

## PROBLEMS OF COMPARISONS IN AFRICA WITH SPECIAL REGARD TO KENYA

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In order to obtain the information needed to include Kenya in an international comparison of income and purchasing power, it was necessary to collect some data to supplement the regularly collected statistics. Special collection was particularly important for capital goods prices and rural consumer goods prices. The remainder of the work involved using unpublished data available from the Kenyan Statistical Division, either to obtain additional detail required by the comparison, or to maintain international consistency in concept and estimating procedures.

This paper is concerned with the practical difficulties of obtaining the data required for a study such as the International Comparison Project (ICP) in an African country. It does not discuss the more general problems of the international comparisons of prices and income except in those instances in which some mention of the more general aspects of international comparisons is essential for understanding a particular practical difficulty.<sup>1</sup> Even within this limited objective it is not possible to discuss every difficulty encountered and the paper will emphasize those difficulties which are apt to be met within most African countries and which have an important bearing on the reliability to be placed on the accuracy of the comparisons. One important point which is insufficiently emphasized in many studies on international comparisons, but which is the basic cause of many of the difficulties discussed in this paper, is that the data required for international comparisons is frequently different from the data usually employed by a country for its own national accounts. However, the data gathered for international comparisons is frequently valuable in filling out missing parts of the standard system of national accounts.

### EXPENDITURE ESTIMATES

#### *Household Expenditures*

In most African countries, including Kenya, household consumption expenditures are calculated as a residual item. The procedure of the ICP, which requires estimates on over 100 types of household expenditures, makes it necessary to estimate the value of household consumption directly. In Kenya, the only

\*The paper was written when the author was Assistant Professor of Economics at Georgetown University. Most of the information was gathered in Kenya between January and September 1970 during which time the author was on a leave of absence from Georgetown. The author wishes to thank Zoltan Kenessey, Irving Kravis, and Edward Murphy for the helpful comments they made after reading earlier drafts of the paper.

<sup>1</sup>The more general problems are discussed in a number of the other papers in this issue. See especially, Kravis and Kenessey, "Output and Prices in the International Comparison Project", this issue.

African country for which the expenditure estimates have been completed, calculating the value of the household expenditures categories required more effort than any other single task. The method used in making the estimates was the commodity flow method supplemented at times by the results of household expenditures surveys. Much of the basic information needed for estimating household consumption expenditures had been gathered by H. E. Dahl in his work involving the construction of an input-output table for Kenya.<sup>2</sup> The value of household consumption in the monetary sector calculated for the use of the ICP differed from the value calculated by the Kenyan Statistical Division (KSD) as a residual by less than 5 per cent.

Household consumption in the non-monetary sector<sup>3</sup> presents particular problems in international comparisons. The difficulties in this area are as much the result of the different needs of the national planners and the economist making international comparisons as they are of the inherent difficulties of making estimates of expenditures in this sector. "Where, for example, the planners are likely to have little impact and where the sector is also largely self-contained (e.g. some forms of traditional agriculture) there may be little to be gained from attempting to find reasonably accurate data".<sup>4</sup> Yet such sectors may represent significant portions of certain types of consumption and while their exclusion may not alter the planners' decisions, they may well be of considerable importance in making international comparisons of income and prices.

The expenditures estimated by the KSD in 1967 for the non-monetary sector and the relative accuracy of these estimates give an indication of the practical importance of the different needs of national planners and the ICP. The KSD estimates the value of non-monetary output for five consumption categories. These are: agriculture, forestry, fishing, water and the ownership of dwellings. The estimated values for agriculture and fishing are good; for ownership of dwellings they are fair, and for water and forestry they are unavoidably tenuous. The method by which the value of water and forestry production is estimated will be discussed in some detail below. Kenya does not make estimates of non-monetary production of a number of goods and services produced. Some of the excluded goods are pottery, household furniture and fixtures, and jewelry. The major services omitted are those associated with traditional social, religious and medical activities.<sup>5</sup> It is in the service sector that the absence of estimates for the

<sup>2</sup>H. E. Dahl, *Household Demand for Consumer Goods in Kenya 1963-1965, with Projections for 1966-1973*, The Chr. Michelsen Institute, Bergen, Norway, 1971.

