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# USERS AND PRODUCERS OF AFRICAN INCOME: MEASURING THE PROGRESS OF AFRICAN ECONOMIES

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**ABSTRACT**

This article traces how African incomes have been measured through history, and shows that there has been a conflict of aims between producers and users of national income estimates. Politicians and international organizations seek income measures that reflect current political and economic priorities and achievements. Thus the importance given to markets, the state, and peasants in the estimates varies through time and space. Meanwhile statisticians aim to produce a measure that gives the best possible reflection of the economy given the available data and definitions at any time. Scholars prefer a measure that is consistent through time and space so that 'progress' can be measured, compared, and analysed, while not being able to reach consensus on how 'progress' is best calculated or defined. The result is not an objective measure of progress, but rather an expression of development priorities determined by changes in the political economy. The article provides a much-needed study of the ability of the statistical offices to provide income statistics independently and regularly. These data are of crucial importance as they enter the public domain in policy evaluations, political debates, and progress towards lofty aims such as the Millennium Development Goals.

WHEN AFRICAN ECONOMIES RECEIVE POPULAR ATTENTION it usually addresses their relative poverty. These debates revolve around a concept of national income. This measure is treated as a consistent entity and assumed to contain the same amount of information through time and

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space. 'National income', however, is not an absolute, but rather a result of a practical measuring process, subject to decisions and to the implications of scarce resources regarding its definition and method of data collection. This historical investigation of national accounting in African economies shows that both theory and practice underlying the measurement of national income have changed over time, and that this has important implications for using it as evidence for historical and social analysis. It will be shown that the changes in measurement methods reflected change in political priorities, currents in the academic community, and physical constraints at the statistical office.

This article offers a qualitative interpretation of these changes in African national income estimates through history. It argues that national income statistics should not be considered as 'facts', but rather as 'products'. Their production has been determined by changes in the political economy. There was an obvious change from colonial to post-colonial income estimation in terms of assessment and appreciation of the African peasant contribution to national income, as contrasted with the colonial emphasis on measuring the white settler economy and the balance of payments. There were interesting contrasts in post-colonial accounting across Africa as well. Markedly different approaches emerged regarding the relative importance, and therefore the value, of the market versus the state, and peasant/subsistence versus modern commercial agriculture. Finally, external donors and scholars have influenced changes in the measurement of African incomes. Thus, studying the changes in the operational definition of 'national income' is a useful lens through which we can see the patterns of an intellectual history of what constitutes African progress.

The discourse on African economic development and economic history has been dominated by scholars more concerned with the quantity than the quality of data. Any data are of course said to be better than none, but beyond a certain point this ceases to be true.[1] Despite well-known quality issues econometricians use all data available to examine economic progress. Jeffrey Williamson, a leading economic historian using quantitative methods, once rhetorically asked: 'Have you ever met a cliometrician who throws data away?', referring to the scholars that use econometric methods in economic history.[2] This is where the issue stands in the current development economics paradigm – it is the availability of

1. Morten Jerven, 'The relativity of poverty and income: how reliable are African economic statistics?', *African Affairs* **109**, 434 (2010), pp. 77–96; see also Morten Jerven, 'Random growth in Africa? Lessons from an evaluation of the growth evidence on Botswana, Kenya, Tanzania and Zambia, 1965–1995', *Journal of Development Studies* **46**, 2 (2010), pp. 274–94.
2. Jeffrey G. Williamson, 'Discussion', *Journal of Economic History* **43**, 1 (1983), pp. 56–60.

data sets for econometric tests that matters.[3] With more advanced statistical and econometric techniques available it is perceived that 'the weakness of the available data represents a major constraint on the potential of empirical growth research. Perhaps the main obstacle to understanding growth is the small number of countries in the world.'[4] That does not look like an agenda for future researchers. Rather, the key must be to explore the limits to our understanding of economic growth through examining the available evidence, and testing whether Michael Ward was correct in his classic statement that 'many of the explanations advanced for differences in growth performance are far more impressive than the data which they purport to explain'.[5]

Statisticians at the Kenyan central statistical office approach the issue pragmatically:

> It is possible to use a number of criteria in order to assess the progress of the economy, but the usual measure of the rate of economic development is the estimate of Gross Domestic Product. Estimates of domestic product are not, however, among those statistics which are a definite measure to which there can be only one precise measure comparable to the number of oranges in a bag. It is in fact an aggregation of numerous data which vary substantially in order of precision.[6]

In other words, the aggregate, in this article generically referred to as national income, is not an absolute, but a result of pragmatic decisions at the statistical offices subject to data availability, financial resources, and political instructions. The quote also points towards the importance of looking carefully at the individual components that make up this composite measure.

This article reviews early debates on the value of initiating national income for African countries before examining some early colonial estimates and the changes and nuances in post-colonial accounting. It discusses revisions in accounting practice following structural adjustment and the growth of the informal economy. Finally, the article concludes with some advice for data users and suggests that issues of transparency in data production may render aspects of historical and contemporary

3. For a discussion of the implications of the lack of economic data on African economies beyond 1960, see Morten Jerven, 'African growth recurring: an economic history perspective on African growth episodes, 1690–2010' (Simons Papers in Security and Development, No. 4/2010, School for International Studies, Simon Fraser University, Vancouver).

4. Steven N. Durlauf, Paul A. Johnson and Jonathan R. W. Temple, 'Growth econometrics' in Philippe Aghion and Steven Durlauf (eds), *Handbook of Economic Growth* (Elsevier, Amsterdam, 2004), p. 559. For a critique of the economic growth literature on Africa, see Morten Jerven, 'The quest for the African dummy: explaining African post-colonial economic performance revisited', *Journal of International Development*, <http://onlinelibrary.wiley.com/doi/10.1002/jid.1603/pdf>.

5. Michael Ward, 'Review of the measurement of real product', *Economic Journal* **81**, 324 (1971), pp. 974–7, p. 977.

6. Republic of Kenya, *Economic Survey 1967* (Nairobi, 1968), p. 2.

analysis of African economic progress meaningless. The article is based on official documents relating to national accounting published by colonial authorities, and official publications prepared by national statistical offices. It is further informed by interviews and visits to the national statistical offices of Botswana, Zambia, Tanzania, Kenya, Ghana, and Nigeria in the period 2006–10.

