average Annual Growth Rates		
		Government Employment 2/	Nongovernment Employment	Total Employment
<u>Botswana</u> 3/				
1976-94	35.4	8.1	7.4	7.6
1976-84	36.0	8.8	6.8	7.5
1985-94	35.4	7.5	7.8	7.7
<u>Kenya</u>				
1973-92	38.1	4.6	2.7	3.6
1973-82	36.0	5.2	2.2	3.8
1983-92	38.1	4.0	3.2	3.4
<u>Namibia</u>				
1990-95	...	...	...	...
<u>South Africa</u> 4/				
1961-93	17.8	3.5	1.3	1.5
1971-93	17.8	3.4	0.6	1.0
1961-70	10.2	3.6	1.8	2.1
1971-80	12.9	4.5	1.8	2.1
1981-93	17.8	2.6	-0.3	0.2
<u>Zimbabwe</u> 5/				
1980-93	18.5	4.5	1.2	1.7

Source: Data provided by national authorities.

1/ Formal sector employment; end of period.

2/ General government.

3/ Employment data are for March.

4/ Standardized employment series.

5/ Government sector includes public administration and defense, education and health.

In the case of the countries in the sample (excluding Botswana), some combination of the factors discussed above--low output growth and positive growth in productivity--appears to have combined over the sample period to retard the growth of nongovernment employment. In some countries, productivity growth may have been boosted by increases in capital intensity associated with rising real wages. By contrast, growth in government employment in these countries seems to be independent of factors such as technical progress and changes in input prices. This apparent insensitivity to market forces serves to lever the growth of government employment above that of nongovernment employment. In the African countries considered, the government sector is thus not only a significant employer, but is also a major source of employment growth: this is because the government sector has both above-average output growth and above-average elasticity of employment with respect to output (typically equal to unity by construction).

Of course, caveats about crowding-out apply as much to the government as a generator of employment growth as a generator of output growth. If, indeed, expanding government employment comes at the cost of lower output and hence employment growth in the private sector, the net effect of government on aggregate employment growth is lower than the differential between total and nongovernment employment growth rates shown in Table 3. Again the true value of this differential is conceivably negative.<sup>16</sup>

## V. CONCLUSIONS AND IMPLICATIONS

This note highlights the importance of the role played by government as a generator of growth in certain parts of Africa. In the sample of countries considered, it was seen that the expansion of the numbers on the government payroll has served to boost growth of both output and employment over quite long periods of time and by quite significant amounts. However, on the assumption that crowding out dominates, the effects of government on output and employment identified in the paper should be viewed as upper limits of the true effects.

The simple model analyzed in Section III suggests that growth accountants should keep one eye on the government debt to GDP ratio when attempting to link current growth performance to what might be sustainable; GDP growth that is inflated by a rapidly expanding government payroll cannot be maintained in the long run. Nonetheless, the empirical evidence presented in the paper shows that growth in certain African countries has been boosted in this way and it would be interesting to know the magnitude (and signs) of government-

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<sup>16</sup> This is Malley and Moutos' (1996) finding for Sweden; they estimate that on average over the period 1964-1990, each 100 employees added to the public sector payroll crowded out 115 private sector jobs.

nongovernment growth differentials elsewhere in the world.<sup>17</sup>

The existence of a government-nongovernment growth differential has implications for assessing the impact of structural adjustment on growth performance. If structural adjustment involves cutting back government employment so as to restore fiscal policy to a sustainable path, then it will initially serve to depress the growth of GDP, particularly in relation to a period when government value-added was being expanded at an unsustainable rate. A more accurate picture of the effect of the policy change on the underlying GDP growth would require a before and after comparison of growth of output outside government (and preferably excluding public enterprises as well, should the data permit).

This note also suggests that the employment costs of structural adjustment will be large in the parts of Africa focused upon, particularly in the short run before the private sector has had time to respond to the new policy environment. In most of the countries in the sample, it was seen that the government sector has a history of absorbing labor at a rate considerably in excess of its proportionate weight in output. Reducing the size of the government payroll will therefore involve curtailing the expansion of a sector that generates considerable employment. In the African countries under examination, where the economically active population grows at up to 3 percent per annum, and open unemployment is already substantial, robustly growing labor-intensive sectors command a premium and it is unsurprising that cutting the government payroll meets resistance.

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<sup>17</sup> In contrast to the African experience, Lim (1993) shows that Asian governments have tended to grow more slowly than the economy as a whole. To take one Asian country as an example, GDP growth in Korea averaged 8.2 percent per annum over 1970-95, whereas annual growth of government value added averaged only 3.0 percent over the same period.

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