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THE USE OF PUBLIC SECTOR ACCOUNTS IN PLANNING THE LEVEL OF PUBLIC EXPENDITURE[1]

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I. CHARACTERISTICS OF THE PUBLIC SECTOR

THE Public Sectors in various countries in Africa south of the Sahara have a number of characteristics in common. They have been greatly expanded over a fairly short period of years under the influence of development policy. Colonial, transitional and independent governments have employed substantial numbers of expatriate officers. There have been a severe shortage of qualified indigenous personnel particularly for technical posts. The domestic education system has been unable to produce qualified personnel to meet this need. Neither training abroad of Africans nor recruitment of expatriates has been sufficient to fill all of the vacancies created by the expansion of public activities.[2]

The economic activity of these countries is largely agricultural and in part (although a part somewhat less important than is widely believed) is devoted to the production of food and other goods and services for consumption by the producers. The public sector and transactions related to exports and imports are an important part of the total of monetary transactions. These transactions are less than total economic activity by the amount of activity devoted to subsistence production. Public economic activity on current and capital accounts is composed exclusively of money transactions. It is, therefore, not only a large part of total expenditure but an even larger part of money expenditure.[3] This growth, and its origin in

[1] All references are to items in the bibliography by number.

[2] See [24] for a general review of the position in Ghana, Nigeria and the Sudan and [50] Rapport No. V [51] and [54] for aspects of this problem in the former French territories. See also [72] for a detailed account of the situation in the Western Region of Nigeria. It is enlightening to compare the growth of the public sector in these countries with the growth of public activities in the United States. See [6] for an account of the latter which raises a host of interesting questions relevant to the countries discussed here.

[3] These proportions can readily be established from the National Accounts of the British East African Territories as shown in [40], [41], and [44], for Nigeria [66], for the former French Territories [47]. See also [28] for some data on the growth of public expenditures. Needless to say, the proportion of public expenditure or public consumption to total income will be greatly affected by the value imputed to production which is not subject to monetary transactions.

development policy, the relations between investment in public activities of various kinds and current public expenditure, the relations between public expenditure and imports, the role of government as the most important employer of labour and the structure and functions of the public sector all greatly affect the growth and distribution of the national income.

A closer examination of the characteristics of the public services, which are briefly described above, reveals a number of problems of considerable importance in planning for development.[1]

The original 'colonial' public services were relatively simple and small. Their core was a small number of administrative officers whose duties were to preserve order, to extend the rule of law and to increase the welfare of the population in fairly limited and clearly defined ways: by improving transportation, implanting schools and dispensaries and, on occasion, introducing new cash crops. This concern for the welfare of the population was also a concern to provide a framework for the orderly conduct of export and import trade.

Typically the administrative officers were citizens of the administering power, few in number, relatively well paid or at any rate paid at a level closely related to levels of pay in the home, civil or military service. They were assisted by doctors and a few technicians in such fields as education, public works and agriculture. They employed natives as clerks and tax collectors, as construction workers on buildings and roads and as staff for schools and dispensaries. Often there were native supervisors. The pay of native staff was at levels which may have been above the levels of income in the 'native' economy, but were a great deal lower than the levels of pay of expatriate officers.

Over time, the functions of the colonial administration expanded somewhat, and educated natives were brought into the service with responsibilities similar to those of expatriates. This was a relatively infrequent occurrence before the Second World War. Their numbers were small and their salary scales were, for the most part, simply assimilated to those for expatriate officers.

With the implementation of policies of 'Development and Welfare' or 'Economic and Social Development' the functions

[1] The description which follows is drawn from too many sources to cite them all. A brief summary statement of the problem appears in [20].

of the administration were greatly expanded and diversified. Expanded and improved public services became a central element in development planning.[1] Additional expatriate staff were recruited and increasing numbers of educated Africans came into the higher levels of the public services at 'expatriate' levels of pay. Over the same period there was an increase in the number of wage-earners in the private sector of the economy, which had expanded under the influence of increased public spending, increased output for export and a degree of industrialization.[2]

These changes raised problems of wage policy at two levels. First, it began to be apparent that the expansion of public services to which governments rapidly becoming autonomous or independent were committed would require large numbers of technical and professional people whose pay, at the level to which the older smaller 'colonial' service were accustomed, clearly would be a heavy, if not an impossible, burden on the public financial system. The domestic supply of skilled manpower was small and could not be increased rapidly. (In passing, note that the costs of training professional people at home or abroad are high. This is a problem which is considered in more detail below.) Worse still there was an international seller's market for technical and professional people in many fields.[3]

The second wage policy problem was at the other, unskilled end of the ladder. Governments recruited a large force of wage-earners. For the most part governments were by far the largest employer in the economy. There was a tendency for the costs of labour in the public sector to be somewhat higher than in the private sector, if only because governments were under an obvious obligation to set at least a minimum standard of wages and working conditions. Therefore even in the case of the unskilled, the costs of labour to governments were raised by circumstances outside the market.[4]

The labour employed by governments as development became the principal element in public policy falls into five broad categories based on pay and qualifications. The lowest category is unskilled and semi-skilled labour often employed irregularly.