Recently, Stephen Ellis called for the writing of histories of contemporary Africa. It was anticipated that writing these histories would be complicated because

> it is unlikely that historians seeking to write the history of Africa since independence will enjoy the same quality of documents as their colleagues studying the colonial period … . A useful archive does not just contain large numbers of documents but is also classified, catalogued and generally maintained, all of which requires money that, for many types of state activity, has been in short supply since the onset of a financial crisis in so many African countries, sometimes twenty or more years ago.[7]

These anticipations were to some extent confirmed when I studied the documentation of the post-colonial estimates. What William Easterly referred to as the 'lost decades' in terms of economic performance were indeed 'lost' in the sense that statistical offices only documented their own activities in a limited manner.[8] Thus this article uses different examples from different countries in an attempt to shape a coherent account of the history of national income estimation in Africa.

## *Measuring African income: the pioneers*

In early exchanges regarding the value of national accounting in Africa and other developing areas that ensued in the early 1950s one of the pioneers of development economics, Dudley Seers, was decidedly pessimistic concerning the rewards of instituting national accounting for the purpose of international comparisons of income and economic development:

> In the hands of authorities, such international comparisons may yield correlations which throw light on the circumstances of economic progress, and they tell us something about relative inefficiencies and standards of living, but they are very widely abused. Do they not on the whole mislead more than they instruct, causing a net reduction in human knowledge?[9]

As we know very well today, these warnings were not heeded and national income estimates were prepared in African countries following

7. Stephen Ellis, 'Writing histories of contemporary Africa', *Journal of African History* **43**, 1 (2002), pp. 1–26, pp. 12–13.
8. William Easterly, 'The lost decades: explaining developing countries' stagnation in spite of policy reform 1980–1998', *Journal of Economic Growth* **6**, 2 (2001), pp. 135–57.
9. Dudley Seers, 'The role of national income estimates in the statistical policy of an under-developed area', *Review of Economic Studies* **20**, 3 (1952–53), pp. 159–68, p. 160.

the Second World War. In theory this was done according to the universal United Nations Standard of National Accounts; in practice the local application varied considerably. In 1945, the only African country to publish national accounts was South Africa. Southern and Northern Rhodesia followed suit from 1949 onwards, while by 1958 Ghana, Kenya, Uganda, and the Congo all published annual estimates. National income was estimated for Nigeria in 1951, but the next estimates were not made until 1960.

The first estimates made for the colony of Southern Rhodesia and the British protectorates of Northern Rhodesia and Nyasaland were characteristic of colonial accounting in that initially they did not include an estimate of the value added by 'African' producers. From 1949 onwards 'a nominal figure of £5 million for African subsistence income was included in the value of national income of Northern Rhodesia'.[10] The same amount was reported unchanged in the accounts between 1949 and 1953, thus *de facto* assuming that the value of total food production from African producers was decreasing quite rapidly (when population growth and inflation are taken into consideration). The first estimates ignored the 'subsistence' product altogether while the later estimates acknowledged it, with a marginalized role in the accounts. Meanwhile, there was a vigorous contemporary scholarly debate concerning the issue of the 'subsistence economy', which is explored below.

The central problem in all national income accounting is to decide which economic activities and actors should and/or can be included in the official accounts. This is often referred to as the 'production boundary'. Since the application of the United Nations Standard of National Accounts there has been a discussion of where one should draw this line. For Western economies this famously means that housewives' efforts are not accounted for. With a specific reference to African economies, Brian van Arkadie noted that the 'existence of a large amount of "subsistence" activity (or, at least economic activity which does not result in a recorded marketed transaction) makes Pigou's famous quip about the national accounting consequences of marrying your cook much more than a mere curiosity'.[11] In all economies there is a distinction between recorded and unrecorded economic activity. In 'developed' economies the latter can be summed up as comprising illegitimate economic activity and economic activity within the family household. In most African economies the unrecorded economy is so large and therefore so economically important that to leave it 'unrecorded' is unsatisfactory. However, its inclusion in

10. Federation of Rhodesia and Nyasaland, *Monthly Digest of Statistics* (Salisbury, 1955).
11. Brian van Arkadie, 'National accounting and development planning: a review of some issues', *Development and Change* **4**, 2 (1973), pp. 15–31, p. 15.

the national accounts has been constrained by the availability of data and has therefore resulted in different innovative accounting practices at the individual statistical offices.

Seers wittily referred to the 'subsistence output' as the 'well-known morass which those estimating national income of underdeveloped areas either skirt, rush across or die in'.[12] Reporting on the ongoing efforts in Kenya, G. Donald Wood Jr offered a short and more accurate comment as to why neither of the terms commonly used for this part of the economy are appropriate:

> 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.[13]

In the settling phase of national accounting there was no agreement on how to integrate this sector into the national accounts, or indeed whether it was worth doing so. In line with a general optimism regarding the prospects for rapid growth in Africa, Peter Ady commented that it was 'strange that some countries in Africa should be planning to devote so many of their scarce statistical resources to the more accurate measurement of this diminishing component'.[14] A lot of the pessimism regarding national accounting, particularly about accounting for small-scale production, was matched by optimism regarding the future growth and 'modernization' of these countries. 'The fundamental difficulty is the same as for international comparison: in a few years an underdeveloped country may have changed so much that for the purposes of the underlying assumptions in economic analysis it can no longer be considered the same country.'[15]

Others objected to the idea of measuring incomes and comparing income across countries on a completely different basis. Consistent with 'substantivism', Herbert Frankel held that some economic behaviour of Africans cannot be explained adequately by concepts drawn from market economics. To him some societies had such different concepts of income and welfare and were governed by such specific rules and laws that international comparisons would be meaningless. The concept of income or

12. Seers, 'Role of national income estimates'.
13. G. Donald Wood Jr, 'Problems of comparisons in Africa with special regard to Kenya', *Review of Income and Wealth* **19**, 1 (1973), pp. 105–16.
14. Peter H. Ady, 'Uses of national accounts in Africa' in L. H. Samuels (ed.), *African Studies in Income and Wealth* (Bowes and Bowes, London, 1963), pp. 52–65, p. 62.
15. Seers, 'Role of national income estimates'.

