



MORTEN JERVEN

Economic Growth and
Measurement Reconsidered
in Botswana, Kenya, Tanzania,
and Zambia, 1965–1995

OXFORD

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RECONSIDERED IN BOTSWANA, KENYA,
TANZANIA, AND ZAMBIA, 1965-1995

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Introduction

How have African economies performed since independence? The literature on aggregate growth has focused on explaining a chronic failure of growth in Africa.¹ This argument is possible only when one focuses on average economic growth. However, this perception is not accurate. According to the available statistics, most African economies experienced rapid growth throughout the 1960s and into the 1970s. There was a turning point in the mid-1970s, after which most economies experienced slow growth and even retrogression into the 1990s.

Thus, the right question to ask is this: Why did some African economies perform better than others at different times? Under what conditions could African economies grow and under what circumstances did they retrogress? Associating economic changes with changes in economic policies and other factors raises issues about how economic performance is measured in postcolonial Africa. That African economies perform poorly is a well-known “stylized fact,”² and it goes hand in hand with the observation that the quality of the data on growth for African economies is also poor. The latter fact is much cited but much less studied. African economic performance has been poorly measured; thus the evidence of growth is misleading. This book reviews the literature on economic growth episodes and finds little difference in economic performance between “good” performers and those who have been described as “bad” performers. Thus, the importance of what many analysts see as good policies has been overstated. Conversely, the literature understates the importance of external market conditions.

Because failure of economic growth has been the focus in the empirical growth literature, attention has been diverted from explaining the actual process of economic growth as it has occurred and detecting economic change. This book takes as its starting point the empirical studies on African growth as presented in Collier and Gunning (1999a and 1999b) and critically reviewed in Jerven (2011a). Cross-country growth regressions have identified an “African” pattern in a global sample of averaged GDP growth rates. The interpretation of this pattern, embodied in a large, negative, and significant African “dummy,” was that African economies have grown inexplicably slowly or that characteristics of African economies have not been fully captured in the cross-country growth regressions. In response, a body of literature has emerged that attempts to account for the economic stagnation of African economies in the

postcolonial era. A rich variety of explanations has been suggested, ranging from poor initial conditions to low institutional quality and growth-inhibiting policies.

This book reconsiders three aspects of the dominant conclusions of and methodology used in the empirical growth literature. First, it observes that the literature has focused on explaining an *average* shortfall of economic growth in Africa. This has diverted attention from important questions about the process of growth on the African continent. The overarching question has been Why has Africa grown slowly? when a more productive question would be How did African economies grow? While it is true that, on average, African economies have grown slower than economies elsewhere on the planet, this stylized fact obscures the reality that, in the aggregate, African economies were not lagging significantly behind in terms of economic growth before the late 1970s. Thus, I argue that the average shortfall analysis is not the appropriate way to describe the African growth experience. I examine to what extent the models informed by this stylized fact have reached conclusions with explanatory potential beyond accounting for the imagined event of a chronic failure of growth in Africa. I find that the extent of the diversity of growth experiences in African economies is better approached at the country level.

Assertions that there was a quantifiably important difference in economic growth in one period as compared to another or in one country as compared to another raise the question of how accurately economic performance in Africa has been measured. The quality of the evidence for African growth is widely considered to be poor, but there is a lack of empirical research that establishes the extent of its weakness. This is the second respect in which this book offers a reconsideration of African growth. I show here that how growth episodes are interpreted is closely linked to the quality of the growth evidence. The empirical growth literature relies on averaged growth rates over three decades. This configuration of the evidence is not very dependent on the quality of the data. However, when scholars seek to associate changes in economic policy with changes in economic performance over time or associate differences in economic policy and economic performance between countries, their conclusions depend on the reliability of the evidence.

The third element of reconsideration in this book relates to the method of investigation. Sub-Saharan Africa and the postcolonial period have so far been studied most intensively under the rubrics of “development economics” or “development studies.” These studies tend to use a methodology that focuses on the present or on a short span of time. In contrast, economic history has the fundamental advantage of a stronger emphasis on achieving an accurate description and analysis of an economy’s experience over time. The notion that African economies have failed to grow developed in the wake of the two oil price shocks, one in 1973–74 and the other in 1979–80, and has become more prominent in the literature as African economies have become

heavily indebted under structural adjustment policies. The contemporary literature on African growth is heavily influenced by this vantage point. This has resulted in what I call a “subtraction approach,” in which the relative lack of economic growth is explained by negative characteristics of poor countries. That is, scholars and analysts observe that an African economy lacks certain elements or advantages of more prosperous economies and determine that the reason the African economy is not flourishing is because it lacks the advantages of the more prosperous economy. A ranking of countries according to average rate of economic growth shows very similar trajectories to a ranking of countries by absolute income levels. Thus, the task of explaining recent slow economic growth has often been confused with the task of explaining the reasons for the long-term condition of underdevelopment. I contend that although the dependent variables the literature identifies can fit with the stylized fact of persistent stagnation, they do not explain changes in economic performance. Thus, this approach is not always a useful guide to interpreting the past. Evaluations of the economic policies pursued by independent African economies suffer from this weakness. They tend to equate the entire postcolonial period with economic failure and judge African economic policies and policy makers severely. The stylized fact that African economies have consistently failed to grow has had a decisive impact on the writing of the economic history of independent Africa. This book revises this view.

State intervention in most African economies has certainly left a lot to be desired in terms of achieving economic development outcomes, but this should not be automatically equated with “growth-inhibiting policies” or explained as an inevitable outcome of “African” conditions. A methodologically sound historical account avoids using the effect to explain the cause. But sound methodology has proved particularly challenging in economic histories of postcolonial Africa because the effect—Africa’s failure to grow economically—has loomed large. The typology of “good” versus “bad” policies derives from the prevailing development policy paradigm. “Bad” policies are hard to define precisely, and it is not enough to identify them as less-than-perfect decisions. To expect foresight about economic change and transcendence in policy advice seems to be asking too much of African policy makers in the 1960s and 1970s. That information is less than perfect is true of both state and market policies. That decisions are constrained by the information available to the decision-makers is one of the central limitations that make economic policy less than ideal. It is fair to point out this deficiency, but more precision should be exercised in practical and relative comparisons of the African economic development experience. This book finds that in several instances there is reasonable doubt about a direct causal link between “good” and “bad” economic policies and the economic growth record.

To address these questions empirically the book considers economic growth in four case-study countries (Botswana, Kenya, Tanzania, and Zambia) in

East-Central Africa from 1965 to 1995. Chapter 1 surveys the literature on African economies since independence. Chapter 2 reviews the state of knowledge on the quality of the African growth evidence, concluding that the basic gaps in the data and mismeasurements will affect the conclusions we draw from the evidence. I substantiate this claim using empirical evidence from my four case-study countries. Annual GDP growth rates for the four case-study countries as reported by the World Development Indicators, the Penn World Tables, the Maddison dataset, and official national accounts data vary so much that it is impossible to make definitive comparisons of the growth experience of these countries. In Chapter 3, I examine the evolution of the national accounting systems in Botswana, Kenya, Tanzania, and Zambia, investigating how the growth evidence is assembled and how this assembly process changed over time. I also describe the underlying basic statistical data for the estimates and changes in methodologies. This chapter clarifies to what extent the available growth evidence can be used to explain how these economies grew from 1965 to 1995.

Chapter 4 introduces the literature on policy and economic growth in Botswana, Kenya, Tanzania, and Zambia and discusses some of the most basic explanations that the literature offers for poor economic growth in those countries. In order to evaluate these claims, given the uncertainty surrounding the growth evidence, Chapters 5, 6, 7, and 8 consult the primary sources for growth data: national accounts. These chapters investigate the development in national accounting methodologies in the four countries. The basic statistical data and methods of measurement and estimation vary, and this has decisive impacts on the growth evidence and consequently on the validity of growth comparisons. These chapters discuss the implications of creating constant growth series based on the national accounts data in each of the four case-study countries. They disaggregate economic growth by sector and differentiate the rates and sources of growth for the four countries. Botswana, Kenya, Tanzania, and Zambia are an interesting set to compare because they are clearly associated with certain negative and positive typologies in the literature. The consensus in the literature has traced the success of Botswana to growth-promoting policies, while the dismal experience of Zambia has been attributed to economic mismanagement. Kenya's relative good growth performance is widely thought to be underpinned by its commitment to capitalist development, while its counterpart Tanzania is seen as suffering from the results of a failed socialist development experiment. However, my analysis of national statistics finds that in Botswana, economic growth was surprisingly low (with the exception of the mining sector). Conversely, economic growth in Zambia (except for mining) was surprisingly fast. Meanwhile, the growth experiences of Kenya and Tanzania were surprisingly similar.

The concluding chapter reconsiders these differences and similarities in the growth episodes and the interpretations of economic policies in the four

countries. If one accepts that growth revived in Africa in the early 1990s, as the national statistics suggest, then the history of African economic growth needs to be reconsidered. It is no longer valid to view one decade of decline as representative of African growth. The book also emphasizes that because of severe measurement problems it is necessary to base evaluations of economic performance on careful country studies that take into consideration changes over time in both economic growth and the measurement of economic growth.

NOTES

1. The literature, which I refer to interchangeably as the aggregate growth literature, the empirical growth literature, and the regression literature, is that of a subdiscipline in economics, specifically empirical studies of economic growth that use cross-country growth regressions in which the dependent variable is the average rate of growth of GDP per capita (as summarized in Durlauf et al. 2005, 599). Within this literature, innovations have included adding different independent variables or interactions of such variables to the initial baseline estimate in order to capture or explain differences in country growth in a global sample. The dependent variable was growth rate of per capita GDP taken from datasets such as the Penn World Tables, Maddison, and World Development Indicators.
2. A stylized fact is a simplified presentation of an empirical finding that is used in a causal explanation. The central point made here and in Chapter 1 is that the growth literature was informed by the wrong stylized fact. Instead of chronic failure, the pattern of growth has been growth and then decline.

African Economic Growth Reconsidered

This chapter reviews a body of research that seeks to explain African growth performance. It first reviews the aggregate evidence of African growth and presents alternative interpretations of the African growth experience. It examines the main conclusions researchers have reached, how those conclusions were supported by explanatory variables, and, finally, whether they cohere with the evidence.

In 1991, R. J. Barro published “Economic Growth in a Cross Section of Countries,” an article that explored the causes of economic growth in a sample of countries from around the world. Barro’s publication spurred a great deal of research that used the same methodology as Barro—cross-country growth regressions in which the dependent variable was the average growth rate of per capita GDP (Durlauf, Johnson, and Temple 2005, 599). In this literature (which I will henceforth refer to as the regression literature), authors innovated by adding different independent variables or interactions of independent variables to the initial baseline estimates. One of the central findings in Barro’s article was a large and significant African dummy variable. Barro’s interpretation of the dummy was that the analysis had not yet fully captured the characteristics of a “typical country” on the African continent (Barro 1991, 437). This finding prompted a research agenda that sought to eliminate the African dummy and thus explain the shortfall in African growth. Various solutions were proposed and conclusions reached in the following years. Nearly a decade later, *The Economist* took Barro’s interpretation literally. It asked, “Does Africa have some inherent character flaw that keeps it backward and incapable of development?” (*The Economist* 2000). Collier and Gunning are more resigned; they recognize that, despite many efforts, the African dummy has proved elusive and has not been eliminated over a decade of research. In an authoritative synthesis article, they concluded simply that African economies have grown “inexplicably slowly” (Collier and Gunning 1999a, 66).

More recently, while there has been a shift toward explaining growth over longer periods (Acemoglu, Johnson, and Robinson 2001, 2002, 2005; Austin 2007; Bates, Coatsworth, and Williamson 2007; Easterly and Levine 2003;

Engerman and Sokoloff 1997; Nunn 2007), there has been a slump in the number of published articles on Africa's postcolonial growth performance, indicating that a limit to invention has been reached. The conclusions in the regression literature on Africa have been very influential, partly because the results were to some extent congruent with the policy agenda set by the Bretton Woods institutions. Those same conclusions have also been successfully transmitted to a nonacademic audience through recent publications by major contributors to the regression literature: Paul Collier (*The Bottom Billion*, 2007), William Easterly (*The White Man's Burden: Why the West's Efforts to Aid the Rest Have Done So Much Ill and So Little Good*, 2007), and Jeffrey Sachs (*The End of Poverty: Economic Possibilities for Our Time*, 2005). The findings of this literature are treated as established facts. For example, *The Political Economy of Economic Growth in Africa, 1960–2000* (Ndulu et al. 2008a, 2008b), a recent and exhaustive two-volume overview of growth literature on Africa, is premised on this literature. The second volume of this set uses the conclusions from the aggregate regressions in twenty-six country studies to guide the search for causes of economic growth that would complement the aggregate story (Ndulu et al. 2008a, 9). That volume presents the widely accepted account of postcolonial economic performance. This chapter outlines how this account was built incrementally and argues that certain perspectives on African economic growth were missed in that process.

The questions on the research agenda of growth economists since the 1960s arose from the methodology that was used, which determined how the growth evidence was handled. The empirical growth literature originated in a quest to explain “secular” or “underlying” economic growth. The model was developed to test growth theory empirically and sought to explain differences in the rate of growth of steady state economies. The original intention of the model is a separate issue from what researchers claim the model explains in the regression literature. A model has an associated narrative, in the sense that the story it tells or seeks to explain is part of what makes it credible (Morgan 1997). Therefore, both the model and its narrative should be evaluated. The literature I review in this chapter seeks to explain African economic performance in the postcolonial period by using GDP per capita as the dependent variable in the average rate of growth. In a global sample, African economies demonstrate a negative rate of growth that has yet to be explained. It requires a leap of faith to go from such a cross-sectional observation to the conclusion that this observation is valid over time. This chapter will examine how the regression model and the use of the growth evidence has influenced the conclusions economists have reached on African growth.

The issue at stake here is economic performance. How did African economies perform and why did they perform that way? Although this point of departure is relatively uncontroversial, the debate becomes complicated as soon as the first step is taken. The mainstream literature accepts measured

growth in GDP as evidence of economic performance. Some scholars are reluctant to agree that this measure constitutes economic development per se and further object that the data on GDP growth in Africa are inaccurate and unreliable. Many economists ignore these caveats and this chapter also side-steps these issues, but I will return to them in the following chapters. Another valid question is whether it makes sense to analyze African economies as a coherent unit. This will be illustrated by my case-study analyses of Botswana, Kenya, Tanzania, and Zambia later in this book.

Collier and Gunning summarize the research agenda in the economic growth literature as follows: “It is clear that Africa has suffered a chronic failure of economic growth. The problem for analysis is to determine its causes” (Collier and Gunning 1999b, 4). The overarching question has been *why* Africa has grown slowly. However, an equally important question is *how* African economies grew.

EXPLAINING LACK OF GROWTH IN AFRICA

Table 1.1 shows the quest for the African dummy as it progressed over a decade, as economists searched for the right explanatory variable that that would remove the “stubborn African dummy” (Temple 1998, 324). The dummy was significant for each of the studies on this table with the exception of the Sachs and Warner regression, which used a tropical dummy rather than an African one.

The list in the table is by no means exhaustive. Durlauf, Johnson, and Temple (2005, Appendix 2) report that in cross-country growth regressions,

Table 1.1. The quest for the African dummy: A summary

Regression	Value of the African dummy	Central variable
Barro 1991	-0.0129 (0.0030) ¹	—
Barro and Lee 1993	-0.0116 (0.051) ¹	Black market premium
Mauro 1995	-0.017 [-4.26] to 0.021 [-5.21] ²	Corruption
Sachs and Warner 1997	0.02 [0.05] ²	Openness
Easterly and Levine 1997	-0.013 [-2.46] ²	Ethnicity
Burnside and Dollar 1997	-0.0135 & -0.0161 (0.76) ¹	Aid
Temple 1998	-0.0102 [1.74] to -0.0238 [4.38] ²	Social capital
Collier and Gunning 1999	-0.0052 [0.98] ²	—

¹ Standard error in parentheses.

² T-scores in brackets.

researchers have found 145 explanatory variables that are statistically significant and can therefore be used to explain the rate of growth. Some of these variables have been used to test similar growth hypotheses but differ from the growth regression models in the measures they use. Durlauf and colleagues identify forty-three different “theories” of growth that have purportedly been “proven” in the literature. They call these findings a “growth regression industry” (639).

A natural starting point is the authoritative survey of the regression literature on African growth by P. Collier and J. W. Gunning (1999a), “Explaining African Economic Performance,” which summarized the most significant factors in regressions on African growth.¹ Collier and Gunning grouped these factors into six categories: lack of social capital,² lack of openness to trade, deficient public services, risk associated with geography, lack of financial depth, and high levels of dependence on aid. Their implicit argument was that these factors all stem from a lack of social capital (Jerven 2010e). In their view, the regression literature presents cumulative evidence that lack of openness to trade and low levels of social capital have “large, damaging effects on the growth rate” (1999a, 74).

Because the literature has focused on the average growth in GDP per capita, the question of the timing of growth has not been examined. There has been no questioning of whether African economies actually experienced chronic failures of growth. In fact, there *were* episodes of growth, but where and when these occurred has received little attention. It is also obvious that the usefulness of “Africa” as a category is limited (Ferguson 2006). Although the view that it is relevant as an explanatory category has been strengthened by the quest for the African dummy, there is probably as much variation in growth within Africa as there is between Africa and the rest of the world. Beyond the obvious point that each country’s experiences are unique, the unexplained aggregate pattern of growth remains unaddressed. The story of an economic growth that was halted and reversed by an exogenous shock has gotten lost in this research agenda.

PATTERNS OF AGGREGATE GROWTH IN AFRICA, 1960–2000

The theory of an African dummy variable originated in observations of a difference between the average growth rate in the world as a whole and in Africa. Yet there are many ways of presenting the economic growth record of the post-colonial period in Africa.

Figure 1.1 shows one way of comparing growth in sub-Saharan Africa with growth in the rest of the world from 1960 to 2000. It is evident that there is

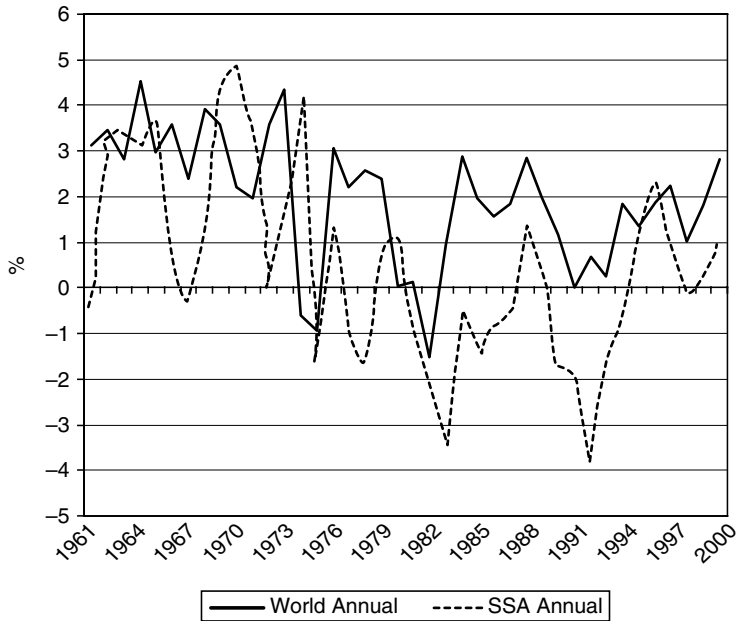


Fig. 1.1.1. Economic growth: Sub-Saharan Africa versus the world, 1960–2000, annual growth rates

Source: World Bank 2007. Data: GDP per capita (constant 2000 US\$) annual growth %.

a large year-to-year variation in growth and that that variation is related to a higher trend in the first half of the period. It is also apparent that since the late 1970s GDP per capita growth in sub-Saharan Africa has often been negative.

In contrast, Figure 1.2 shows the average growth in GDP per capita over the same period as a conceptual approximation of the growth evidence that has informed the regression literature. The average shortfall in growth world-wide over these decades is about 1.5 percent. The average rate of growth in sub-Saharan Africa is 0.5 percent, compared to a 2 percent average rate for the world. In Barro's cross-country regression, which offered a global sample of average growth rates for the period 1960–85, the African dummy was found to be 1.1 percent (Barro 1991). The regression literature takes it as given that this average shortfall in growth is the defining characteristic of African growth performance. Collier and Gunning observe this analytical weakness: “One limitation of the growth regression literature is that to date it has focused upon explaining long-term average African slow growth” (Collier and Gunning 1999a, 79).

Figure 1.3 plots indices of GDP per capita (1960 = 1). The main lesson to take from the indices is that the gap between sub-Saharan Africa and the rest of the world is very small in the first part of the period; it is only after 1975 that

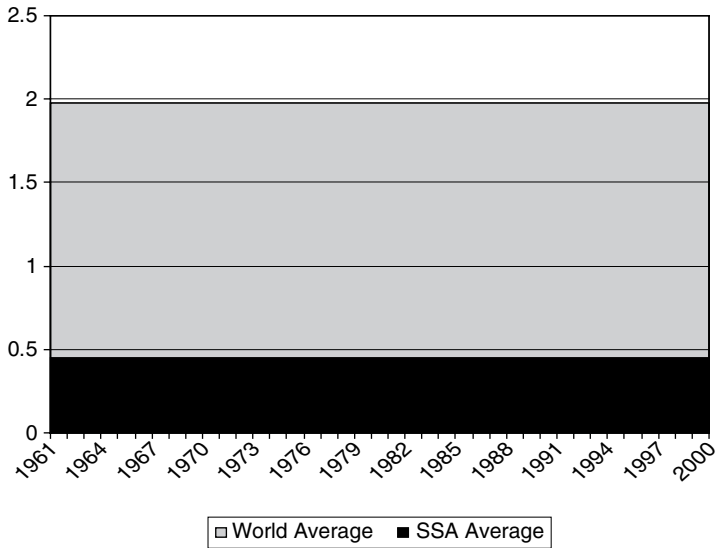


Fig. 1.2. Economic growth: Sub-Saharan Africa versus the world, 1960–2000, average growth

Source: World Bank 2007. Data: GDP per capita (constant 2000 US\$) Annual Growth %.

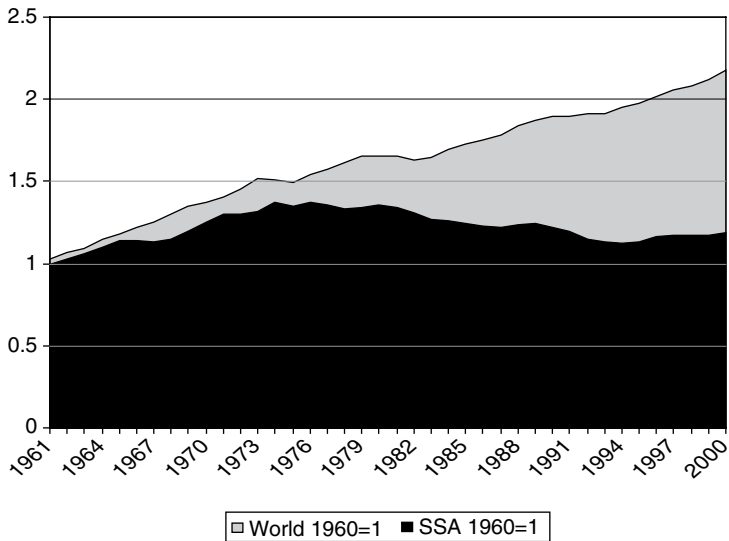


Fig. 1.3. Economic growth: Africa versus the world, 1960–2000, GDP per capita index

the difference between them is larger than 10 percent. After that, however, the indices diverge significantly.

As we see from the contrasting pictures in Figures 1.2 and 1.3, if one adopts a perspective that is not limited by focusing on an average shortfall in growth, the aggregate growth evidence opens up for other interpretations of the timing of the dummy. When did the negative residual accumulate? It also shifts the focus away from why there is a gap in growth in Africa vis-à-vis the rest of the world and toward explaining African growth itself. If one judges that the growth pattern does not cohere with the static approximation presented in Figure 1.2, then the regression model becomes unsatisfactory. When the imagined event—a persistent negative rate of growth—differs from the real event to such an extent, different explanatory variables are called for.