<sup>3</sup>There is no satisfactory name for this sector. The non-monetary sector is used in this paper because that is what it is called in the Kenyan National Accounts. The name is misleading since money is widely used in this sector. Other names which have been used to designate this sector are: the subsistence sector, although the standard of living is usually above the subsistence level; and the traditional sector, although social, economic and political institutions and behaviour are probably changing as rapidly in parts of this sector as they are elsewhere in the country.

<sup>4</sup>*Survey of Economic Conditions in Africa—1968*, United Nations, Economic Commission for Africa, New York, 1972, p. 72.

<sup>5</sup>There are many works which include comments on traditional African services. Two that are particularly interesting are Mugu Gatheru, *Child of Two Worlds* (Heinemann, London-Nairobi, 1964) and John S. Mbiti, *African Religions and Philosophy* (Heinemann, London-Nairobi, 1969).

value of non-monetary production is apt to cause the greatest distortions in international comparisons with developed countries. Almost all of the expenditures on such services as burials and marriages, for instance, take place outside the monetary sector and will not be included in the estimated income of most African countries.

In comparing Kenya's output with that of another African country it will be necessary to compare what is included in the non-monetary sector in both countries. If the countries include different sets of goods and services in their estimates of non-monetary output, the reasons for this difference in coverage will have to be determined. It is possible that the activity is important in the non-monetary sector of one country, but not in the other. In this case it is possible that no adjustment will have to be made. The most likely reason is that in one country the item could be included with little cost—the information necessary to make the estimate being a byproduct of some study undertaken for other reasons—while in the other country no reasonable estimate could be made without incurring unacceptable costs. An example of estimates of non-monetary consumption resulting as a byproduct of other projects is the estimate of Kenyan non-monetary fish consumption. The base for this estimate is a study undertaken to determine the possible commercial value of Kenya's fishing areas. In the latter case some adjustments will have to be made.<sup>6</sup>

In addition to ensuring that the non-monetary sector includes the same items, it will be necessary to give considerable attention to the methods used to calculate the value of particular items. The usual procedure is to estimate the output of a particular item in the non-monetary sector and then multiply this output by some imputed per unit value. The way in which the quantity of non-monetary production—be it maize or firewood production—is estimated will differ between countries. The method used in one country may be superior to that used in another country. It will not be possible in most cases for the ICP to improve the method by which quantities are estimated since any such improvement would inevitably require extensive field work. The method of determining imputed unit value may also vary between countries but it should be possible to eliminate this source of distortion in international comparisons.

Some of the difficulties which will be encountered can be shown by discussing the way in which the KSD estimates the value of non-monetary water and firewood production. Estimates of the consumption of water and firewood are made by first estimating the needs of an average non-monetary household and then multiplying the average by the estimated number of such households. One difficulty arises in how the output is valued. The System of National Accounts states:

“Gross output for own consumption should be valued at producers prices in the market. Where the producer does not sell any output, the relevant prices are those at which producers in the same or neighboring localities sell the same or similar commodities.”<sup>7</sup>

<sup>6</sup>Another possibility is that both countries have the same basic data, but one country's statistical division is willing to publish estimates based upon this data while the other is not.

<sup>7</sup>United Nations, *A System of National Accounts*, New York, 1968, p. 96.

Kenya does not use the method suggested by the SNA. The KSD estimates how many hours it takes to gather the quantity consumed in the non-monetary sector and the number of hours are multiplied by the average wage rate for female agricultural workers. The product of the multiplication is the imputed value of the quantity gathered. There are excellent reasons why the KSD decided to value firewood and water by the imputed value of the labor needed to collect the quantities consumed rather than estimate the values as suggested by the SNA. Irrespective of the merits of the arguments of the KSD, the fact that their procedures differ from those recommended by the SNA creates difficulties for the ICP. Some adjustments will have to be made by the ICP if Kenya is compared with other countries that have a non-monetary sector and that follow the SNA recommendations in estimating the value of non-monetary firewood and water consumption.