wealth would vary from culture to culture to such an extent that the efforts to maximize it could not be compared across cultures. Indeed, Frankel compared the maximization of income to that of maximizing a game of chess. A game of chess is governed by specific rules and these rules set the aim of the game, and as such the game cannot be maximized.[16]

Similar views were expressed by economists pioneering national accounting in the colonies. In a report on an experiment of preparing income estimates for Nyasaland, Northern Rhodesia and Jamaica in 1941, Phyllis Deane noted that 'when working out national income tables for Central Africa (as compared to Jamaica) it soon became clear that a more comprehensive and direct knowledge of the social and economic structure of Central African peoples was essential if a satisfactory framework was to evolve'. It was therefore felt necessary to discard the formal tables and envisage a new system, and thereby to abandon 'the income classification according to profits, interest, rents, wages and salaries, and substitute a classification according to nationality'.[17] Thus in the final accounts there were separate contributions allotted to Europeans, Africans, and Asians. In the colonial accounts for Rhodesia a division remained in the accounts as 'normal' versus 'African' output. A similar accounting classification was used by the apartheid regime in South Africa, where there were different estimates made for the 'Bantu Homelands' and the 'Black States'.[18]

Alan Prest and Ian Stewart, who prepared income estimates for Nigeria in 1951, also noted problems with the application of 'Western' concepts: 'For a start, the distinction between production and living, the distinction between working and not working, is something reasonably tangible in the "West"; it is often nebulous in Nigeria.'[19] Prest and Stewart ended up accounting for transactions within Nigerian households as market transactions, arguing that the extended household in Africa had to be interpreted differently from the Western household. A striking diversion from conventional methods was that intra-household services were included in the estimates, even evaluating the value of the service of procreation, as provided by wives to husbands. Data on bride wealth were used as a proxy for the market values for this intra-household service. Pius Okigbo, who prepared estimates for 1950–7, discarded this approach, and

16. S. Herbert Frankel, 'Psychic and accounting concepts of income and welfare', *Oxford Economic Papers* **4**, 1 (1952), pp. 1–17.
17. Phyllis Deane, *The Measurement of Colonial National Income: An experiment* (Cambridge University Press, Cambridge, 1948), p. 127.
18. Republic of South Africa, *National Accounts of the Black States* (Pretoria, 1980).
19. Alan R. Prest and Ian G. Stewart, *The National Income of Nigeria* (Colonial Office, Colonial Research Studies No. 11, HMSO, London, 1953).

favoured a less inclusive one.[20] I. Eke, who reviewed the two estimation methods, noted that 'this excursion by Prest could easily be dismissed as ludicrous, but it is much more serious than that'.[21] He argued that it was a fundamental misconception that national accounts could capture fully all the processes that contribute to the welfare of human beings.

Writing generally on the use of national accounts in Africa in 1963, Ady summed up the value of the resulting GDP estimates in the following manner:

> We must conclude, therefore, that with the data available, estimates of domestic production in the rural sector are likely to be very 'soft' figures. Does this render national accounts valueless in Africa? The usual aggregates are certainly valueless, at present, for certain purposes: welfare comparisons using per capita income, for example, are obviously nonsensical when income estimates themselves are in part derived by multiplying up per capita averages of doubtful accuracy by population estimates equally subject to error.

To further illustrate the malleable nature of the resulting figures, he added 'there is at least one African country whose per capita income figures were revised upwards by 75 per cent in recent years'.[22]

These early debates are worth recalling. Some of the current data quality concerns were predicted by the pioneers. There was a wide divergence in opinions and in practical application of methods in individual estimates. Development optimism misled many to think that rapid change would rule out the importance of accounting properly for the contribution of small-scale and rural activities. Walter Lewis viewed economic growth as entailing 'the slow penetration and eventual absorption of the subsistence sector by the capitalist sector'.[23] This view of development and economic growth justifies the ignorance concerning the 'subsistence' sector since it is conceived as a static sector, waiting to be integrated and absorbed by the modern, urban capitalist sector. There are many scholars, however, who emphasize the capitalistic and dynamic activities of the actors in the rural sector, and would counter that there is no such thing as a 'subsistence' farmer.[24] So this perspective can be turned around – to reveal development as something that grows out of the unrecorded parts of the economy. Unrecorded, unfortunately, can also mean ignored, as it is mostly a conclusion based on aggregate data that informs new policies,

20. Pius N. C. Okigbo, *Nigerian National Accounts, 1950–57* (Government Printer, Enugu, 1962).
21. I. I. U. Eke, 'The Nigerian national accounts – a critical appraisal', *Nigerian Journal of Economic and Social Studies* **8**, 2 (1966), pp. 333–60, p. 334.
22. Ady, 'Uses of national accounts in Africa', p. 55.
23. Walter A. Lewis, 'Economic development with unlimited supplies of labour', *Manchester School* **22**, 2 (1954), pp. 139–91.
24. Polly Hill, *Development Economics on Trial* (Cambridge University Press, Cambridge, 1986).

and which is used to judge whether previous policies were successful or not.

Crucially, in most African economies at independence, conditions for the unlimited supply of labour were generally not satisfied. The basic premise in arguably the most influential development economics model was that marginal productivity of labour in the rural sector is zero. To make this assumption is equal to saying that growth solely arises as a result of modern sector expansion. However, land was generally abundant and labour was generally scarce in Africa, and thus we would not expect marginal labour productivity to be zero: indeed, in a labour-scarce situation labour productivity should be high.[25] Writing on the lack of data about development in Nigeria in 1966, Wolfgang Stolper concluded: 'The absence of a Malthusian problem makes it illegitimate to neglect the so-called subsistence sector and to assume that any increase in output by "modern" sectors is a net addition to total product.'[26] Yet, as we have seen, these were the assumptions that were made.