[1] See, for example, [54], [62] and [73].
[2] The labour force data for Ghana and Nigeria are shown in sources (59) and [68].
[3] See Younger's account in [24] Part IV.
[4] See Appendix B, Tables 4 and 5.

Next is the growing class of literate (if barely literate) skilled labourers and artisans, drawn mainly from the primary schools. This category includes clerks, typists and so on as well as primary-school teachers. The third category consists of highly skilled labour, skilled artisans and the like, as well as accountants, stenographers and secondary-school teachers. The fourth consists of technicians and professional men: agronomists, engineers, and skilled technicians in a variety of fields. The fifth category is the present-day equivalent of the administrative officer: the administrative class of the Civil Service in British terminology. Judges, legislators, and, of course, ministers can be included in this category. Many of the functions of the administrative officer came to be performed by elected officials.

It is not wholly unfair to say that the level of remuneration of this last category is set by politics. The fourth is much affected by international scarcity, the third by domestic scarcity of secondary school graduates. The levels of pay in these three categories are unrelated or only distantly related to other prices or levels of pay in the economy. The second and particularly first categories are more closely related to the rest of the economy. The way in which wages in the public sector are set has important economic consequences.[1]

The shortage of skilled manpower, which arises when the public services must be greatly expanded to carry out a development plan, is well known. The upward pressures on levels of pay in the public services are easy enough to discern.

There are analogous problems relating to the goods which are required to 'produce' public services. With the expansion of technical services (and, of course, with an increase in the employment of highly skilled people) comes a requirement for more elaborate supplies and equipment (and the consumer goods to which expatriate or highly educated natives become accustomed). It is inevitable not only that public expenditures for goods increase, but that these expenditures have a high import content.[2]

[1] See [69] for a discussion of current problems in wage determination in Nigeria which reveals some of the upward pressures on wages. The scale of needs for skilled manpower in combination with the supply price of skilled manpower are staggeringly high. On this point, see [65] and A. W. Lewis' letter to *The Economist* published on 10th January 1959. The categories used here are a generalization of the usual categories to be found in budgets, staff lists, etc.

[2] For a fairly explicit statement on this point, see [67], pp. 91–93. The import cost of meeting these requirements is clear from import statistics taken in conjunction with budgets.

II. ECONOMIC CONSEQUENCES OF INCREASED PUBLIC EXPENDITURE

We have seen that the proportion of the national product allocated to public consumption in a number of typical African countries is relatively high and found some reasons why it is likely to increase. What are the economic consequences of a high level of allocation to public consumption and what are likely to be the consequences of the increase?

In attempting to answer this question, we must also consider at least two other major elements in the monetary economy: exports and imports. The price of the goods which compose the foreign trade in these countries is for the most part set in world (or at least regional or national) markets. It is wholly or almost wholly beyond the reach of their own economic policies and beyond the influence of their domestic economies. Since the peak of the Korean boom the prices of their imports have tended to decline slightly and of their exports to decline a good deal more so. Consequently terms of trade of those countries have tended to deteriorate. Other things being equal, this would have brought about a decrease in the money income of export producers and in the national income. In some cases, there may have been a decrease in real income as well: it is difficult to generalize on this point.

But we have seen that institutional influences have increased public expenditures and the money income of a growing number of public employees regularly and substantially. The first consequence and the most obvious is the need for more government revenue with all the attendant problems of tax collection, borrowing and so on. Very little more will be said about this problem here, but it should be kept constantly in mind. A second probable consequence is a substantial shift in real income from farmers producing for export toward government employees, or at least a change in the distribution of *increases* in income in this direction. If this is the case, the incentives of money income may operate to attract people toward public employment (and very possibly into the educational system which prepares them for public employment) and away from agriculture and some other forms of production for export. In addition, the same incentives will tend to increase urbanization, because many public activities are located in cities, setting in motion a circular set of forces which will then increase public activities in urban areas (to meet

increased 'needs'), and in turn will reinforce the incentives for rural-urban migration. These shifts in income will probably be accompanied by shifts in relative prices within the economy.

A third consequence is a shift in the marginal propensity to import both the goods required to perform public services and the goods consumed by public servants.

It is clear that the economic consequences of expanding the public sector affect the structure and growth of the economy in many ways.[1]

III. THE PUBLIC SECTOR IN THE NATIONAL ACCOUNTS

The national accounts provide a framework for the analysis of the problem defined above. The public sector account is obviously most important. What is the form and content of the public sector account in the system of national accounts which are widely used in Africa? The most widely used systems of National accounts [2] include a separate account for public authorities which shows general government expenditure: purchases of goods and services from the economy, transfer payments, etc., and revenue: tax receipts, transfers from abroad, etc. In the account for households, wages and salaries from public employment are included, but are not usually distinguished from other forms of income received by households. Direct tax payments to government and transfers from government are shown separately. In aggregate measures of national income, government income is composed of profits from public enterprises as well as rent interest and dividends arising from government property, investments or enterprises.