In fact, the African growth experience is not one of persistent stagnation. In 1960, African GDP per capita was about one-sixth of world GDP per capita. This remained true until 1977, after which the gap widened. In 2000, the African GDP per capita was less than one-tenth of world GDP per capita. The shortfall in African growth is thus a more recent phenomenon. Indeed, viewed in terms of total GDP, the African economies grew more rapidly than the rest of the world in the period before 1977, since the rate of population growth in Africa in the period 1961–2000 was 1 percent higher than that of the rest of the world.³ Tables 1.2 and 1.3 contrast the relative performance of Africa and other regions, using total GDP indices from 1960 to 1975 compared to those from 1975 to 1990.

In reality, therefore, the African growth pattern looks considerably different from the picture the regression literature presents. The notion that African economies failed to grow developed in the wake of the oil price shocks of

Table 1.2. Total GDP indices by regions, 1960–75

1960=100	World	South Asia	East Asia	OECD	Latin America	Africa
1965	130	122	117	131	127	130
1970	171	150	164	170	168	166
1975	204	170	224	200	228	208

Table 1.3. Total GDP indices by regions, 1975–90

1975=100	World	South Asia	East Asia	OECD	Latin America	Africa
1980	121	119	138	119	130	114
1985	137	156	195	135	133	120
1990	164	209	268	160	146	136

1973–74 and 1981 and has increased in currency as African economies have become heavily indebted under structural adjustment policies and because of droughts that have plagued the continent in the latter part of the period. In trying to solve the puzzle of slow growth, the regression literature is a child of its own time.

It is perhaps a paradox that the regression literature gives policy such a prominent role. In the growth pattern presented in Figures 1.1–1.3, the African economies grew rapidly when “bad” policies were implemented. In 1979, Senegal was the first African country to agree to a structural adjustment package (Van de Walle 2001). Since then, although most African economies have been implementing “good” policies as prescribed by orthodox scholars, economic performance has been poor. There is considerable debate about whether these policies were fully implemented. The reforms that *were* implemented targeted the prominent variables in the regression literature—that is, the black market premium through devaluation,⁴ openness to external trade (also part of the former) by abandoning price controls and reducing tariffs, and financial reforms directed at the operation of the central bank and the setting of interest rates (Lensink 1996).

DETERMINANTS OF AFRICAN GROWTH RECONSIDERED

The alternative presentation of the growth evidence presented above demonstrates that the “chronic failure” of African economies to grow is dependent on a specific configuration of the evidence. Because of the timing of the divergence of economic performance, expressing the research question as Why has Africa grown slowly? is misleading. The extent to which this initial starting point is incorrect determines how far the independent variables used in the literature have been tainted by this use of the growth evidence. This chapter now moves to consider those variables, review their conceptual soundness, and test how well they stand up as causal factors of growth in Africa. Has the quest for the African dummy yielded any results that can provide a coherent explanation for the notion that rapid growth occurred in the 1960s and early 1970s, followed by retrogression in the late 1970s and the 1980s?

The cross-sectional explanation of African growth suffers from several incoherencies. The proposition that initial conditions directly determine persistent slow growth does not make sense. At best, such variables as “ethnicity” or “lack of modernization of outlook” (as used in Easterly and Levine 1997 and in Temple 1998 [from Adelman and Morris 1967], respectively) can be seen as contingent. The growth record strongly suggests that unfortunate initial conditions were overcome. The question of how they came into play at a later stage

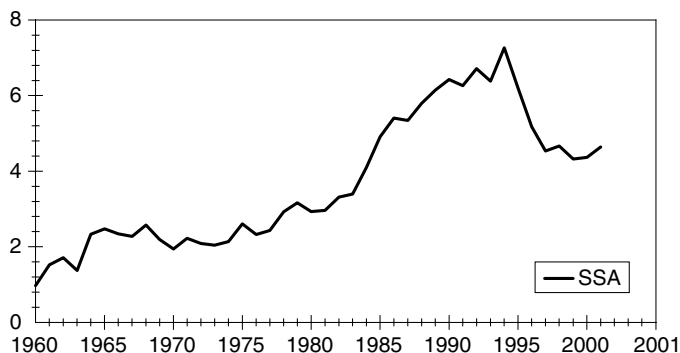


Fig. 1.4. Financial aid as a percentage of GNI for Africa, 1960–2000

Source: World Bank 2002.

might form part of a historical explanation. However, the cross-sectional average growth story does not accommodate such explanations.⁵

The variables that are supposed to capture the outcomes of policy mistakes suffer from a different shortcoming. Either the average value (such as the annual black market premium between the 1960s and 1990s) of such variables was inflated by the economic shocks of the late 1970s and early 1980s or the observations that were meant to capture institutional quality, such as survey data on perceptions of corruption and bureaucratic efficiency, were made after these economic shocks. It is misleading to interpret this post-shock phenomenon as an explanation for the entire period.⁶

Collier and Gunning illustrate this when they argue that Africa suffers from high dependence on external aid (Collier and Gunning 1999a, 74). They reported that in 1994, the ratio of aid to GNP in Africa was almost five times higher than in other low-income countries.⁷ In 2002, the World Development Indicators (WDI) recorded aid dependency ratios as a percentage of gross national income, which includes all official development assistance, official aid, technical cooperation, and all loans with at least a 25 percent grant element. The percentages are plotted in Figure 1.4, which reveals that in choosing 1994, Collier and Gunning used the absolute peak observation. Relatively high dependence on aid is indeed a symptom of the growth experience of the 1980s, but its extreme values are a more recent phenomenon than is usually supposed.

A similarly misplaced pessimism in the regression literature relates to investment in human capital. Collier and Gunning write that “the public service which has received most attention in growth regressions has been education” (1999a, 71). But education is quite unsuitable for explaining slow growth in Africa, because enrollment and literacy levels have increased rapidly even

when growth has not been high. This is confirmed, using data from WDI (World Bank 2002), by a correlation coefficient of -0.985 between GDP growth and literacy rates for the period 1970–2000 (annual data). In growth regression terms, this counterintuitive finding of almost perfect negative correlation would imply that literacy has a negative impact on growth rates. It shows that Africa has experienced an impressive improvement in human capital measures and that this tendency has continued despite the slowdown in growth since the mid-1970s. This contradictory evidence can be accommodated in a growth regression, however. If one then looks for a correlation between a relative deficit in human capital stock and average shortfall in growth, the result will be that human capital has a significant negative effect on growth. By this method, human capital is found to account for 1.2 percent of Africa's annual growth shortfall relative to Asia (Bleaney and Nishiyama 2002).⁸ But has something actually been explained, or are we merely using data to fit a regression?

While there might be a certain threshold of human capital above which African economies would start to benefit from growth based on that resource, it is still not clear whether it is the level of human capital that has been the chief constraint on growth in the 1980s. What is certain is that significant progress has been made since independence (Sender 1999), even during times of constrained finances and external demands for austerity. The overall generalization that public services are deficient in African nations does not capture how public service delivery has evolved in African economies. Large improvements were made after independence, despite initial conditions. Some of these improvements continued through the 1980s, even when African economies were not growing. Africa has not been a chronic failure either in terms of growth or in terms of development.

The variables identified by the regression literature give the distinct impression of a subtraction approach, one that compares the characteristics of a developed country and with those of an underdeveloped country and finds an explanation for lack of growth in the latter. The differences between the two countries are then assumed to explain underdevelopment. This is well illustrated by the list of factors in Collier and Gunning; the frequent use of the phrase “lack of” makes this approach explicit.

The revival of the notion of the vicious circle of underdevelopment is linked to the subtraction approach, which is not consistent with the actual record of growth. African economies have displayed both growth and retrogression; they have not been trapped in a low-level equilibrium in which poverty reproduces itself. Thus, the factors identified in the regression literature and the circular reasoning in which they are embedded are not immediately convincing. It is well known that Africa has performed relatively badly in GDP per capita terms over the postcolonial period as a whole: the African economies are poorer than many. Given that, it is safe to assume that they rank lower than many on education, health, and infrastructure indicators; that they receive more aid

than many economies; and that they have less developed financial markets. The regression literature confirms these assumptions. What it does not tell us is why the African economies grow and why they regress. Understanding these issues is the key to understanding economic performance.

Observing a difference between two countries using a subtraction approach can be a useful start, but it does not provide a useful conclusion. One has to ask why this difference exists and how it came about. That correlation does not imply causation is a truism, yet this basic fact sometimes needs to be restated when confronted with the regression work on African growth. Correlation and circular reasoning do not make us wiser; what is needed is a stronger explanatory framework for cause and effect. This would mean abandoning the central premise of the cross-sectional regression literature. Although these regressions are fitted by averaging dependent and independent variables, they construct a history of African economies that is a static narrative of stagnation and slow growth that ignores important quantitative and qualitative changes.

REFLECTIONS: TOWARD EXPLAINING AFRICAN GROWTH

In a paper written for the World Bank's Development Research Group, Lant Pritchett observes that the growth experience of most developing countries has been characterized by instability. From this premise, he warned that the "exploding economic growth literature" was "unlikely to be useful" and that the "use of 'panel' data, particularly with 'fixed effects' to investigate long-run growth effects is almost certainly pointless" (Pritchett 1998, 3–4).

Important quantitative and qualitative changes have taken place in Africa since independence. The pattern is one of growth followed by retrogression, not permanent stagnation. This observation raises the issues of the timing of growth periods and missed events in the performance narrative. The regression literature draws upon data that averages growth statistics. This does not account properly for two decades of structural adjustment, falsely attributes situational observations from the 1980s to the whole period, and ignores the policy changes that accompanied structural adjustment. A perspective based on averages has thus meant that some of the issues that are problematic for those who argue for orthodox policies have been circumvented. This has been an outcome of the model that contributors to the regression literature have used for analysis. Morgan writes that although modeling is "a style of scientific thinking," the application of the model "is achieved via a narrative prompted by an external fact, an imagined event or question to be answered" (1997, 361). The explanation for African economic performance has been structured by a

model that works only when growth in Africa is assumed to be persistently slow. Economic change must be investigated if we are to go further in understanding the African growth experience. This involves stepping away from the perspective that relies on data about average growth. Associating economic change with economic policy change raises many issues about how economic performance is measured in postcolonial Africa.

The following chapters will examine the predictions derived from the regression literature. Although this book studies African economies in their own right, my choice of economies as case studies has been influenced by this objective. Examining African growth as an average of GDP per capita improvement for the period 1960 to 2000 does not allow for treatment of particular growth episodes. Another weakness of using aggregate data is that this perspective has not evaluated the diversity of economic performance on the African continent. Ndulu et al.'s *The Political Economy of Economic Growth in Africa* (2008a, 2008b) provides data that can be used to fill these gaps in the economic literature; this is especially true of volume 2, a compilation of case studies that identify episodes of economic growth in each country.⁹ The findings of the chapters on Botswana, Kenya, Tanzania, and Zambia provided useful comparisons to my own research on the economies of these countries, whose histories in terms of natural endowments and development strategies are very different. In the regression literature and in the mainstream interpretations of African economic history, these countries represent ideal typologies (see Table 1.4). These are “stylized facts” about these countries that show how they are described in cross-country growth regressions and how they are referred to in anecdotal accounts of African growth experiences.

The typologies and economic performances of these four countries are highly consistent with the predictions made by the regression literature.¹⁰ Tanzania and Zambia are consistently identified as countries that have “growth-retarding characteristics.” Kenya is a hybrid case: its partly protectionist stance in trade policy was followed by an emphasis on capitalism and policies that promoted

Table 1.4. Mainstream typologies of Botswana, Kenya, Tanzania, and Zambia

	Open/closed	Democracy	Ethnic diversity	Urban bias**	Socialist/capitalist	Economic performance
Botswana	Open*	Yes	No	No	Capitalist	Excellent
Kenya	Open*	No	Medium	No	Capitalist	Good
Tanzania	Closed	No	High	Yes	Socialist	Bad
Zambia	Closed	No	Medium	Yes	Socialist	Bad

* Classified as open in some years in the Sachs & Warner Index.

** This sometimes includes the concept of policies that are biased against agricultural exports.

agricultural exports as vehicles of development. Its political system was somewhat authoritarian, and there was ethnic fragmentation. Botswana is the star performer, an example of how an African economy can grow rapidly, even when the nation is landlocked and poor, by following growth-promoting policies. According to the evidence this table presents, these countries are appropriate case studies for assessing the truth of the aggregate growth literature. At face value, the variables that are statistically significant in the regression analysis have the values that fit the analysis. The following sections will examine whether these variables are correct and historically significant.

For a test of the regression literature, my sample of four countries has its limitations. The geographical focus is narrow; it is limited to East and South-Central Africa. Ideally some West African economies would have been included. But there is a trade-off between width and depth: because my study deals with geographically homogenous countries, it is more manageable. Taking external factors such as climatic changes and commodity price changes into account is easier with such a sample. Another limitation is that all four countries are former British colonies; French- and Portuguese-speaking Africa are not represented.¹¹ This is partly because of time and space constraints, but there is another justification from an analytical perspective. In the regression literature, the prominent policy variable that justifies the conclusion that the cause of poor economic performance was endogenous is the black market premium and thus the overvaluation of domestic currency. In Francophone Africa, this outcome was exogenously determined by the Communauté Financière Africaine (CFA; African Financial Community), so in this respect, the study would have been less interesting if based on the former French colonies, which were all members of the CFA currency union.¹²

The Portuguese colonies reached independence very late, so the study of independent development policies in Portuguese-speaking African nations does not correspond chronologically. Angola, in particular, was unfortunately also riven by internal war, in which context an investigation of the link between policies and economic growth becomes difficult. Nor does my sample include typical examples of kleptocratic or failed states. This study takes for granted that the economic performance of some African countries was determined by war or widespread corruption. However, this applies only to some countries for the whole of the independence period: Angola, Chad, and Sudan in the case of war and the Central African Republic and, especially, Zaire in the case of corruption. Others, for example Uganda and Nigeria, were similarly affected by civil war and unrest for part of the period.

This study looks at “normal” economies and focuses on a range of policy options. It is of course true that in the aggregate some of the observed shortfall in African growth is explained by the extreme cases mentioned above. However, these are—and should be—regarded as abnormal. That is, African economies do not have an inherent character flaw that meant that the predicted outcomes

varied, from kleptocracy and civil war to closed socialist economies. African nations form coherent and rational economic policies more commonly than is assumed. More importantly, as this study will show, policy is a less clear-cut determinant of economic performance than the mainstream interpretation indicates.

The typology of “good policy” may be defined too narrowly in the literature today, largely because the definition is informed by the development studies literature. That discipline takes its impetus from the prevailing development policy paradigm. When these definitions are applied to history, researchers often make the curious mistake of using the terms “bad policies” and “economic mismanagement” in a normative way, thus taking the stance that not only is a right way of managing the economy known but also that it would have been possible to govern the economy in that way. This language may be useful for evaluating the economic efficiency of some present-day policy decisions, but when interpreting the past, one must be cautious about labeling a policy as “poor” and then using it to explain deficiencies in the social or political structure of the economy. “Mismanagement” or “bad policies” are hard to define precisely, and it is not sufficient to identify them as less-than-perfect decisions. To expect foresight about future economic change seems to be asking too much of African (or other) policy makers in the 1960s and 1970s. The information at hand for making decisions about state policies or economics is always less than perfect. That decisions are constrained by what is known at the time is one of the central limitations that makes economic policy less than ideal, but the question is whether the comparison with an ideal world is fair. It is fair to point out these failings, but more caution should be exercised in a practical comparison of the economic development experience. One should acknowledge the benefit of hindsight and not jump to the conclusion that all unfortunate policy outcomes were actively pursued as a rational choice.

Tanzania is a suitable country for the study because it has a high level of ethnic diversity and is classified as an economy that is socialist economy with urban-biased policies. Kenya provides the opposite example of an economy that is capitalist, more open to external trade, and has a rural bias. Competition among ethnic groups for economic resources has been a feature of its economic performance, which must be weighed against other causes of poor economic performance. Zambia and Botswana provide another interesting pair of economies. Both have been, and remain, reliant on mining—copper and diamonds, respectively—for foreign exchange earnings. Botswana, which has low ethnic fragmentation and is ruled democratically, is described in the literature as an economic success, while Zambia, which had a period of socialist rule after independence, is diagnosed as an economic failure. The case studies in this book try to determine which differences between the countries were the most crucial for economic growth and therefore what was the most plausible determinant of success or failure. Botswana is described in the literature as the exceptional

example of successful development in Africa. In the regression literature, it is often invoked to provide anecdotal evidence about how democracy, a stable foreign exchange rate, and low ethno-linguistic fragmentation provide the right fundamentals for economic growth. This book will focus on whether these conclusions contradict or support the findings of the regression literature. These four case studies will also allow for a consideration of what information is contained in the aggregate data and for a detailed examination of whether the conclusions of the regression literature are borne out by the economic data.

The typology in Table 1.4 is representative of how these countries are described in the regression literature, but that typology can be misleading. The use of averages and the frequent use of binary variables are fraught with pitfalls. Many variables used in the regression literature allow for one observation only; for example whether an economy is open or closed to trade. First of all, the “open” parameter as developed by Sachs and Warner (used in 1997, described in 1995) and reproduced in the Penn World Tables (PWT) appears to be slightly inconsistent. In these sources, a country is classified as closed if exports are done through a state monopoly and the country meets three other criteria.¹³ Both Botswana and Kenya organized exports of agricultural produce through marketing boards during this period and should therefore be regarded as closed economies according to the PWT.¹⁴ For example, the Botswana Meat Commission provided the only channel for export sales for the country’s important cattle industry. The only other export of significance for Botswana was minerals, and the hugely important diamond trade and mining was in the hands of Debswana, a joint venture between the De Beers company and the Botswana government that amounted to a strict monopoly.

A related shortcoming of the regression literature, as mentioned above, is that it fails to account for policy changes. The typology in Table 1.4 illustrates this. There were major policy changes in these four economies during the period covered by the table, one of which was a turn to openness in trade. This and other policy changes are related to the structural adjustment programs that were initiated through the intervention of the Bretton Woods institutions. These programs insisted on changes in economic policies as a condition of external aid. Structural adjustment meant the abandonment of price controls in external and internal markets and the retrenchment of the state through privatization and liquidation of state-run companies. These policy changes were particularly important in Tanzania and Zambia and had important effects on economic growth.

This book examines episodes of growth at the country level to evaluate propositions in the empirical growth literature. In part, this study has the same motivation as Ndulu et al.’s two-volume survey. Both use the case-study approach to explore episodic growth and variations in economic performance at the country level. My study evaluates the coherence of the propositions in the regression literature, while Ndulu et al. explicitly seek “complementarity”

(Ndulu et al. 2008a, 5). This means that what they are conducting is not really a test, but rather a confirmation exercise. They do not entertain the hypothesis that one or more of the twenty-six case studies they present is inconsistent with or directly contradicts the aggregate findings of the regression literature. They use cross-country evidence to locate individual African countries in a global distribution of growth. This evidence is meant to “discipline the search for leading themes at the country level,” arguing that the country-level evidence identified in this manner would feed back into the account of growth at the aggregate level (Ndulu et al. 2008a). The justification they give for this methodology is that the cross-country evidence can be used to weigh the importance of factors against each other. However, case studies have the inherent problem of endogeneity. Any factor may conceivably be important for growth, but no strict method exists to determine the importance of any one factor or whether a factor is a cause or an effect.¹⁵ In statistical regressions, this problem is solved by treating all the other countries in the samples as the implicit counterfactual. For example, the growth experience of countries that did not initiate reforms is the implicit counterfactual to those that did, and countries without overvalued currencies are the counterfactual of those with overvalued currencies. Ndulu and colleagues do acknowledge that this assumption is “heroic” (Ndulu et al. 2008a).

As in the quest for the African dummy, the central task for Ndulu et al. is “to explain persistent and widespread economic stagnation.” They observe that while this stagnation is present in averaged growth statistics for the period 1960 to 2000, this “conceal[s] a wide diversity of experience at country level” (2008a, 8). They comment indirectly on the timing of the African dummy: “Africa’s shortfall is sharpest during the twenty-year period from roughly 1974 to 1994” (Ndulu et al. 2008a, 17). This might be seen as an admission of the importance of external economic shocks, though they still assume that economic policies were to blame. Their overarching research question is therefore why policies were adopted that were poor for growth.

Although using observed correlations derived from a subtraction approach can be a useful starting point, that approach yields insufficient conclusions. The material Ndulu et al. present in their second volume provides opportunities for us to evaluate whether the theories and conclusions of the regression literature provide useful models for designing case studies. The two volumes Ndulu et al. have compiled do not give much consideration to the quality of the statistical evidence for growth. Poor data quality is likely to compromise research, especially comparisons across countries, if proper care is not taken with the economic growth evidence. The following chapters enable us to compare the merits of a cautious approach to the growth evidence with one that takes GDP data at face value.

Ndulu et al.’s compiled volumes are unique because they consider the effect of changes in the incentive structures on growth. At first sight, the aggregate

growth pattern does not seem to fit the orthodox interpretation. Rapid GDP growth in the early period coincided with the general prevalence of assumed growth-inhibiting policies, while the later move toward liberalization was associated with a slowdown in aggregate growth. This observation can be studied at the country level. The orthodox interpretation associates economic control and distortion of prices with slow growth and predicts a positive growth effect from liberalization of economic controls.

There is no tradition of comparing the four economies I have chosen for my case studies, partly because in African studies priority has been given to monographic research that emphasizes local specifics (Austin 2007a, 11; Manning 2003). In addition, there is an imbalance in how much research focusing on economic performance has been devoted to the four countries I have chosen. Kenya and Tanzania have been intensively studied, Botswana and Zambia less so.¹⁶ The issues that make each of these four countries special have understandably attracted attention. Thus, studies on the economic history of Zambia have focused on the development of the Copperbelt, the uniquely early high rate of urbanization that resulted, and issues relating to rural-urban migration.¹⁷ Botswana has gained an international reputation as a democratic state, and the literature has focused on the Setswana, the traditional origins of this rule; the role of cattle in the nation's economy; and the transition to a modern diamond-dependent economy (Parsons, Tlou, and Henderson 1995; Peters 1994). There is fertile ground for a comparison of Zambia and Botswana, but a rich literature that contrasts the experiences of these two countries does not yet exist.¹⁸

The literature on postcolonial Kenya and Tanzania, by contrast, includes numerous comparative studies (Barkan 1984, 1994; Lofchie 1989).¹⁹ However, the two countries also figure as diametrically opposite cases in some of the synthesis literature that presents Kenya as the typical case of African capitalism and Tanzania as typical of African socialism (Iliffe 1983).²⁰ A central focus of the early literature, which was dominated by dependency scholars, was the prospective viability of the divergent development paths of these two countries. The "Kenya Debate" centered on the viability of capitalist development in a postcolonial (or neocolonial) world. The crucial question was whether the indigenous capitalist class was essentially "comprador" (i.e., dominated by foreign capital and not progressive) or not (Leys 1996, 143–63).²¹ Debates about Tanzania concerned whether the country was successfully embarking on a path toward socialism and self-reliance even though it was dependent on foreign capital and whether problems of class formation derived from the fact that the state was the agent of socialism or because the country was largely peasant based (e.g., Saul 1973; Shivji 1976).²² These debates subsided and changed somewhat as Kenya and Tanzania converged in terms of performance and policies with the onset of economic decline and the policies of structural adjustment.²³

Though this literature is guided by certain historiographical questions, it is still instructive and can usefully be read as a whole to inform a case-study approach. While leftist scholarship has focused on the general feasibility of development in the postcolonial periphery, the right has focused on state interventions in the marketplace and the negative consequences of such intervention for economic growth. The urban bias thesis was initially set up as crude opposition of urban versus rural areas, with urban interests dominating economic policy (Lipton 1977). Bates (1981) provided the seminal explanation for the political origins of agricultural production shortfall in Africa. He argued that because states were focused on pleasing urban elites, they actively intervened in the economy in a way that disadvantaged rural producers, particularly through setting low prices for food and export crops in the marketing boards. This did not give rural producers an incentive to expand production. Kenya was at the heart of the further development of this argument because it provided “reason to reject the implicit opposition of town versus country” (Bates 1991, 119). Bates identified proof of “Kenya[’s] exceptionalism...marked by its commitment to economic growth, particularly in export agriculture” (Bates 1989, 148). Though the impact of this literature has been increased by its apparent ability to explain African economic decline, its strength lies in its explanation of why particular policies were adopted. Its potential for explaining aggregate growth rates is less straightforward.²⁴ Bates asserted that in Jomo Kenyatta’s Kenya and Seretse Khama’s Botswana, “political elites invested in rural assets” (specifically coffee and cattle), while in Zambia and Tanzania “they did not” (1991, 123). This distinction, he argued, determined whether the agricultural sector would be a priority in these countries.

