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SOME PROBLEMS OF NATIONAL ACCOUNTS ESTIMATION IN  
AFRICAN COUNTRIES

(Prepared by the secretariat of ECA)

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AFRICAN COUNTRIES

Introduction

1. The present paper is based mainly on the information about methods of national accounts estimation in selected African countries, which was obtained in connexion with the preparation of the "Handbook on National Accounts for Africa". An attempt has been made to concentrate the attention on main areas of particular difficulty since it was not possible, of course, to cover in detail the very many specific problems of national accounts estimation.
2. A number of the difficulties met by African national accountants are not specific to Africa alone. The same problems are encountered by national accountants in all parts of the world including the statistically highly developed countries. While the nature of the difficulties may be the same, however, the problem of how to overcome them may sometimes be more serious in African countries.
3. It is evident that in countries where few resources are devoted to statistics, the national accountant has a very hard task indeed. He is given the responsibility for providing estimates which are of great importance for economic policy decisions, without having available the proper basic information which could make it possible for him to do the job as thoroughly as he would like to. It is hoped that the present paper may help to support the national accountants in their claim for a more adequate foundation on which to build their estimates.
4. As is well known, there are two main lines of approach to national accounts estimation in African countries, largely determined by the approaches used in the countries which until recently have been most influential in the development of African statistics. This difference in approach has had as its result not only differences in the arrangement of the accounts in two groups of countries (the French system and a system

more related to the SNA), but it has also resulted in differences in the basic method of estimation of otherwise comparable aggregates and components.

5. This paper is concerned with methods of estimation of the basic components of the accounts and not with the definition of these components or their arrangement in systems of accounts. Differences in definitions and in accounting systems are, of course, important for the interpretation of the estimates and for their usefulness for various purposes. However, the more basic problem of how the various items were originally obtained is often of even greater importance for the significance of the results.

#### General about methods of estimation

6. The present paper is based on the assumption that the countries of the region are attempting to construct fairly comprehensive and complete national accounts. In their efforts to do so they may be following the recommendations as to the development of various basic series, which were proposed by the Working Group on the Intermediate System of National Accounts for Use in Africa, or some similar system of priorities. It appears that this assumption is in conformity with what is actually happening in the region.

7. All the countries which are attempting national accounts estimates are fairly ambitious and aim at as complete a coverage as possible. The alternative possibility, to concentrate intentionally the estimates on some of those industries or those sectors of the economy for which relatively adequate information is available, does not seem to have been followed in any of the countries of the region.

8. Another assumption basic to this paper is that continuous estimates over a series of years are attempted and not only isolated estimates for one or a number of discontinuous years. For quite a number of African countries the only national accounts estimates at present available do, as a matter of fact, refer to isolated years or groups of isolated years and no pretension is made about comparability between the groups. It is assumed, however, that in the future continuous, comparable estimates will be attempted.

9. Isolated estimates for one or more years are important in that they usually represent the first attempts at a mapping of the structure of an economy. As soon as possible, however, time series, at least for the most important break-downs, should be attempted, since only such series represent data which are really useful for development planning. Also, it is only in establishing continuous estimates that the national accountant comes to grips with the basic data problems. For isolated estimates, very rough assumptions may sometimes be used, but in order to develop significant time series much more care has to be shown in order to reduce the margin of error of the estimates and this cannot, in the last instance, be done without improvement of the basic data on which the estimates are built. Most of the problems and difficulties mentioned in this paper refer to the development of continuous estimates.

10. The three classical approaches to the estimation of gross domestic product, namely the production, the income, and the expenditure approach, are all applied in the region. It is probably true to say that the production approach is the one most widely used, although in all countries a mixture of several approaches are, in fact, applied. It should also be noted that an application of the production approach to national accounting does not necessarily mean that production statistics are particularly well developed in the country in question, but rather that the prevalent statistical thinking tends to emphasize the importance of production statistics in general and of the commodity flow approach to national accounts estimates. This may explain why many of the countries which follow the production approach have so far not succeeded in developing continuous, annual national accounts.

11. In a number of countries of the region where income statistics have up to recently, broadly speaking, been developed more than statistics on production, it has followed, almost as a natural consequence, that the main approach to national accounts estimation has been the income approach. Most of these countries have developed comparable time-series for the main components of the national accounts covering a number of years, up to a decade or more.

12. A few countries have also found it convenient to make the estimate of the main product total by means of the expenditure method. In these countries, greater reliance has been put on family living surveys and similar sources than on either product or income statistics.

13. Countries which are using the French system of national accounts representation usually emphasize the production approach in their basic estimates, although in order to arrive at the set of sector accounts which is also included in this system, a considerable amount of income statistics is also required. Conversely, countries with more developed income than production statistics have tended to adopt a system of national accounts representation more in line with the SNA and have not concentrated on the elaboration of commodity balances or the application of the commodity flow method.