In comparing the non-monetary sectors between African countries it may be necessary for the ICP to make adjustments in the country's official estimates. These adjustments are needed to ensure that each country includes estimates for the same items of non-monetary production, and values production in the same way. These recalculations may cause the values of GDP and output in the non-monetary sector which the ICP uses to differ from the official estimates.

When independent estimates of personal consumption expenditures are available which are satisfactory for a country's own account, there will still be some data adjustments that have to be undertaken for the ICP. Most of these adjustments will involve reallocating certain expenditures between the three main consumption sectors—business, government and households. These adjustments are necessary because most expenditures are allocated by SNA on the basis of which sector purchases the goods or services, while the ICP requires total expenditures on any particular good or service to be included in one expenditure category. The ICP allocated expenditures between the three main sectors using the concept of total consumption of the population.<sup>8</sup> This concept is designed to cover, in addition to expenditures included in household consumption by the SNA, the value of the goods and services that government, non-profit institutions and enterprises furnish free, or at reduced charges, which are clearly and primarily of benefit to the households as consumers. The major adjustments that were required were on health and education. Such adjustments may make considerable differences in the relative size of the three sectors. In Kenya, if all expenditures on education and health are included in the household sector, government consumption is approximately 10 percent of GDP. If all expenditures on education and health are included in the government sector, government consumption is approximately 18 percent of GDP. A comparison made between two countries which differed only to the extent that one country financed all educational and health expenses through the government sector and the other through the household sector would show a major difference in the relative importance of the two

<sup>8</sup>This concept was developed within the material product system and was subsequently used by the United Nations in its work on income distribution. See *Basic Principles of the System of Balances of the National Economy*, Studies in Method, Series F, No. 17, United Nations, New York 1971; and *A Draft System of Statistics of the Distribution of Income, Consumption and Accumulation*, E/CN. 3/425, 3 February 1972, Statistical Commission, seventeenth session.

sectors even though there was no difference in the total services provided in the two countries.

Expenditures on health and education are of considerable interest to most countries, particularly the developing countries. Usually separate studies on expenditures in these two sectors are available even though the information may not be used in the construction of the national accounts. This was the case in Kenya and no major data problems occurred in making the necessary adjustments. The same will be true for most African countries.

### *Capital Expenditures*

The capital sector should include all capital formation that occurs in a country. It must include both private and government capital formation. In most developing countries capital expenditures by the government are a major concern of the policy-makers and good data are available. In the case of Kenya little difficulty was incurred in combining the values of public and private capital formation. The only difficulty that might arise in some African countries is separating public expenditures on military assets from capital formation, although in Kenya the problem did not arise. Durable assets for military use are, of course, included by the SNA in current government expenditures and not in government capital formation.

The main difficulty in estimating capital expenditures was not in obtaining estimates for the various expenditure categories required by the ICP but in obtaining values that would be comparable to similar values obtained for other countries included in the study. Two main methods are employed in estimating the value of capital formation. These are the expenditures method and the commodity flow method. In the expenditures method the purchasers are asked to give their total expenditures on capital formation. In the commodity flow method, the individual capital goods are followed from the producer through the distribution sector to the final purchaser. This involves marking up imports and domestic production to purchasers' values and deducting the value of exports. In the expenditures approach the estimate of capital formation is the value of capital that purchasing firms capitalize. The commodity flow method is used in Kenya to estimate expenditures on residential construction, certain other building construction and producers durables except transport equipment. All other capital formation is estimated by the expenditures approach.

Comparability problems may arise between countries that use the expenditures method either because different countries require firms to include different items in capital formation or because the individual firms do not follow the rules set down by the central statistical agency. An experienced statistical division such as that in Kenya is apt to have few errors caused by incorrect completion of survey forms by individual firms. An illustration of a reporting error is provided in the construction sector of one of the countries in the ICP study. A firm had capitalized the total cost of a construction project which had taken several years to complete in the year in which it was finished. Often detailed knowledge about particular industries is required in order to be confident that all capital formation has been included by the reporting firm. For instance, in certain cases the user of electricity pays part of the capital cost of getting the electricity to him. The East

African Power and Light Co. (EAP and L) does not include the part of the capital expenditure paid by the user as part of its capital formation. Unless care is taken such expenditures may be overlooked. In the case mentioned, the EAP and L reports to the KSD the amount of capital formation in construction paid for by consumers as well as the value of capital formation in construction that it carries on its own books.