The agricultural sectors have not always been included in evaluations of comparative economic performance. Part of the reason for this is that while policy bias has been fairly easy to detect, an economy’s responses to policies are more difficult to establish, especially in terms of food crops.²⁵ In an article on the food production crisis, Berry claimed that “the data are simply not good enough to warrant clear or firm conclusions about national (let alone continental) trends in agricultural output” (1984, 60). The literature on African agricultural sectors is quite uneven; Tanzania’s has been more intensively studied than others (e.g. Bryceson 1993; Hyden 1980), sometimes in direct comparison with that of Kenya (Lofchie 1989; Stein 1979) and Zambia (Lundahl 1990). The three countries are analyzed together in country chapters in a few edited volumes.²⁶ Botswana’s agricultural sector is evaluated in a volume that compares all four economies (Fair 1992), but it is studied less often, particularly in terms of food crops (Jones 1981), though cattle have received ample attention (Hubbard 1987), as have the recurrent droughts (Hinchey 1979). The literature illustrates that while crop production in Botswana was poor, beef exports were relatively successful. In Zambia, agricultural production was geared toward self-sufficiency, while export promotion was initially neglected,

for what seem like good reasons.²⁷ Jansen (1988) has nevertheless attempted to show the agricultural output and income opportunities that were lost because the local currency was overvalued. The hypothesis is that Zambia would have exported agricultural goods if prices were higher for farmers.²⁸ Similarly, in Tanzania, scholars have highlighted the overvaluation of currency as a cause for stagnant levels of agricultural exports and have examined inefficiencies in the internal marketing of food crops (Lofchie 1988). Kenya has been shown to be relatively more oriented toward agricultural exports, though Peterson has pointed out inefficiencies in internal marketing and discrimination against small-scale farmers (Peterson 1986). Under Daniel arap Moi (1978–2002), the power base of the elites changed, which resulted in a change in policy that shifted the focus from production of crops for export to the production of grain for internal consumption (Bates 1987, 91–92). One weakness of this literature is that while it is very informative about specific topics, it speaks less clearly about the implications of this information for aggregate performance. The literature highlights how development policy is a choice: for instance focusing on exports versus developing food sufficiency or focusing on equitable distribution of and access to food or land versus export-oriented large-scale farms. The growth data on food production and peasant production are particularly poor, which might be part of the reason why “good policies” are rather loosely associated with “good performance” in the literature. This book investigates the robustness of these associations for the four case-study countries.

The account of the growth and decline of manufacturing is less dependent on data quality. Informative volumes with chapters on the relevant countries exist (Coughlin and Ikiara 1988; Riddell 1990), as do surveys of the merits of variations of import-substitution industrialization across Africa (e.g., Mytelka 1989). Initially high growth rates eventually gave way to economic decline in the manufacturing sector. The literature is divided about whether this was because the industrialization strategy was flawed to begin with. In practical terms, this discussion reached its conclusion with the introduction of the structural adjustment programs of the World Bank and the International Monetary Fund (IMF) in the 1980s. Policies for manufacturing underwent drastic changes, and deindustrialization has taken place since the opening up of markets to external competition in the adjustment years (Mkandawire and Soludo 1999, 61). This has stimulated debate on the merits of structural adjustment policies (Lall 1995). The decision to initiate and implement reform is hard to account for using the variable of power of interest groups to explain policies under structural adjustment. Bates and Krueger found it “surprising” that “interest groups fail to account for the initiation, or lack of initiation of reform”; they also find that “variations in the pattern of interest group presentation failed to account for variation in the success of different governments to implement economic policy reforms” (1993, 455, 461).

The organizing theme of this book is that despite their differences, the growth rate estimates of the economies of Botswana, Kenya, Tanzania, and Zambia have formed the basis for implicit or explicit comparisons of economic performance deriving from natural resources, exposure to external shocks, economic development policies, and institutional frameworks. This perspective is not always in the foreground in the secondary literature on these countries; this is why the second volume of *The Political Economy of Economic Growth in Africa* is particularly useful. It offers case studies of these four economies that provide convenient reference points for the orthodox growth interpretation, since they use similar methodologies and ask the same type of questions (Maipose and Matsheka 2008; Mwanawina and Mulungushi 2008; Mwase and Ndulu 2008; Mwega and Ndung'u 2008). The authors of these four chapters have identified episodes of growth and associated them with periods of policy change. My analysis examines the coherence of the associations of growth with policy.

NOTES

1. One might object that this synthesis study is rather dated, but there have not been major significant new findings in the literature since then. This contention is supported by Durlauf, Johnson, and Temple (2005), who refer to Collier and Gunning (1999a) and Easterly and Levine (1997) as the authoritative examinations of African growth. Furthermore, an additional review of the regression literature on African growth focused on the same papers reviewed here (Azam, Fosu, and Ndung'u 2002).
2. For a review of how social capital was defined and measured, see Jerven (2010e).
3. All data taken from World Development Indicators. This conclusion is not an artifact of my use of the WDI data. Ndulu and O'Connell (1999) find the same pattern using Penn World Tables. Maddison (1995) supports the same conclusion. Nor is this finding an artifact of aggregation; it is supported by individual country experiences, as is shown by Arrighi (2002) using data assembled by Berthelemy and Soderling (2001).
4. The black market premium refers to the amount in excess of the official exchange rate that must be paid to purchase foreign exchange on an illegal ("black") market. High black market premiums existed because governments controlled exchange rates at a price that overvalued domestic currency compared to foreign currency and controlled access to foreign currency. One of the objectives of the structural adjustment programs was to let the domestic currency devalue so that there would be no rationale for a black market in currency.
5. *Economist* (May 13–19, 2000) quoted in Arrighi (2002).
6. See Jerven (2010e, 2011a) for a full critique of the use of these variables.
7. Collier and Gunning do not provide a source for the data for this ratio.

8. Bleaney and Nishiyama (2002) found this after making a synthesis of the regression models of Barro (1991), Sachs and Warner (1997), and Easterly and Levine (1997). Their human capital variable is a composite of life expectancy and male schooling.
9. Another study of episodes of economic growth is provided by Kelsall (2013).
10. The role of settlers is an important topic in the literature on the colonial period and is now resurfacing in the current economics literature (e.g. Acemoglu et al. 2001). According to data provided by Mosley (1983), there were more European settlers as a percentage of the total population in Northern Rhodesia (3 percent) than in Kenya and Bechuanaland (1 percent). Reflecting that European settlers were mainly drawn to Zambia because of copper (Butler 2007, 36–7), the percentage of alienated land or land reserved for Europeans was smaller in Northern Rhodesia (3 percent) than in Kenya and Bechuanaland (7 and 6 percent, respectively) (Mosley 1983, 7, table 1.1). Mosley does not review Tanganyika, but according to Brett (1973, 221), African peasants were dominant, and despite efforts to do so, “the attempt to create [a] viable white farming community... had clearly failed by the end of the thirties.”
11. Although mainland Tanzania was under German rule until World War I.
12. With the exception of Guinea for the early part of the period and Mali for a few years.
13. A country is classified as closed, first, if the black market premium of the 1970s and/or 1980s was over 20 percent; second, if the country was classified as socialist (by Kornai 1992); and finally, according to a variable capturing the frequency of quotas on imports of intermediate and capital goods, as calibrated by Barro and Lee (1994) with data from UNCTAD covering the years 1985, 1986, 1987, and 1988.
14. According to Sachs and Warner (1995, 65), they use a World Bank study (Husain and Faruquee 1994) that ranked the distortion of the marketing boards, but this study applied only to African countries.
15. Though the case-study approach is perhaps not a strict method, it uses certain categories to assert cause and effect. Time is the most important of these categories: a cause must precede an effect.
16. According to Freund (1984, 333), “no African state is so well studied as Tanzania.”
17. On Zambian historiography, see Ferguson 1990a and 1990b and Macmillan 1993.
18. Du Plessis (2006, 4) claims to be the first to make such a comparison.
19. Lofchie notes that apart from Barkan’s study (1984), “there have been virtually no efforts to subject these countries to side-by-side comparison” and suggested that the reason for this shortcoming was that “the academic literature has consisted almost entirely of case studies of one or another aspect of Kenya and Tanzania” (Lofchie 1989, 185).
20. Tanzania was referred to as the “model of African socialism” after Nkrumah’s fall in Ghana (Iliffe 1983, 78). Kenya is labeled the typical example of “nurture capitalism” in East and South Africa (Iliffe 1983, 82). Zambia does not fit aptly in a category, but Iliffe describes it as combining parts of “parasitic capitalism” with “elements of privately owned productive enterprise, a large state sector, and

a good deal of socialist rhetoric in an extraordinary political balancing act” (Iliffe 1983, 81).

21. The list of contributors to this debate is long. Suffice it to say that the debate was initially stimulated by Leys (1975; 1978), continued in an edited volume by Fransman (1982), was further added to by Swainson (1980), and was revised by Kitching (1985).
22. For a review of the debate on class formation and dependence in Tanzania, see Freund (1981) and Nursey-Bray (1980).
23. According to Chege (1998, 210), the “Kenya Debate” “rebounded with a vengeance” with a renewed interest in discussions on African capitalists and new publications, of which the most important are Berman and Leys (1994), Kennedy (1988), and King (1994), all with different perspectives on the debate.
24. For several criticisms of Bates’s arguments, see Leys (1996, 89), and for a critique of a price-based approach to the production problem, see Platteau (1995, 463–69).
25. Also note that although Bates claimed a wider explanatory coverage, particularly with regard to food pricing, Arhin et al. (1985, 19) argued that “it is clear that Bates’ analysis applies to export crops only,” because in other crops the state marketing board would have no monopoly power to exploit its peasantry.
26. Ellis on Tanzania and Kydd on Zambia in Harvey (1988), Lofchie on Tanzania and Good on Zambia in Chazan and Shaw (1988), Coulson on Tanzania and Cowen on Kenya in Heyer et al (1981), and Shao on Tanzania and Peterson on Kenya in Commins et al. (1986).
27. The receipts from copper exports were sufficient to cover the import bill in 1964, while infrastructure for further exports was a real bottleneck.
28. Jansen analyzes rates of implicit taxation on agricultural production deriving from an overvalued kwacha, and with the help of supply elasticity (the assumed response of agricultural supply to price changes) she estimates the agricultural output in the counterfactual case of the currency not being overvalued.

Measuring African Economic Growth

The first chapter of this book investigated the conceptual soundness of the explanatory framework for African growth performance and explored the different independent variables used in the regressions on African growth. It suggested that there is room for alternative interpretations of African growth performance. This involves examining the record of growth in Africa and asking how African economies grew before explaining why African growth failed. This reinterpretation must be supported by a rigorous approach to the evidence of African growth. The empirical growth literature has used an averaged growth rate for examinations of the postcolonial period. This has obvious weaknesses, as we have seen, and it has less obvious implications for the explanatory framework.

In theory, data about real GDP per capita is obtained by adding together the value of all value-added activities in the economy for one year; dividing that total by population size in that year, deflating the result by a purchasing power parity term; and comparing the result with the equivalent figure for the previous year. This assumes full coverage of all activities and that the outputs and inputs within each activity are properly valued and quantified. It further assumes that the population is properly enumerated from year to year and that the deflation measure is timely and correct. In practice, this measure does not attain that level of accuracy, even in developed economies. Some economic activity is not measured, population censuses are usually undertaken only once in a decade, and constructing comparable purchasing power parity indices involves compromises about which goods and services to include in the index. The GDP measure is always an approximation, and it is not as accurate as economists sometimes assume.

GDP estimates and other national account derivatives have obvious shortcomings that are potentially serious. The most serious shortcoming in the quality of data about growth in Africa is the absence of empirical research on the topic. This raises an important question: Do growth rates using the metric of GDP convey meaningful information?

The issue of data quality is best approached by posing two questions: Are the data valid? and Are the data reliable?¹ Reliability is not the same thing as validity. A measure can be recorded inaccurately in predictable ways. This would make the measure invalid, but the measure would still be reliable. For example, if the level estimates of GDP per capita are inaccurate but this inaccuracy was the same across time and between countries, the evidence could still be useful for the purpose of making comparisons. Unfortunately, as will be shown below, this is not likely to be the case for economic data on Africa. Thus, African data has both validity issues and reliability issues.²

However, these vulnerabilities in Africa data have not been discussed in the economic growth literature. Instead, those who do econometric work frequently complain about availability.³ Often the absence of observations for some countries for some variables decreases geographical coverage as a regression becomes more specific. It is true that data availability is a real concern. The World Development Indicators 2002 has listed forty-eight countries in the sub-Saharan category. For the thirty-one years from 1960 to 1990, these countries provide 1,082 of the 1,488 observations in the 2002 dataset, a coverage rate of 72 percent. Nevertheless, the WDI also provides a time series for GDP per capita for Africa *as a whole* for the same period. It is helpful to keep in mind that this number is 28 percent guesswork.⁴

The only instance where data quality is directly addressed in a regression study is in Harrison (1996). Harrison mentions lack of availability and notes that she has extrapolated observations because of missing data. She does not discuss the validity and reliability of the actual observations and how this might influence her study, but she does refer in a footnote to “a more complete discussion of data quality issues” (427).⁵ The studies she referred to were part of a special issue of the *Journal of Development Economics*. In that issue, Srinivasan wrote that there was “concern that analyses based on unreliable and biased data could result in seriously distorted, if not altogether wrong, analytical and policy conclusions” (1994, 4–5). Heston noted that since the studies done by Blades (1975, 1980), “seemingly little has been done to provide an overview of national accounting practices across countries” (1994, 31). Heston also said that “the type of study which Blades carried out for a number of African countries is what would be desirable to have across the whole spectrum of countries” (50).

Heston is one of the creators of a widely used dataset, the Penn World Tables. These tables include a quality ranking: countries are assigned to one of four classes from A to D, and each category has clearly defined error ranges. In the A ranking, the error boundary is plus or minus 10 percent, and in the D ranking, the error boundary is from 30 to 40 percent. Summers and Heston have conceded that the rankings were “based somewhat subjectively on the error patterns displayed in checking consistency in multiple benchmark years and in the residual patterns described” (1991, 348).

Although this ranking was not the product of a rigorous method, it showed a systematic pattern: poorer countries have higher errors than richer countries. Dawson and colleagues (2001) noted this correlation and used it as the basis for an econometric test of systemically biased error margins in the database. The study sought to tease out whether the observations expressed variations in economic information or variations in data quality. Dawson and colleagues offered two possible, but mutually exclusive, conclusions: either economic behavior is different in countries with low-quality data than it is countries with high-quality data or there are systemic variations in the quality of the data. If the latter conclusion is correct, then “the right thing to do is to exclude the low-quality data” (2001, 1008). However, because this would reduce the sample size in cross-country regressions by two-thirds and effectively eliminate cross-country variations, “we [would] find ourselves critically short of tests in several fields of study” (2001, 1008).

The regression literature seems to be more concerned with the quantity of data than with quality. Any data are of course said to be better than none, but beyond a certain point this stops being true. Thus, a key research question for those interested in understanding growth and development in poor countries must be whether 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” (1971, 977). Riddel is unusually candid in his introduction to a number of quantitative studies on manufacturing in Africa: “Perhaps the most fundamental problem with the available Africa data is that these are widely known to be inaccurate but the degree of inaccuracy cannot easily be judged—itsself a sign of the underdevelopment of the region.” He concedes that this “throws considerable doubt on all the aggregate data used subsequently” (1990, 10).

The counting and categorizing procedures used to assemble the national accounts were designed for conditions that obtained in developed economies. One of the critical problems is how to handle data about the “subsistence” economy. Large parts of economic activity in Africa economies are not recorded because they do not pass through formal marketing channels. Production (of food and marketable surplus), consumption (of food, tools, transportation, water, and fuel), and investment (such as irrigation, road building, and house construction) appear in the national accounts, but only to a limited extent. This lack of coverage makes the GDP-level numbers incomplete and also compromises growth rates, since coverage of different unrecorded activities varies across time.

Kpedekpo and Arya have commented on how the United Nations System of National Accounts, the system most nations use to arrive at their GDP metric, works in African contexts: “Reflecting the practice of the industrial countries, it focuses attention heavily on the main tables, especially the gross domestic product (GDP), and the international agencies reinforce this bias by requesting national statistics offices to provide data for aggregates long before the

preparation is defensible, resulting in figures that are little better than random numbers" (1981, 208).

There is a vast gulf between rhetorical assertions from skeptics that the GDP figures are random and accepting the available published data at face value, as regression scholars do. My analysis tries to find a middle ground by examining how the GDP figures for Africa are arrived at and then formulating a defensible approach to a quantitative study of African economic development.

THE SYSTEM OF NATIONAL ACCOUNTS IN AFRICA

The data on GDP are collected using the methodology of the United Nations System of National Accounts (SNA). The first version of the SNA was created in 1952 by the OEEC National Accounts Research Unit, chaired by Richard Stone. The foundations of this system were laid in 1939 by the League of Nations' Committee of Statistical Experts, for which Stone wrote a paper entitled "Recommended System of Accounts." The UN published the original SNA in 1953. In this version there was provision for imputing data about two types of nonmarketed activities: farm output and rent of owner-occupied houses. In the 1968 revision, more allowances were made for nonmarketed produce and incomes from different kinds of small-scale processing, such as production of butter, wine, and cloth. Since this system was created, efforts have been made to encourage all nations to adhere to it, and it is now broadly implemented in all countries, at least on paper.

A central problem in national accounting in Africa is how to decide which economic activities should be included; the line that is drawn is referred to as the "production boundary." Since the SNA was implemented there has been a discussion of where this line should be. For western economies this means that the efforts of stay-at-home parents are not accounted for. In African countries, this has broader implications. Van Arkadie noted of African economies 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" (1973, 15). While in most developed countries economists distinguish between recorded and unrecorded economic activity (the latter comprising illegitimate economic activity and economic activity that takes place within the family household), the issue is far more complex in African economies. The unrecorded economy is so large and so economically important that to leave it as "unrecorded" is unsatisfactory. Thus, statisticians have included data about it, when it is available, in the national accounts using a range of accounting practices determined by the individual national statistical offices.

Essentially there are two ways of reaching an estimate of the “subsistence” output of the agricultural sector. It is possible to make an educated guess about the areas under cultivation for such purposes and multiply that number by an educated guess about average yield. This sum would again be multiplied with the price of choice. Alternatively, average consumption (based on Food and Agricultural Organization statistics or a national household budget survey) can be estimated and multiplied by the population figure. Once one of these methods has been chosen, one must make a decision about the price to use.

In 1972, O’Loughlin and Ewusi noted that a great deal of literature existed on evaluating nonmarket production in the national accounts. The 1968 SNA recommends using “Producers Price in Local Markets,” which has the “advantage of flexibility” for the national accountants (United Nations 1968). O’Loughlin and Ewusi rightly comment that a “convention of this type is essential if one is to allow for these aggregates being included” (1952, 385). However, flexibility has won over convention, and this has meant that comparability has suffered. Even if such a convention had been agreed upon, there would still be some difficulties with adhering to the standards set out in the guidelines. Wood noted in relation to an international comparison project in Kenya that there was a “lack of sufficient price information to calculate national average prices” (1973, 116). Lury (1964) notes the problem of which price to use to account for subsistence production, whether a statistician chooses producer (at the farm gate) or retail prices or makes a special subtraction for subsistence products. This decision has the potential, according to Lury, to make “a ‘paper’ increase of 50 percent” (1964, 102).

In the absence of actual recording, the practice statisticians follow to account for activities in the informal sector assumes that it increases proportionally to the rest of the population. This population growth is the product of a statistical method of calculating based on sporadic censuses with limited coverage. In sum, this means that the information on large and vital parts of African economies consists of mere statistical coefficients, not actual observations.

In the final GDP data, domestic food production is either estimated or excluded. Other statistics are missing from the national accounts. Important forms of rural capital formation such as land clearing and building construction were not included in the original SNA.⁶ Van Arkadie reported that although Peacock and Dosser (1958) created national accounts for Tanzania for 1952 to 1954 that included activities in the subsistence economy such as hut-building, the official data of the 1960s did not include such measures. When the official national statistics for 1967 included construction and rents in the subsistence sector, Tanzania’s GDP increased by 10 percent. When combined with other changes, this increased national income estimates by 25 percent and capital formation by 11 percent (Van Arkadie 1973).

When such investments as clearing new land, building roads, and investing in tree crops are not accounted for, a false impression emerges that expansion

in the primary sector takes place without investment. Without this data, it is virtually impossible to assess the effect of public policy on rural investment. Such gaps in the data make it easy to form an impression of the rural sector as one "in which 'development effort' is associated with a few capital intensive projects, which are readily apparent, although most output growth is in fact generated by smallholder agriculture, in which little of the investment covered by the official series occurs" (Van Arkadie 1973, 20). These accounting anomalies are important for some debates in the literature. The vent-for-surplus model developed by Myint (1963), in which export growth was assumed to happen without opportunity cost, derives from this gap in the data. This method of accounting for these activities also has important implications for economies with large subsistence economies. A statistician may choose a price that underestimates the productivity of rural dwellers, and the resulting statistic could have serious implications for those people. In this system, both the consumption and production of rural residents is considered to be part of subsistence activities; their consumption of basic utilities such as housing, water, and heating is not accounted for. Furthermore, a turn from "subsistence" production and handicrafts to cash crop production results in an overestimate of progress in the accounts because coverage will increase, creating an artificial impression of growth. In addition, the difficulties of measuring demographic change make it difficult to construct measures related to per capita productivity.

The statistics that express the size and growth of a country's population are the basis for the construction of other important national statistics. GDP per capita is obtained using population as the denominator, and for large parts of the economy's output there is no actual data to measure changes. These sectors are instead accounted for by assuming economic growth is proportional to population growth. In addition, the implementation of population censuses in African nations is somewhat 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 percent 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. (Bondestam 1973, 10)

Finally, in order to make sense of the nominal data (which includes price changes or inflation) on agricultural produce and other sectors, it is necessary to deflate the data to express it in real or constant terms (so that the growth data do not express changes in prices, but changes in production). The sophistication of the deflation method and its statistical base varies from country to

country, and it can be difficult to tell to what extent price effects are eliminated from the estimated growth rates.

RELIABILITY OF GDP ESTIMATES

While no empirical work existed on the reliability of growth rates until recently, level estimates have been examined. Blades (1980) assessed the error ranges in GDP-level figures for five sub-Saharan countries and produced the data presented in Table 2.1. These estimates were based on his own experience of doing statistical work in Africa, informal discussions with national accountants and experts from international agencies, and the qualitative assessments given by the countries themselves. As the table demonstrates, the weighted GDP error for the countries varies by around 20 percent and the error range was as high as ± 35 percent for Nigeria. Some sectors are considered to be worse than others. The error range in modern agriculture is from 10 percent (for Kenya and Tanzania) to 25 percent (for Nigeria), whereas for “subsistence” agriculture the level estimate is deemed to vary within an 80 percent band for all countries except Nigeria, where a band of plus or minus 50 percent is assumed. Public administration, which is the best-recorded sector, still has a 10 percent error range, while all small-scale operations are considered to be poorly estimated (Jerven 2013c).

This level of unreliability would render a ranking of countries by GDP per capita unreliable (Jerven 2010b). Changes of the magnitude of 30 percent could have large effects on an individual country’s ranking.⁷ The data for small-scale agriculture are the most unreliable, giving reason for great caution before drawing conclusions about rates of growth and inter-country comparisons with regard to the production of food and cash crops. Agriculture being the sector in which between 50 and 90 percent of the population are partly engaged (depending on the country), the aggregate economist knows little about what is actually taking place in African economies (Jerven 2013a).