14. The intermediate system of national accounts for use in Africa which was recommended by the Third Conference of African Statisticians for experimentation represents an attempt to combine the two approaches to national accounts representation. In order to implement this system, countries which have so far concentrated on the development of their income statistics and have primarily applied such statistics for their national accounts estimates would have to make supplementary estimates by the commodity flow method. In order to do so, they may first have to concentrate on a further elaboration of their production statistics and on a classification of their foreign trade statistics by economically significant product groups. A further development of income statistics by all countries of the region would also be required in order to construct the sector accounts of the intermediate system.

15. In the following, a number of problems of national accounts estimation will be touched upon, most of them likely to arise regardless which of the three approaches is used as the main one. In addition, a few difficulties which are specific to the various approaches will be dealt with briefly. Again, it must be stressed that the treatment of the various problems must of necessity be sketchy and could not possibly be exhaustive within the scope of the paper.

Agricultural production

16. Since the countries of the region are overwhelmingly agricultural, the quality and comprehensiveness of basic agricultural statistics are, of course, of the greatest importance for the reliability of their national accounts estimates. The total agricultural production of the countries may conveniently be divided into the four main areas of crop production for exports, crop production for domestic consumption, animal production and the production of fruits and vegetables. In addition, forestry and fishery production is also included with agricultural production in the wider sense, to the extent it is important enough to be covered at all.

17. The problems which will be dealt with here refer mainly to the estimates of crop and animal production because these parts of total agricultural production are the most important ones in all the countries. However, most countries of the region also find great difficulties in arriving at comprehensive and reliable estimates for the other parts of the agricultural sector. Information from family living surveys combined with scattered production data are virtually the only bases for estimating these items, and the resulting estimates can hardly be considered fully adequate. Considering the relative unimportance of this part of the agricultural sector, however, it may be justified to say that improvements of these estimates would contribute relatively little towards making the national accounts of most countries of the region more meaningful and therefore may be given somewhat lower priority. On the other hand, improvements of the estimates of crop and livestock production are very much required as soon as possible in order to obtain significant national accounts estimates in many countries.

18. Agricultural production for exports in the region is generally estimated on the basis of export figures, information about the purchases of marketing boards and other data. Normally, each country exports only one or a few agricultural products and almost the total crop of these products is exported while only limited quantities are consumed in the

country. The information mentioned combined with a rough estimate about the part used for domestic consumption is usually sufficient to obtain a reasonably good estimate of the production of export crops.

19. The problem of estimating the production of domestic crops is much more difficult. The available information about these crops is in some countries virtually nil, in others some rough estimates are available about approximate area under cultivation and assumed yields, while a few countries have more or less complete sample surveys of the main crops at yearly or less frequent intervals. Decennial agricultural censuses are available in some countries and these provide benchmark data on production levels and basic structural information which is very useful also for national accounts estimates which refer to years other than the census years.

20. It is evident that for countries where no agricultural census or sample survey exists, the basic data from which the national accountant has to work leave very much to be desired as far as estimates of the production of domestic crops are concerned. The estimates of the level of production may for these countries differ very considerably from reality. But even more serious from the point of view of utilizing the gross product estimate as an indicator of overall economic activity, a reliable estimate of the variations in the agricultural production is very difficult, if not impossible, to arrive at. Estimates of the variation in the production of these crops, which are obtained by means of very approximate assumptions about the changes in yields of the various crops are, of course, liable to margins of error which exceed safe limits.

21. It depends on the methods used in estimating the production of domestic crops whether subsistence production is, as it were, automatically included or not. In some countries, an attempt is made to estimate total production of the various crops, marketed as well as non-marketed, and it is not always clear to what extent non-marketed production is actually covered. There are also instances where no explicit information is given on the methods of estimating agricultural production, so that it is not possible for the user of the data to know to what extent subsistence production is actually covered.

22. Some countries have good information on the production of the "organized" agricultural sector and supplement their estimates for this sector with separate rough estimates for the subsistence sector, based, for instance, on an assumed per capita consumption which is multiplied by estimated population.

23. Also the estimates of animal production are in many countries of the region based on very scanty basic information. If no relatively reliable estimate of the number of livestock exists, it is evident that even an approximate estimate of total meat and dairy production is very difficult indeed. Ingenious indirect methods of measuring meat production, which take their starting point in information available, for instance, on the exports of hides, are sometimes resorted to.

24. In some countries, information is available on slaughtering in municipal slaughter-houses and on the sale of milk, cheese, eggs, etc. in large urban markets. On the basis of this information, a rough estimate of total marketed animal production may then be obtained. However, if the sources from which the basic information is obtained cover only a small part of the total sales of the products concerned, the margin of error of the resulting estimate must be considerable, and not much reliance can be put in estimates obtained in this way of annual variations in the production. In the absence of more complete basic information, however, it is not possible to suggest any other method of estimation which might lead to more reliable results.

25. The only possible solution to the problem of obtaining satisfactory information on the production of domestic crops and on animal production is through a system of sample surveys undertaken at regular intervals. More complete sample surveys every five years may be combined with less detailed surveys every year which could provide data for extrapolation of the production figures. It is fully realized that a really thorough-going improvement of this field of statistics will have to be a long-term affair, perhaps more because of lack of resources than for technical reasons. However, since agricultural production is likely, for some



considerable time to come, to remain the most important component of the gross domestic product of African countries, it is evidently necessary that very high priority is given to as speedy an improvement as possible of basic agricultural statistics.