It is worth emphasizing that these rudimentary estimates are the very ones that we still rely on today. When we are comparing economic change from the 1950s and 1960s, to evaluate economic progress in sub-Saharan Africa, it is these estimates that provide the benchmark for comparison. In retrospect it is easy to lament that the statistics so needed in the 1960s (as Stolper saw) are the ones that are lacking today as well. Economic change was not expected to originate from the 'informal', 'traditional' or 'subsistence' sectors, and therefore our ability to judge whether progress was originating from and/or was transforming these sectors is correspondingly constrained today.

### *Independence: measuring for development*

Just at the turn to official recording by newly independent African countries, Deane reviewed some of the new official estimates while national accounting was in its trial phase in Africa. She commented that 'what was once the happy hunting ground of the independent research worker has become the routine preoccupation of official statisticians and international Civil Servants'. This might explain why there has been less scholarly attention to the subject of how incomes were measured following independence – it might have been assumed to be a task of standardization rather than a fruitful area for research. 'The fact is, however,'

25. Gareth Austin, 'Resources, techniques and strategies south of the Sahara: revising the factor endowments perspective on African economic development, 1500–2000', *Economic History Review* **61**, 3 (2008), pp. 587–624.
26. Wolfgang F. Stolper, *Planning without Facts: Lessons in resource allocation from Nigeria's development* (Harvard University Press, Cambridge, MA, 1966), p. 21.

Deane observed, 'that African national-income publications are as heterogeneous under the official stamp as they ever were when privately produced.'[27]

Independence meant new priorities and statistical needs. Before independence in former Northern Rhodesia, now Zambia, national accounts were prepared by the Central Statistical Office (CSO) in Salisbury. At the beginning of 1964 this responsibility was transferred to the CSO in Lusaka. 'Economic Planning was an important task for the Government and the need for statistical information had therefore increased considerably.'[28] With the new economic and political conditions there was a need to revise the data for the level of private consumption and other categories of expenditure. Essentially this meant estimating the magnitude of total production as compared to monetary demand. In other words, the national accounts had to be based on the 'production approach' rather than the 'income approach' adopted in the colonial period. This implied an upward revision compared to earlier years as non-monetary activities such as production for own consumption and smaller-scale transactions were included in the new national income estimates. An earlier neglected part of the population was now seen as economically and politically, and therefore statistically, important.

Despite these aims of a new basis for the accounts, the available basic statistics were not sufficient. The estimates of agriculture in the first national account reports for Zambia covered commercial farming (non-African) and officially registered sales from African farms, while 'African subsistence farming and hunting is estimated mainly in accordance with information given by the Food and Agricultural Organization (FAO) for per capita consumption of different kinds of commodity.'[29] A similar ambitious intent was evident in Tanzania. The Central Bureau of Statistics in Dar es Salaam attempted to include 40 agricultural products, 15 livestock products and producers of government services in the estimates for agriculture. The Bureau acknowledged that despite the importance of agriculture to the national economy, 'the available information on crop acreage, output etc. is very meagre', except in the case of export crops.[30] In Tanzania data on production for own consumption from the Household Budget Survey were first available in 1969. The

27. Phyllis Deane, 'Review of three publications (East African Statistical Department, *Domestic Income and Product in Kenya: A description of sources and methods with revised calculations from 1954–1958*; C. H. Harvie and J. G. Kleve, *The National Income of the Sudan, 1955–1956*; and G. Le Hégarat, *Comptes Économiques Togo, 1956–1957–1958*)', *Economic Journal* **71**, 283 (1961), pp. 630–1.
28. Republic of Zambia, *National Accounts 1964–1967* (Lusaka), p. 37.
29. *Ibid.*, p. 37.
30. United Republic of Tanzania, *National Accounts of Tanzania 1966–68* (Government Printer, Dar es Salaam), p. 2.

survey was based on a sample of 824 households spread throughout the country. For all other years, consumption was assumed to grow with the rural population at an annual rate of 2.825 percent.

This assumption of proportional agricultural growth to rural population growth was made in many African countries. In one of the very few empirical studies of African national income statistics, Derek Blades noted that for the growth estimates of subsistence agriculture 'the basic assumption is that output grows at the same rate as the rural population', thus assuming a 1 to 1 labour productivity in the rural sector.[31] Note that since rural population growth was slower than total population growth this introduces a bias towards decreasing GDP per capita output in the measurement methods. These estimates are not very sensitive to climatic variations or other factors assumed to affect agricultural productivity, though some *ad hoc* adjustment in the annual data was made in exceptional years: 'In Zambia and Uganda annual variations around the trend are estimated on the basis of "eye-estimates" made by agricultural experts in the main production areas.'[32]

The data basis in Tanzania might seem meagre, but it compares favourably with other countries. In Zambia, a pilot Household Budget Survey was first undertaken in 1972/3, while in Botswana a Rural Budget Survey was available first in 1973/4, and provided the only survey data for agricultural production until a new survey was undertaken in 1986/7.[33] In Kenya the estimates of agricultural output are based on an annual Integrated Rural Survey (IRS) and an annual Census of Large Farms. The first IRS was undertaken in 1974/5, and it is not clear what source of information on small farms was used before this date.[34] In Nigeria, agricultural surveys have been conducted on a regular basis since the 1950s, but these had a very small sampling frame, and covered an irregular geographical area. In fact, Gerald Helleiner notes that in the surveys conducted during 1955–60 'no one area was covered more than once' and 'in no one year were areas in more than one region covered'.[35]

The importance given to peasants in political speeches was matched by ambitions in national account blueprints. But in both cases there were

31. Derek Blades, 'What do we know about levels and growth of output in developing countries? A critical analysis with special reference to Africa' in R. C. O. Mathews (ed.), *Economic Growth and Resources: Proceedings of the Fifth World Congress, International Economic Association, Tokyo, vol. 2, trends and factors* (St Martin's Press, New York, NY, 1980), pp. 68–75.
32. *Ibid.*, p. 69.
33. Morten Jerven, 'Accounting for the African growth miracle: the official evidence, Botswana 1965–1995', *Journal of Southern African Studies* **36**, 1 (2010) pp. 73–94.
34. Republic of Kenya, *Sources and Methods Used for the National Accounts of Kenya* (Nairobi, 1977).
35. Gerald K. Helleiner, *Peasant Agriculture, Government and Economic Growth in Nigeria* (Richard D. Irwin, Homewood, IL, 1966), p. 392.