In the measures of national product and expenditure the total value of government purchases of goods and services (including, of course, the wages and salaries paid by government) is shown under the heading public consumption.

In the U.N. system of national accounts, it is suggested that general government expenditures be further classified by type (compensation of employees, purchases, purchases from enterprises, etc.) and by purpose (general administration, defence, social services, etc.).[3] For the most part this is the most detailed

[1] For a fairly detailed calculation see [79], p. 32.

[2] This discussion is based on both the UN [26] and OEEC [32] systems. The French system [4] includes most of this information, although it is arranged in a different way.

[3] See [26], p. 28 and the more detailed classifications of public expenditure in [25] and [29].

information about government activity available in the framework of national income accounts.

Complete national accounts include aggregate measures of national income, product and expenditures recorded in current and constant prices. Data at constant prices are a measure of changes in the volume of the various components of the aggregates. They can be used to calculate changes in their price. The problems of measuring the 'price' and 'volume' of public services do not arise in drawing up annual accounts for the public sector. They do arise in incorporating the public sector into the aggregate measures of national income, product and expenditure, and in measuring changes in the value and price of these aggregate measures from year to year.[1] These aggregate measures of national income, product and expenditure are a widely used framework for development planning.[2] The objectives of development planning are often stated in terms of increased investment and increased output. The two increases are believed to be related by marginal capital-output ratios: economic policy in general, and development policy in particular, is set within the framework of relationships among the various aggregates: savings and investment, capital formation and product, the national product and net exports, etc. A central problem in policy-making is to determine and make appropriate allocations of resources (i.e. the national product plus net exports) to various uses: capital formation, consumption (public and private), exports. Existing systems of national accounts are of limited use in ordering and analysing the information required to make the appropriate allocations. One reason is the generally inadequate consideration of changes in volume and price. This is particularly true of the public sector or general government revenue and expenditure account for a number of reasons which have to do with the general problems of accounting for public activities and with the particular problems of public economic activity in underdeveloped countries.[3]

[1] The literature on measuring changes in the price and volume of items in the National Accounts is large. Source [22] is an excellent examination of the problem which refers to a good deal of the literature.

[2] See, for example, [27], as well as the more general discussion in [16] and the more specific discussion in, for example, [57] for 1958.

[3] The only volume (and inferentially price) data which are to be found in the national accounts of the countries considered here are to be found in [38] for the (Belgian) Congo. The literature about the inclusion of the Public Sector in the National Accounts is extensive. See especially [2], [3], [11], [12], [14], and [19]. S. Kuznets's discussion of the problem in relation to military expenditures in wartime [14] is particularly relevant.

IV. IMPROVING THE ACCOUNTS: THE EXAMPLE OF EDUCATION

How can the national accounts be used to describe and analyse the phenomena which we have been discussing and contribute to development planning? The public sector account can be subdivided functionally as suggested by the U.N. without any great difficulty. A few revisions in the functional classification of public expenditure which is gaining widespread acceptance would provide all of the additional information required to construct a public sector account with functional subdivision further classified into the pay of government employees and purchase of goods and services. Presumably, public expenditures at all levels of government would be included. Transfers would be shown in the account, but would be excluded from the public consumption item of expenditure on the gross national product. Public consumption (at current prices) should also be subdivided by function and classified by object (wages and salaries, goods and services). An effort should be made to establish indicators of changes in the volume and price of education and other public services.

Two problems arise at this point. The transfers mentioned above often include substantial sums provided by the public authorities to private agencies in support of activities which are also carried on by the public authorities directly: education, health, and so on. For planning, if not for national accounting purposes, information about those uses of public funds and about the allocation of private resources to these and similar purposes is most important.

The second problem has already been raised. How can the annual accounts best be included in the aggregate measures of national product, expenditures and income, and how can changes from year to year in the value, volume and price of the aggregates and their components be measured?