Most firms treat expenditures on capital goods which have a per unit value below some stated cost as current costs. This value will be called the lower value limit. A country that relies on the expenditures method to estimate capital formation would want to impose a uniform lower value limit on all purchasers of capital equipment. For a country's own accounts it would not make a great difference what the actual value was, as long as all firms used the same value. If two countries use the expenditures method and they use different lower value limits, this could cause a considerable difference in international comparisons. Some adjustments for different lower value limits between countries must be made in order to make valid international comparisons.

Another boundary problem is the distinction between capital and current repair. Capital repair should be included in capital formation while current repair should not. The SNA defines capital repair in the following way:

“The capital outlays should consist of significant alterations and additions to, or replacements in, the parts of fixed assets. In order to be classified as fixed capital formation, the newly incorporated parts should have an expected lifetime of use of one year or more and should involve substantial outlays; and should also lengthen the expected lifetime of the use of the fixed asset, or alter the character or volume of service which they yield.”<sup>9</sup>

The above definition leaves considerable latitude to the national accounts statistician in determining what should be included as capital repair. The decisions as to whether a particular repair expense should be included in capital formation may not be of major importance to the national accounts of any particular country. For international comparisons it is important that if a particular type of capital repair is included in capital formation for one country in the comparisons that it also be included in the other.

The greatest discrepancies in the coverage of capital repair are apt to arise when comparisons are made between countries using the expenditures approach and countries using the commodity flow approach. Countries using the expenditures method will probably include more capital repairs than those that use the commodity flow method. Most capital repair is undertaken by the user or purchaser of the equipment. The expenditures method requires that these users be surveyed to determine the amount of capital formation they have undertaken. It is a simple matter to structure the survey so that information about capital repair is also given. The commodity flow method does not require participation of the purchasing firms and will not generally include the value of capital repairs. The only capital repairs that countries using the commodity flow method will

<sup>9</sup>United Nations, *A System of National Accounts*, New York, 1968, p. 113.

include are those made by particular firms for which they have made special studies.<sup>10</sup>

Most African countries do employ the commodity flow method to estimate the value of capital formation in producers durables. It should be possible to make adequate adjustments for the difference in coverage or estimating methods between the African countries, either by including some item in a country's capital formation which it did not include or by excluding some item from capital formation which it did include. The recalculations will cause the values of GDP and investments which the ICP uses to differ from the official estimates for these values.

#### *Government Expenditures*

Government expenditures were readily available. For the most part the expenditures were estimated in accordance with the SNA. The only exception was that no estimates were available for depreciation of government capital equipment. It was not possible to construct estimates of government capital consumption on the basis of the information available. It is expected that a similar situation will prevail in most of the other African countries. Some adjustment will have to be made for this value when Kenya is compared with other countries. The problem is not as serious as it might appear because of the limited definition of the government sector used by the ICP. Total depreciation is essentially the depreciation on government buildings. For all countries which reported the value of depreciation of government capital according to the ICP definition of the government sector, the value was well under one percent of government expenditures. The only other difficulties were those encountered in adjusting the government sector in order to have it conform to the concept of the total consumption of the population. These difficulties were discussed in the section on household consumption.

### PRICE COLLECTION

#### *Prices of Consumer Goods*

The prices required by the ICP must have two major attributes in addition to representing the prices of all items in a given expenditures category. It must be possible to associate a well-specified item with each price and the prices must be national average prices. The price data in existence in most African countries probably possess neither of these characteristics.<sup>11</sup> The Economic Commission

<sup>10</sup>In the official Kenyan estimates, the only addition made for capital repair was the inclusion of the value of imported airplane engines in the value of capital formation. This is an obvious inclusion since it is one of the few capital repairs that can be estimated by the commodity flow method. For ICP purposes, estimates for the installation costs of the engines, the cost of major overhauls for locomotives and the cost of major repairs to ships were added to the official value of capital formation in Kenya.