serious shortcomings when it came to practical application. President Julius Nyerere, in a speech in 1973, said: 'If real development is to take place, the people have to be involved.'[36] In Zambia, Kenneth Kaunda voiced a similar opinion: 'Our emphasis must be among those thousands of farm units which we must help emerge from strict subsistence level into a living relationship with the rest of the economy.'[37] Nevertheless, 'real people' at the 'subsistence' level tended to remain uncovered in the national income statistics, and similarly ignored in national development plans. Nyerere was seemingly sceptical of the value of national income as a measure of development, arguing that 'To measure a country's wealth by its gross national product is to measure things, not satisfactions.'[38] Ten years after independence Nyerere was addressing the progress made and went on to discuss the validity of the descriptive statistics:

> Our total wealth has certainly gone up, although really comparable figures are rather difficult to give. Thus it was estimated – though without much precision – that at the time of independence the national income per head was something like Shs380 per year. Since that time a new and more reliable basis for such calculations has been worked out and, on that basis, plus the fact that the population in 1961 was larger than we thought, a better figure for 1961 is probably between 460 and 490 shs. Certainly that is the figure we must think of when comparing with the present position, where the national income is calculated to be approximately Shs670 a year.[39]

The quote reflects the importance given to the estimates. A low-income estimate at independence certainly would put the first ten years of progress in a favourable light. But of greater importance for Nyerere and Tanzanians was the point that before independence the contribution and size of the population and their economic activities were underestimated. Alan Peacock and Douglas Dosser did create national accounts for Tanzania in 1952–4, which were inclusive of activities in the 'subsistence' economy such as hut building.[40] But the colonial estimates and first official data of the 1960s did not include these data. In the revised 1966 estimates, construction and rents in the subsistence sector were included and, together with other changes, this increased national income estimates by 25 percent and capital formation by 11 percent.[41]

36. Julius Kambarage Nyerere, *Freedom and Development* (Oxford University Press, Dar es Salaam, 1973).
37. Kenneth David Kaunda, *Towards Complete Independence* (Zambia Information Services, Lusaka, 1969).
38. From 'The rational choice', a speech given on 2 January 1973 in Khartoum, in Nyerere, *Freedom and Development*.
39. Julius Kambarage Nyerere, 'Tanzania ten years after independence' (Report, Ministry of Information and Broadcasting, Dar es Salaam, 1971).
40. Alan T. Peacock and Douglas G. M. Dosser, *The National Income of Tanganyika, 1952–54* (HMSO, London, 1958).
41. van Arkadie, 'National accounting and development planning', p. 19.

A final notable change in African economies, particularly prominent in Zambia and Tanzania in the 1970s, was a centralization of the economy and the growing power of parastatal companies. In both Zambia and Tanzania this was paralleled by an emphasis on socialism, but in other so-called 'capitalist' countries the state was also deeply involved in the economy – conducting trade, marketing and transport of agricultural crops (both for food and for exports) and engaging directly or indirectly in manufacturing and construction through newly formed development corporations. This also eased economic recording. In Tanzania in the 1970s the data used for the national accounts on trade, finance, and industry sectors were largely drawn from the parastatal enterprises, while data on crops were largely drawn from state marketing boards. This might be interpreted as a choice of convenience, but in the case of Tanzania there was a correspondence between legitimate and recorded economic activity. Marketing of commodities outside state or parastatal channels was illegal and as such could not be thought of as a contribution to the national income.

Progress soon gave way to decline, and in the 1980s and 1990s economic collapse redefined the task of development. The convenient data sources became increasingly obsolete as 'parallel', 'black', and 'informal' markets thrived. The new challenge was to account for this 'informal' economy in the midst of a collapsing formal economy in which the statistical offices were firmly embedded.

### *The 'lost decades'*

In the Zambian statistical office in Lusaka the national account reports and any other publications relating to the accounting methodology and most other relevant reports ceased to be available after 1973. Beyond that point, only an annex report to the 1973–8 estimates was obtainable. This means that very little is known about the estimates and their procedures in the 1980s. During my visit to the Central Statistical Office in Lusaka in 2007 neither the national accountants nor the persons responsible for library and data dissemination functions were able to clarify whether the reports had gone missing or simply never been published.[42]

A similar problem was observed in Ghana, where the Ghanaian Statistical Services ceased publishing its annual 'Economic Survey' in 1985 due to lack of funding and qualified personnel. It attempted to reinstate this document as a regular source of economic information for Ghana in 2005, but it has not been published since. In Kenya, the only

42. Interview, Litia Simbangala, Statistician, National Accounts branch, Central Statistical Office, Lusaka, March 2007.

available document describing the methods and sources for the national accounts was published in 1977. At the Central Bureau of Statistics in Nairobi in 2007, I was assured that this publication contains 'everything you need to know' about national accounting in post-colonial Kenya, although many important changes, such as an informal sector survey, have been implemented since.[43]

It is indicative of the economic development experience that what have been referred to as the 'lost decades' were indeed lost in national accounting terms.[44] It also exemplifies a lack of institutional memory, as the statistical office is unable to account for the estimation procedures for a decade or more. Finally, it shows how the lack of economic resources and state finances hinders efficient economic planning.

In Zambia librarians at both the University Library Special Collection, which functions as a legal depository of official documents, and the National Archives, which has the same legal rights, lamented this fact. Publications for the 1960s and early 1970s were present and catalogued, but after that there was a gap in the deposits. It was explained that while the libraries had the legal right to the documents, finances for their transport and acquisition were not available. The librarian in each place explained that the documents would have to be collected by them personally, and understandably this had not happened.[45] The onset of economic crisis and the ensuing structural adjustment had serious ramifications for the provision of national income estimates.