These questions can best be discussed by using one of the public services as an example. Education is a clear and generally representative example among the public services; it is a particularly important one for three reasons. First, it is both absolutely and relatively a large item of expenditure. Second, it has characteristics which make increases in the total cost and 'price' of education difficult to control. Third, the output of the educational, system-trained people is a uniquely important

element in the development process. It is almost impossible to measure the contribution of education to economic growth. It is possible to state with certainty that people with certain skills, in particular, and an educated population, in general, are, a prerequisite for growth.[1]

It is possible to put some factual flesh on the bones of this discussion by considering the case of education in some detail. Statistical examples of the circumstances described below will be found in Appendix B. In this case it is possible to find direct measures (this may be too ambitious a term – indicators will be used to replace it hereafter) of the 'volume' of education. One such measure might be pupil-years of instruction; another, graduates from any level of the education system. Neither is wholly unambiguous. The problem of the quality of instruction, for which there are only the crudest statistical tests (e.g. pupil-teacher ratios), must be assumed away in using either measure. The problems of wastage, the failure of pupils completing year one to go on to year two, and of absenteeism arise in using pupil-years of instruction as an indicator. Conversely, the value of incomplete education is ignored in using graduates as an indicator. Alternatively, man-years of teaching services might be used. But the pupil-teacher ratio and the qualifications of teachers must obviously be taken into account. 'Prices' could be calculated for each of these measures of output. But these 'prices' would be affected by the same ambiguity. Nevertheless, some of the characteristics of the public sector as a whole and some of the problems of development planning are clearly visible as we enquire into the 'volume' and 'price' of education.

All of the countries with which we are concerned have greatly expanded their education system. For the most part they have given priority to the expansion of primary education. (Secondary and post-secondary education have lagged behind, at least relatively. The special problems of post-primary education are discussed below.)[2] The best available single indicator of the growth of primary education is the number of pupils enrolled in primary schools. This information for selected countries and years is shown in Appendix B.

[1] The importance attached to education, the efforts to expand it and the results achieved in various countries including those discussed here are set forth in Appendix B, Table 1, and in [1], [7], [9], [17], [21], [30], [31], [33], [34], [52], [53], [56], [60], [71], and [74].

[2] See p. 98.

Detailed educational data relating to education in Ghana include a number of the other elements required to measure the increase and give some indication of the 'volume' and 'price' of primary education.[1] In the primary schools of that country the number of teachers has increased along with the number of pupils over recent years. The pupil-teacher ratios in public schools have remained almost constant. There were about thirty pupils per primary-school teacher and about ten per middle-school teacher over the five years 1955–9. This has not been the case in the private schools. Pupil-teacher ratios in private primary schools have increased from about 34 to about 40 over the same period. In the private middle schools the ratio was far less favourable than in the public middle schools in 1955: 30 to 1. It has not changed significantly over the period.

Another important element in the quality of education is the level of qualification of teachers. In Ghana, in the public primary schools the proportion of qualified teachers has increased from 35 to 46 per cent in these five years. It was and is high in the middle schools (over 85 per cent of middle-school teachers are 'qualified'). However, these qualifications are relatively low and the number of professionally trained teachers is very low indeed.

The expansion in middle-school enrolment has been more rapid than the expansion in primary-school enrolment (as has the expansion in secondary-school and teacher-training-college enrolment). But the ratio of secondary-school to primary-school pupils, a crude measure of wastage (and, of course, of bottlenecks in the system), reveals the magnitude of the problem of post-primary education. In 1955 the number of secondary-school pupils was 2·3 per cent of the number of primary-school pupils. In 1959, despite the absolute increase in secondary education, it was only 3·2 per cent.

Within the primary and middle schools there is a clear pattern of wastage. From the first to the second year of primary school a large (31·6 per cent in 1955) but declining (26·5 in 1959) percentage of pupils drop out. After that the rate drops sharply to between 5 and 10 per cent per year. The potential

[1] It is clear, from the author's direct enquiries that the data which are required for the construction of these measures (or indicators) exist or can be fairly easily gathered in most of the countries discussed. This being said, the examples used here are subject to error and to the author's misunderstanding of the published data.

problem which would arise if the rate in the first year continues to decline is clear enough.

There are no data on the total cost of various levels of education in Ghana, but we do know a good deal about the salaries and allowances paid to teachers, which are a large proportion of total current costs in the primary and middle schools. Overall teaching costs per pupil have risen at a rate of somewhat more than 10 per cent. But the differential between the teaching costs of primary and middle-school pupils is striking: in the middle schools it was about five times as great as in the primary schools over the years 1955–9.

A word about secondary and technical educational institutions is in order (and a further word about higher education), although unfortunately no detailed data are available. In both (all three) cases there are two substantial qualitative differences from primary and middle schools. First, teachers are well qualified, often trained abroad, and are paid at salary scales similar to those for Europeans (either in Ghana or in Europe). Salaries in these scales are very much higher (four to five times) than those in the middle schools and correspondingly higher than those in the primary schools. Pupil-teacher ratios are similar to those in the middle schools. Consequently, teaching costs per pupil are substantially higher than in the primary and middle schools. The teaching cost per pupil in the secondary and technical schools is probably in the range of £100 to £150 per year.

The second qualitative difference between secondary and technical and primary and middle schools is the very high cost of building, equipping and operating them. Primary and middle schools are relatively inexpensive to build, maintain and operate. Secondary and technical schools require relatively expensive buildings and equipment (libraries, laboratories and so on). They are often residential. Accommodations for teachers and pupils add greatly to both capital and current costs. The pattern and level of consumption of pupils in these institutions is, naturally enough, different, and a good deal higher than the pattern and level of consumption of public in primary and middle schools or of most persons in the economy at large. A good deal of the cost is met by the public financial system.