26. With the introduction of sample surveys of small-scale farming, it should also be possible to obtain information separately for subsistence farming and for that part of this sector which produces for sale on the market.

27. What has been said above should not be taken to imply that the very commendable efforts at present made by national accountants in various African countries to make estimates of the level and annual variations of agricultural production on the basis of the scanty material available should in any way be discouraged or abandoned. Information is urgently needed on this point and in the absence of other data even the rough estimates which exist at present represent a very valuable contribution. As all national accountants are aware, however, even relatively small improvements in the basic material with which they have to work for the agricultural sector would help greatly in their efforts to provide as reliable and comprehensive estimates as possible.

#### Agricultural prices

28. While the production estimates of other sectors are frequently but not always obtained in value terms directly from the basic sources, the value of agricultural production in the region is generally obtained by multiplying estimates of the quantities produced of various agricultural crops by average prices. What is said in the following is therefore to some extent valid also for other industries but mostly for agriculture.

29. For non-marketed production the well-known question arises as to which general system of prices should be used since this production is not actually valued in monetary terms. The solution adopted varies from country to country. Some countries of the region follow international recommendations and use prices which are assumed to be as close as possible to producer prices while others apply the prices of the market.

30. Regardless which solution is adopted in this respect, however, the more basic question remains to what extent the prices collected in one or a number of retail markets are, in fact, representative for the country as a whole. Not only may the level of prices vary considerably from region to region and between urban and rural areas, but seasonal price variations which are important for agricultural products may also differ in the various parts of a country. Relatively small differences in the prices used to value the quantities produced of a particular commodity may be large enough in percentage terms to influence the value estimate considerably.

31. Very great care is therefore necessary both in the collection of price data and in the selection of prices used for estimating global production values of the various agricultural crops. This problem is, of course, not special for African countries but is met by national accountants all over the world. However, it may be particularly important in this region, because of the isolated nature of many markets and the general difficulty of determining exactly the market price of a commodity even in a single market. Bargaining is widespread and prices frequently also vary with quantities purchased.

32. Improved price information would help to make estimates of production values more accurate, but it will always be necessary to show the utmost care in the selection of prices. Small scale ad hoc surveys would perhaps be useful in determining the relationship between prices quoted and prices actually paid in specific markets.

#### Stocks of agricultural products

33. While information on the changes in stocks of export products is available in many countries, stock changes of agricultural products for domestic use are generally unknown in the region. The lack of information on such stock changes presents particular difficulties because in many countries the crop year and the calendar year (or other year of reference for national accounts estimates) do not coincide.

34. The crop years for some crops in countries of the region are spread over two calendar years so that the sowing falls within the first year and the harvesting within the second. This is not strictly speaking a question about agricultural stocks, since no finished product appears till the second year. However, if the work connected with sowing and care of the crops during the first year is not entirely negligible, payments of wages and for inputs during that year ought to have been matched by a corresponding imputed production for stocks during that year. This may, however, be considered a refinement which it is justified to ignore in view of the general lack of information. Correspondence between production and expenditure with regard to the crop in question would still be ensured within the second calendar year.

35. A more serious problem may arise if an important crop is harvested towards the end of a calendar year. Almost the whole production of this crop should then be considered as increase in stocks since the actual consumption of it would fall almost completely in the next calendar year. The formal balance between production and expenditure would, of course, be maintained in the first year regardless whether the production of the crop is considered increase in stocks or consumption on the expenditure side. If it is considered consumption in the second year it would have to be outweighed by a corresponding figure for depletion of stocks in that year.

36. In the countries where the above problem actually arises, it appears that the production of the crops in question as a general rule is matched by consumer expenditure in the same calendar year. The reason for not attempting to shift the expenditure figures to the following year is sometimes stated to be that information on stock changes is not available. However, if it is known that the major part of the production is actually consumed in the following calendar year, it may be worth treating the total production of the first year as production for stocks and maintaining a consistent one year time-lag between production and consumer expenditure. It is realized that such a procedure would still be only approximate, but it might result in a more realistic registration of actual movements in personal consumption of agricultural products.

37. If there are only small annual variations in the production of the crops concerned, the procedure indicated above, of course, may not lead to very noticeable improvements as compared to the treatment used today. It also depends on the general accuracy of the production estimates for the crops in question, whether it would be worthwhile at all to attempt a refinement of the type indicated. Certainly, any improvement of the basic production data would be of much more fundamental importance and therefore should be given priority. On the other hand, a change in methodology like the one indicated is relatively easy to undertake and should be implemented when necessary in order to improve the meaningfulness of the estimates.

38. Changes in live-stock should also be included in the figure for net changes in stocks or, even better, should be shown as a separate component of the figure for net stock changes. Very few countries of the region do actually have the information necessary for making even rough estimates of changes in live-stock. For several countries, the methods of estimation of meat production imply the assumption that all additional live-stock during a year is slaughtered and consumed. This serves to illustrate that any attempt at an estimate of changes in live-stock is closely connected with an improvement of the estimates of animal production and cannot be implemented independently of such an improvement.