This situation also damaged the credibility of the national statistical offices as reliable providers of information. In Ghana and Nigeria the statistical offices both underwent name changes (from Central Bureau of Statistics to Ghanaian Statistical Services and from Federal Office of Statistics to National Bureau of Statistics), and in both cases this was a deliberate move to improve credibility, assert independence from politics, and distance themselves from previous controversy.[46]

Among users in academic and policy circles there has been a decisive shift in preferred use of data sources. Journal articles and monographs published on African economies in the 1960s, 1970s, and 1980s would invariably refer extensively to official documents and make use of national accounts, economic surveys, and data from statistical abstracts to support

43. Interview, Collins M. Omondi, Statistician, Central Bureau of Statistics, Nairobi, April 2007.
44. Easterly, 'The lost decades'.
45. This information was conveyed to me in two independent conversations at the University Library, Lusaka and the National Archives, Lusaka during February 2007.
46. Interviews, Professor Nsowah-Nuamah at the Institute of Statistical, Social and Economic Research (ISSER), Legon, Ghana, 15 February 2010 and O. F. Nwaboku at National Bureau of Statistics, Abuja, Nigeria, 23 February 2010.

their analysis. In recent decades these data sources have gone missing entirely. In part this is due to availability and accessibility. Major competitors such as Penn World Tables and World Development Indicators have become the preferred source of social and economic statistics. The product remains the same: the World Bank is reporting the official data as submitted to them by national statistical offices, with only minor modifications. Undoubtedly, the brand name of 'World Bank' is better than the 'National Bureau of Statistics' but the ingredients in the final 'product' remain the same.

*Adjusting to structural adjustment*

A Zambian report on a national income estimate revision for a new series based on 1994 starts by stating the obvious: 'inflation rates of more than 200 percent in the early 1990s had adverse effects on the provision of macroeconomic statistics'.[47] Creating meaningful data on year-to-year real economic growth in such circumstances is complicated. Furthermore, structural adjustment entailed massive change in the structure of production and 'the break up of the former large parastatals meant that previous sources of data were not available'.[48] A revision and a rebasing were overdue as the accounts were still based on 1977 prices and the benchmarks were 'becoming inadequate, and over time provided less accurate estimates'.[49] The previous estimates had largely 'excluded [the] informal sector and therefore impaired the value of GDP estimates over time, in all sectors except agriculture'.[50]

After informal sector activity had been incorporated in the total GDP, the formal sector share was estimated at 58 percent in terms of value added, with a corresponding 42 percent share for the informal economy. On this estimate the statistical office gave the following warning: 'We wish to caution that including the informal sector activity in the Zambia National Accounts may tend to exaggerate the GDP of the nation, relative to other countries or even to the previous estimates which mostly excluded it. It must also be recognised that it will be difficult to up-date the sector relation based on indicators in the absence of surveys to monitor the activity in the future.'[51]

In Tanzania the report accompanying the new constant prices series at 1992 prices held that 'strong efforts were made to determine what is the

47. Republic of Zambia, 'National Accounts Statistics GDP Revision of Benchmark 1994 Estimates' (Central Statistical Office, Lusaka).
48. *Ibid.*
49. *Ibid.*
50. *Ibid.*
51. *Ibid.*

story behind the figures, whether the data applies to what is experienced as happening in the industry. This has not been emphasised earlier.' The report thus indicated that rather than letting the data speak for themselves, the resulting figures were compared to what was otherwise known or assumed regarding economic trends.[52] Structural changes, especially in the later part of the 1980s, were not reflected in the available statistics, resulting in an underestimation of value added. 'Estimates of the size of this deficiency ranged from 30 percent to as much 200 percent of GDP.'[53] The new level estimates were reached by incorporating all available data into the accounts, including the results of new surveys of transport, trade, and construction undertaken as part of the project. In the previous estimation methods of 1976 the 'private sector was undercovered – sometimes not covered at all – and the growing informal sector was not generally accounted for'.[54] A time series was developed by extrapolating these data on trends backwards. The assumptions were changed: the informal economy was expected to increase when the formal sector was in decline, rather than to move with it.

This question is analogous to the issues related to the 'subsistence' or 'traditional' output raised in the 1950s. The 'discovery' of the 'informal sector' is usually credited to the ILO in the 1972 and Keith Hart in 1973,[55] but there is still an unresolved scholarly question regarding the productive potential of this sector.[56] Is the 'informal' an independent source of economic growth, is it dependent on the 'formal' economy for demand and supply, or is it a parasitic sector, profiting from the demise of the formal sector? The facts that are available in the national account statistics are expressions of assumed relationships between the measured and unmeasured economy, and the assumptions are often not transparent for the data user. The resulting figures need therefore to be questioned and treated critically as historical evidence rather than being viewed as raw data that can be used as empirical observations – when testing the relationship between the 'formal' and 'informal' economy, for instance.

52. United Republic of Tanzania, 'Report on the Revised National Accounts of Tanzania 1987–96' (Bureau of Statistics, Dar es Salaam), p. 1.
53. *Ibid.*
54. *Ibid.*
55. International Labour Organization, 'Employment, incomes and equality: a strategy for increasing production employment in Kenya' (Report, Geneva, 1972) and Keith Hart 'Informal income opportunities and urban employment in Ghana', *Journal of Modern African Studies* **11**, 1 (1973), pp. 61–89.
56. For recent reviews of the informal sector literature see Kenneth King, 'Africa's informal economies: thirty years on', *SAIS Review* **11**, 1 (2001) and Keith Hart, 'On the informal economy: the political history of an ethnographic concept' (CEB Working Paper No. 09/042, Centre Emile Bernheim, 2009) and Kate Meagher, *Identity Economics: Social networks and the informal economy in Nigeria* (James Currey, Woodbridge, 2010).

Thus in the late 1990s both Zambia and Tanzania underwent a massive upward reappraisal of the national income following structural adjustment. Both countries had followed a path of state-led development from the late 1960s until the crisis in the 1980s. As a matter of convenience and ideology, during this period data on trade, services, and by implication production (through state marketing boards) were collected by the parastatal companies, which were assumed to represent the whole economy. When those state agencies were unable to offer services, or unable to do so at an acceptable price, economic actors turned to informal and parallel operators, and thus the national income estimates recorded a massive decline in the late 1970s and early 1980s. It is impossible to gauge correctly the movement and/or the size of this unrecorded component. As noted, Zambia and Tanzania have revised their economies to include 'informal' sector estimates, but, much as with the inclusion of the 'subsistence' economy in the 1960s, the national accountants are unable to measure economic change and the estimates are potentially misleading when scholars wish to compare income across countries, as well as across time.