Blades (1980, 70–72) reviewed the common methods for estimating growth rates. In subsistence agriculture, output growth is assumed to grow proportionally with the population but is adjusted by “eye observations” of weather and climatic conditions. Large-scale manufacturing is covered by censuses that are undertaken every five or ten years. The output of small-scale operations is estimated to grow with population. Trading activities are sometimes extrapolated from information on agricultural output, manufacturing, and imports by the large trading firms, but in many countries the value added by this activity is also assumed to grow proportionally with population. The transport sector is also estimated from other factors. The number of registered vehicles and/or the volume of agricultural output are commonly used. The government

Table 2.1. Estimates of error levels in GDP by sector in five African countries, 1969–73 (percent)

	Botswana 1971–72		Kenya 1971–73		Malawi 1970–71		Nigeria 1971–73		Tanzania 1969–70	
	Share GDP	Error range	Share GDP	Error range	Share GDP	Error range	Share GDP	Error range	Share GDP	Error range
Agriculture, etc.										
Modern	4.7	20	15.6	10	16.2	20	6.3	25	18.9	10
Other	25.7	40	16.1	40	34.8	40	35.5	50	21.1	40
Mining and quarrying	12.4	10	0.4	10	0.1	20	18.5	15	2.0	20
Manufacturing										
Modern	7.6	15	13.2*	20	10.2	15	6.1	30	8.5	15
Other	0.9	30	—	—	2.4	40	0.7	50	1.0	30
Electricity, gas, and water	1.6	10	2.1	10	1.1	10	0.6	15	1.0	10
Construction										
Modern	9.9	15	3.6	15	3.5	15	7.0*	30	3.9	15
Other	1.2	40	1.6	30	1.4	40	—	—	0.8	40
Trade, hotels, and restaurants										
Large	6.4	20	10.5*	30	4.6	20	2.9	50	13.2*	40
Small	1.1	40	—	—	5.0	50	8.4	50	—	—
Transport, communication, etc.										
Road transport	0.8	40	1.3	30	1.7	40	1.9	40	6.2	30
Other	4.2	25	5.9	20	3.2	35	1.2	20	2.3	20

(Continued)

Table 2.1. Continued

	Botswana 1971–72		Kenya 1971–73		Malawi 1970–71		Nigeria 1971–73		Tanzania 1969–70	
	Share GDP	Error range	Share GDP	Error range	Share GDP	Error range	Share GDP	Error range	Share GDP	Error range
Finance, real estate, etc.										
Owner-occupied dwellings	2.4	50	4.9	30	1.2	50	—	—	6.8	40
Other	4.3	20	4.0	15	1.5	20	—	—	3.5	15
Public administration, defense										
Central government	8.8	10	8.0	10	6.5	10	5.3*	15	4.1	10
Other	0.9	20	1.2	20	1.0	20	—	—	2.2	20
Other services										
Health and education	3.8	15	6.8	10	3.0	15	3.2	15	3.0	10
Other	3.3	30	4.8	30	2.6	40	2.3	40	1.5	40
GDP at factor cost	100.0		100.0		100.0		100.0		100.0	
GDP error range										
Assuming independence		11		8		15		19		11
Weighted average		24		22		29		35		26

*Disaggregated estimates were not provided for these countries and sectors.

Source: Blades (1980).

share in value added is assumed to equal growth in government inputs. Other services are assumed to grow in tandem with other activities. The number of dwellings is assumed to follow the population proportionally. So to a large extent the year-on-year change is based on an assumed movement from the baseline estimate, usually in line with population growth. Only large firms in farming, manufacture, and trading are properly accounted for. In addition, the receipts from government are easily recorded and imports and exports are routinely reported, so some sectors are better recorded than others. For some parts of the economy there is little or no record, while for others—particularly those closely monitored by the state—we have more information.

Blades's view is that although error levels for level estimates are probably high (i.e., are not valid), estimates of change could be said to be better (i.e., more reliable). He feels that although the data would not pick up much short-term change, it would seem fine in the long term. For Blades, the assumptions that the volume of food production will increase at the same rate as population and that the size of the transportation sector will increase at the same rate as the number of vehicles seem reasonable in five- or ten-year perspectives, but "estimates of year to year variation should be treated with extreme caution" (1980, 70). He also warns that "the GDP per growth rates published by developing countries have never been examined for their reliability" (1980, 72). He concludes that "it seems unlikely that in developing countries GDP real growth rates have errors of less than 3 percent attached to them. An estimated year-to-year increase of 3 percent may mean anything from no growth at all to an increase of 6 percent" (1980, 72). This is a strong warning against drawing firm conclusions from cross-country comparisons of growth. This margin of difference has serious implications for assessments of the success or failure of development policies. A growth rate of 0 percent indicates failure, while a rate of 6 percent indicates success. Many judgments about the success or failure of development policies could inadvertently be based on statistical assumptions and may not reflect the actual economic situation.

Thus, there are potential problems with the African growth evidence that might compromise the validity of conclusions that rely on such data. Because of problems with the level estimates, rankings of African countries according to GDP per capita need to be treated with caution, and such rankings should allow for plus and minus margins of error (Jerven 2010b, 2013a, 2013b). We have no guidelines to tell us whether a GDP estimate is likely to be an underestimate or an overestimate. To make such judgments, we would need to know the basic assumptions of the national accounting methodologies of the country in question. Blades's judgment of the reliability of the GDP-level estimates is an outcome of the reliability estimates of the different sector components that make it up. Because the level of reliability varies considerably from sector to sector, if we use disaggregated estimates, we can avoid some of the reliability issues. This means that the sectoral distribution may hold a key for studies of

the reliability of level estimates and, by implication, studies of growth rates as well. When a higher relative weight is given to unreliable sectors, the reliability of level estimates will be reduced. Growth data that derives from these sectors should be treated with caution.

Blades's judgment that the data for the total growth rate of African economies has an estimated annual error of 3 percent is a powerful warning, but a poor guide to economic growth studies. This assessment is discouraging, because in any given year the great majority of countries in a global sample of growth rates would lie within that band, from 0 to 6 percent growth. The estimate of 3 percent error for each year's data effectively means that in most cases we cannot determine the true rate of year to year economic growth in one African country, let alone make comparisons across countries. It is somewhat encouraging that estimates in the longer run are better. However, the inference that in the long run it is safe to assume that economic growth follows population growth and new investment amounts to a statement that the assumptions of neoclassical economic growth theory are largely correct.⁸ These theories do not fit well with the data from Africa, as shown by the quest for the African dummy and the African growth debate. Both are based on observed deviance from an assumed long-term growth rate. One of the purposes of growth statistics and the empirical growth literature is precisely to determine whether neoclassical or other theories of growth match the empirical data.

The absence of empirical study is the problem; the annual growth rates of African countries have not been assessed for reliability. In 1994, the *Journal of Development Economics* published a special issue on data quality that called for empirical studies, but since the work of Blades (1975, 1980) under the auspices of the OECD Development Centre, the matter has not been the subject of thorough research. Blades's 1975 study looked at the coverage and treatment of the subsistence (or nonmonetary) sector in the national accounts of selected developing countries. The study was comparative and thus was broad in range, but it covered only a part of the national accounts. It could therefore not reach any specific conclusions about the implications of using subsistence sector data when constructing and using a time series of growth data in a developing country. Blades noted that "it is not possible to make intelligent use of the published statistics without knowing the estimation procedures used and the assumptions on which they are based" (1975, 8). Strictly speaking, it follows that because such care has not been taken, most academic work on economic growth in Africa has been without merit, but that may go too far. But we can at least conclude that the subsequent research has not been carried out on a reliable basis.

The central goal of this book is to reduce this gap in the literature. Through a careful use of the growth evidence and its source material, including the primary documents on national accounts estimation, this book attempts to give the best possible answer to the question of how Botswana, Kenya, Tanzania, and Zambia grew in the postcolonial period. I offer an evaluation

of the accuracy of available growth evidence and suggest the potential implications of my evaluation for other studies of African economies. The World Development Indicators and the Penn World Tables give the impression that the growth evidence is reliable and valid. However, the constant price growth series for 1960–2000 that these sources publish are based on discontinuous series, extrapolations over missing years, and a great deal of guessing. How serious these shortcomings are has not been established. The next chapter is devoted to establishing how well the different sources of data on Botswana, Kenya, Tanzania, and Zambia cohere.⁹

NOTES

1. Ariyo (1996) provides this useful distinction.
2. For a full discussion of reliability and validity issues with African development statistics, see Jerven (2013). For a history of national accounting in Africa, see Jerven (2011d).
3. Collier and Gunning (1999) note that GDP data for seven countries that experienced civil war during the 1990s are either lacking or unreliable. Temple (1998) refers many times to this lack of availability and hopes that the absence of data for some countries is “random” so as not to bias the results. In Sachs and Warner (1997), lack of availability narrows the dataset, and they voice the same concerns about bias resulting from missing data. In order to prevent the dataset from becoming too narrow, they compensate for absent data for some variables for some countries by inserting the average of the actual observations for other African countries. This was done for twenty-three African countries that lacked data for three or fewer variables (out of eleven). Easterly and Levine (1997) note that lack of available data reduces the scope of the dataset and that they had to forego the use of some variables because of insufficient data. Barro and Lee (1993) do not refer to data quality but note that their dataset is limited by data availability. Less than half of the African economies appear in their regression.
4. Or, more accurately, the creators of the WDI database assumed that the 406 missing observations changed in the same way as the actual observations.
5. This discussion takes place in Ahmad (1994), Behrman and Rosenzweig (1994), Heston (1994), and Srinivasan (1994).
6. As noted above, the 1968 revision of the SNA introduced an improvement, albeit a limited one, to account for these activities.
7. Jumps in GDP levels of the order of 30 percent are not that unusual (Jerven 2013a, 2013b; Jerven and Duncan 2012).
8. The major determinant of the estimates of growth trends in many sectors is population growth. However, because of the sporadic nature and poor quality of many African censuses, we do not know the actual size of the population in many African countries.
9. For a discussion of growth rates in these four countries, see Jerven (2010b).

Measurement in Botswana, Kenya, Tanzania, and Zambia, 1965–95

This chapter compares the available growth evidence for my four case-study countries: Botswana, Kenya, Tanzania, and Zambia. An abundance of evidence exists for these countries, presented in various sources in a range of editions. In addition to the official data published by the respective national agencies, data is distributed by several international organizations. Scholars can make their own estimates or their own adjustments based on any of these sources. Here I consider four sources: the official data published by the respective country's national statistical agency, the World Development Indicators published by the World Bank, the Penn World Tables (Heston, Summers, and Aten 2006), and the Maddison data produced under the auspices of the OECD (Maddison 1995, 2001, 2003). These are the most widely used sources for empirical growth studies. To get a sense of how accurately economic growth is measured for these economies, this chapter will investigate the discrepancies in measurement in the most commonly used data sources, comparing the growth evidence in the World Development Indicators, the Penn World Tables and the Maddison data with the official country statistics from the four case-study countries.

The World Development Indicators data series gives GDP data in constant and current prices in both local currency and US dollars (World Bank 2002). The base year for constant dollars is 1995; that for local currency data is not given explicitly but can be derived from the implicit GDP deflators. For example, the base year is 1992 for the constant price series for Tanzania, 1994 for the series for Botswana and Zambia, and 1982 for the series for Kenya. These years correspond to the base year in the most recent official data series. The database reports GDP data for Tanzania from 1988 onward only, but it provides a complete series from 1960 to 2001 for the other three economies. The Penn World Tables report almost the same base evidence as the WDI uses. The latest version, PWT 6.2, is based on WDI 2002 for non-OECD countries. Data for years and countries not covered in WDI 2002 (this includes Tanzania) were

Table 3.1. Official series used to compile constant growth rates series for Botswana, Kenya, Tanzania, and Zambia

Botswana		Kenya		Tanzania		Zambia	
Base year	Report years used to calculate growth rate	Base year	Report years used to calculate growth rate	Base year	Report years used to calculate growth rate	Base year	Report years used to calculate growth rate
1974–75	1966–68 ¹ 1974–77	1964	1966–72	1966	1966–76	1965	1966–71
1979–80	1978–83	1972	1973–74	1976	1977–81	1970	1972–76
1985–86	1984–87	1976	1975–79	1985	1982–88	1977	1978–95
1993–94	1988–95	1982	1980–95	1992	1989–95		

¹ Gap in official series from 1968 to 1974.

obtained from previous national accounts files used in PWT 5.6 and earlier versions. Many scholars prefer this data series because it provides information about purchasing-power parity and national income accounts converted to international prices.¹ Angus Maddison's series (Maddison 1995, 2001, 2003) provides growth data for all countries for the period 1950–2003 in 1990 Geary-Khamis dollars, also known as international dollars.²

The reporting of data sources in the publications of the international organizations leaves much to be desired. For example, they often cite each other as their main source. The series are loosely based on national account data files, but which data series from the national accounts is used and how these series are assembled in continuous constant time series for GDP growth is not clear. The primary source is the official national accounts data. The key difference between the official national accounts data and the data available from the three main international databases is that the national accounts do not provide continuous series for the entire postcolonial period.³ The availability of constant growth data from official national accounts is shown in Table 3.1. The differences between these time series of economic growth and the different versions of the national accounts (and the underlying data from which those are constructed) will be discussed in detail in later chapters. Some data assembly is required if one wants to compare the growth rates from the international organizations with the growth data derived from the national accounts.

In this comparison, the metric of interest is percentage annual growth. Figures for this are readily downloadable for the whole period (from 1960 to the present day) from the three international databases. Because national statistical agencies do not publish their own estimates for the time before independence, a comparative analysis of growth data based on published national accounts can be made only from 1965 onward.⁴

To make this comparison, I compiled a growth series for the whole period using the official series from the four case-study countries. For each country, I used the estimate with the most up-to-date base year; these are indicated in Table 3.1. It is important to note that in the international databases, the derived growth rate is based on a constant continuous total GDP series, but the official evidence consists of discontinuous series. However, since the comparison is between growth rates, it is not necessary to harmonize these in the international databases and the official country statistics.⁵

The issues that complicated my comparison of the four data series are important findings in themselves. One of the problems with the national accounts data is that there are gaps in the constant growth series for Zambia and Botswana. Zambia introduced a new constant price series in 1977 that was not revised backward, so there is no direct data from which to compile a real growth rate for 1977. The official data for Botswana has some gaps in the series for the period 1969–73. Since 1968, Botswana has made constant price estimates for the years 1971 and 1973; thus, annual growth estimates are missing for the years 1968 through 1974. (Because we do not have a constant price estimate for 1973, we cannot infer economic growth from 1973 to 1974.) Finally, as mentioned, the WDI do not report any data for Tanzania before 1988. Before plotting the growth evidence, I compared the different data sources for the period 1965–95. In the case of Tanzania, only three sources are available. To compare the correlation of the annual growth rates between 1965 and 1995, I have extrapolated the data for the missing years in Botswana and Zambia, assuming that the absolute increment in value added was smooth over the missing years. These computations make it possible to compare the reliability of the annual growth series from four sources (three in the case of Tanzania).

I made this comparison to determine how well the annual growth rates in the four available sources of data—the three international databases and the official national statistics—agree with each other. Because there are no criteria for choosing which of the sources is the most correct, I carried out this exercise to get closer to such a judgment. For instance, if one of the four series is very different from the other three, that could be an indication that something is wrong with that series. I used Blades's (1980) suggestion of an error margin of plus or minus 3 percent to distinguish between the growth rate as an outcome of national accounting practices and the actual rate of economic growth in the economy. That perspective will be discussed at length later; at this point I am interested in the extent of agreement between the main sources of evidence. This is a powerful indicator of the accuracy of any source of evidence, and as such it tells us how meaningful the economic information conveyed by an annual growth rate is likely to be. It will also indicate whether it matters which type of growth evidence one uses and for what kind of analysis it matters. The problems with the quality of the growth data clearly indicate that it might be unwise to take any source of growth data at face value.

Table 3.2. Correlations in data on national growth rates in Botswana, Kenya, Tanzania, and Zambia, 1965–95

	WDI	PWT	Maddison
Botswana	0.72	0.26	0.38
Kenya	0.54	0.27	0.78
Tanzania	—	0.13	0.78
Zambia	0.83	0.48	0.90

Table 3.2 presents the results of a first test of the coherence of the growth data. It shows the correlation between the official data and the three other sources on annual growth rates: the World Development Indicators, the Penn World Tables, and the Maddison dataset. While the different sources of growth data are in all cases positively related, the correlations are all less than perfect and sometimes far from perfect. Five out of eleven times the correlations are closer to zero than to one: the correlation between the data about average rate of growth in the official national statistics and any of the three other datasets is 0.55. This indicates that the data on growth for any sub-Saharan African country will vary depending on which source one consults. The discrepancy between the Penn World Tables and the official data appears to be especially large, while the data provided by the Maddison dataset and the World Development Indicators correlates better with the official data. The official national data for Zambia coheres better with the three international datasets than does the data for the other three case-study countries.

Table 3.2 shows the correlations using the national accounts as the reference source. Although we do not have any way of telling whether one source of data is of better quality than another, in this comparison it makes sense to use the national accounts data as the reference because it is this evidence that the following chapters will investigate and because the other three sources supposedly use this data to compile their series. The lack of correlation between the different sources reveals the extent to which the three international databases use the official data and to what extent the adjustments made by these three databases influence the coherence of the growth data.

It is interesting to note the extent to which the rates of annual growth reported by the three international datasets correlate with each other. One way of understanding this would be to assume that they cohere well and that therefore it is the official data that are atypical. However, as the results in Table 3.2 indicate, the estimated growth rates in any given year also vary across the three international datasets. The highest correlation (0.92) is between the Maddison data and the WDI data for growth in Zambia. The correlations in the growth data on Kenya (0.75) and Tanzania (0.53) are lower. The data in the WDI and

PWT agree to a considerable extent for Kenya (0.90), but not for Botswana (0.47) or Zambia (0.61). The Maddison data and the PWT data are seemingly unrelated in the case of Kenya (0.31) and Tanzania (0.15), while the data show a greater level of agreement, though not a satisfactory one, for Zambia (0.51) and Botswana (0.78).

To the extent that these correlations can form the basis for any conclusions, it can be said that at least in the case of these four countries, no one source of data is superior to another; if you are interested in a growth rate for any year, the answer you find depends very much on which data provider you choose. Although the level of agreement on growth rates for Zambia is reasonable, for Botswana and Kenya it is mediocre, and for Tanzania it is poor.

Another way to measure the degree of disagreement about economic growth in these four countries is to investigate the actual discrepancies in the data and the timing of those discrepancies. One way to approach that issue is to look at the error range for any year through the period. For this purpose, I constructed an annual error range for the four countries. Figures 3.1 through 3.4 display the highest and lowest value of GDP growth provided in any of the four sources of data for each year from 1966 to 1995. The differences between the two lines indicate the error range in the data. This exercise displays the extent of disagreement, detects the period of particular uncertainty, and provides a point of entry for an investigation into the causes of disagreement on growth rates.

In the case of Botswana, the average difference between the highest and the lowest estimate of growth in a year is very high: 8.5 percent. In no year do the four sources agree on the rate of growth. There are some lessons to be taken from the error range. The disagreement is greater at the beginning of the period. From 1966 to 1977, it is 5 percent or more in every year except 1973, when it is only 2 percent. Only in two other years is it smaller than 10 percent (6 percent in 1972 and 5 percent in 1968). In the latter half of the period the error range narrows. From 1978 to 1995, it reaches double digits three times, in 1982, 1987, and 1988. From 1990 onward the series all use the same base year, and the error range average in this period is less than 3 percent.

Figure 3.1 indicates four periods when the range of disagreement about growth in Botswana is particularly large. In the period 1966–71, the average range of disagreement is 14 percent. This is not that surprising, because there were no official growth estimates on which the series could be based for 1969 and 1970. The period 1974–77 was characterized by economic shocks both domestically (drought) and externally (such as sudden changes caused by drought or hikes in the price of petroleum imports), and the way the data has picked this up seems to differ. The official national data reports no or negative growth in the period 1974–77, but the other sources indicate rapid growth. In the other two periods of large discrepancy—1981–82 and 1987–88—the

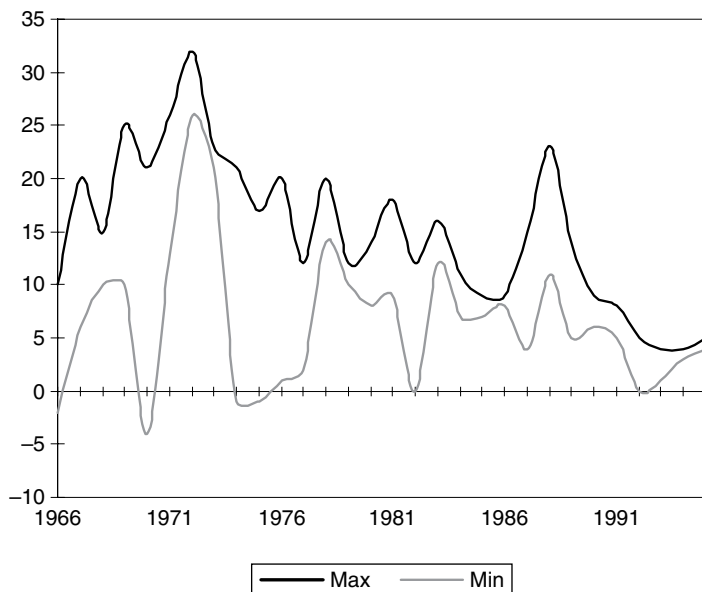


Fig. 3.1. Annual error range in GDP growth rate, Botswana, 1965–95

discrepancy in the data is driven by the fact that the Penn World Tables report relatively low estimates of growth while the other sources report high growth. All in all, the range between the lowest and highest estimates is very large in the Botswana data, although the coherence of the data is better as we approach the present day.

The average annual error range for Kenya is lower but still considerable at 4.6 percent. This high average is driven by a very large discrepancy in the years 1970–72. There are two competing versions of growth for this period. If one trusts the data provided by the WDI or the PWT, the economy shrank in 1970 (by 5 or 10 percent, respectively) and then grew very rapidly in 1971 and 1972 (22 and 17 percent and 28 and 17 percent, respectively). However, the official data and Maddison data indicate that the rate of growth was stable at between 5 and 7 percent in 1970–72. The WDI and PWT datasets seem to share an error that explains the spike in the range of disagreement between the four datasets for those years. The official data for Kenya use 1982 as the base year for its constant price series. The weights—the shares given to the different sectors in the base year⁶—are probably less correct for the later years, but because Kenya uses the same base year as the data from the other series, the range of disagreement between the four datasets is narrower. From 1980 to 1995, this range is greater than 5 percent only once (6 percent in 1983), and the data are very consistent from 1987 to 1994, when the range of disagreement is never greater than 2 percent. As indicated in the data correlation exercise in

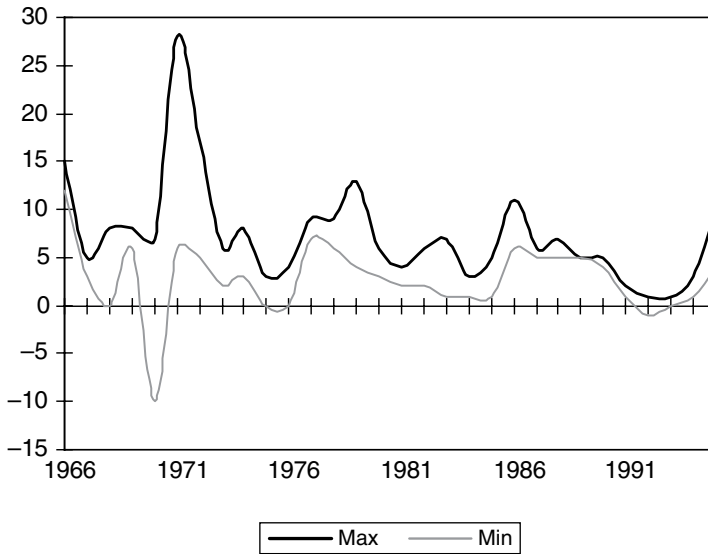


Fig. 3.2. Annual error range in GDP growth rate, Kenya, 1965–95

Table 3.2, it is the PWT data that is mostly responsible for the error range, and in the case of Kenya, a spike in the range of disagreement for 1979 is caused by that dataset, which reports a growth rate of 13 percent in a year when the official national statistics and Maddison data agree on rate of 4 percent. The lesson from this exercise is that some errors are common to the WDI and PWT datasets: the pattern of greater disagreement in the early period in the data for Botswana is repeated in the case of Kenya. The latest official series in Kenya was based in 1982, which may explain why the error in the series narrows earlier. Quite simply, this is because when there are changes in base years in the official data, the international databases deal with this in different ways, so there are often erratic changes in growth rates due to the methods used to harmonize the series.