Everything which has been said above about secondary and technical education applies to higher education to a greater

degree. The degree is so much greater (Professor W. A. Lewis has estimated the annual cost of education at the University College of Ghana is between £2,000 and £3,000 per student)[1] as to become a difference in kind. This is clear enough when these costs are expressed in terms of annual *per capita* national income and compared with costs of education elsewhere expressed in the same way. In Ghana £2,000 to £3,000 per year is on the order of thirty to forty times annual *per capita* national income. The ratio for the U.S. or France is in the range between less than one to something more than two.[2]

All of these educational institutions above the middle-school level require imported equipment, supplies and, as indicated above, services. No data are available on the 'import content' of education, but this element should be borne in mind.

Although Ghana is the only country for which detailed (albeit insufficiently detailed) data are available, there is good scattered evidence that most of what has been said above applies generally in tropical Africa. In one group of countries the structure of costs is somewhat different and the level of costs a good deal higher: the former French territories.[3] Various institutional factors at work there round the costs of education at all levels and narrow the range between the costs of primary and of higher education. Briefly, salary scales in all the public services were driven upward by constitutional and political forces epitomized by the representation of these countries in the French Parliament. Equality between African and European and between colonial and metropolitan scales was the standard set by these forces. Although it was incompletely achieved, the result was to raise the floor under the costs of public services by raising salary scales (and by the widespread adoption of metropolitan standards of construction, etc.). The data in Appendix B illustrates this condition.

V. PUBLIC SERVICES IN GENERAL

We have described a situation where the price of education is high and rising, and where income and government receipts are unlikely to rise as fast as either the price of or the demand

[1] See [15].

[2] These estimates are based on data in [33], [35] and [36]. Inter-country comparisons in this area would be extremely useful. Certain elements of comparison for a number of European countries and the U.S. are to be found in [8].

[3] See Appendix B, Tables 2 and 3, as well as [20] and [54].

for education at all levels. Although this situation may change greatly in the long run, it presents a serious problem to low-income countries in the first ten to twenty years of planned development. Logically, either the volume or the quality of the 'output' of the educational system is likely to be affected. One clear consequence of this situation has been the bottleneck in secondary, technical and post-secondary education, where prices are of a different order of magnitude from the price of primary education.

At this point we must ask to what extent this same situation obtains in respect to other public services. In most of the other public services the data are fragmentary or do not exist at all in usable form. But there is qualitative evidence that a generally similar condition obtains. Staff lists and budgets show how the number, qualifications and pay of public employees in all services have increased. The same sources show how the public services have become increasingly diversified. From this we may infer that the quality of the product has been raised. In general the number of specialized agencies and personnel has greatly increased. Meteorology, broadcasting, agricultural and industrial research, specialized forms of medical services, all appear in the staff lists and budgets of the late 1950s. Their personnel cost more than the generalist or at least less specialized personnel of the early part of the decade, not only because wage levels have gone up, but because those people are relatively scarce and command a higher price. Budgets also show the purchase of expensive equipment: everything from specialized vehicles to data-processing machines.

We have examined some problems involved in expanding the public services and set forth in some detail the data which are or can be made available about one most important service: education. We can now discuss in detail the suggestions made in Section 3 about ways in which these data can be included in the national accounts and how the accounts may be used in development planning.

The first form into which these data might be put is the account of public authorities' receipts and expenditures. Instead of showing total expenditures by function, the account should classify expenditures for each function into wages and salaries, goods and services and transfers. Corresponding entries in the account for households would show the income received

by households on account of the performance of each of these functions. The aggregate 'expenditure on the Gross national product' would include public consumption by function (classified into wages and salaries and goods and services), perhaps in a supplementary table.

Presumably the accounts will be prepared for a number of past years. In any event, it would be relatively easy to prepare the public authorities' receipts and expenditures account retrospectively. When this is done, changes over time in public expenditure by function and object will be apparent. The next step is to resolve these changes in the cost of the public services (or, in the case of public consumption, in its value) into changes in quality and changes in price. If any two of the three terms of the equation V=PQ (value equals price times quantity) are known, the other one can readily be obtained. By definition we know V. We must decide which data to use in determining P and Q. The foregoing discussion suggests that two somewhat different approaches may be used. We have suggested various indicators of changes in the quantity of public services produced (e.g. pupil-years of instruction, graduates, teacher-years of instruction) and indicators of the price of education (annual teaching – and other costs – per pupil or per graduate, annual salary payments to teachers). These are crude indicators, suggested because they can readily be established from existing records. There may well be equally good or better indicators. It is a relatively easy task to calculate all of the measures suggested, once the educational statistics are redesigned or reviewed to produce any one of them. Hopefully, changes in the 'volume' and 'price' of teachers' services, an 'input', when compared with changes in the 'volume' and 'price' of pupil-years or graduates, an 'output', would throw light on changes in the productivity of the public services. As information is developed, these indicators might be refined. The total number of pupils could be divided by level of education; teaching and other costs per pupil might be calculated separately for each level and so on.