#### Manufacturing

39. Manufacturing is at present in most African countries of far less importance than agriculture, but efforts are being made to develop the industry. Industrial development is a central feature of many of the economic development plans of the region. It is therefore necessary to establish as soon as possible reasonably accurate estimates of the share of manufacturing in gross domestic product and of the changes in this share. In order to do this, high priority must be given to the improvement of basic manufacturing statistics.

40. In the same way as for agriculture, information is available in several countries of the region about the production of the modern or organized part of the industrial sector. Some countries also try to cover small-scale industry. The surveys at annual or less frequent intervals by means of which this information is obtained as a rule cover an unknown part of the total universe.

41. In addition to their limited and uncertain coverage, they also often suffer from other drawbacks. For instance, as a consequence of the fact that no industrial register exists, the coverage of existing enterprises may vary from year to year, so that no reliable information about the annual variations of manufacturing production is available even for the limited part of the industrial sector which the surveys cover.

42. Improved industrial registers combined with better authority to claim information would serve to improve the existing surveys. The fact that the total number of enterprises in the modern or organized part of the manufacturing sector is small in many countries should make it possible to aim at full coverage for this part of the industry even if statistical resources are limited.

43. Where no information is available in surveys, the production of small scale industry is sometimes estimated by the national accountant by assuming the same ratio as for large-scale industry between production and a known variable, like, for instance, employment, for which some information is available in other sources. Handicrafts are frequently either not covered at all in the national accounts or some very rough estimates are included which represent conclusions on the basis of whatever scattered information is at hand.

44. The best way of covering small-scale industry is perhaps to include in an eventual survey of manufacturing, enterprises down to those with only one employee. This would increase the work considerably in comparison with surveys covering enterprises with five or ten employees or more, but would, on the other hand, eliminate the necessity for special sample surveys for this part of manufacturing. It would be a great advantage if urban handicrafts, if at all possible, could also be covered by the same surveys.

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45. As far as rural handicrafts are concerned, the problems of statistical coverage resemble those for subsistence farming and it is, as a matter of fact, impossible to separate handicrafts from the other activities of the rural household sector. Sample surveys aiming at obtaining information about the rural household sector would therefore naturally also cover rural handicrafts activity.

#### Imports and exports

46. Although statistics on external trade are available in all countries of the region, so that the problem of complete lack of basic information does not arise, the national accountants still meet problems in utilizing these data for their purposes. The problems are mainly connected with the presentation and the coverage of the data.

47. The classifications of external trade statistics, including the international standards, are not constructed primarily with their use for national accounts purposes in view. Still in most countries of the region, external trade statistics are presented with a classification detailed enough to serve as a basis for estimates by the commodity flow method. The question is mainly how far one should go in splitting groups and items of imports which cover goods with multiple uses and to what extent one can use groupings already available directly for national accounts purposes.

48. National accountants in most of the countries of the region encounter difficulties because of unsatisfactory coverage of the external trade data. For one thing, smuggling is an unavoidable phenomenon in countries with long borders which are difficult to control, and it may sometimes reach important proportions. No allowance can be made for smuggling except in a very rough way since even a largely conjectural commodity break-down is not feasible.

49. Another problem with regard to the coverage of external trade statistics is met in the land-locked countries, particularly in the Western part of the region and in the coastal countries bordering on these land-locked countries. Part of the goods in transit through the coastal countries are not registered as such in their external trade statistics, but are shown as final imports. This is because wholesalers in the land-locked countries have offices in the coastal cities and only forward their imported goods to the interior as need arises. In addition, a number of West African countries are still formally in a customs union, or in practice they form a free trade area. Imports and exports between these countries are sometimes recorded and sometimes not, specially in the case of products like cattle, fish and kola nut.

50. This uncertainty with regard to the coverage of external trade data, presents very serious problems for the national accountants of the countries in question. In order to solve these problems, sample survey of transport between the countries along the main roads, would be of very great help and such surveys do already exist to some extent.

Commerce and transport

51. The domestic production of agriculture and manufacturing, together with the imports and exports of commodities, supply in most countries practically all the goods which pass through the transport and commerce sectors. In some countries, however, mining is also of great importance both as a component of gross domestic product and as a user of transport services. Mining statistics are, as a general rule, well developed and the problems met are not of the same degree of seriousness as those met for agriculture and manufacturing.

52. The product of the commerce and transport sectors is, in those countries of the region which apply the commodity flow method, generally estimated by applying more or less roughly estimated mark-ups to the figures for the supply of goods handled by these sectors. To the extent that up-to-date and representative mark-ups are carefully selected, this indirect method of estimation may lead to relatively reliable results. Special ad hoc investigations are sometimes required in order to establish the mark-ups and these investigations should cover a wide variety of goods. Sometimes it <sup>is</sup> necessary to "work backwards" from known prices in the market, and sometimes a comparison between market prices and producer prices supplies the required information, but most frequently trade and transport mark-ups are added to producer and c.i.f. import values.