The average range of disagreement for the data for Tanzania is 6 percent. That average is not evenly distributed, and in contrast with the other countries, the discrepancies in the data are greater at the end of the period. The WDI does not report growth data for Tanzania before 1988, and the fact that this error range is based on three sources rather than four would normally have reduced the range somewhat. As reported earlier, the correlation between the PWT and the official data is very low, only 0.13, and this difference is largely responsible for the error range expressed in Figure 3.3. The large discrepancies come in the later period. In 1987, PWT recorded a GDP growth of 20 percent, but in 1988, just one year later, they reported a negative growth of 33 percent because of a mistake in the data reported in the PWT database. This is why WDI does not

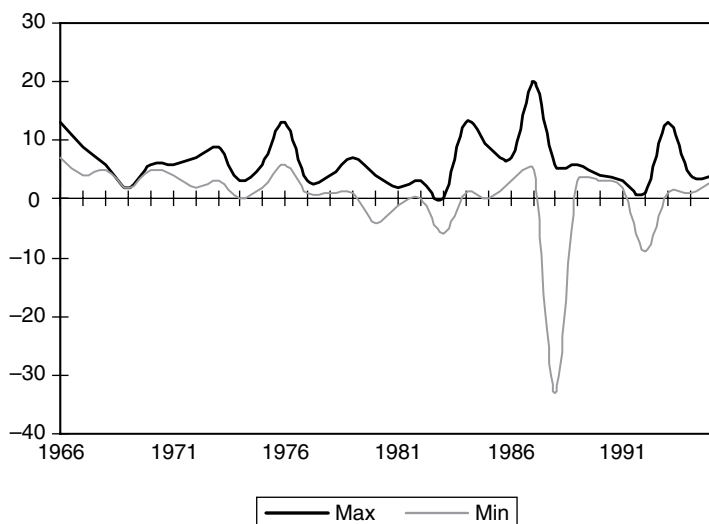


Fig. 3.3. Annual error range in GDP growth rate, Tanzania, 1965–95

report data for Tanzania before 1988. The recorded rate of growth in the PWT data for 1987 most probably included data about the informal sector, and the decline recorded in 1988 is attributable to another change in statistical methods. These changes in underlying methods at the statistical office have been misunderstood by the PWT data compilers. There is a break in the series in 1987, but because the PWT data did not take this into account they include large errors, and these large statistical errors in data could easily be misinterpreted.

There has indeed been misinterpretation based on international data. Using the PWT data, Durlauf, Johnson, and Temple (2005) argued that negative output shocks are a typical phenomenon in low-income countries. They included Tanzania (1987–90) in their “top ten” list of output shocks, not realizing that the PWT data for Tanzania for those years contained a statistical error. This mistake raises an important issue. In the late 1970s, many African economies shifted from state channels toward market channels, in part because of reforms mandated by structural adjustment programs and in part because states were unable to offer reasonable prices for agricultural produce and resources were not available to maintain parastatal companies at the levels of previous years. This change presented a considerable challenge to the statistical agencies. Economies were making large structural changes from formal to informal activities and channels at the same time that administrations were strapped for resources. Statistical offices and, later, database compilers, had to decide whether to report a significant reduction in economic activity as activity in the formal sectors declined or assume that this reduction in formal activity was compensated for by an increase in activity in the informal sectors. The

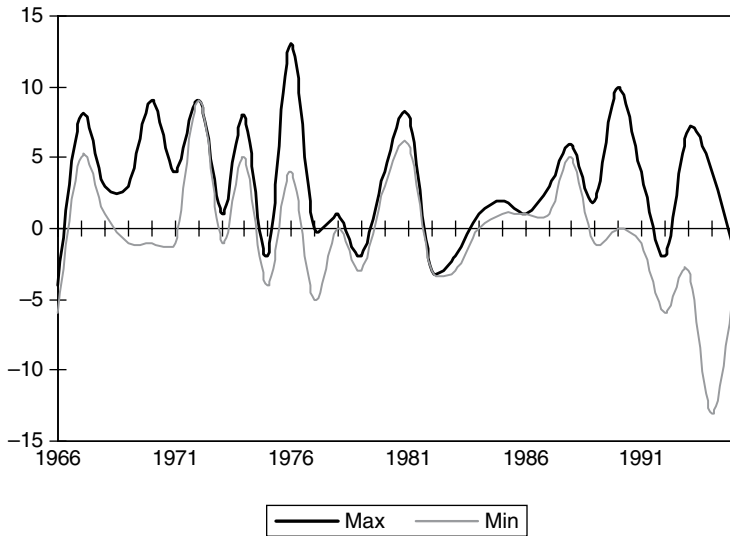


Fig. 3.4. Annual error range in GDP growth rate, Zambia, 1965–95

mistakes in the PWT data derive from the data compiler's failure to keep up with the changing assumptions of Tanzanian statisticians about basic data collection the late 1980s.

For Zambia the average annual range of disagreement is 3.6 percent, the lowest in my sample. It should be noted that the size of the error ranges cannot be directly compared across the four case-study countries. The absolute size of the range is to some extent dictated by the average growth rate, which is lower in Zambia. The range of disagreement in the series for Zambia increases at the end of the period. Accounting practices changed in the late 1990s as a delayed response to a structural change similar to that in Tanzania, and the discrepancies in the data arising from this are clearly visible. The other years in which the discrepancy was particularly large, 1970 (10 percent) and 1976 (9 percent), coincide with a change of base year in the official data.

The data in Figures 3.1 through 3.4 reflect both common themes and some specific issues. In general, the Penn World Tables seem to be out of tune more often than the other sources. Another general theme is that it is more likely that WDI and PWT contain mistakes when the base year in the official data has changed. These two sources are evidently based on the official data series, but they are not always successfully harmonized over time. In the data for Botswana and Kenya there is a trend toward better agreement as the timeline approaches the present. In Zambia and Tanzania, the onset of structural adjustment was far more disruptive to both economic structures and public administrations, resulting in confusion about which sources to use when compiling economic growth statistics.

The low correlation between the data sources and the large error ranges among the data sources confirm that year to year variation in growth rates should be treated with extreme caution. The annual error range varies from year to year: in some years it is very large. The four sources agree about the exact rate of growth in one year in one country in only five of the 120 instances under review. The data never agree on the exact rate of growth in Botswana, they agree once for Kenya and Tanzania, and they agree about the Zambian data three times. The average error range over the period was 8.5 percent in Botswana, 4.6 percent in Kenya, 6.0 percent in Tanzania, and 3.7 percent in Zambia.

The size of the error range for each country is to some extent a function of the absolute size of the growth rate. In order to obtain a comparable measure of accuracy in reporting, the size of the growth rate itself needs to be controlled for. This can be done by calculating the mean error range for each of the four countries (the sum of the annual error range divided by thirty years), then expressing the result as a percentage of the average growth rate for the whole period. Because we have no basis for determining which growth rate is more accurate, we can use the average of the four sources of growth data. By that measure, the average accuracy of any annual growth rate has an error range of ± 78 percent in Botswana, ± 91 percent in Kenya, ± 174 percent in Tanzania, and ± 291 percent in Zambia. This is not a measure of how well the economy is measured; it is a measure of accuracy in reporting. When we look for the annual growth rate in a given year for Botswana in any of the four sources reviewed here, the average difference between the result obtained in that source and the results reported in any of the other three sources would be 78 percent. This range is upward and downward, so that hypothetically if one finds that in one year the growth rate was 5 percent according to one source, the average margin within which the other three sources would report growth is from 1 percent to 9 percent growth.

The common way to counter the problem of reliability with such measures is to note that this error relates to only one observation and that evaluations of economic performance are not based on single observations. We can hope that in the long run, the impact of single errors will be reduced. It is true, according to mathematical logic, that one mistake in reporting in one year has less impact on the average growth rate if that statistic is calculated over many years. So the extreme case of the -33 percent growth rate in Tanzania that the PWT reported for 1988 would mean a negative growth effect of 6 percent over five years, 3 percent over ten years, 1 percent over 30 years, and an apparently inconsequential 0.3 percent over 100 years. A second source of consolation derives from the hope that one error in one direction is evened out over time by one or more errors in another direction. It may perhaps be naïve to hope that the average of a sequence of errors will in the end give a satisfactorily accurate result, but in the absence of better methods this is the state of the art.

Tables 3.3 through 3.6 show the differences between the four datasets in the figures they report for average growth rates.

The error range is the difference between the smallest and highest reported average growth rate. The inaccuracy measure is the error range expressed as a percentage of the average rate of the four different sources. As was logically expected, the error range is smaller when one calculates the average rates of growth over the whole period. The differences between the highest and lowest estimate of growth rates in the 30-year averages range from 1.7 percent in Botswana to 0.5 percent in Tanzania. The differences between the high and low estimates in Kenya and Zambia are 0.6 and 0.7 percent, respectively. Whether this level of inaccuracy is important is a matter of interpretation. The

Table 3.3. Accuracy in reports of average annual rate of growth, Botswana, 1965–95¹

	WDI	Botswana	PWT	Maddison	Average	Error range ²	Inaccuracy
1966–70	11.0	16.8	7.0	10.0	11.2	9.8	88
1971–75	18.2	16.2	17.2	18.6	17.6	2.4	14
1976–80	12.2	9.0	13.2	13.2	11.9	4.2	35
1981–85	10.0	11.2	7.6	10.0	9.7	3.6	37
1986–90	11.8	12.2	9.2	10.4	10.9	3.0	28
1991–95	4.0	3.4	4.6	3.4	3.9	1.2	31
1966–75	14.6	16.5	12.1	14.3	14.4	4.4	31
1976–95	9.5	9.0	8.7	9.3	9.1	0.9	9
1966–95	11.2	11.5	9.8	10.9	10.9	1.7	15

¹ All figures expressed as percentages.

² The difference between the highest and lowest value reported by the four datasets.

Table 3.4. Accuracy in reports of average annual rate of growth, Kenya, 1965–95

	WDI	Kenya	PWT	Maddison	Average	Error Range	Inaccuracy
1966–70	5.8	8.2	2.6	7.6	6.1	5.6	93
1971–75	10.0	5.0	11.4	4.2	7.7	7.2	94
1976–80	6.4	5.6	5.8	6.4	6.1	0.8	13
1981–85	2.6	4.2	2.2	3.0	3.0	2.0	67
1986–90	5.6	5.2	6.6	5.6	5.8	1.4	24
1991–95	1.4	3.2	1.6	1.4	1.9	1.8	95
1966–75	7.9	6.6	7.0	5.9	6.9	2.0	29
1976–95	4.0	4.6	4.1	4.1	4.2	0.6	13
1966–95	5.3	5.2	5.0	4.7	5.1	0.6	12

Table 3.5. Accuracy in reports of average annual rate of growth, Tanzania, 1965–95

	WDI	Tanzania	PWT	Maddison	Avg.	Error range	Inaccuracy
1966–70	—	6.0	5.8	6.0	5.9	0.2	3
1971–75	—	4.6	3.8	4.2	4.2	0.8	19
1976–80	—	3.2	4.4	3.0	3.5	1.4	40
1981–85	—	0.8	4.2	0.4	1.8	3.8	211
1986–90	—	5.6	0.2	3.8	3.2	5.4	169
1991–95	1.8	2.2	2.2	2.0	2.1	0.4	20
1966–75	—	5.3	4.8	5.1	5.1	0.5	10
1976–95	—	3.0	2.8	2.3	2.7	0.7	24
1966–95	—	3.7	3.4	3.2	3.5	0.5	14

Table 3.6. Accuracy in reports of average annual rate of growth, Zambia, 1965–95

	WDI	Zambia	PWT	Maddison	Average	Error range	Inaccuracy
1966–70	1.6	3.2	1.2	1.6	1.9	2.0	105
1971–75	2.4	2.4	3.4	2.4	2.7	1.0	38
1976–80	0.4	0.8	2.4	0.4	1.0	2.0	200
1981–85	0.6	0.6	0.8	0.6	0.7	0.2	31
1986–90	1.8	3.6	2.0	4.0	2.9	2.2	77
1991–95	–1.2	–2.4	–0.2	–2.2	–1.5	2.2	–147
1966–75	2.0	2.8	2.3	2.0	2.3	0.8	35
1976–95	0.4	0.7	1.3	0.7	0.8	0.9	113
1966–95	0.9	1.4	1.6	1.1	1.3	0.7	53

uncertainty about the rate of growth translates to uncertainty about levels. The compound of the error range in each country is one way of measuring this; the compound of the differences in the high and low rates of growth is another. According to the first measure, the 30-year compound of 1.7 is 66 percent, while the compound of 0.5, 0.6, and 0.7 percent is 16, 20, and 23 percent, respectively.⁷ By the second measure one could calculate the difference between the accumulated low and high growth rate. Thus if GDP in 1965 equals 1.0, then the 1995 level in Botswana would be between 17.0 and 26.0, in Kenya it would be between 4.0 and 4.7, in Tanzania it would be between 2.6 and 3.0, and in Zambia it would be between 1.3 and 1.6.⁸

Whether these discrepancies in annual growth rates over thirty years compromise the analysis depends on what question is being investigated and which

method of investigation is being used. The empirical growth literature, which used precisely this kind of growth evidence, which is most commonly drawn from PWT, might contend that there is a clear-cut difference between the star performer, Botswana, and the poor performer, Zambia. The analysis of the growth reporting I have presented in the book thus far does not tell us whether the analysis of African growth vis-à-vis the rest of the world is compromised. The typical value of the African dummy is between 0.6 to 1.2 percent in annual growth rates, but my analysis does not provide a clear answer about whether there is any systematic bias toward underestimating the annual growth rates of African countries. The PWT growth rates, which are used in most of the empirical growth literature, have the lowest estimates for Botswana and the highest for Zambia, and in the other cases it is the other sources of evidence that present the extreme values. While it is usually inferred that Kenya outperformed Tanzania over the period as a whole, inaccuracies in reporting might cast doubt on the validity of this inference. The lowest estimate of growth for Kenya is 4.7 (Maddison) and the highest estimate for Tanzania is 3.7 percent (official data), and given the general weaknesses in the underlying data one might want to be careful about drawing conclusions about the comparative growth performance of these two countries.⁹

Comparisons of growth in these countries based on year to year variation is likely to be compromised by data quality issues, and the conclusions would vary according to which source is used. This is also true if one uses five-year averages, as Tables 3.3 through 3.7 demonstrate. According to the PWT, Botswana had an average growth of 7 percent in the first five years after independence. There is not a large difference between Tanzania and Botswana for this period in this dataset: PWT records an average growth of 5.8 percent in Tanzania. In contrast, in the Maddison data and the official growth evidence there is a marked difference between the two countries. In Kenya during the first five years of independence, the PWT reports 2.8 percent average growth, compared to 8.2 percent in the official Kenyan data. Academic scholarship often relies on different data in different works, so there is room for miscommunication here. If one compares national data for Kenya and Tanzania with scholarship that uses PWT data for Botswana, one would find that Kenya outperformed Botswana in the early years and that Tanzania grew at a slightly slower rate than Kenya. However, a comparison of Zambia and Kenya using official data for Zambia and PWT data for Kenya would indicate that Zambia grew more rapidly.

According to the PWT data, in the period 1971–75 Zambia performed comparatively well at a 3.4 percent average rate of growth and kept good pace with Tanzania, which grew at an average rate of 3.8 percent. The Maddison database indicates apparently surprising details: for example, that Zambia grew at an average range of 4.2 percent and thus did not lag significantly behind Kenya. If one compares the national data for Tanzania with the Maddison data

for Kenya, Tanzania outperforms Kenya during this period. Researchers and scholars usually note in the literature that it is Tanzania's inability to reform quickly enough after the external shocks of the late 1970s that led to its dismal performance in the early 1980s and that Kenya handled the readjustment fairly well. The PWT database takes the opposite view of this important historical period: it reports an annual average rate of growth in Tanzania of 4.2 percent through 1981–85, compared to 2.2 percent in Kenya.

This study in accuracy in growth reporting for these countries shows that taking any source at face value is unwise. It is very unlikely that the state of affairs is much better for most other African countries. It is evident that the variation across the sources of data, which are all widely used, means that cross-country comparison cannot be conclusive using growth rates alone. There is scope for work on this issue covering more African economies. If the quality of quantitative economic histories of Africa is to improve, it is important for scholars to be open about which sources they have relied on, and they should compare the data they use with that used in other sources to check for coherence. So far in this book, I have only taken into consideration the coherence between the sources. I have not dealt with how well any given source agrees with what actually happened. For example, if one is studying the comparative effect of the external economic shock of the late 1970s, what should one do if one source reports 0.4 percent growth from 1981–85 and another source reports 4.2 percent for the same country in the same period? And what if one source reports a 2.2 percent growth rate and another source 4.2 percent for the same country for the same period?

The underlying evidence for all these sources is the national accounts data series. The three international statistical databases provide different annual growth rates because they use different methods to harmonize official series over different base years and smooth over gaps in the national data series. The natural starting point for determining whether the growth evidence reflects actual economic change in these economies is the national accounting methodologies. A study of the underlying basic statistical data for the estimates and changes in methodologies can clarify to what extent the available growth evidence can be used to explain how these economies grew from 1965 to 1995 and to what extent the changes in GDP are comparable across the economies.

In contrast to the three international databases, the national accounts are primary sources. The data available from the international series have been obtained from governments and statistical bureaus and have then been modified to fit the purpose of the data retailer and its customers. These alterations create some problems, and, as was shown in the previous chapter, the conclusions of any study that compares economic performance across several countries depend on which source of growth evidence is used. The international databases provide no proper sources for their data and no data that would enable analysts to understand why the different sources disagree about growth.

This is not good enough. The growth evidence in the databases covers years for which no official data was available and the series are compiled from national data that use different base years. The only way to deal satisfactorily with inconsistencies in the data and the effects of revisions is to consult the primary source. The advantage of using the national accounts is that they come with guidelines and commentaries. When the underlying methods or basic data used to assemble the accounts are changed, these changes are reported.

The downside of the national accounts evidence is that it is not readily downloadable. The publications have to be manually collected, and then the process of data entry and interpretation follows. This study is based on my research visits to the statistical offices of the four countries.¹⁰ In each country, I collected reports and handbooks on methodology. I have supplemented this with consultations with the representatives of the respective central statistical offices.

Therefore, in the following country studies, I will make use of the original national accounts data and conduct a critical analysis of this evidence to evaluate the central claims made in the empirical growth literature about the pace and direction of economic growth and the connection between economic policies and economic growth performance.

This study of how national accounts have been compiled since independence in Botswana, Kenya, Tanzania, and Zambia is based on archival research and visits to statistical offices, where I interviewed and consulted the statistical officers who compile the contemporary national accounts. The officers I made contact with, without exception, had only been employed at the offices during the last decade and therefore did not know much about practices in the period this study is looking at—the three decades after independence. This lack of institutional memory is in some sense completely understandable. Consequently, this study relies on the documents that were available for examination in the archives and at the statistical bureaux' own archives/libraries.

It has been anticipated that writing the history of contemporary Africa 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" (Ellis 2002, 12). Ellis further noted that "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" (13). These predictions were confirmed and we will return to specific problems in this study of national accounts. The scope for investigation in this chapter has been dictated by how much documentation on the accounting methods was available. The availability of information and regularity of reporting was best in Botswana, followed by Tanzania. In Zambia there was a dearth of reporting in the 1970s and 1980s, whereas for Kenya

very little information about changes in methods and sources exists. The short version of the history of national accounting is presented in Chapters 4, 5, 6, and 7. I now present some important issues in measuring economic growth in these countries and beyond.

A full understanding of the growth effects deriving from statistical methods is possible only through a detailed chronological account of the evolution of national accounting in the countries concerned, as presented here in Chapters 4, 5, 6, and 7. This review of the national accounts confirms that accounting in these countries has been carried out largely according to convention, with some methodological shortcomings. However, the primary limitation of the estimates is the quality and availability of basic statistical data. This means that the estimates could not easily be improved by a quick fix. For this we would need better basic statistical data, and it is clear that the national agencies have made available most of what data there is. A major shortcoming is that the statistical methods, which are conditioned by the available data, are not fully standardized across the countries.

One problem that is not touched upon in the theoretical literature on African growth data is the issue of statistical growth, defined as growth in recorded GDP that results from an increase in statistical coverage. This can be substantial at some times for some countries and is a recurrent topic in the national accounting methodologies. In order to deal with this issue, it is essential to know the extent of coverage in the different baseline estimates. While the national statistical agencies strive to improve the coverage of the GDP estimate, there is no formal convention about how to integrate new statistical data in the estimates. This is a deficiency. As a rule, the introduction of a new base year for the series is associated with new statistical data and revision of the series. The growth series are therefore discontinuous. Acknowledging this problem is essential for making valid comparisons of growth between countries.

There is considerable variance within the official evidence, as will be shown in the following sections. This derives from backward revisions as a result of new data, discovered errors, or changes in methods. The most recent data in any given report is “provisional” and will generally be subject to revision. This and the issues mentioned in the previous paragraph underline the importance of double-checking the data. The second lesson is that very recent data should be used with care. Even then, the growth evidence can change at a later stage. This refers specifically to the use of secondary sources for data. As has been shown, a scholar writing about the 1970s (or any other decade) who has used official evidence might have very different data from another author, depending on whether a sweeping backward revision had been done before or after their respective studies were completed.

The element of statistical growth, the introduction of new base years for the series, and changes in the methodology of the official growth data explain the extent of documented inaccuracies in growth reporting. The differences in the

reported annual growth rates derive from extrapolations across missing years and smoothing of data across changes in base years. There is an underlying contradiction between what the providers of national account statistics in the national agencies are aiming at and the purpose of the growth time series of the international agencies. While the national agency strives each year to give the best estimate of economic change in that year in order to inform current policy makers, the users of international databases are interested in the comparison of economic change over time and space.

I consulted the accountants at the national statistical offices about these issues. Three concerns were voiced at the offices, concerns that are not reflected in how international organizations and the research community disseminate and use the growth evidence.¹¹ First, there is the issue of base years for constant price series. The series are reported as if they were continuous from 1960 to 1990. This does not correspond with either the practices or the recommendations of the statistical offices. In general, effort has been made to change the base year every ten years or so. If there is a growth series from 1970 through 1980 with 1972 as a base year, this series is not continuous and is therefore not comparable with the growth evidence from 1969 with a different base year. In the internationally used statistical databases, however, it is treated as comparable.

Second, and related to this first issue, is the element of statistical growth. When the base year is changed and a new constant price time series is created, it normally coincides with the implementation of new statistical methods or changes in the use of basic statistical data; this normally means increased coverage. This further weakens the comparison over time. Again, this caution is not reflected in the compilation of the growth series in the databases.

Finally, while the first two issues were related to comparison over time for an individual country, the third concern regards the comparison over space—that is, comparing growth in one country with another. In response to direct questions, the Kenyan representative concurred that a comparison of annual growth rates between Kenya and Tanzania countries would be invalid.¹² The problems of differences in base years and changes in methodology make such a comparison meaningless if necessary precautions are not taken. It is worth illustrating this with an example. If, hypothetically, the Kenyan growth data took the boom year of the coffee price as the base year while Tanzania took a slump year as a base year, this would affect the outlook of the evidence and therefore affect the conclusions reached. Similarly, if one compares a country where the system of national accounts covers the growth in the informal sector in the early 1980s with data from a country that does not include the informal sector, the analysis would be incorrect and the conclusions would be based on statistical artifacts, not on sound empirical evidence.

The cases where a comparison over time and/or space could be invalid are many. Comparisons over space are constrained by differences in methodology.

In addition, expressing comparisons of one country with another in currency terms creates difficulty. In current terms, the problem is expressing them in a comparable currency. In constant currency terms, the problem is that the chosen base years (the year for which prices are held constant) differ from one country to another. This difference in methodology will be shown to be important. A further problem is that a given sector in one economy is estimated in different ways in each country. For instance, in one country the growth in a specific sector (e.g., trade) is enumerated annually, whereas in another country the same sector might be estimated to grow in accordance with a chosen variable (e.g., agricultural output). In this example, the scholar would think he or she is comparing growth in the countries' respective trade sectors but is in fact comparing trade in one country with agricultural output in another.