*Conclusion: measuring the progress of African economies*

A recurring theme in this article has been the changing importance and character of the unrecorded element in the national income accounts. In the 1960s development economists were not convinced of the importance of measuring small-scale peasant production, perceiving it to be a diminishing component in rapidly changing economies. Currently, it is rather the lack of change and the continued importance of this 'subsistence' sector in African economies that is lamented. Precisely because of the lack of information about this sector it is hard to interpret what structural change has in fact happened since independence. Similar debates relate to the measurement of the 'informal' economy today. The statistical evidence would imply that there has been a growth in the informal sector, especially in small-scale manufacturing and services, but whether the growth is a result of increased statistical coverage itself or a structural change is a very interesting as well as a pressing question to pursue.

When baseline and/or growth estimates for these largely unrecorded sectors are made at the statistical offices, recourse is often made to population estimates, assuming a per capita value for certain activities, or using estimates of population growth as a proxy for unmeasured economic change.[57] This means that the population data, substituting for labour

57. For a review of these different estimation methods and their growth implications, see Jerven, 'Random growth in Africa?'

market data that often are lacking, are of great importance for the estimates.[58] According to Lars Bondestam, the implementation of these important population censuses has been sporadic:

> During the 20 years after the Second World War, 21 countries made one complete and 28 countries made two or more complete population counts, together covering some 80% of the total African population. Between 1950 and 1971, 11 countries conducted three censuses, 20 countries two, and 6 countries had one census only. If we concentrate on the last years, we find that between 1965 and 1971 less than half of the African countries made complete enumerations of their populations. The obvious difficulties in carrying out censuses are further illustrated by the fact that out of 21 listed with plans to carry out censuses in 1970 only 5 succeeded in doing so.[59]

The censuses that have been implemented have also been of poor quality and have been subject to political contestation, as the case of Nigeria and the controversy surrounding the population censuses and the political importance of the relative population size in the North and the South illustrates very well.[60] The uncertainty surrounding the population size estimates leaves the per capita measures of income malleable, and the population growth between each census should not be taken at face value, but is rather a matter of interpretation regarding the relative quality and coverage of the population censuses.

Is national income accounting a problem primarily of scholarly interest, or does it have practical implications? Undoubtedly, these statistics are pertinent for contemporary political debate. In Ghana in 2004, a public debate arose regarding the estimate of per capita income. At the time the World Bank reported the accepted figure to be US$380. President Kufuor claimed that instead the correct figure was $600, while Finance Minister Wiredu claimed the figure was closer to $1000. Kufour stated that the Statistical Services in Ghana did not have sufficient resources to calculate these particular statistics.[61] When I visited Ghana Statistical Services (GSS) in February 2010, the revised estimates were still to be published. The process of revision was explained to me in a conversation with the Director of Economic and Industrial Statistics Group.[62] The current data in Ghana, based on 1993 prices, and calculated according to the 1968 Standard of National Accounts, are considered severe

58. John Sender, Christopher Cramer, and Carlos Oya, 'Unequal prospects: disparities in the quantity and quality of labour supply in sub-Saharan Africa' (Working Paper, World Bank Social Protection Discussion Paper Series, No. 0525, 2005).
59. Lars Bondestam, 'Some notes on African statistics: collection. reliability and interpretation' (Research Report No. 18, Uppsala, 1973), p. 10.
60. Morten Jerven, 'Controversy, facts and assumptions: population growth and agricultural productivity in Nigeria, 1911–2006' (Paper presented at the African Economic History Workshop, London School of Economics, April 2010).
61. *The Ghanaian Chronicle*, 'Ghana: Conundrums', 17 August 2005.
62. Interview, Magnus Ebo Duncan, ISSER, Legon, Ghana, 21 February 2010.

underestimates. According to the Director of Economic and Industrial Statistics, the current Value Added Tax receipts alone were higher than the total income estimates reached by the prevailing methods. Another striking example of how out of date the 1993 benchmark was comes from the communications sector. The 1993 base year estimate only contained data on landline telephones, thus growth in Ghana since 1993 did not account for the revolution in mobile telephone communications. In April 2010, the GSS convened a meeting with stakeholders to announce the future upward revision of the estimates. It was expected that Ghanaian economists would be pleased with these news, as it had been a longstanding complaint that the GSS data were underestimates. Commercial banks likewise had commented that the GSS data did not match their estimates of business in Ghana. The political reception, however, is likely to be mixed. As the Director of Economic and Industrial Statistics noted, although by some indicators an upward revision is good news, this is not true across the board. It will be harder to get access to financial aid, for example, and some targets like development spending measured as a ratio to GDP would be harder to reach.[63]

Such an upward revision is likely to occur across the African continent as benchmarks are updated, the 1993 Standard of National Accounts is implemented, and coverage of new economic activity in formal and informal markets is properly measured. The *ad hoc* upward revisions may give an illusory impression of recent growth. There is no agreed method to deal with these revisions. The national income accountants in both Ghana and Nigeria had received visits from IMF representatives who recommended substantial upward revisions of the national income estimates. In both cases the IMF representatives had recommended that the increase be 'spliced' in backwards, thus creating an illusory acceleration of economic growth in recent years.[64] Essentially this means that instead of adding a 60 percent increase in a single year, the increase is divided in parts, and added to the estimates for earlier years.[65]

Is there a substantial data quality variation between countries? There are differences in assumptions and methods. Currently the most important difference is whether there has been a substantial inclusion and revision regarding the informal sector, as provided for in the 1993 Standard

63. The re-basing of the national accounts to year 2006 for Ghana was announced in November 2010, with an upward revision of national income of more than 60 percent. Reuters Africa, 'Update 3: data overhaul shows Ghana's economy 60 pct bigger', 5 November 2010.

64. Interviews conducted at Ghana Statistical Services in Accra, Ghana, 15–17 February 2010 and at the National Bureau of Statistics, Abuja, Nigeria, 21–23 February 2010.