53. In the "unorganized" sector of the economy, the basic producer himself frequently also provides trade and transport services in connexion with the goods he is producing. Not only is there then no way of obtaining a reasonably accurate estimate of these services, but it may also be preferable for conceptual reasons not to attempt to separate them from the basic production. The actual arrangement of productive activities in the "unorganized" sector is such that a neat classification according to usual industrial groups is not possible.



54. A direct estimate covering goods as well as passenger transport is usually also possible on the basis of production statistics and company returns for at least part of the transport sector. Basic information of this type is, however, generally lacking for road and river transport in the region and additional sample surveys for this part of the sector would be required in order to obtain complete coverage.

55. The countries which have well developed income statistics are also able to make a direct estimate of the value added originating in commerce. Production statistics for this sector are, however, as a rule not available, and countries relying mainly on this type of statistics are therefore confined to indirect estimates.

#### Government

56. In all countries of the region basic data are available which permit relatively good estimates of domestic product originating in central government and of all transactions of this part of the government sector which are included in the national accounts. Although information is also available for local and provincial government, the time-lag involved in obtaining the data frequently makes it necessary to resort to extrapolations for the purposes of current estimates. Also for central government, budgets often have to be used instead of final accounts for the most recent years, but actual figures are usually available for the years previous to the most recent one.

57. As for external trade, the problem of lack of basic information does not arise or at least is not serious as far as the government sector is concerned. As a matter of fact, the major problems of the national accountant in making estimates for this sector concern the best possible utilization of the relatively abundant raw material available. To make the data useful for national accounts purposes, the government accounts have to be reclassified by economic and functional categories, and both conceptual and practical problems arise in this connexion. The national accountant must have considerable knowledge about the struc-

ture and contents of the government accounts as originally presented in order to do the reclassification work satisfactorily, and a considerable amount of detailed, painstaking work is required during the actual reclassification job. A number of items in the original documents have to be split, and most items must be re-shuffled in order to fit into the re-classification framework.

58. Work on the reclassification of government accounts by economic and functional categories according to international recommendations is undertaken by several of the countries of the region. Sometimes the work is done by the Ministry of Finance or by a special person in the Statistical Office while in a number of cases the national accountants themselves have to do this work. It is a definite advantage if the national accountant can receive the reclassified figures in a form ready for inclusion in his tables, since it is hardly possible, in addition to his many other duties for him to do the reclassification work as thoroughly as he would have wished.

59. There is no doubt that the reclassified accounts for several countries of the region could be considerably improved if additional resources could be earmarked for the task. It is necessary that this be done as soon as possible, since the raw material for good estimates of all relevant items for at least part of the government sector is available and should be utilized to the fullest extent possible. It may not always be realized that the results of reclassifications made in detail may differ substantially as compared with rough reclassifications. There should be no need to emphasize the importance of establishing reliable estimates for this important sector of the national accounts at the earliest opportunity.

60. Even if resources do not permit the immediate inclusion of local government in the reclassification scheme, work should be started on making the reclassification for central government as complete as possible. As a better supply of material for the other parts of the government sector becomes available, the experience gained in working with central government would make the task of extending the estimates much easier.

#### Other services

61. No attempt will be made to go in detail about the specific difficulties which are met in the region, in estimating the domestic product originating in the various individual parts of the other services industry. Other services may for the present purposes be considered to include the banking and the dwelling sectors, education and health, the various individual and communal services rendered to the public and last, but not least, also the "unorganized" part of the commerce sector. For some of these components like banking, education, and health, sufficient information is available for reasonably reliable estimates. For the rest, however, basic data are almost completely lacking.

62. For some services consumption as well as production are sometimes estimated by multiplying population data with an assumed per capita consumption. This method of estimation may yield a result with a reasonable margin of error, provided the population figures are fairly correct and the per capita consumption data are carefully selected. In the absence of sample surveys which could provide more exact direct estimates of the production of other services, it is not possible to suggest any major improvements of the methods of estimation used for this sector at present. It is perhaps also reasonable to suggest that resources should not be spent on minor improvements of the estimates for other services till the data for more important sectors like agriculture and manufacturing are improved.

#### Wages and profits

63. Some countries of the region estimate the product originating in "organized" sectors outside agriculture as the sum of wages and salaries and profits. The basic information for these estimates is mainly obtained from corporate enterprises which are in many countries required by law to publish annual accounts. Income tax statistics are also used to some extent.

66. The fact that corporations are legally required to make their accounts public would presumably ensure as complete a coverage as possible with regard to number of enterprises covered. It is also reasonable to assume that the information supplied is fairly correct. For these reasons, estimates for the organized sector based on corporate returns may reflect better both the level and the annual variations of the magnitudes measured than similar estimates based on more or less voluntarily submitted production returns.

67. However, the problem of coverage of small-scale industry and handicrafts and small enterprises in other sectors still remains and may be more difficult to solve where the income method is used than where the production approach is applied. An extension of the estimates, for instance, to cover small-scale industry and handicrafts simply by broadening the collection of similar basic data, which is possible with the production approach, could not, of course, be easily undertaken where the basic data are company returns. Special sample surveys would have to be used in order to include those parts of any given sector which are not covered by such returns.