The issues that arise when comparison is carried out over time or when one is looking at year to year changes in economic growth can be summarized in five points. First, there is the general increase in prices; that is, an inflationary effect. Second, there are changes in the quality of production.¹³ Third, there are errors and omissions in some years that may become apparent when a time series for a given item does not form a consistent series. Fourth, there have been changes to the methodology from year to year. Fifth and last, there are changes in coverage from year to year. The reported figures should ideally be adjusted for these effects, and the final growth rate should represent the real added value of production. The last three problems mentioned would create statistical growth, an element that can be huge in some years. The fundamental issue of comparing growth over time is the inflationary effect. In the countries I study in this book, inflation has in some years been in three-digit and commonly in double-digit numbers. This means that the error margin in the reported constant price growth data can be significant.

The next part of the chapter has two central purposes. The first is to generalize the implications of national accounting methodologies for growth time series analysis. The second is to clarify the limitations in comparisons of the growth experience of the four countries. I will deal first with the measured structure of the economies because this has implications for the validity and reliability of the growth rates. The GDP growth rate is an aggregation of items with very uneven data quality. It is therefore of interest to determine the relative size of the reliable and unreliable items in the aggregate GDP estimate.

THE MEASURED STRUCTURE OF THE ECONOMY

Most research on economic development either focuses on the aggregate rate of economic growth or deals specifically with the growth of manufacturing or agriculture. A focus on the aggregate follows from viewing GDP as the most

appropriate indicator of development. There are also compelling reasons for emphasizing the manufacturing and agricultural sectors because these are the sectors where one would expect growth to originate. The other sectors of the economy are supplementary, as they are not typically associated with a physical output. Some of these sectors can sometimes be appropriately thought of as costs, although by definition they contribute to value added. However, trade and transport, that is, the physical movement of people or goods from point A to point B, definitely entail a physical and measurable output. Similarly, construction and the provision of water and electricity can easily be thought of as physical output.

The system of national accounts uses the ISIC classification of economic activities. This system has been subject to a number of minor revisions over the relevant period and has not always been followed strictly by the respective national agencies. National statistical agencies have made slight alterations when it has been deemed justifiable, and at times data has not permitted the appropriate disaggregation. However, the framework presented in the list below is broadly representative of the classification system that has been used in the four countries.

1. Agriculture, forestry, fishing, and hunting
2. Mining and quarrying
3. Manufacturing
4. Electricity and water
5. Construction
6. Wholesale and retail trade and hotels and restaurants
7. Transport and communications
8. Finance, insurance, real estate, and business services
9. Public administration and other services

For readers not familiar with the system of national accounts, this list can be a reminder that the percentage change in economic activity in one year can derive from sources other than a change in production in manufacturing or agriculture. Sectors of the economy that receive relatively little scholarly attention can still be important in national accounting terms. To illustrate this more clearly, the percentage contribution per ISIC sector to total product for each country at the beginning and at the end of the period is presented in Table 3.7. There are nine major sectors. For the current purpose, the first three can be thought of as the “productive” sectors and the last six as the “supportive” sectors. This is not entirely correct. However, in the national accounting methods the sectors from 4 through 9 are largely derived from the physical production registered in sectors 1 through 3. If the countries’ growth rates in these sectors are markedly different, we can with some certainty identify a difference

Table 3.7. GDP per ISIC sector in Botswana, Kenya, Tanzania, and Zambia, 1963–66 and 1989–93 (percent)

		Botswana		Kenya		Tanzania		Zambia	
		1964	1993	1963	1989	1966	1993	1964	1993
1	Agriculture, hunting, forestry, and fishing	51	5	40	30	45	45	11	14
2	Mining and quarrying	1	33	0	0	3	1	47	16
3	Manufacturing	8	5	9	11	6	7	6	13
4	Electricity and water	1	2	3	1	1	2	1	4
5	Construction	3	7	3	6	3	4	4	4
6	Wholesale and retail trade and restaurants and hotels	11	15	10	11	12	14	10	19
7	Transport, storage, and communications	7	3	8	6	7	6	4	6
8	Finance, insurance, real estate, and business services	6	9	9	15	9	10	2	18
9	Public administration and other services	12	21	17	19	13	9	13	7

Source: Botswana National Accounts 1964, Kenya Statistical Abstract 1966, National Accounts of Tanzania 1966–68, Zambia Revised National Accounts 1965–93, Botswana National Accounts 1992–93, Kenya Statistical Abstract 1989, National Accounts of Tanzania 1989–2001, and Zambia Revised National Accounts 1965–93. The figures shown in both tables are my calculations based on industrial origin of GDP at factor cost.

in economic performance. If the differences between two countries are largely accounted for by growth in the “supportive” or derived sectors, it would be fair to suspect that statistical methodology is part of the explanation for the growth differential.

The three first sectors—agriculture, mining, and manufacturing—receive most attention in the literature. Together these sectors accounted for 60 percent of GDP in Botswana at the beginning of the period and 40 percent at the end. In Kenya the respective shares were 49 and 41 percent, in Tanzania 54 percent and 53 percent, and in Zambia 64 percent and 53 percent. In terms of contribution to total GDP growth, then, the “supportive” sectors of the economy are more important than the “productive” sectors in Botswana and Kenya but not in Tanzania and Zambia. This is of course an empirical statistical acknowledgment, not a growth-theoretical perspective. It follows from this acknowledgement that the accounting treatments of these supplementary sectors are important for the determination of total GDP growth. According to these two points of observation in time, the growth of the “productive” sectors in Tanzania has been accompanied by a proportional growth in the “supportive” sectors. Meanwhile, in Botswana and Kenya, the growth in the

“supportive” sectors has been more than proportional. In Botswana, the supporting sectors have been growing by a proportion of 1.5, while in Kenya the proportion is almost 1.2. In Zambia it could be said that the proportion of growth has been similar to that in Kenya. However, it would be more correct to say that the “supportive” sectors have not declined in proportion to the mining sector, which suffered an absolute decline.

The part of the more than proportional growth of the “supportive” sectors that cannot be explained by the decline of the copper industry in Zambia derives directly from a statistical discrepancy. As can be seen from Table 3.7, the relative shares of the different supplementary sectors are rather similarly distributed, with one glaring exception. The share of sector 8—finance, insurance, real estate, and business services—represents 6, 9, and 9 percent in Botswana, Kenya, and Tanzania, respectively, but only 2 percent in Zambia at the beginning of the period. At the end of the period, the picture has turned around; sector 8 now accounts for 9, 15, and 10 percent in Botswana, Kenya, and Tanzania, whereas the share is now 18 percent in Zambia. Here we are not witnessing a fascinating piece of comparative financial history with effects on economic growth. The reason is statistical. Sector 8 includes real estate, and for Tanzania, Kenya, and Botswana, provisions for the value of rural dwellings were made in the estimates, while such an inclusion was not made in the data for Zambia in the early years. This also partly explains why the “supportive” sectors grew more than proportionally to the rest of the economy in Zambia.

Another accounting peculiarity associated with ISIC sector 8 is worth noting here. According to the system of national accounts, one part of the accounts of banking and insurance should not be included as value added. This is the surcharge between interest rates paid and received in banking and the difference between premiums received and outgoing in insurance. This does not concur with accounting requirements in the countries and is indeed the way this sector makes a profit. The entries for the sector therefore include this surcharge in all the countries discussed here. The amount in question is imputed retrospectively by the national statistical agency and subtracted from gross output. It is not subtracted for each sector because the data does not permit this. This practice can also be justified by the fact that subtracting it directly from sector 8, apart from not being normal practice, would not be a “fair valuation of the service performed by banks and other financial intermediaries” (Republic of Botswana, Central Statistics Office 1988, Introduction). In Botswana this amount is accounted for in a dummy sector, while in the other three countries it is subtracted as “less imputed bank service charges.” This should be interpreted as a part of “intermediate consumption” that belongs to the economy in general. This can cause confusion because the sum of the sectors 1 to 9 is larger than the final estimate of GDP. It can also be the other way around if there is a

policy of subsidizing business through the banking sector. The amount in this dummy sector varies from year to year.

To illustrate the potential growth effect of statistical methods, I present an example based on the ratios in the cases of Tanzania and Botswana (which had a 1:1 and 1:1.5 growth relationship in “productive” and “supportive” sectors, respectively). It is hard to determine whether the more than proportional growth in “supporting” sectors in Botswana represents a difference in actual economic activity or a difference in statistical methods. It could be hypothesized that the cause was statistical, and that there were two reasons for this. First, it is likely that in Botswana the statistical coverage of ISIC sectors 4 to 9 was poorer than the relative coverage in Tanzania. This could be due to better basic statistical data in Tanzania and more generous provisions when estimating these sectors (i.e., without basic data). Second, because of improved basic statistical data and more generous estimation methods applied during the accounting period for ISIC sectors 4 to 9, the growth in these sectors appeared to be more rapid. These two effects, which both create a relative positive bias for the aggregate growth rate, could be called a “low initial estimate effect” and a “statistical growth effect.” It is reasonable to assume that the observed 1.5 proportionality is the combined effect of the two.

But how important are these effects likely to be? Consider the following hypothetical example: in country A there is proportional growth in “productive” and “supportive” sectors, while in country B there is 1.5 times proportional growth due to a low initial estimate effect and a statistical growth effect. In 1960, both countries had 500 US dollars per capita. In country A, the “productive” sectors contributed 55 percent to GDP and the “supportive” sectors contributed the remaining 45 percent. In country B, due to the low initial estimate effect, the corresponding shares in GDP were 60 and 40 percent for the “productive” and “supportive” sectors, respectively.¹⁴ To measure the hypothetical effect on growth, let us assume that “productive” growth per capita between 1960 and 2000 equaled the sub-Saharan annual average at 0.56 percent.¹⁵ Growth patterns for countries A and B are shown in Figures 3.5 and 3.6, respectively.

In country A, the growth was proportional (i.e., the whole GDP per capita grew at an average of 0.56 percent), whereas in country B, the “supportive” sectors increased at a ratio of 1.5 in addition to the underlying growth. While GDP per capita in country A has increased 25 percent after forty years of cumulative 0.56 percent growth, the corresponding increase in country B is 50 percent, indicating a growth rate about double that of country A. These examples are hypothetical only (although they are derived from observed ratios and growth rates) and cannot produce conclusive results about the relative growth performance of these countries. However, the example does display the implications of statistical growth for the aggregate growth rate and underlines the

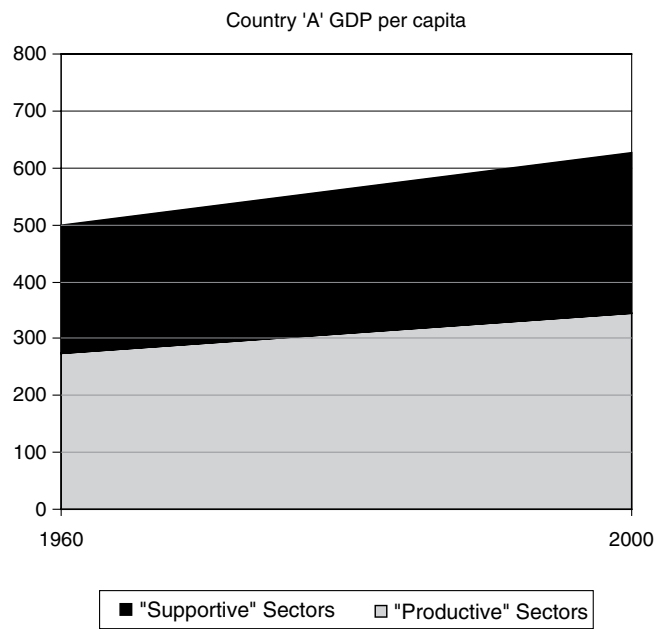


Fig. 3.5. Projection of GDP per capita growth without statistical growth

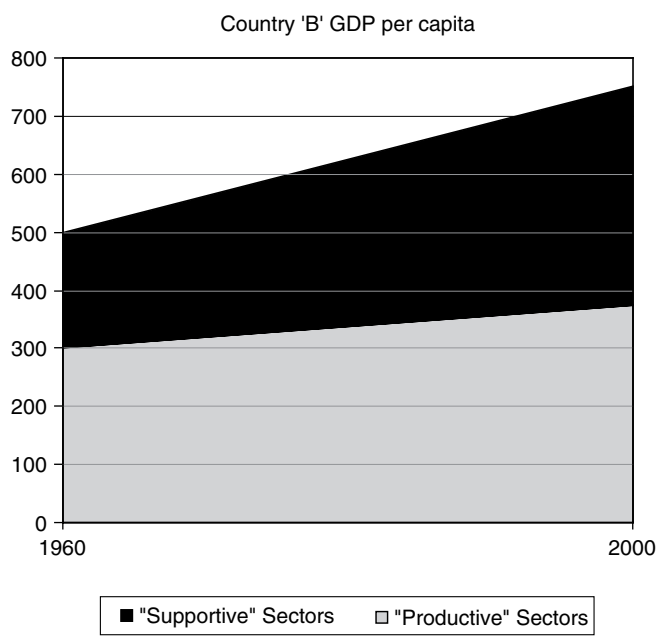


Fig. 3.6. Projection of GDP per capita growth with statistical growth

importance of investigating accounting methods and baseline estimates in a comparative growth analysis.

The structure of the economy is more than a sectoral distribution of economic activity. The scale and outlook of the operators in each sector also make a difference. The national statistical agencies obtain reliable annual information only on certain operations. Large-scale manufacture, state-owned enterprises, large-scale commercial farming, exports and imports, and the state's own activities are reasonably well covered by actual information. There are weaknesses related to these data deriving mainly from underreporting to avoid taxation, but there is at least basic statistical data informing the statistical agencies. The remainder of the economy is estimated on various bases. The Zambian Central Statistical Office had two levels of denoting when an estimate is questionable: one asterisk denotes a "guesstimate" and two asterisks denotes a "guesstimate on a weak basis" (Republic of Zambia, Central Statistical Office 1978). However, these estimation techniques can be looked at in a more sophisticated way.

ESTIMATION TECHNIQUES

Some distinct methods of making guesses can be identified, the main differences between them being whether the baseline estimate is grounded in basic data or not. One method is as follows: if a sector of the economy is known to consist of one large operator and many small ones, a qualified guess can be made as to how much of the sector is dominated by the large operator, for which basic statistical data is available. The statistical office can then assume that the data represents, say, 60 percent of the activity in the sector, gross the sector up accordingly, and assume that the rest of the sector grows proportionally. Similar assumptions are made regularly where the sectors are covered by an annual industrial census to adjust for underreporting and non-responding. Here the reported activity would be adjusted upward on an annual basis, assuming proportionality. These methods are deficient because they are in fact based on guesses, though the guesses can be more or less educated or informed. The assumption of proportional growth also precludes any intrasectoral structural shifts. A reduction in activity among the large operators in a sector might very well be a result of increased competition from the smaller operators. This would apply to manufacturing, construction, retail trade, transport, and other services in particular.

In other cases the national accountants rely only on sporadic censuses for whole sectors or only one baseline estimate. In these cases, the methods available to the accountants are projections. If there are two points of observations over time, growth will be assumed to have been smooth through these two

points, and it will be assumed that this growth will continue in similar fashion beyond the last observation point. This is the typical method used for estimating population, where there is usually one census every decade. The main objection to this method is that there is no way of detecting the point of acceleration or deceleration in growth. One further runs the considerable risk of reporting statistical growth. This problem is accentuated by the fact that one census will differ in quality, reliability, and coverage from another. Retrospectively there is little chance of determining to what extent the growth is the result of increased statistical efficiency or whether the change relates to the economy itself. The statistical agency is then left to make a guess about whether the detected growth between the two observations is reasonable or whether it is a result of a relative under- or overestimation at one of the points. The agency can accept a break in the time series, extrapolate backward to change the initial baseline estimate, or simply smooth the growth between the two points of observation. Figure 3.7 illustrates the different choices available to the national accountants.

In Figure 3.7, the value of a sector of the economy was measured or assumed to be 100 in year 1. The sector was assumed to have been growing at 3 percent per annum. In year 10 a census was undertaken and the sector measured at 150. “Measured” represents how the growth pattern would appear if no action were taken to correct backward. “Revise” denotes the option of taking the year 1 baseline estimate to be wrong and the 3 percent growth assumption to be correct. “Smooth” denotes the option of changing the annual growth measure when faced with the new baseline estimate for year ten. The “halfway” measure

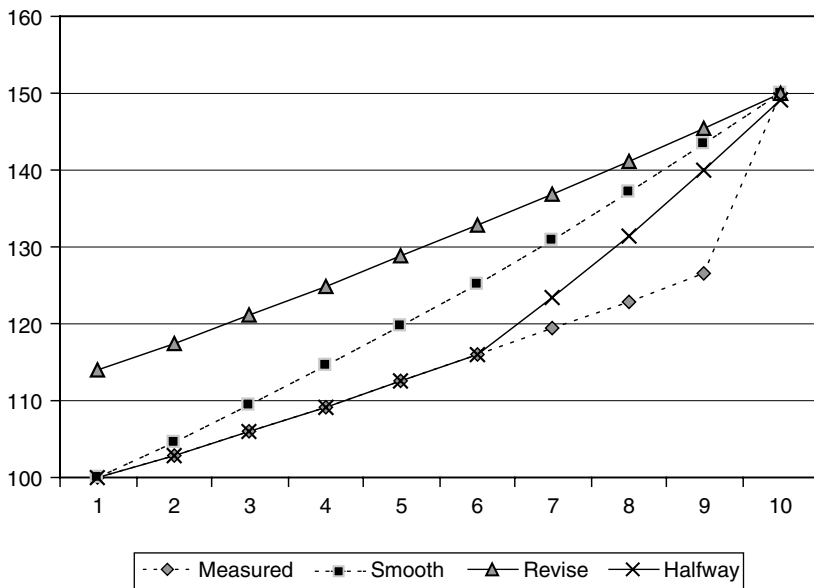


Fig. 3.7. Stylized revision options

is often chosen, as the agencies are hesitant to revise the series over a long period.¹⁶ All these choices have been used at various points in the national accounting in the countries studied in this book. The data a scholar uses as evidence for his or her analysis depends on the statistical choices the accountants have made, and the evidence obtained in year 9 will be different from the evidence obtainable after year 10.

This example illustrates the case of a statistical agency faced with harmonizing two conflicting pieces of evidence. In many cases, however, no such conflict arises, as there is no basic statistical evidence at all. This can apply to whole sectors of the economy, typically what is called the “rural subsistence economy,” but it is also done with regard to other sectors or smaller-scale operations within a sector. Here a baseline estimate or guess is complemented by assumptions of growth. Food production, water collection, rural construction, and real estate are assumed to take a certain value per rural household and then assumed to grow in accordance with rural population growth. The initial guess, the measure of rural population growth, and the assumption of corresponding growth can, of course, all be wrong. However, this measure is widely used in the absence of a better one. In all of the countries, rural population growth is assumed to be lower than total population growth, so by definition the rural “subsistence” sector will be growing slower than the total population. This represents an inbuilt bias toward a decreasing GDP per capita. This can be quite serious in countries where this sector is particularly large, as in Tanzania. One of the most important conclusions of World Bank research on the continent has been that food production has failed to keep up with population growth (World Bank 1981, 3). While this conclusion could really be true, the way the evidence is set up means that it is true by definition. Again, the larger the “subsistence” sector, the slower the aggregate growth as measured.

There are other sectors of the economy where growth is determined indirectly via other indicators. This is the case in Zambia in the latter part of the period of this study, where most growth is determined in this way. For all four countries, trade, retail, and transport are either completely or in part determined by the growth in imports and food production, where food production is already partly an indirectly determined indicator. The major lesson is that the more economic activity takes place in the informal sector, the less certain is our knowledge about economic growth. It is also important to note that the assumptions made in the baseline estimate and the assumptions of indirect growth may put a limit on the measure of future growth.

Intensive growth, where there is a higher increase in output than in input, will not be detected in the informal sector. A key question that arises is whether the research on the informal sector suggests that this assumption is a fair approximation. Some writers on the informal sector would agree; others would not (for such discussions, see, e.g., King 1996). Although this question falls outside the scope of this book, a useful and relevant conclusion based on the work presented here

is that the national accounts data are a poor guide to these sectors. Observed differences in growth in the informal sectors across time and space are likely to derive from statistical methods and are not directly indicative of economic change. It follows that the increase in GDP per capita must derive from the modern large-scale sectors in which growth is recorded, while the sectors that grow by statistical assumption will appear to reduce GDP per capita growth.¹⁷

Consequently, we can make predictions about the GDP data based on the sectoral distribution. The more comprehensive the coverage of “subsistence” or informal economic activities in the initial baseline estimate, the larger the share of the economy that will grow at a slower rate. This insight forms part of the rationale for the analysis in the following section. There has been a shift away from the large-scale state-controlled economy toward free market and informal economy activities in all four countries, but more radically so in Zambia and Tanzania. An indication of this development is the fact that the share of GDP of ISIC sector 9, which includes public administration and all other public services, actually decreased in Zambia and Tanzania, from 13 percent in the first estimate (1966) to 7 and 9 percent (1993). How this structural adjustment affected growth accounting is a complicated issue. The state was active in all sectors, particularly trading, but also in transport and financial services before structural adjustment. In terms of administration and public service (health and education) it might be safe to conclude that there has been a reduction in formal activities that is reflected in the official statistics. The extent to which this activity has been replaced by informal and unrecorded activities is uncertain. The trade and transport sectors, which notably include marketing of agricultural produce, are of particular importance. For these sectors we can be sure that the reduction in recorded activities went along with an increase in unrecorded activities.

As structural adjustment began, the gap in statistical knowledge widened in all these countries, especially in Tanzania and Zambia. Before structural adjustment, formerly registered activity disappeared into the informal economy, when formal channels either failed due to shortages or traders favored parallel markets over the official ones because of prices. The effect of structural adjustment on recorded growth is hard to gauge. While improved prices might have increased formal marketing, the process of privatization made data collection difficult.

MEASURING THE ECONOMY AT CONSTANT PRICES

The official growth evidence for 1965–95 is covered by four or five series with different base years. Some of these series overlap. In order to test the propositions I have presented, it is possible to check how the structural

distribution for one year changes when it is measured in different prices. The differences between the estimates show the combined effect of accounting with different prices and revision of the estimates after the inclusion of new data. For Botswana there is sparse reporting for the first decade, which was reflected in the high level of inaccuracy in growth reporting for this period. From 1974–75 onward, four series are available, so the consistency can be checked for the different base year estimates. Four series are also available for Kenya and Zambia, but they overlap to a lesser extent. For these two countries, we can compare the structural distribution in the estimates at the end of one series and the beginning of another. The lack of choice of series to choose from when creating a constant price series for the whole period probably accounts for the greater accuracy in reporting observed for these countries. For Tanzania, there is considerable overlap in the series, and this abundance of choice for the compilers of a 1965–95 growth series may have contributed to the previously documented inaccuracy in growth reporting.

In the table for Botswana (Table 3.8), the percentage distribution of GDP of three years, 1974–75, 1979–80, and 1985–86 is shown according to four, four, and three estimates, respectively. For each year there are some differences between the estimates. Since these four estimates are for the same economy, the differences between the years reflect changes in prices and in estimation methodology. We see that changes in agricultural output are not that large across the 1974–75 estimates. The major earner in this sector is cattle sold for export. According to this comparison, Botswana received stable prices for its cattle through the period. For the year 1979–80, there is a marked difference between the 1974–75 and 1979–80 estimates for the agricultural sector. This structural difference is partly explained by the large revaluation of the mining sector that year.¹⁸ The difference in terms of measured growth in 1974–75 and 1979–80 is that the growth of the agricultural sector has less impact on growth in total GDP, but this is not a very large effect. If the agricultural sector declined by 10 percent in 1974–75 prices, the total growth would be slowed down a half percent more than at 1979–80 prices.