Thus if a minimum of information is available, it is possible to construct indicators of changes in the volume and price of education and, assuming that similar indicators can be found for other public services, for public consumption as a whole. The categories of personnel described on pp. 91–2 above suggest some indicators. The construction of measures of output in

other services is a good deal more difficult. It might be undertaken along with the development of performance budgets.

When this is done, some familiar index number problems will arise: the choice of quantity and price weights, the choice of a base year, etc. In dealing with these statistical problems we are at the same time dealing with some other important substantive problems of development. Let us take the case of selecting quantity weights for the construction of an index of the price of education. The weights will be the numbers of pupils at various levels of education: primary, middle, secondary, technical, post-secondary. The problem is to decide whether the numbers used should be those of the first year of the series, of the current year, or of some intermediate year. The choice itself will focus attention not only on the absolute numbers of pupils at the various levels in the educational system but on the relative numbers, i.e. in the distribution of pupils within the system.

There are numerous advantages to be derived from a systematic examination of changes in the cost and quantity of the public services within the framework of the national accounts over a period of years. Retrospective analysis of this kind will throw weight on the more or less inevitable changes which have accompanied their growth in the past. One obvious example is stated above, the progression of pupils from one level of education to another. Another example is the pay of Civil Servants. In the first stage of expansion, young, new and often qualified persons are employed. In almost every Civil Service there are provisions for 'automatic' advancement with age, length of service and increased qualifications. These provisions exert a strong upward pressure on costs. The usefulness of detailed data about the effects of this pressure in the past is evident. The range of problems in this area which can usefully be examined in this way is more or less evident.

There is at least one other range of problems in which statistical analysis within the framework of national accounts will be useful. One clear characteristic of developing countries, which is implicit in the description in Part I is a shift in relative prices. We have seen that some prices are set by forces outside the economy (imports and exports) and that others are set by the nature of the development effort (public consumption). Other prices are set by market forces which reflect to an extent the countries' endowment of natural resources. Changes in

relative prices imply shifts of real income from group to group within the economy. These shifts in turn result in changes in the economic incentives which the economy holds out to various groups. A system of national accounts which includes volume and price indices for the components of national income is a good instrument for the examination of changes in income distribution, real income and incentives.[1] The public sector account is particularly important for reasons set out above: its large share in the national product, expenditures and incomes and even larger share in total money income and the large proportion of wage-earners who are employed by the public sector.

Time series of the kind discussed above, volume and price of education and certain other public services can be used to construct a public sector account which will reveal related changes in the past. The effects of past policies will be evident in these related changes. It will then be possible to project those efforts into the future and to estimate the consequences of new policies, particularly new measures to expand the public services. As the data required are collected and as refinements are introduced, for example, differentiation of levels of qualification of school teachers or other government employees, the public sector account can be used as a framework for manpower planning. It will be possible to project the number of teachers with a given level of education required to provide instruction to any given number of pupils. It will also be possible to estimate the costs of 'producing' these teachers.[2]

VI. SOME GENERAL PROBLEMS

The existence of wastage in education raises a most important problem: to what extent should the public services, particularly in a period when they are being expanded and improved, be recorded as a part of final national product. Before discussing this matter, we must consider briefly what functions the public services perform in the economy. To an extent, they replace existing, traditional services. For example, school teachers replace tribal or other traditional systems of instructing the young. Inevitably the change in monetary terms which comes with the

[1] A proposed comprehensive system of accounts including volume and price data is to be found in [23].

[2] For a specific discussion of manpower planning see [65]. See also [1], [9] and [21] for specific discussion of educational planning.

introductions of a 'Western' educational system is greater in an important sense than the change in real terms (by the 'volume' of traditional instruction to which no value has been imputed). This change is an improvement in quality and is analogous to an increased level of qualification of teachers in an existing education system. Although by definition these changes reflect progress, when they are included in the national accounts at their full money value they may tend for two reasons to overstate growth. The first is mentioned above: no allowance is made for the value of traditional services which are replaced.[1] This is a part of the broad and difficult problem of defining the boundaries of economic activity and of imputing values to goals and services which are not the object of monetary transactions. This paper has no new solutions to offer. It only proposes that the problem be explicitly considered at every stage in making the changes which are suggested above.