<sup>11</sup>Few price collection agencies will have national average prices such as those required by the ICP. The reason for this is that most national statistics offices are not concerned with the absolute price of any item; rather they are interested in the change in the price of particular sets of items over time. The information required to measure changes in prices over time is less than that required to measure the level at any given time. The difficulties in getting national average prices for the U.S.A. will be different from those encountered in Kenya, but it is not clear that the difficulties in the U.S.A. will be easier to overcome than those in Kenya.

for Africa (ECA) is currently attempting to obtain information on price collection in all African countries. Once this information has been collected and examined, it will be possible to be more precise about the exact nature of the difficulties that will have to be overcome in Africa. It will be surprising if problems emerge that are not already present in those African countries with which the ICP has had experience.

### *Specification Pricing*

Specification pricing is frequently at a rudimentary level in African countries although specifications often are more exact than the written description would lead one to believe. Kenya collects prices for three indexes in Nairobi. These are the wage earners index, the middle income index and the cost-of-living index. In the first two indexes one of the items priced is "meat". The price of meat was different for the two indexes. A short conversation with the price collectors showed that they had a much more detailed specification in mind than the written specification when they actually collected prices. Both the type of meat and the type of retail outlet depended upon the index for which the price was being collected.

The lack of detailed written specifications and people trained to work from written specifications made it necessary for the ICP staff to spend considerable time in actually examining the items priced by the KSD and in writing specifications for those items which would be used in the comparisons. It was necessary to have outside experts come to Kenya to assist in these tasks.

### *Average Prices*

The calculation of national average prices is as important for international comparisons as having exact specifications. It is particularly important that rural prices be given their full weight.<sup>12</sup> Kenya regularly collects price data only in Nairobi, but the KSD undertook special pricing in Mombasa and Kisumu for a wide selection of items for the ICP, as well as some special pricing in Nairobi for a few items required by the ICP but for which prices were not regularly collected. It is believed that prices from these three cities will be a sufficient sample on which to calculate average urban prices. Prices for approximately 200 consumer items were collected.

Rural prices were collected in 13 villages by the KSD with the aid of the ICP. The KSD staff member on any particular trip did the actual questioning of sellers. He would explain the purpose of the project to the seller in the local language. The seller was then asked the transaction prices of the items that he carried which were being priced for the ICP. On certain items bargaining occurs. In this instance the seller was questioned about the price range. It is my impression that the sellers co-operated and that the prices quoted were in general quite close to the actual transaction price. The villages were chosen so that prices were collected in areas dominated by each of the eight largest tribal groups.

<sup>12</sup>For a detailed discussion of the reason why it is important to have a true average price see D. Usher, "Equalising Differences in Income and the Interpretation of National Income Statistics", *Economica*, N.S., August 1965, and D. Usher, "The Thai National Income in United Kingdom Prices", *Bulletin of the Oxford University Institute*, 1963.



The only province in which no prices were gathered was the Northeastern province.<sup>13</sup> Prices were collected for 45 items: 21 food, 13 clothing and 11 household items. The initial list of commodities was constructed on the basis of information presented in the rural expenditures survey undertaken in Central Province during 1963 and 1964, and from discussions with people familiar with non-metropolitan markets in Kenya. The initial list was modified on the basis of experience in the price collection.

There was no way to select an outlet sample prior to visiting the village in which prices were collected. In the typical small Kenyan town there are three general types of retail outlets. First are the "dukas". These are permanent structures which contain a single business and which operate on a daily basis. Almost every type of product can be found in one duka or another. Second there is an inside market. The inside market is a covered building which houses a number of individual sellers. There may be separate stalls, or there may only be tables set up in a single large room. There is generally a wide range of goods on sale in the inside market. However, the range of goods is considerably increased on market days. Finally, there is the open market. The open market only operates on market days. There are usually one or two market days a week. The open market takes place in an uncovered field which is typically enclosed by a fence. The sellers either sit on the ground or on a stool they bring with them. Most of the merchandise in the open market is agricultural produce, although clothing (usually second-hand), shoes, household utensils and other items, may be offered for sale. Prices were collected for an item for each type of retail outlet in which it was sold.