Mining is the most important sector of the Botswana economy, and it is also in this sector that most change is observed between the estimates. There is a change between the estimates at 1974–75 and 1979–80 prices, which relates to the way mining output was estimated. There was an indecisiveness about whether to account for diamond trading, diamond sorting, and mining construction in the mining sector itself or outside it. At the beginning of the period, diamond trading was accounted for within the trading sector and would therefore appear to be important for growth measured according to the 1974–75 methodology. The difference is the largest for the 1979–80 estimate at 1974–75 prices compared to the estimate at 1993–94 prices. The trade sector is valued at almost a quarter of the economy in the first estimate, compared to

Table 3.8. GDP by sector at different constant price estimates, Botswana, 1974–75, 1979–80, and 1985–86 (percent)

	GDP 1974–75 according to				GDP 1979–80 according to				GDP 1985–86 according to		
	1974–75	1979–80	1985–86	1993–94	1974–75	1979–80	1985–86	1993–94	1979–80	1985–86	1993–94
Agriculture, hunting, forestry, and fishing	27	23	23	24	15	11	13	13	4	5	6
Mining and quarrying	6	14	12	12	23	32	29	30	44	47	49
Manufacturing	7	6	9	7	5	4	6	4	3	5	4
Electricity and water	3	2	2	2	3	2	2	2	2	2	2
Construction	10	12	13	15	4	5	9	10	2	4	5
Wholesale and retail trade and restaurants and hotels	21	17	17	9	24	23	21	8	18	13	6
Transport, storage, and communications	3	2	2	2	4	2	2	2	3	3	2
Finance, insurance, real estate, and business services	7	6	5	5	12	10	6	7	7	6	6
Public administration and other services	16	17	17	17	14	15	15	14	18	16	15
Imputed bank service charges	1	1	1	1	5	4	–2	–2	3	2	–2
Gross domestic product	100	100	100	100*	100	100	100	100	100	100	100

*Does not equal 100 percent; 4 percent in import duties.

less than a tenth in the later estimate. There is a similar change in the finance sector for the same reasons, when diamond sorting was moved from finance to mining, as is seen most clearly across the estimates of 1979–80 at different prices. In construction, the value added moves in the opposite direction, as construction activities relating to mines were accounted for separately in the later estimates.

For Kenya we have three estimates for 1974 and two estimates each for 1972, 1976, and 1982 (Table 3.9). As seen in the GDP estimates for both 1972 and 1974, there is statistical growth in the construction sector in the 1972 series. In the agricultural sector, coffee is the major cash crop, and we can see the effect of the high coffee prices accounted for in 1976 prices. The difference is the largest in 1976, accounted for in 1972 and 1976 prices. Growth series based in 1976 for Kenya will overestimate the impact of agriculture on growth. There is a change in evaluation of the government or other services sector from 1972 and 1976, visible at both 1974 and 1976 prices. It is hard to imagine that this was a price effect: it is probably the result of moving one item previously accounted for here to another sector, or of the exclusion of the valuation of some service.

In Tanzania (Table 3.10), there are four constant prices to choose from. They can be compared at five points in time: 1966, 1976, 1982, 1985, and 1992. As these series are compared over longer periods, one would expect larger effects. There are big differences in the valuation of the agricultural sector across the period. In particular, there is a disagreement between the 1966 and 1985 series that is apparent across the 1966, 1976, and 1982 estimates. In 1976, the contribution of the sector to GDP ranges from 33 percent at 1966 prices to 42 percent at 1976 prices to 47 percent at 1985 prices. The difference between these estimates would influence a structural interpretation of the economy. In 1966 prices, the agricultural sector accounted for about half of the economy in 1966, but only for one-third in 1982. At 1985 prices there is no significant structural change over the period. In growth terms, a hypothetical 10 percent growth in agricultural output would raise the total GDP growth by between three and five percentage points in a year. The 1985 series gives a larger weight to manufacture, with the estimated contribution ranging from 5 percent at 1966 prices and 11 percent at 1985 prices in the 1982 estimates. The 1985 series gives a larger weight to the trade sector, while the relative share of finance and government is radically smaller. Depending on which estimate one trusts, the government sector contributes one-quarter, one-seventh, or one-tenth of GDP in 1982. Interestingly, when accounted for in current prices (i.e., 1976 in 1976 prices) the government share of GDP remains stable at 10 percent throughout the period. This can be explained. In Tanzania, the government sector was deflated by an index of public sector wages. Two conclusions can be drawn from this. First, public sector wages did not follow the prices of the rest of the economy. While prices increased quickly in all other sectors of the economy,

Table 3.9. GDP by sector at different constant price estimates, Kenya, 1972, 1974, 1976, and 1982 (percent)

	GDP 1972 according to		GDP 1974 according to			GDP 1976 according to		GDP 1982 according to	
	1964	1972	1964	1972	1976	1972	1976	1976	1982
Agriculture, hunting, forestry, and fishing	35	36	33	34	37	32	38	35	33
Mining and quarrying	0	0	1	0	0	0	0	0	0
Manufacturing	12	12	13	13	12	14	11	13	13
Electricity and water	2	2	2	2	2	2	2	2	2
Construction	4	7	4	6	6	5	5	5	6
Wholesale and retail trade and restaurants and hotels	8	10	8	10	12	9	10	10	10
Transport, storage, and communications	8	6	8	6	5	6	5	6	6
Finance, insurance, real estate, and business services	14	13	15	13	14	14	14	16	17
Public administration and other services	18	17	18	18	14	19	15	16	16
Imputed bank service charges	0	-2	0	-2	-2	-2	-2	-3	-3
Gross domestic product	100	100	100	100	100	100	100	100	100

public sector wages lagged behind, and the government sector appeared to be growing. Second, the constant price series of Tanzania significantly overestimates the growth of the public sector.¹⁹ While the 1985 series revalued the trade sector, compared to the earlier series, the 1992 series represented another such increase. Together with the finance sector, the inclusion of the trade sector in the 1992 series has the effect of adding a valuation of the informal sector.

In Zambia, there are fewer series to compare. Note that in Table 3.11, the comparison of the 1970 and 1977 series is done over two separate years. There are no official constant price estimates of GDP growth between 1976 and 1977. The crucial sector for the growth and decline of the Zambian economy is mining. Therefore, changes in copper prices are decisive for the outlook of the structure of the economy. While prices of copper were favorable for producers from 1965 to 1970, there was a huge decline in the value of production in the 1970s. This is apparent in the change in the mining share of GDP measured by 1970 prices in 1976 as compared to mining share measured 1977 prices

Table 3.10. GDP by sector at different constant price estimates, Tanzania, 1966, 1976, 1982, 1985, and 1992 (percent)

[illegible]

Table 3.11. GDP by sector at different constant price estimates, Zambia, 1970, 1976–77, and 1994 (percent)

	GDP 1970 according to		GDP 1976	GDP 1977	GDP 1994 according to	
	1965	1970	1970	1977	1977	1994
Agriculture, hunting, forestry, and fishing	13	10	11	16	22	15
Mining and quarrying	27	36	33	12	6	19
Manufacturing	10	10	10	17	24	11
Electricity and water	2	1	3	2	3	4
Construction	5	6	7	6	2	1
Wholesale and retail trade and restaurants and hotels	12	10	8	11	11	19
Transport, storage, and communications	5	4	4	6	3	7
Finance, insurance, real estate, and business services	7	7	9	10	11	15
Public administration and other services	15	11	12	16	18	14
Imputed bank service charges*	4	3	2	3	1	–5
Gross domestic product	100	100	100	100	100	100

*includes import duties.

in 1977. Its share of GDP was one-third in the former measure but less than one-eighth in the latter. A positive price development from 1977 to 1994 is apparent, as the GDP contribution in 1994 is 19 percent at 1994 prices, compared to 6 percent at 1977 prices. The differences in output share of GDP for the agricultural sector are partly accounted for by the change in the relative share of mining. A very large inclusion for the informal sector in the 1994 estimates explains the shift in that sector's contribution from 11 to 19 percent and a shift from 3 to 7 percent in the relative share of trade and transport, as compared to the estimates made according to 1977 methodology.

Comparison of the different series shows that there are growth effects deriving from changes in base years. These differences can at times be attributed to price changes and at others to changes in classification and greater inclusion of new activities. Considering the range of available evidence for compiling constant growth series, the discrepancies in the reporting of annual growth rates are less surprising. Such as examination of the growth evidence is critical for any study that analyzes any of the countries individually, and even more so if the countries are to be compared.

The implications for the regression literature are less straightforward. The cross-country growth regressions use average GDP growth per capita over three decades as the dependent variable. I have argued that this dependent variable is highly misleading because it ignores the dominant growth pattern in Africa. I have not argued, however, that it was misleading because of statistical mismeasurement. The crudeness of the formulation of the growth experience in the regression literature precludes any major change in interpretation as a result of a revision of the growth data. The countries that had a negative growth per capita over the period will not suddenly appear as having a rapid growth per capita. The African dummy is not hidden in the national accounting methodology. That acknowledgement aside, there are still implications worth highlighting.

As shown when I compared the different sources of constant price growth series for the relevant countries, there are considerable differences in the annual growth data and the structural distribution of GDP. This is the basic data that forms the metric used in the regression literature. But this data is not correct, which means that the coefficients cannot be interpreted literally and, correspondingly, that growth regression is not an exact science. However, the main reason for undertaking the growth data analysis is that a study of economic performance in individual countries cannot be undertaken without a study of the state of the growth evidence.

The tests of coherence across the different international datasets for Botswana, Kenya, Tanzania, and Zambia suggest that there are serious problems with how the compilers of these datasets have put together the growth time series for these economies. The next four chapters study the evolution of the national accounting systems in the four countries, how the growth evidence is assembled and how the methods of assembling data changed over time.²⁰

NOTES

1. The steps required to express the national accounts in international comparable dollars will not be dealt with here.
2. The data used here is downloaded from the OECD website. It is produced at the Groningen Growth and Development Centre and is copyrighted to Maddison.
3. The period is covered by several growth time series with different base years.
4. Some earlier estimates were made in the colonial period. These estimates are not immediately comparable; I use the first estimates after independence as my starting point.
5. The coherence of the different official series in Botswana, Kenya, Tanzania, and Zambia will be dealt with in Chapters 4, 5, 6, and 7, respectively.
6. See Tables 3.8–3.11 in this chapter and Jerven (2013).

7. The formula used here is $\text{level error} = (1 + (\text{Error range}/100))^{30}$.
8. The formula used here is $\text{low level} = (1 + (\text{Min}/100))^{30}$ and $\text{high level} = (1 + (\text{Max}/100))^{30}$.
9. These are total GDP growth rates. If the difference were measured in GDP per capita it would be smaller, since the average population growth in Kenya 1965–95 was 3.5 percent, compared to 3.2 percent in Tanzania (World Bank 2007). Note that with 3.2 percent population growth, the conclusion that Tanzania had negative growth in GDP per capita over the period is supported by the Maddison data, while the official data and PWT would report a positive growth in GDP per capita.
10. I visited Gaborone, Botswana, in February 2007; Lusaka, Zambia, in February and March 2007; Dar es Salaam, Tanzania, in March 2007; and Nairobi, Kenya, in March and April 2007.
11. Interviews with Litia Simbangala, statistician, National Accounts Branch, Central Statistical Office, Zambia (February 2007, Lusaka); and Collins M. Omondi, statistician, Central Bureau of Statistics, Kenya (April 2007, Nairobi).
12. Interview with Collins M. Omondi (April 2007, Nairobi). I conducted follow-up interviews at these statistical offices and in Uganda, Nigeria, and Ghana during the research for *Poor Numbers* (Jerven 2013).
13. This is less important for economies dominated by primary production. However, it does complicate matters slightly here as well. Export prices will usually reflect a quality grading of the products, though a general price increase in coffee, for example, would not imply a quality upgrade. It is less obvious how one decides upon a price for own consumption. This problem is discussed in the national accounts methodology in all countries, in particular with relation to consumption of meat and milk from livestock.
14. These shares in GDP were observed in the tables above for Tanzania and Botswana, respectively.
15. As given in Table 1.1 in Ndulu et al. (2008a, 4).
16. The use of the “halfway” backward revision is particularly pronounced in Botswana but also figures prominently in Kenya; this will be reviewed in Chapter 5.
17. The notable exceptions are when ad hoc additions are made following the inclusion of new statistical data when accounting for these sectors.
18. Since these are relative shares, the growth of one sector means the decline of the other, even though no absolute change has taken place.
19. Interestingly, this is a well-cited statistic. It is an established stylized fact that the growth of the public sector was rapid and was one of the characteristics of the Tanzanian economy. In 1966 prices, the government sector grew from 11 percent in 1966 to 25 percent in 1982. This is a statistical artifact.
20. This is documented in Chapter 3 of Jerven (2008).

Economic Growth and Measurement Reconsidered: Botswana

In Botswana, the first attempt to construct national accounts was made in 1955. This was an individual academic effort (Erasmus 1963). In 1966, the Central Statistical Office in Gaborone was established; it began operation in the latter half of 1967. The first official national accounts were published in 1968 as the *National Accounts of Botswana, 1964–66*. National accounts for 1967–68 and 1968–69 were published in 1970 and 1972, respectively. In 1973, the national accounts for 1971–72 were published. No accounts were prepared for either 1969–70 or 1970–71. The fifth report of the national accounts was published in 1976 and covered 1973–74. No report was published for 1972–73. From the 1973–74 report onward, national accounts were prepared and published consistently on an annual basis.

The preparation of the first report was considered “an asset” by the Central Statistical (CSO) office in the sense that the exercise “revealed the weaknesses of the data and the gaps in the information available” (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1970, 1). The report noted that the resulting GDP estimates should be considered as preliminary, with the implication that subsequent estimates were likely to have better information and consequently more extensive coverage. In the second report, the CSO informed readers that “a number of assumptions and estimates have been used which are based on insufficient or unreliable data, and in many cases on opinion” (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1968, 1). The third report stated that “we still depend on estimates and intelligent guesses due to the unavailability of certain data,” indicating that the problems of lack of basic statistical data and undercoverage were not dealt with during the preparation of the first three reports (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1972, 1). The second report also commented on the degree of coherence with the UN standards of accounting: “Botswana is far from being able to produce the full range of tables

recommended in the UN SNA" (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1970, 2).

The agricultural sector in Botswana consists of crop production and livestock. Only a small share of the crops produced is commercially marketed, so the data on this sector is limited. Yet in 1967–68 the marketed production was estimated to be 24 percent of total production. A large contribution to value added in Botswana's agricultural sector comes from cattle. Recorded slaughter of livestock alone accounts for almost 40 percent of value added (excluding value added deriving from hides, milk, and increases in livestock). The national accounts distinguish between freeholder and non-freeholder farmers; the latter farm on state or tribal land (estimated in the 1971–72 accounts as 65,000 non-freeholder farms compared to 400 freeholders). The information on freeholders is based on income tax data, while most of the output of the non-freeholders is estimated on the basis of surveys. The non-freeholders, called "traditional farmers," are not expected to complete income tax returns because "they do not keep any records of their activities" (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1973, 3). Estimates of crop production were derived from the total acreage of crops, using two sources. For 1964 to 1966, they used the relationship between the sampled farmers' acreage and the total acreage reported by the agricultural department, making allowances for the increase in total acreage in accordance with the increase recorded among the sampled farmers through this period. In other words, the assumption was that there was an increase in total acreage. The distribution of crops was considered to be proportional on the basis of the 1967 distribution. To obtain a figure for the production of crops, the obtained acreage figures were multiplied by the average yield per acre as estimated by the Department of Agriculture.

In the 1967–68 report the data on crop production was compared with those for 1964–66, and the comparison suggested that the figures for sorghum were probably incorrect. "Prices certainly vary from year to year but using an average of R45 per ton the estimates used for 1964 to 1966 would suggest a production of approximately 75,000, 26,000, and 88,000 short tons for the three years respectively. The Department of Agriculture estimate total production of all cereals as 5,000 and 11,500 short tons respectively for 1965 and 1966. It is therefore probable that the estimates used for calculation of values for 1964 to 1966 must be far too high" (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1970, 5). The 1968–69 report noted that "agricultural production is subject to annual fluctuation mainly due to erratic climatic conditions" and explained that crop production had increased threefold from 1967–68 to 1968–69 because the latter "was a good year" (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1972, 4).

The manufacturing sector in Botswana was very small at this time; no formal activity was reported apart from the Botswana Meat Commission (BMC) and the Government Printer. In addition, allowance was made for manufacturing outside the commercial sector. "No reliable information on this traditional sector has ever been collected and as a result the figures used are crude estimates" (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1972, 12). The 1971-72 estimate was the result of adding together the accounts of the central government, thirteen local authorities, slightly more than 800 private firms, and 300 freehold farmers, plus the estimated contribution from 65,000 traditional farmers. The CSO still depended "on estimates and intelligent guesses due to the unavailability of certain data" (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1973, 0-3). It was further noted that "the data on which this report is based are of very uneven quality"; the data varied from the "very high quality... for the Central Government" to "some unusable returns sent to us by a few private firms." The report warned that "the reader should not place too much reliance on individual figures" while maintaining that the aggregate tables "are a reasonably good measure of the domestic economy" (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1973, 0-3). It was in these estimates that the mining sector first rose to importance and accounted for most of the increase in GDP (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1973, 0-3).

When preparing the 1971-72 estimate, the statisticians considered it likely that previous agricultural surveys had slightly underestimated both the number of non-freehold farmers (because of an outdated sampling frame and a bias in the sample design) and the number of cattle owned by each farmer (because of a response bias). "The latter defect, which is still with us, is not too serious as far as the 1971-72 GDP is concerned because the value added by increase in livestock numbers is small compared with the value added from sales and own consumption" (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1973, 1-2). Nevertheless, the 1968/69 estimate of 53,750 traditional farmers was thought to be too low by about 10 percent, which meant that the value added for that year was too low. In addition, the report's analysis of purchasers' records indicated that cattle purchased from the traditional sectors in 1971-72 were probably about one-third more numerous than sales reported by traditional farmers. This meant that previous national accounts may have seriously underestimated the value added in the traditional sector from cattle sales, since they relied exclusively on agricultural surveys (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1973, 1-2). In this report, in contrast to the earlier ones, construction activities by mining companies and the government were transferred from the mining sector to the construction sector (Republic of

Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1973, 5-1). A pilot project was undertaken to survey small-scale traders. On the basis of a sample of fifty such traders, the total product was estimated to be R1.3 million. This production had not been covered before, so this was statistical growth. The data for both small and large traders are considered to be of bad quality. Large traders were estimated to account for R6.2 million (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1973, 6-2). The report offered constant price estimates with the caveat that "it is debatable whether one should attempt an analysis of this sort when there are so many statistics missing. Certainly the results are very rough and may be altered in future National Accounts reports. The entire National Accounts methodology used is still going through a settling down period and will be further improved in the 1973/74 report" (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1973, 14-11).

National accounts were not prepared for 1972-73. The 1973-74 report was prepared along the lines of the 1971-72 report, and the CSO stated in the introduction that they "still depend on estimates and on intelligent guesses due to the unavailability of certain data, but much less than before" (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1976, 0-1). The report stated that since the statistical office was still unsure of when the correct baseline estimate is reached, the "growth rates that may be derived from these figures should be used with caution, as there is an element of statistical growth at play: notably in ISIC 6, 7 and 8" (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1976, 0-13).

The 1974-75 report claimed that "because coverage and quality of data have continued to improve, it was no longer found necessary to adjust for under coverage" (Republic of Botswana, Central Statistics Office 1977, 0-11). This would prove to be a premature conclusion. The constant GDP and current GDP for 1974-75 was revised upward in the 1975-76 report by ten million pula. There was also a revision in the current GDP by origin for the previous year. Agriculture accounted for half of the upward revision and mining for three million; the increase in manufacturing was marginal (Republic of Botswana, Central Statistics Office 1978, Table 1.1.C).

In 1974, a Rural Income Distribution Survey (RIDS) formed the basis of the agricultural data for a decade to come. National statisticians still considered that the number of 65,000 and 400 farms run by non-freehold and freehold farmers, respectively, was representative (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1976, 1-3). They believed that the previous agricultural surveys underestimated the size of output in the traditional farming sector. For the first time, the RIDS gave "reliable information" on milk production for own use (R9.7 million) and the value

of dead animals consumed (R4.9 million) (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1976, 1–4). Despite a huge increase in estimated total output, statisticians still judged it as only “quite certain” that the 1973–74 output level was significantly higher than that of 1971–72, but perhaps by not as much as is shown in the accounts: “the 1971–72 level of output probably still is underestimated” (Republic of Botswana, Ministry of Finance and Development Planning, Central Statistical Office 1976, 1–4).

In 1979/80 the increase in construction was the highest ever recorded. “A larger sample has obviously yielded better data pertaining to this sector and to a certain extent accounts for the huge increase in the sector’s value added” (Republic of Botswana, Central Statistics Office 1982, 6). This demonstrates that the issue of statistical growth had not been solved. The whole sector was revised upward by a cautious 10 percent, and the report noted that “it is strongly felt that the 1971–72 results for the sector have been seriously understated.”

The 1980–81 report coincides with the change of base year for a constant price series. The base year was changed for two reasons: “Firstly, the SNA recommends base years be changed frequently... Secondly the CSO was gutted by fire on the 30th September, 1982[,] hence all our constant price files were destroyed. Besides[,] the constant price computations for 1980–81 are better than computations of previous years” (Republic of Botswana, Central Statistics Office 1983, 2).

NATIONAL ACCOUNTS ESTIMATES: 1986–87 TO 1994–95

The 1986–87 report estimate incorporated the 1985–86 Household Income and Expenditure Survey (HIES) and provided a much-anticipated and overdue baseline estimate for the informal sector. It also made available a range of updated basic data. Several major revisions and changes to the national accounts were made covering years as far back as 1974–75. Most important was a transfer of the diamond trade and diamond sorting from the trade and business sectors, respectively, to mining and the revaluation of stocks (from cost to market prices).

Informal activities were revised to incorporate the results of the 1985–86 HIES, which provided information on two informal activities that had not previously been included in the National Accounts: business services (property rental) and informal retail trade. In addition, the level of construction output was reportedly increased in line with the demand for construction (Republic of Botswana, Central Statistics Office 1988, 2). In the new series, the trade sector rose from 319.9 million pula to 384 million pula, an increase

of 20.1 percent. Without duties, the increase was 9.8 percent. Mineral trading, as mentioned above, was excluded from the sector, which meant an absolute decrease of 100 million. The source of data for exports and imports was changed to the Bank of Botswana instead of own estimates from national accounts. This meant a significant change in the data on the current account. All sectors but government, community services, and water and electricity were significantly changed in the new series.

The agricultural sector was revised upward without specific mention of that fact. In the accounts, the change can be traced to "other production marketed," which was increased from estimates below 1 million pula to 5 million pula. In 1984–85, eight million pula was added to the original estimate of two million. From 1978–79 to 1984–85 the estimates of production for own use were increased for each year by 10, 12, 15, 15, 15, 17, and 22 million pula. In addition, intermediate consumption was revised downward for 1980 onward and by as much as five million pula for 1984–85. As a result, value added from the account was increased by 20 to 30 million (from a base of 50), implying a 50 percent upward revision. There was no change in freehold farming and no change in crops produced. The upward revision can be traced to the other items in own production, which is identified in a footnote: "The most important item is milk, followed by crops and meat from deceased animals" (Republic of Botswana, Central Statistics Office 1987, Table 3.1.2, 44). In the 1987–88 report, the base year was shifted to 1985–86. The yearly growth rates based on the previous base year were maintained as far as possible, although "some sectors and types of expenditures have been adjusted in order to balance supply and demand" (Republic of Botswana, Central Statistics Office 1991, 3).

According to the CSO, the report containing the 1991–92 and 1992–93 estimates was "the nineteenth issue of the national accounts publications." The previously published comprehensive national accounts of Botswana were for 1987–88, published in June 1991. The office produced provisional estimates annually up until 1994–95, but they were not regularly published and the estimates were gradually revised when better data were made available. The other years, from 1988–89 to 1990–91, were published retrospectively. The estimates were made according to the 1968 SNA until 1997, when the SNA 1993 was introduced. The 1985–86 HIES was followed by a second in 1993–94 and the estimates of the traditional sector were interpolated between the two surveys. In this period, the Census of Population and Distribution was complemented by a yearly Census of Manufacturing and Construction. South African price data were still used in the preparation of constant price data and some of the current data. The constant price data continued to use 1985–86 as the base year through the 1990s. In 2000, a new constant price series based on 1993–94 prices was published that covered the period back to 1974–95 (Republic of Botswana, Central Statistics Office 2000).