68. Some difficulty may also be met in defining profits in the national accounts sense, where company returns are used. Depreciation allowances which do not correspond to what is economically correct may be permitted by the tax rules and applied by the enterprises. Also, accepted accounting practices may permit expenditures on certain capital equipment to be entered as current expenditures by the enterprises. The adjustments required because of these conceptual differences may be difficult because actual practices vary from enterprise to enterprise.

69. Where the basic data for estimates of wages, salaries and profits are obtained from income tax statistics, more serious problems with regard to coverage arise. Income tax data everywhere in the world tend to be under-estimates and there is usually very little basis for an adjustment for this. Where income tax data are used, the resulting estimates are therefore often left unadjusted or are adjusted in such a rough way that they are rather unreliable.

### Consumption and capital formation

68. Countries which apply the commodity flow method in their basic national accounts estimates will within this framework obtain estimates of both consumption and capital formation which are consistent with their product estimates, as well as a break-down of these components by type of goods. Even if the commodity flow approach does supply a convenient framework for obtaining consistent estimates, however, numerous difficulties are certain to come up during the actual process of estimation, because of the lack of sufficient basic information and the consequent need for indirect methods of estimation.

69. The problems and difficulties met by the countries of the region in making estimates of gross fixed capital formation were the subject of a special Working Group in October 1963<sup>1/</sup> and therefore will not be discussed in the present paper. To a certain extent, the problems of estimating private consumption are similar to those of estimating capital formation, when the commodity flow approach is used.

70. Countries which do not apply the commodity flow method usually obtain a total figure for personal consumption as a residual and in this way achieve a formal consistency in their estimates. However, even if the total is obtained as a residual, a break-down of this total may still be attempted on the basis of production data (which in a way amounts to a partial application of the commodity flow method) and information from household surveys.

71. Per capita consumption figures obtained from household surveys should of course, be treated with the utmost care since they usually refer to a special group of the population only. There is no way of

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<sup>1/</sup> See Report of Working Group on Problems of Estimating Capital Formation (E/CN.14/CAS.4/CF.4)

concluding from these figures what the per capita consumption representative for the country as a whole would be. In some countries, there may be a tendency to use rather indiscriminately per capita figures from household surveys which are clearly not representative for the population as a whole for the purpose of estimating personal consumption of various items. The population estimates of a number of the countries of the region are also uncertain, which makes it even more difficult to rely on estimates of personal consumption obtained in the way mentioned.

72. Still, if the estimates are made as carefully as available information permits, they are no doubt useful in arriving at a first approximation of a structural analysis of private consumption and should therefore in no way be discouraged. Also, as long as the information about production for domestic use of agriculture, handicrafts, and services still leaves very much to be desired there would be no great advantage in replacing the indirect estimates by direct information from these sources. However, it is necessary for the national accountants to be very much aware of the limitations of the present estimates of personal consumption and to seize every opportunity for improving them.

#### Estimates at constant prices

73. The supply of national accounts series at constant prices is rather scarce in African countries as compared to other regions and also as compared to the relatively abundant supply of series at current prices for this region.

74. There are several reasons for this. National accounts work in many countries of the region is still in the experimental stage, and estimates are only available for one or more isolated years.

Since these individual estimates are usually not comparable with each other, the question of constant price estimates does not arise at all. However, most of the countries which fall within this group apply the commodity flow method and could relatively easily produce constant price estimates when the opportunity arises. Some of the countries in the region which apply this method already produce both time-series and constant price estimates.

75. In several of the countries which base their estimates on income statistics, time-series covering a considerable period are available at current prices, but the question of constant price estimates has frequently not been solved or been seriously considered. Sometimes the need for series at constant prices for the purposes of economic policy was not recognized when the estimates were established. Relatively stable internal price levels may also have contributed to strengthen the impression that constant price estimates were not really necessary.

76. The most important reason why so few estimates at constant prices are available for countries using the income approach is, however, probably methodological. To obtain constant price series these countries would either have to deflate their current series by appropriate price indexes or construct entirely independent estimates on the basis of quantity and price data for production. Price indexes appropriate to the deflation of some components of domestic expenditure, like exports, imports, and private consumption are usually available in the countries, but their coverage and representativeness often leave much to be desired. For instance, there are in many countries two or more consumer price indexes which cover different strata of the population, and these indexes do not always show the same movements. It is therefore difficult to say that one of these indexes represent the movement in the general price level more faithfully than the others, and one is led to the conclusion that a representative index for the deflation of consumer expenditure does not exist at all.

77. With the arrival of development planning the demand for constant price estimates is increasing everywhere in the region, and the preparation of such estimates is now under way also in several of the countries which have used the income approach for their current estimates. The solution actually adopted in these countries has often been to make their estimates at constant prices independently of the current price estimates on the basis of whatever information is available on prices and indexes of production.