Most food items could be found, and were priced, in all three types of outlets. Food items were usually sold by weight in both the dukas and the inside markets. There were no scales in the outside market and food items were sold on some basis other than measured weight. It was necessary for the author to weigh the items priced in the open market in order to obtain the information needed for the ICP. In some instances the prices in the open market, on the basis of weight, varied considerably from one another and from prices in the inside market but in general there was little variation in prices. For example, in Nyeri prices obtained for cabbages in the outside market, which by our scales weighed  $3\frac{1}{4}$  pounds and 2 pounds were 20 and 18 Kenyan cents a pound while prices in the inside market were 20 Kenyan cents a pound.

There were three main types of units which were used as quantity measures in the open market. The measures used depended on the divisibility of the product being sold. The variability of price quotes per pound in a given market declined as the divisibility of the product being sold increased. Finely divisible products such as maize meal were sold by some standard container. Most of the sellers of maize meal would be grouped at the same location, all would charge the same price per container and all would have the same container. Rarely did we find a difference in weight between sellers of a finely divisible item sufficient to give different price quotes per pound.

<sup>13</sup>The Northeastern province is semi-arid and inhabited for the most part by nomadic people with few permanent markets. About 3 percent of the total population lived in this province in 1962.

For less finely divisible products such as sweet potatoes, the sales unit was the heap. In this case the seller would arrange his wares in a series of heaps in front of him. The price quoted would be for the heap. The buyer could take any heap he wanted at this price. The seller tried to make the heaps as close to the same size as possible, but of course there was some variability. Again all the sellers of the same product tended to group together, and usually there was little variation in the size of the heaps among sellers.

Finally, there were items such as cabbage and pineapples that were sold by the piece. In this case the price varied as the size of the item varied. The markets for milk, chicken and beef do not fit into the general description, and special procedures were used in obtaining rural prices for these items.

New clothing was sold almost exclusively in the dukas. Men's shorts and trousers, boys' shorts and women's and girls' dresses were for the most part made at the seller's place of business; however, brand name items were frequently available. The difficulty in pricing these items was in maintaining the same quality from place to place. Brand names were the most important sellers for other clothing items. The existence of brand names made it easier to ensure that the same item or quality was being priced at different places, but they did not do away with all difficulties. More of the variation in the various price quotations for a given clothing item is probably explained by quality differences than is the case for the variability in the price quotations for items in either food or household goods.

Most household items were sold in the dukas. Occasionally they were also available in the inside and open markets. The exceptions to this general rule are kerosene which was bought by the quart from a gas station, charcoal which was purchased from one of a number of specialists who were located on the outskirts of town, and chairs which were purchased from a carpenter's shop. The items priced for this category were of a simple kind and it was relatively easy to ensure uniform quality.

### *Prices of Capital Goods*

As in the case of consumer goods, the prices of producers durables collected vary considerably among African countries. The data collection problems in this area are not as difficult as those in consumer goods, however. Most producers durables are imported from other countries included in the study. There is no problem in obtaining the specifications of a particular producers durable or with matching this specification with equivalent goods in other countries. The distributors of producers durables were quite willing to provide prices when they were approached by an ICP staff member. The purchasers of producers durables which did not have a local distributor were also very co-operative. In most African countries the number of distributors and purchasers of durable equipment is quite small and good coverage is possible with little effort.

In construction the difficulty was not in getting prices or descriptions of individual items within a country, but in attempting to find equivalent items in the countries to be compared. The reason for the difficulties encountered in construction is that the general procedure used by the ICP relies to a large extent on physical identity of items being compared. The nature of the production process

in construction is such that the number of forms that a structure designed to perform a specific function can take is large. The wide range of forms makes finding identical structures in different countries difficult.