65. For a demonstration of the growth effects of such methods, see Jerven, 'Accounting for the African growth miracle'.

of National Accounts. The more recent the benchmark year, the better the level estimates. It is hard to generalize on the quality of the growth data, where methods of extrapolation, 'splicing' and harmonization of older time series are done in *ad hoc* and undocumented fashion. An important issue not dealt with in this article is the effect of violent conflict (in Sierra Leone, Angola, Mozambique, Somalia, Ethiopia, Democratic Republic of Congo, and other countries) on statistical agencies. In these countries data collection will be significantly distorted, and this is an important issue that has received attention only recently.[66]

What might be done to improve the accuracy of national accounts data? As the term 'garbage in – garbage out' indicates, the national income estimates will not be better than the basic data available to the national statistical offices. Thus investment in data collection that ensures the timely and regular collection of data is the key to the future improvement of the estimates. As has been discussed here, such funding has been insufficient and irregular. At the Federal Office of Statistics in Nigeria, irregular funding was lamented and it was expressed that ideally the office should rely on funding by the government rather than international donors. Thus, this article reiterates the call for more investment in upstream data collection that was made in this journal almost two decades ago by Paul Mosley.[67]

The title of this article – 'Users and Producers' – is inspired by the name chosen for seminars organized by the Federal Office of Statistics in Nigeria in the 1980s and 1990s, which aimed to provide a consultation between the data providers and the data users. In the first workshop held in 1982, the director of the Federal Office of Statistics spoke of the lack of authority and legitimacy of the institution:

> There has been a noticeable concentration on diagonal relationships in the way we are operating to the utter neglect of horizontal relationship. This situation has led to unhealthy relationship among the statistical collecting agencies and some loss of credibility in the statistics published. Furthermore, priorities in statistical work are sometimes determined by the request for statistics from various United Nations Agencies. It has been found that the requests for statistics often made by the UN agencies have gone a long way in distorting the statistical programmes where they exist and have sometimes conditioned the shifting of the priority base. It often happens that these requests are tied to some benefits like loans for projects or other aids for development programmes. It is expected that the existence of a statistical policy-making body would regulate the

66. The recently published Human Security Report reviews some of the problems in assessing both the negative effects of war and the benefits of conflict resolution and peacekeeping operations. Human Security Report Project, 'Shrinking costs of war' (Human Security Report 2009/2010, Prepublication, Human Security Research Project, Vancouver) (Oxford University Press, Oxford, forthcoming).

67. Paul Mosley, 'Policy making without facts: a note on the assessment of structural adjustment policies in Nigeria, 1985–1990', *African Affairs* **93**, 363 (1992) pp. 227–40.

involvement of statistical offices in this respect and help in establishing and stabilizing the statistical priorities.[68]

These concerns correspond well with those voiced at statistical offices visited in sub-Saharan Africa in the period 2007–10. The producers of statistics are constrained by lack of funding and are not able to function fully as independent fact providers. The importance of the ability of the statistical offices independently and regularly to provide statistics that enter the public domain – in policy evaluations, political debates, and progress towards lofty aims such as the Millennium Development Goals, for example – cannot be stressed strongly enough.

The situation is not hopeless, and there are other data available for analysis, especially given the development of satellite imagery, increased monetization, and a proliferation of budget household surveys. These can be used as invaluable checks on aggregate national income accounts statistics. For countries with multiple Demographic and Health Survey datasets, for example, time series on birth weights could be constructed – and possibly used to revise income estimates, or at least to shed light on trends that seem counter to health patterns. Pioneering such efforts, Alwyn Young is constructing real measures of consumption to account for increased welfare in the post-colonial period, while Alexander Moradi has been compiling datasets on heights for African countries in the colonial period.[69] The latter method, referred to as anthropometry, utilizes data on heights to measure health and nutrition outcomes for the population, and can be a useful alternative to, or check on, income measures. Other innovative suggestions include the use by John V. Henderson and colleagues of satellite data on light emissions to measure growth, and Edward Miguel and colleagues, who use rainfall data to correct for measurement problems.[70] A recent surge in research on the issues of data quality and measurements in Africa may well provide better tools for data users and better resources for data producers in the future.

Despite the appearance of alternative measures, national income data retain a unique importance in economic development, policy evaluation, and political debates. It is therefore not sufficient to dismiss the data as unreliable. As long as they are available they will be used. The recently

68. O. O. Ajayi (ed.), *Production and Uses of Statistics in Nigeria: Discussion and summaries of proceedings of a national workshop* (Federal Office of Statistics, 1983), p. 11.

69. Alwyn Young, 'The African growth miracle' (LSE Working Paper, 2009); Alexander Moradi, 'Towards an objective account of nutrition and health in colonial Kenya: a study of stature in African army recruits and civilians, 1880–1980', *Journal of Economic History* **69**, 3 (2009) pp. 720–55.

70. John. V. Henderson, Adam Storeygard, and David N. Weil, 'Measuring growth from outer space' (National Bureau of Economic Research Working Paper 15199, 2009); Edward Miguel, Shanker Satyanath, and Ernest Sergenti, 'Economic shocks and civil conflict: an instrumental variables approach', *Journal of Political Economy* **112**, 4 (2004), pp. 725–53.

published two-volume study *The Political Economy of Growth in Africa 1960–2000* provides an excellent example of an approach that is oblivious to the quality of the economic growth data.[71] In these two volumes, reliant almost exclusively on quantitative analysis, the issue of data quality is not touched upon, leaving the validity of the analysis shrouded in uncertainty. This article has aimed to provide a much-needed tool to engage with the challenge of interpreting official statistics in Africa. What are the implications for data users? Awareness that the data are produced with scarce resources at the individual statistical offices is one important step forward. This article has established the limits to what type of questions the data can answer, and shown how the priorities of powerful stakeholders in the development process have been mirrored in how progress has been measured in African economies.



71. Benno J. Ndulu, Stephen O'Connell, Jean-Paul Azam, Robert H. Bates, Augustin K. Fosu, Jan Willem Gunning, and Dominique Njinkeu (eds), *The Political Economy of Growth in Africa 1960–2000: An analytic survey* and *The Political Economy of Growth in Africa 1960–2000: Case studies* (Cambridge University Press, Cambridge, 2008).