78. The need for supplying time series at constant prices for at least the main break-downs of the national accounts in the near future makes it necessary for all the countries of the region to arrange their national accounts work from now on <sup>in</sup> such a way that constant price estimates can be obtained in as convenient a way as possible. Where the commodity flow method is used, time series at constant prices for domestic product and expenditure are, in a way, not much more difficult to obtain than series at current prices. Quantities as well as values are shown for most items in external trade statistics and similar information is also generally available for domestic production, to the extent domestic production figures exist at all. With the commodity flow method, estimates at constant prices should be obtained practically simultaneously with the current price estimates, since they only imply an alternative valuation of quantities at base year prices instead of at current prices. Constant price estimates for domestic product and expenditure obtained in this way will be completely consistent with each other since both series are built up from the same components.

79. If price indexes are used to deflate current data, correspondence between the various break-downs of domestic product in constant terms does not automatically occur, except if the same overall price index is used for all break-downs. This is a consequence of the fact that price indexes relating to various components or aspects of domestic product are all imperfect and not mutually consistent. In order to obtain formal consistency between the various break-downs of domestic



product at constant prices obtained by deflation by means of price indexes, adjustments are therefore necessary. Depending on the magnitude of these adjustments, the national accountant may or may not consider the <sup>results</sup> reliable enough to be used. If some of the price indexes used for deflation are known to be less reliable than others, however, the national accountant may feel justified in adjusting the series deflated by the less reliable indexes, even if the adjustment required is large.

80. Also if independent estimates at constant prices are made, the question of consistency between the various break-downs will arise, if the estimates are not made within a strict framework like the commodity flow method which guarantees formal consistency at the first approach. The validity of implicit price indexes obtained from independently **estimated series at current and at constant prices** would be unknown. **Mutual adjustment of the various break-downs** in order to obtain formal consistency between the movements of the totals at constant prices obtained by the various approaches would then be the only possibility. It is likely that there would be very little basis for assuming that either of the totals is more dependable than the others.

81. In view of the difficulty of obtaining consistent constant price estimates for various break-downs of the domestic product, the countries would probably be well advised in trying first to obtain a reasonably good estimate for only one break-down, and this could be either product by industrial origin or by expenditure categories. To "force" two or more inconsistent estimates into formal consistency is a doubtful procedure which could not lead to very useful results. Experimental estimates by more than one approach would still be very useful in revealing the potential inconsistency between the constant price series adopted and estimates arrived at by other approaches.

Publication and timeliness of the estimates

92. The national accounts estimates of African countries are relatively well documented. For a majority of the countries which have published estimates for a number of years at least, some information about the methods applied is available in published form. Some of the published material goes into great detail and compares favourably with national accounts publications from anywhere in the world.
83. The importance to the users of the data of a detailed textual treatment of methods applied together with well presented and amply footnoted tables can hardly be overestimated. The actual contents of items presented under the same formal heading often varies considerably between countries and misinterpretations are unavoidable in the absence of detailed and conveniently arranged explanations. In spite of the relatively high standards maintained in this respect in the region, many countries could still improve their presentation of the data, particularly by ensuring that all deviations in contents of items from what might be expected are clearly indicated in footnotes.
84. Another problem is the degree of accuracy which ought to be required from published estimates. Some countries of the region try to indicate to the user in broad terms the margins of error attached to the main series published, while most countries do not make any attempt in this direction except sometimes by qualitative statements. It is certainly very important for the user to be warned as to the degree of reliability of published estimates and, to the extent possible, all countries of the region ought to adopt the practice of indicating the accuracy of their estimates in a prominent place in the relevant publications.

85. A related question which faces national accountants everywhere in the world to a larger or smaller extent concerns the minimum degree of accuracy which an estimate should have before it is released for publication. It is impossible to give any generally valid answer to this question, because everything depends on the purposes for which an estimate is made and its eventual uses.

86. It is clear, for instance, that an analysis of yearly economic trends cannot be made in a meaningful way on the basis of national accounts data which have a margin of error greater than the annual variations they register. On the other hand, it may be quite justified to publish these data for the purposes of rough study of long-term economic trends or in order to obtain an idea about the structural relationships of the economy and their changes over a relatively long time period. Also, there should not really be any objection to the publication of rough estimates which are meant only as an illustration of possible methods which may be applied in future, more solidly based estimates and which in addition, may give some first approximations to a structural analysis of the economy.

87. It is extremely important, however, that no doubt is ever left in the user's mind about the limitations of a particular estimate and, consequently, about the uses to which it should not be put. There are no doubt estimates published in this region as well as elsewhere which fall short of the standards of accuracy required for the purposes for which they are actually used, either because sufficient warning is not given to the user about their limitations or because this warning is neglected.

88. Misuse of national accounts estimates can never be entirely avoided, because as soon as a weak estimate is committed to print, and regardless whether ample qualifications are given about its accuracy, there is the danger that it may be used for purposes for which it is not suitable. Because of this, the national accountant would be well advised not to release for publication very rough estimates which he knows are likely to be used for an unintended purpose. Experimental estimates with very high margins of error may be useful for the internal purposes of a government administration and can be used in this way without much danger because the national accountants who are responsible for the estimates will always be at hand to clear up points of doubt and to warn the users about the limitations of the figures. However, they should not be released for use by the public.