The second reason is somewhat more subtle. The use of new methods or systems in education or other public services tends to raise the prices of these services essentially because new methods require new and scarce factors of production which must often be imported. Allowance can and should be made in aggregate measures of national income for this phenomenon by the use of alternative weighting systems.[2]

When the problems of measuring growth under the circumstances described in the preceding paragraphs are examined a little more closely, some questions about the validity of capital-output ratios arise. In the public sector an increase in capital formation in the form of, say, a new school building leads directly to an increase in public consumption in the form of salaries for teachers, books, chalk, etc. At the primary-school level in Ghana, or Western Nigeria, the capital cost of a new classroom would be in the order of £200–£250 and the recurrent cost for teachers alone would be in the order of £500. On this basis, and without regard for other recurrent costs, the primary education sub-sector of the public sector would have an incremental capital-output ratio of 0·4 to 0·5 – well below the range

[1] This problem of imputation is explicit in the basic discussion of National income accounting. See [2], [3], [8], and [10].

[2] This important subject is raised by M. Gilbert and I. B. Kravis with respect to military expenditures in Europe in [8], pp. 36–45. It greatly merits empirical application to public expenditures in underdeveloped countries in general and the African countries discussed here in particular.

of most of the ratios in the literature on this subject.[17] It seems likely that the ratios for the public sector as a whole would be low, particularly in the social services, given the large numbers and increasing salaries of government employees and the labour-intensive character of many public services.[1] For this reason, the low capital-output ratios in the (large and growing) public sector greatly affect aggregate capital-output ratios and impair their usefulness.

This problem would not arise if a more radical approach to the problem, suggested on p. 104 above, were adopted [24]. It may be useful and desirable to reclassify certain elements of public consumption as capital formation (W. A. Lewis makes this suggestion specifically in regard to post-primary education)[2] or as an intermediate product (along the lines suggested by S. Kuznets, who argued in respect to many but not all government services that they should be considered 'the mere cost of maintaining the social framework') [11]

These suggestions reflect the growing concern among those concerned with economic development that the preconditions for growth, and, what some are pleased to call the non-economic aspects of growth, are immensely important and must be recorded in somewhat novel ways. One of the most widely accepted of these preconditions is education, although there is no agreement on how much education or what kind of education. Another is 'good' government. This paper attempts to indicate some ways in which education and 'good' government can be brought within the scope of empirical, quantitative investigation. It may also recall that some of the 'non-economic' elements of growth lie within the range of economic analysis and that economists have forged some useful tools for this work.

[1] See [15].
[2] See [16], pp. 183–7 and [14], pp. 3–13.

APPENDIX A

SOURCES AND BIBLIOGRAPHY

The sources and other bibliographical material below are classified as follows:

I. General works are arranged alphabetically by author.

II. Publications of the United Nations (U.N.) and the Organization for European Economic Co-operation (O.E.E.C.) are arranged alphabetically by title.

III. Works relating to France, the United Kingdom and the United States are arranged by country.

IV. Works relating to the (Belgian) Congo are arranged alphabetically by author following official documents of or about the Congo which are arranged alphabetically by title.

V, VI, VII, VIII. Works relating to British East Africa, the former French territories, Ghana and Nigeria are arranged in the same way in Parts V, VI, VII, and VIII. There are two peculiarities. The 'style' of the agency issuing official documents for the former French territories has changed frequently in recent years. Therefore the 'author' is ignored and titles are arranged alphabetically, but all French official documents are listed together. Documents about British East Africa are first classified by territory.

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APPENDIX B
TABLES

TABLE I

Population, Enrolment in Primary and Enrolment in and Graduation from Secondary Schools in Selected African Countries

	1954	*1957*
(Belgian) Congo		
Population	—	12,698,000
Primary	1,092,985	1,584,255
Secondary	9,954	12,502
Graduates	n.a.	n.a.
Uganda		
Population	—	5,527,000
Primary	309,122	418,179
Secondary	9,937	21,599
Graduates	n.a.	491
Nigeria		
Population	—	31,824,000
Primary	1,213,000	2,447,631
Secondary	32,500	57,522
Graduates	n.a.	2,130
French West Africa		
Population	—	18,842,000
Primary	268,146	356,800
Secondary	12,124	14,948
Graduates	n.a.	844
French Equatorial Africa		
Population	—	4,854,000
Primary	129,718	168,840
Secondary	2,016	2,141
Graduates	n.a.	n.a.
Kenya		
Population	—	5,902,000
Primary	347,392	500,337
Secondary	2,099	3,316
Graduates	n.a.	363
Togo		
Population	—	1,084,000
Primary	57,400	66,000
Secondary	1,145	1,357
Graduates	55	34
Cameroons		
Population	—	3,171,000
Primary	216,100	269,600
Secondary	4,706	6,112
Graduates	11	18

SOURCES AND NOTES

Population: United Nations, *Economic Survey of Africa since 1950* (New York: U.N., 1959), p. 13. Estimates for 1956. In all probability, population is understated throughout. The population of primary-school age (5–14) is thought to be in the order of 20 per cent of the total.