In many instances, the lack of identical buildings being constructed in two countries can be met by asking knowledgeable people what a building constructed in one country would have cost had it been built in the other. Great care must be taken when this procedure is used and frequently equivalent buildings must be used instead of buildings that are identical. The specifications for light manufacturing buildings for the United States call for aluminum siding. In Kenya most light manufacturing buildings are constructed with exterior walls of cement blocks and none are constructed with aluminum siding. The quantity surveyor who provided the cost estimates for light manufacturing buildings in Kenya offered to provide the estimated cost of the buildings as specified for the United States, but said, that they would be quite expensive and would not be built in Kenya. It was decided to price the buildings as specified for the United States but to substitute cement block for the aluminum siding.

Determining if two buildings are equivalent is more difficult when the differences are caused by substituting one factor for another rather than by substituting one material for another. An example of this type of substitution is given in an architect's comment accompanying a drawing for a building in Kenya.

“The reinforced concrete columns are ridiculously large for the weight they have to carry. This is fully appreciated, but was done deliberately. Smaller columns would have required the steel in them to be more accurately fixed and more careful shuttering. The contractor who did this job said that he would prefer to use large columns and more concrete rather than provide the extra supervision necessary for accurate work. In other words, good carpenters and supervisors are at a premium in this country and the concrete is not.”

Once the reason for the large columns in the Kenyan building are known, it is proper to compare the Kenyan building with a structure in the United States with smaller columns and more accurately fixed steel and more careful shuttering.

In Kenya dairy cows are not housed. There are no barns in Kenya even though Kenya is a major producer of dairy products. In some cases the cattle are taken from the pasture at milking time to a fixed dairy and milking stall. They are milked and returned to pasture. The more common procedure is to have the dairy and milking stalls on slides. The milking equipment is taken to the cows at milking time. In the binary comparison between Kenya and the United States it would be possible to ask what it would cost to build a barn of some given specifications in Kenya. Since there was no function for a barn to perform in Kenya it was decided to omit any comparisons of barns and base the comparison of agricultural buildings on prices of other structures such as the dairy or the milking stalls.

The examples given do not exhaust the cases in which difficulties in comparisons arose in building and other construction, but they do provide an indication of the type of problems encountered and the procedures used to resolve them. All of the examples given involved comparisons between modern structures in both countries. In discussing Africa it is necessary to mention the difficulties that occur because of the importance in Africa of the traditional non-monetary sector in residential construction. Traditional housing accounts for about 60 percent of total expenditures on single unit residential buildings in Kenya. Traditional houses in Kenya cannot be directly compared to houses found in the United States. In this case, the price relatives were based only on comparisons of modern housing in both countries. The expenditure weight in Kenya included expenditures on both modern and traditional housing, however.

### CONCLUSIONS

There are formidable problems in obtaining the information required for a study such as the ICP in an African country such as Kenya. One set of problems arises because of the lack of certain basic data on the economy. These include the lack of sufficient detail on personal consumption expenditure, the lack of specification pricing and people trained in specification pricing and the lack of sufficient price information to calculate national average prices. The experience with Kenya suggests that the data can be gathered in some African countries, particularly if additional resources can be provided.

Another set of problems arises because of the need for international consistency. It may be necessary, for instance, for the ICP to use a different value for GDP than is used by the country in its official publications. The differences are most apt to occur in the criteria used to separate capital formation from intermediate consumption, the criteria used to distinguish an economic activity from other activity in the non-monetary sector and in the method used to place a value on a given economic activity in the non-monetary sector. If reasonable care is taken in making the adjustments needed because of the different definitions of what constitutes final output, these differences should not cause major distortions in comparisons among countries. The final set of problems arises because in some instances it is difficult to find items which can be compared directly with items found in other countries. It does not appear that this type of difficulty will be any more troublesome in comparisons including African countries than in comparisons between any pair of countries.

The final conclusion must be that it is feasible to include countries such as Kenya in general international comparisons of income and purchasing power.