89. With regard to timeliness of the publication of national accounts estimates, it goes without saying that estimates which are intended to be used in analyzing short-term economic trends ought to be as up-to-date as possible. Those countries of the region which so far publish regularly annual estimates of the main components of the national accounts have a good record as far as timeliness of publication is concerned, since data for a particular year are usually available some time during the following year.

90. A number of countries of the region, however, have so far confined themselves to the publication at relatively long intervals of estimates which cover a series of years. As time passes, the usefulness of these series will, of course, be much reduced and it does not take long before they will be of historical interest only. All countries of the region should therefore as soon as possible aim at developing current annual national accounts estimates.

### Revisions

91. The particular problems which arise in connexion with the extensive revision of national accounts estimates have not so far created much attention in the region. In the countries which produce regular current estimates, the figures for a particular year are usually revised the following year, since the preliminary estimates are frequently rough extrapolations only. This is a routine procedure which does not raise any serious problems.

92. As far as is known, extensive revisions of estimates covering a long time period have so far taken place in only few of the countries of the region. For some countries, however, alternative series developed by different estimators are available for the same time period.

93. A thorough revision of all or a major part of existing national accounts data may be considered necessary either because new and improved methods of estimation are adopted or because a substantial amount of new basic statistics becomes available which requires the revision of earlier estimates in order to achieve comparability. As long as few basic data are available and a large amount of ingenuity is required in making the estimates, any change in method is likely to lead to considerable changes in the resulting estimates. Frequent and substantial revisions because of changes in method should be discouraged, however, because nothing tends to discredit the national accounts estimates more than repeated presentations of new estimates for the same time-period without any evidently compelling reason.

94. As a matter of fact, frequent revisions of key magnitudes for even the best of reasons would tend to make the users doubtful about the estimates. Therefore, such revisions should as a general rule be avoided as far as possible. Major revisions of course cannot be entirely avoided and should be made when new basic information appears. Even in this case, however, it may be preferable to wait until a considerable amount of new information has been accumulated before a revision is undertaken. It would probably be good policy as far as possible to avoid major revisions for any reason what-so-ever at more frequent intervals than, say, every five years.

95. It may be objected that it is, in a way, dishonest not to revise the estimates as frequently as opportunity arises. As long as not only the estimates to be revised but also the revisions themselves are rough and it is a question of relatively small revisions, however, this may still be justified. It is evidently much better to decide on one particular estimate and to stick to this as long as possible than to present a multitude of alternative series of unknown relative merit which will confuse the users and may make them lose their faith in the estimates altogether.

96. In the same way, it would be a good thing for countries for which a number of alternative estimates exist to choose one of these estimates as the official one and to build their future national accounts work on that.

97. Finally, it must be added that what has been said above refers to published estimates only. Continuous experimentation and search for improvements are, of course, necessary at the workshop level because otherwise the national accounts work would stagnate and nobody would know when a major revision of existing estimates would be justified and unavoidable.

#### Planning and national accounts

98. Many countries of the region already have economic development plans and the need for good national accounts estimates for planning purposes is becoming more and more evident. Economic development planning is sure to impose stricter standards on national accounts estimates than most of the uses to which such estimates have been put previously. National accounts data which represent orders of magnitude only would not in the base year of a plan give a picture of the situation which is sufficiently reliable to form a basis for sound planning and projection into the future. For this purpose, it is necessary to have

fairly accurate information about the importance of the various industries, about investment and consumption ratios, exports and imports, etc. Unreliable data could undermine the whole basis of a plan and leave it ineffective, because the underlying assumptions would be wrong.

99. Structural data for the base year alone would not be sufficient for the formulation of a development plan. Although a plan usually presupposes a change in a number of economic variables, historical factors and the economic and social environment will still determine the broad lines of the future development. Past developments as shown by national accounts data for a series of years must therefore be taken into account in planning the future. Marginal capital-output ratios, export and import elasticities, growth-rates of the gross domestic product at constant prices, etc. which can be derived from such data are invaluable in planning for the future. This means that national accounts data which register reasonably faithfully the development of the main components of the gross domestic product over a series of years long enough to show significant trends are also a necessary pre-requisite for planning.

100. The demand for national accounts data for planning purposes which may be most difficult to meet is the need for current, up-to-date and accurate figures for use in determining the annual progress of a plan. During the stage of implementation, it is very important that annual developments are registered within the framework of national accounts so that it may be clearly seen on which points action is necessary to "boost" the plan or whether changes in the targets are required. Although national accounts estimates, of course, would not be the only statistics available for measuring the annual progress of a plan, they are indispensable in providing a consistent set of data without which the implications of the plan progress on the various economic variables cannot be understood. In order to develop national accounts data which

could be used for this purpose, reliable short-term indicators which could be used in extrapolating the various complements of gross domestic product and expenditure would have to be established.

101. The requirements of planning represent both a challenge and an opportunity for the national accountants of the region. A larger effort than ever has to be made in order to utilize existing basic data to the fullest extent possible for accurate national accounting, and pressure has to be put on the authorities to provide more and improved basic material. The opportunity lies in the fact that as the understanding of the importance of national accounting for planning purposes grows, the national accountants will have a better chance than ever before for response to their claims for more resources and improved basic data.