Enrolment: United Nations, *Special Study on Educational Conditions in Non-Self-Governing Territories* (New York: U.N., 1960), pp. 63–66. In the Congo, metropolitan-type schools are excluded. In Kenya and Uganda, non-African schools are excluded. Data on Togo and Cameroons, where data are for 1955 and 1957, from France, *Outre-Mer 1958* (Service des Statistiques d'Outre-Mer).

Graduates: Sources as for enrolment Cambridge School Certificate in Kenya, Uganda and Nigeria. *Baccalauréat* (*1ere et 2e parties*) in French Territories. Data in 1957 column are for 1956.

TABLE II

Costs of Education Expressed as Ratio to Average per capita National Product for Selected Countries

	Total Annual Costs per Pupil		Average Teachers Salary	
	Primary	*Secondary*	*Primary*	*Secondary*
Uganda	0·3	2·2	8·0	50·7
French West Africa	0·5	5·2	11·2	65·4
Ghana	n.a.	n.a.	2·4	25·0
France	0·1	0·4	n.a.	n.a.
United States	0·1		1·9	2·1

SOURCES AND NOTES

Uganda: Data furnished by Ministry of Finance.
French West Africa: France, *AOF 1957.*

Ghana: Calculated from Ghana, *Education Statistics 1957* (Accra: Office of the Government Statistician, 1957), and Ghana, *Economic Survey 1957* (Accra: Office of the Government Statistician, 1958). Average of primary and middle-school teachers' salaries weighted by their salaries. Secondary-school salary estimated on the basis of data in Ghana, Staff List. . . . (Accra: The Government Printer, 1959).

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TABLE III

Selected Educational Data for Ghana

A. Enrolment in Public and Approved Schools

(thousands)

	1955	*1959*
1. Primary	429·6	483·4
2. Middle	105·0	140·0
3. Secondary	7·7	11·1
4. Teacher Training	1·3	4·3
5. Technical	1·3	2·2
6. University College	n.a.	0·5

SOURCE: Ghana, *Educational Statistics 1955, 1959* (Accra: Office of the Government Statistician 1955, 1959).

B. Percentage of 'Wastage' from Class to Class in Government and Approved Schools.

	1956	*1957*	*1958*	*1959*
i. Primary Schools				
Classes 1 to 2	31·6	29·6	28·7	26·5
Classes 2 to 3	6·4	5·0	6.9	8·3
Classes 3 to 4	6·0	5·4	6·9	5·9
Classes 4 to 5	8·5	7·4	9·3	8·3
Classes 5 to 6	7·5	6·3	6·7	4·8
ii. Middle Schools				
Forms 1 to 2	8·1	5·9	8·7	5·5
Forms 2 to 3	8·5	5·4	8·9	3·7
Forms 3 to 4	5·9	4·9	11·8	8·8

C. Changes in Teachers' Salaries and Qualifications

	Number (units)		Average Annual Salary (£)	
	1957	*1959*	*1957*	*1959*
Primary Schools	14,893	15,044	120	156
(qualified)	(5,734)	(6,956)	(177)	(219)
(unqualified)	(9,159)	(8,088)	(84)	(102)
Middle Schools	3,599	4,360	204	256
(qualified)	(3,070)	(3,825)	(204)	(277)
(unqualified)	(529)	(535)	(87)	(103)

SOURCE: Ghana, *Education Statistics 1957, 1959* (Accra: Office of the Government Statistician, 1957, 1959).

TABLE IV

Changes in Selected Prices

Ghana, Uganda, 1958

(1954 equals 100)	*Ghana*	*Uganda*
Imports	101	100
Exports	90	82
Cost of living	108	114
Locally produced food	112	n.a.
Primary school teachers' average annual salary	137	155
African government employees' average annual salary	129	163
African wage-earners' average annual salary	120	119
European wage-earners' average annual salary	120	120

SOURCES AND NOTES

Ghana: *Labour Statistics 1958* (Accra: Office of the Government Statistician 1959), information furnished by the Government Statistician and Birmingham, W. B. 'An Index of Real Wages of the Unskilled Labourer in Accra', *The Economic Bulletin*, Vol. 4, No. 3 (March 1960) (Accra: The Economic Society of Ghana).

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Note: In Col. (1) primary school teachers' average annual salary estimated; average annual salary for African wage-earners includes unskilled workers only; European wage-earners' average salary includes government employees only.

TABLE V

Earnings by Ethnic Group and Sector in Ghana and the Federation of Mali 1956–7 Expressed as Ratio to Average per capita Gross National Product

	Ghana	*Mali*
Average *per capita* annual wages of:		
Europeans, public sector	20·3	19·7
Europeans, private sector	18·4	20·0
Africans, public sector	1·8	7·4
Africans, private sector	1·8	3·4

SOURCES AND NOTES

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Note: G.N.P. subject to considerable margin of error. However, even a relatively large change in G.N.P. would not greatly affect these ratios and the comparison.