PERFORMANCE

This section describes the economic performance of Botswana from 1965 to 1995 according to the available data on growth from official national statistics. The postcolonial growth record of Botswana is covered by five different constant prices series (see Table 4.1). Official information about economic growth in constant prices is sparse for the first decade of independence: there is only one series covering the early years. This is based on constant 1971–72 prices and provides a GDP estimate by sector in 1967–68, 1968–69, and 1971–72. The series provides only limited information about the dynamics of growth in the early period. It is generally agreed that there was rapid growth during the first decade of independence, but the sparseness of official reporting has led to wide variation between the different growth estimates. During the first five years after Botswana's independence (1966–70), the discrepancy between the official growth rates and those of the Penn World Tables was particularly large; the official estimates indicate an annual average growth of more than 16 percent, but the PWT estimate indicates a more conservative 7 percent. If the latter estimate is correct, Botswana was not growing significantly faster than many other African economies in this period. Maddison, probably reacting to the dearth of national accounts data files for this period, reports a rate of 10 percent growth in GDP for each year from 1965 to 1971. Table 4.1 shows the coverage of the official national accounts in Botswana from 1965 to 1995.

The second official constant price growth series was based on 1974–75 prices. By this stage, the once poor, land-locked, and agricultural nation had become a rapidly growing economy that depended on diamond mining. The new series reported total GDP in 1974–75 prices for 1965, 1966, 1967–68, 1968–69, and 1971–72, but it provided a disaggregation of GDP per sector only from 1973–74 onward. The story of growth in the first decade is compromised by the absence of an estimate of total GDP for 1969–70, 1970–71, and 1972–73 in both constant and current prices. In addition, these estimates were indicative only and were undertaken with very sparse resources and few basic statistical

Table 4.1. Availability of official constant price growth series: Botswana, 1967–68 to 1994–95

Base year	Coverage
1971–72	1967–68; 1968–69; 1971–72
1974–75	1966 to 1978–79
1979–80	1973–74 to 1985–86
1985–86	1974–75 to 1988–89
1993–94	1974–75 to 1994–95

Table 4.2. GDP, Botswana, base year 1971–72 (millions of rand)

	1967–68	1968–69	1971–72
Agriculture, hunting, forestry, and fishing	20.9	23.8	27.4
Mining and quarrying	–1.4	–1.4	11.2
Manufacturing	1.9	2.8	7.7
Electricity and water	0.6	0.6	1.2
Construction	3.9	3.5	10.0
Wholesale and retail trade and restaurants and hotels	2.5	3.8	6.8
Transport, storage, and communications	2.9	4.3	4.5
Finance, insurance, real estate, and business services	5.6	5.9	9.1
Public administration and other services	7.9	9.2	12.2
Imputed bank service charges	0.1	0.2	0.8
Gross domestic product	44.9	52.7	90.9
<i>Average growth</i>			
Agriculture	8%		
Manufacturing	76%		
GDP	26%		

data. Indeed, the motivation for making these early estimates was to display and clarify the extent of the absence of data. The estimate of GDP in the 1964–66 report was reasonably consistent with that of the 1967–68 and 1968–69 estimates. The 1971–72 estimates provided some new data and changes in estimating methodologies and assumptions. Comparing the estimates for these years reveals significant statistical growth. The constant price estimates published in the 1971–72 report came with the warning that it was debatable whether such estimates should be attempted when so much data was missing. The 1973–74 report noted that there was no consensus among the nation's statisticians about the correct level for baseline estimates for most sectors and that derived growth rates should be used with caution. Thus, the first constant price estimates, as shown in Table 4.2, were considered by national accountants to be inadequate as a basis for the derivation of growth rates.

The combined effect of such absence of estimates, changes in methodology, and lack of agreement about basic underlying statistics makes it impossible to assess the validity of the data for some years. It is important to keep these limitations in mind when working with derived growth rates for Botswana.

According to the 1974–75 series, the total GDP increased from 55 million pula in 1965 to 335.5 million pula in 1978–79 (see Table 4.3). The measured economy was more than six times larger in 1978–79 than it had been four years earlier. In 1978–79, the agriculture, mining, trade, and government sectors

Table 4.3. GDP, Botswana, base year 1974–75 (millions of pula)

	1965	1966	1967–68	1968–69	1971–72	1973–74	1974–75	1975–76	1976–77	1977–78	1978–79
Agriculture, hunting, forestry, and fishing						68.9	61.2	62.0	64.6	61.8	58.9
Mining and quarrying						14.4	18.0	40.1	40.0	49.6	79.8
Manufacturing						11.0	15.5	19.9	21.9	19.3	28.9
Electricity and water						2.6	6.9	10.4	8.7	9.5	11.5
Construction						24.0	20.1	14.5	9.6	10.2	10.9
Wholesale and retail trade and restaurants and hotels						31.4	34.3	39.0	43.1	48.3	65.4
Transport, storage, and communications						6.1	5.5	5.6	2.4	6.3	7.1
Finance, insurance, real estate, and business services						15.0	14.6	15.8	17.6	19.4	29.5
Public administration and other services						32.8	33.7	42.8	44.8	46.3	55
Imputed bank service charges						–0.8	–3.3	–2.4	–6.2	–6.6	–11.5
Gross domestic product	55	59.9	68.6	79.0	138	205.4	206.5	247.7	246.5	264.1	335.5

were each larger than the entire measured economy in 1965. Reported economic growth according to the estimates in Table 4.3 is uneven, and unfortunately it is during the unmeasured years that growth appears to have been the most rapid. According to the 1974–75 series, growth was strong but relatively slower from 1965 to 1968–69 compared to the period of the unmeasured years (the years between 1968–69 and 1971–72). Total GDP increased by almost 50 percent, and the economy grew by 9 percent the first year and by 15 percent in the two following years. In 1971–72, after a gap of two years, total GDP was measured at 72 percent higher than the 1971–72 series and 75 percent higher than that reported in the 1974–75 series. In 1973–74, after another gap, the GDP was measured as 50 percent higher than in 1971–72. From 1973–74 to 1978–79, the methods and sources used for the measurement of GDP were reasonably consistent and regular, and growth slowed considerably. In comparison to the period from 1965 to 1973–74, total GDP increased four times (from 55 to 205.4 million pula), while for the period 1973–74 to 1978–79, the increase in total GDP was about 64 percent. For this early period (before 1973–74), the method of estimating GDP was revised three times, but after 1973–74 the methodology was more consistent. There is thus good reason to believe that statistical growth was particularly strong during the period 1965 to 1973–74, so the derived growth rate for this period should not be accepted at face value.

This difference in the GDP estimates is borne out in the reported derived growth rates for 1965 to 1978–79. In this case, the derived growth rate is calculated by comparing GDP at the end of the period with GDP at the beginning and averaging the result over thirteen years. By this measure, GDP growth for the period is 39 percent. If the rate of GDP growth is calculated only for the eight years in the 1970s for which we have consecutive observations, the result is an average growth rate of 12 percent for the period. While growth was rapid throughout the whole period from 1965 to 1978–79, the conclusion that growth in Botswana was explosive is an impression based on the years for which we do not have a consistent measure (1965 to 1971–72). The implementation of new accounting methodologies in 1971–72 and again in 1973–74 also requires some consideration. This is best done by considering each sector's contribution to Botswana's GDP statistics.

The agricultural sector grew by 15 percent from 1968–69 to 1971–72, much slower than total GDP. This sector accounts for 9 percent of the increase in total value added for this period, as its percentage contribution to GDP decreases from 45 percent in 1968–69 to 30 percent in 1971–72. There was significant statistical growth in this sector because the statistical office used a new agricultural survey and re-estimated cattle sales from what is called the traditional sectors in the national accounts after consulting purchasers' records. Traditional agriculture contributed about 70 percent of the value added in the agricultural sector in 1968–69. After reviewing the new sources of data, the statistical office concluded that the output of traditional agriculture had been

significantly underestimated in the previous accounts. It responded by increasing the number of farmers in its report for 1971–72, increasing the value of the total sales of cattle by 30 percent, and increasing the “markup” for undercoverage (the statistical office adds a percentage to their estimate to adjust for unrecorded activities, in this case for unrecorded cattle sales) by 1.5 percent. The traditional sector accounted for 70 percent of the agricultural output in that year, contributing to a statistical increase of almost 40 percent in the agricultural sector’s contribution to the total value added to Botswana’s economy in that year. Botswana’s national statistical office corrected for changes in methodology when it created its 1971–72 series and retroactively adjusted the GDP estimates for 1967–68 and 1968–69 upward by 40 percent. This backward readjustment was not done for 1965 or 1966, and the ad hoc increase in the 1971–72 series partly explains why the output of the agricultural sector in 1973–74 is larger than the nation’s total GDP in 1965. I will present the rest of the explanation of how reported GDP increased by 70 percent from 1971–72 to 1973–74 below, but first I will consider the other sources of growth for the period up to 1971–72.

Agriculture accounted for only 15 percent of the increase in value added from 1965 to 1971–72. The bulk of the remaining growth is explained by the mining sector. Thirty-three percent of the increase in total value added is explained directly by activity in this sector. Two other sectors made significant contributions to value added from 1965 to 1973–74. In these years, national statisticians transferred the construction activities of mining companies and the government to the construction sector. They also transferred holding companies and the activities of management consultants for the mines to the finance and business sectors. Thus, mining activity contributed to three sectors: mining, construction, and finance and business. Together these three sectors account for almost 60 percent of the increase in GDP. Two mines were responsible for much of the increased growth in output: the Orapa diamond mine began operation in 1971, when the Shashe mining project was still under development. Another sector that increased between these estimates (from 1971–72 to 1973–74) is trading. In this sector, as a result of a pilot survey, statisticians included data about small-scale traders for the first time (1973–74). One-third of the growth in this sector is explained by this new data. Large-scale traders also made a significant contribution to value added, but the data for both small and large traders is considered to be of poor quality. Finally, the manufacturing sector contributed 13 percent to the increase in GDP, largely the result of increased throughput of cattle at the BMC’s new abattoir.

The rapid increase in GDP from 1971–72 to 1973–74 is explained mainly by statistical growth and very favorable climatic conditions. The rainfall in 1973–74 was 74 percent above the norm and resulted in an even sharper increase in output (Republic of Botswana, Central Statistics Office 1973–74). In contrast, 1965 was a very poor year because of climatic conditions

(drought) (Republic of Botswana, Central Statistics Office 1968). Because Botswana's economy was largely based on agriculture during this period, the data for 1965 and 1973–74 cannot be seen as typical because of climactic conditions. That 1973–74 was an exceptional year for agricultural output is borne out by the 1974–75 series, for which 1973–74 was a peak year, and agricultural output demonstrated an average negative growth of three percent for the rest of the period. Even so, the statistical office was “quite certain” that the output level in 1973–74 was significantly higher than in 1971–72, though not as much as indicated by the accounts, because it considered the 1971–72 level to be an underestimate.

Measured in current prices, GDP increased 80 percent from 1971–72 to 1973–74, while according to the constant price series reported in Tables 4.2 and 4.3, the increase was about 50 percent between 1971–72 and 1973–74. In current prices the statistical growth was considered to account for 25 to 30 percent of this increase. There is no reason to believe that the share of statistical growth would be smaller in the constant price series. This is assuming that the statistical growth would constitute the same proportion in the current and constant price series. As already reported, statistical growth was particularly strong in the trade sector, and national statisticians felt that the 1971–72 results were a serious understatement. If we compare the sectors' shares of GDP in 1973–74 with those of 1971–72, the only two sectors that increase their relative share are agriculture and trade. However, the growth rates that can be derived from the figures for 1971–72 and 1973–74 should be used with caution, as there is an element of statistical growth at play, notably in ISIC 6, 7, and 8.

This creates great uncertainty about Botswana's economic performance from 1965 to 1973–74. It is clear that while there were gains in productivity, at least one-third of the increase in growth was the cumulative result of an increase in coverage in the baseline estimates. In addition, the rate of growth is considerably overstated because there was a drought in 1965 and extraordinarily good climatic conditions in 1973–74. These conditions produced a rapid increase in output, and the national statistics overstated the extent of the underlying economic expansion. At the same time, there was strong statistical growth in the agricultural sector because the coverage in the agricultural estimates was increased. While the tertiary sectors and agriculture are subject to exogenous shocks, changes in methodology, and rainfall, there was some undisputed economic expansion. The major contributors were the two mining complexes mentioned above. The mining sector's contribution is understated in these early accounts, as activities directly related to mining are accounted for in other sectors. In addition to growth effects from mines, weather, and statistics, the expansion of the meat processing industry accounts for growth in the manufacturing sector, which grew from a very low base in the first years of independence and remained a weak contributor to the overall economy. Even as late as 1973–74, it accounted for only 5 percent of the economy.

For the years 1973–74 to 1978–79, the national statistics office reported total GDP at constant 1974–75 prices by sector with no gap in the series. The average growth rate for this five-year period is an impressive 11 percent. However, the average rate hides the episodic nature of that growth. Most of the increase in output occurred between 1974–75 and 1975–76 and between 1977–78 and 1978–79. The GDP growth in these two periods was 20 and 27 percent, respectively; together they account for more than 9 percent of the 11 percent average growth in Botswana's economy over five years. Put another way, 87 percent of the total increase over the entire period from 1973–74 to 1978–79 took place in these two years.

Increased output in the mining industry and in mining-related activities were responsible for the increase in value added in these years. The government was directly involved in the management and ownership of the mines and increasingly relied on mining for revenue. Although only 5 percent of government revenue came from this industry in 1971–72, in 1979–80 that proportion had increased to 36 percent (Harvey and Lewis 1990, 110). Output in the mining sector increased by a factor of more than five over the period, and the value-added numbers for trade and finance sectors doubled, likely because of activities related to the diamond industry such as trading, sorting, management, and holding. Part of the electricity and water sector is also accounted for under mining operations. Thus, more than 90 percent of the recorded growth of Botswana's economy took place in the mining, trading, finance, and government sectors in the five-year period from 1973–74 to 1978–79. The timing of this increase corresponds to the doubling of the diamond extraction capacity at Orapa at 1975 and the start of production at Letlhakane in 1977. However, activity in the construction sector decreased as construction there and at the Orapa mines was completed.

Growth in the non-mining sectors came from agriculture and manufacturing. The agricultural sector stagnated over the period and actually shrank because of drought conditions in 1978–79. The good climatic conditions that contributed to the peak year of 1973–74 were repeated in 1974–75, but growth was lower in the latter year because subsistence farmers reduced their planting activities and relied on consumption from the previous year's record output. The drought in 1978–79 caused an absolute failure of all crops, and many cattle owners chose to slaughter their animals because of the shortage of water. Because of this, the BMC produced record output in that year, as indicated in the growth in the manufacturing sector, to which the BMC was the major contributor. Some of the growth from 1973–74 to 1975–76 is accounted for by the beginnings of textile manufacturing. Later, in 1979, the Kgalagadi Breweries were set up.

There was less statistical growth during the late 1970s and the 1980s than there had been in the initial years of independence. There were some additions in the agricultural sector, but these did not have large implications for the aggregate

growth rate. Further statistical growth was noted earlier in both trade and construction. However, the fluctuation in GDP levels and the massive increase in GDP shown in Table 4.4 are largely explained by the expansion in mining. The agricultural sector and, therefore, in Botswana's case, the manufacturing sector (because of the importance of primary product processing in that economy) fluctuated according to climatic conditions. The reports that presented the constant price data warned that the quality of the underlying price data for the deflation (of GDP at current prices to constant prices) is very weak (Republic of Botswana, Central Statistics Office 1982, 4). While the data should not be interpreted at face value, the importance of the mining sector is undeniable and is understated in the accounts because many activities directly and indirectly related to that industry are accounted for in different sectors. If Botswana had relied on manufacturing and agriculture alone, its economic performance would have much less impressive. The combined value added of these two sectors grew at an average rate of 2 percent per annum from 1973–74 to 1978–79. Had this been the mainstay of the economy, GDP would have failed to keep pace with population growth.

The 1979–80 growth series covered thirteen years of growth by sector from 1974–75 to 1986–87. The new series thus overlaps with that for 1974–75. A change in methodology and a change in base year for prices did have some growth effects. These changes can be compared for five years of overlap: 1974–75 to 1978–79. The major difference between the two series is that the old series recorded construction value added as declining (by 50 percent), but the new series recorded a slight increase in value added for the same period. In addition, the construction, mining, and government sectors have a higher relative share in GDP in the new series. The relative share of all other sectors in GDP, especially agriculture, declines in the new series. However, these changes do not affect the average aggregate growth rate, partly because government statisticians revalued mining output in the 1974–75 report, with the result that growth in the first year was reported as slower in this report than in the previous one. The revaluation changed the timing of the growth, as most of the increase in value added in mining took place in 1977–78 in the new series; in the old series, most of the mining growth took place in 1978–79.

An important change in methodology took place during the accounting period of the 1979–80 growth series. The statistics for GDP by sector and the growth rates presented in Table 4.5 are based on the full series published in the 1986–87 report. The series published in the 1985–86 report looks significantly different. Departing from common practice, in 1986–87, government statisticians revised the entire series. This revision incorporated the data from a new HIES. The effect of these new data was that the outputs of the agriculture, trade, and finance sectors were revised upward. Agricultural output was increased because of increased statistical coverage and additions that were made for "own consumption." Retail activity was added to the data for the trade sector, and improved data on property rental was added to the data for

Table 4.4. GDP, Botswana, base year 1979–80 (millions of pula)

[illegible]

Table 4.5. Statistical growth in Botswana data: A comparison of differences in GDP by sector before and after the 1986–87 revision (base year = 1979–80; millions of pula)

	1974–75	1975–76	1976–77	1977–78	1978–79	1979–80	1980–81	1981–82	1982–83	1983–84	1984–85	1985–86
Agriculture, hunting, forestry, and fishing	12.5	12.6	13	18.5	11.7	17.0	15.5	20.5	20.7	19.1	21.5	22.5
Mining and quarrying	0	0	0	0	0	29.0	60.8	158.8	164.1	112.4	106.3	114.0
Manufacturing	0	0	0	0	0	–0.9	–1.6	–1.6	–1.8	–1.8	–2.2	–1.7
Electricity and water	0	0	0	0	0	0	0	0	0	0	0	0
Construction	–0.1	13.8	18.8	32.4	26.2	21.7	25.6	4.2	7.6	13.3	17.9	17.2
Wholesale and retail trade and restaurants and hotels	0	0	0	0	0	–9.3	–25.3	–19.6	–40.5	–57.2	–55.8	–70.1
Transport, storage, and communications	0	0	0	0	0	3.5	2.8	1	–2.4	1.7	3	2
Finance, insurance, real estate, and business services	0	0	0	–4.0	–9.0	–11.8	–16.6	–25.3	–24.9	–34.9	–3.9	–1.2
Public administration and other services	0	0	0	0	0	0	0	0	0	0	0	0
Imputed bank service charges	0	0	0	3.9	9.0	12.9	14.6	23.8	23.5	32.8	0	0
Total GDP	12.4	26.4	31.8	50.8	37.9	62.1	75.8	161.8	146.3	85.4	86.8	82.7

Note: The table represents the 1986–87 estimates subtracted by the 1985–86 estimates. A negative sign means that the sector has decreased in value added in the new series. The sum, gross domestic product, represents the total statistical value added from this revision.

the finance sector. In effect there was positive statistical growth in each of these sectors. These new data were added by smoothing the series backward.

The direct effect of the statistical growth in trade and finance is difficult to discern in the 1979–80 series because of another important change in the data for the 1986–87 report. In that year, data about the mineral trade was removed from the data for the finance and trade sectors and transferred to the mining sector. The gradual approach to revision was used here too; beginning in 1977–78, a gradually increasing amount of data was transferred from finance to mining, and in 1979–80, the same process began for the trading sector data. Because data from the HIES was flowing into these sectors as these transfers were taking place, producing statistical growth, the end result is confusing.

Another statistical increase in GDP was created when “construction output was increased in line with the demand” (Republic of Botswana, Central Statistics Office 1987, 2). Exactly what this “demand” means is hard to tell, but the increase was probably made in order to harmonize the old estimates of construction with the new data on rural dwellings. However, the effect is clear enough: government statisticians were retrospectively adding growth to GDP. One of the basic conditions for comparing data over time is violated with this gradual addition of new data. For example, according to the series published in the 1985–86 report, the total value added in agriculture decreased by 50 percent during the period. In the new revised series, this figure was reduced to 30 percent. The increased value added in construction overestimates the growth in GDP, particularly in the early period. In the previous series (see Table 4.5) it was observed that the value added in this sector decreased in the late 1970s, while the rest of GDP was increasing. This made sense because of the timing of the construction of mines. In the 1986–87 report, however, the output of this sector was adjusted in accordance with “demand.” It seems that this adjustment in effect assumed that the construction sector grew at the rate of the rest of GDP.

The sum of GDP in Table 4.5 is a measure of how much was added to the baseline estimate. The increase is largest in the middle of the period. In 1981–82 the increase is 21 percent more than in 1985–86. The effect of the revision is the largest for the period from 1974–75 to 1981–82. According to the data published in the 1985–86 report, the annual average growth was 13 percent and the output in the agricultural sector declined at an annual average rate of 3 percent. The revised data in the 1986–87 report records an annual growth of 18 percent and growth in the agricultural sector at –1 percent. Note that this is a classic contradiction between reliability and validity. The 1986–87 revision of the data was carried out to improve the 1986–87 estimate of total GDP: the inclusion of new statistical data makes that estimate more valid. Thus, if one is interested in the best estimate of GDP per capita, the newer estimate is preferable. However, if one is concerned with economic change over time, the newly included data makes the derived rate of growth unreliable. The series published in 1985–86 is

therefore more reliable because the measurement is more consistent in that series. However, when statisticians compile information for use in databases, they generally prefer the most recent estimates. In this case, the most recent series has a significant element of statistical growth.

This element of statistical growth does not affect the *average* growth in total GDP for the period 1974–75 to 1985–86, but it does affect the *timing* of growth. Because of the large increase in the baseline estimate in 1981–82, GDP was estimated to grow by 8 percent in that year, compared to a decline of 2 percent in the old series (Table 4.5). The effect on the average rate of growth is canceled out by the reduced growth rate for 1982–83. For agriculture, the growth effect is visible in the average growth. In the old series, agriculture declined at an annual average of 4 percent, compared to an annual average decline of 2 percent in the new series. Mining growth is marginally higher on average for the period. The upward revision in the annual estimates causes a marked upward revision of growth rates up to 1981–82 and a revision downward for the rest of the period because of the higher level estimate in 1981–82. The benefit of the new series is that it more accurately measures the contribution of the mining sector, although some mining-related activities continued to be measured in other sectors, notably construction.

Bearing in mind this revision, the aggregate growth rate of more than 10 percent indicates that economic performance in Botswana was excellent during the eleven-year period of this data series. If we concentrate on the period after 1979–80 and use the 1986–87 series, total GDP nearly doubled during the period 1979–80 to 1986–87. The mining sector alone accounted for 70 percent of this increase in output. Government expenditures accounted for almost 20 percent of the increase, and more than 50 percent of government revenue derived directly from mining in 1985–86 (Harvey and Lewis 1990, 110). As I have noted in this chapter, some of the increase in some sectors was statistical. In agriculture, the difference in value added in 1985–86 between the two estimates presented in Table 4.5 amounts to 3 percent of the total value added of the period. (This difference occurs because of the growth effect created by including new statistical data.) The other changes were made in the trade and finance sectors, where elements relating to mining were subtracted. The difference between the amount added to the mining sector and the actual decrease in the trade and finance sectors accounts for 6 percent of the value added in the period. The increase in total output over this seven-year period occurred in mining and government expenditure. The recorded increase in other sectors can be attributed to changes in measurement.

Even with statistical growth in the agricultural sector, the trend in agricultural growth, shown in the statistical series published in 1986–87, was negative for the whole period from 1974–75 to 1986–87. Manufacturing performed slightly better. Although that sector became more diversified, its major driver was still the cattle industry. The capacity of the industrial sector to expand

was limited by the absence of growth in the agricultural sector. The combined effect of manufacturing and agriculture was neutral. In the 1979–80 series, which does not overestimate agricultural growth, the total output of the two sectors declined over the period. In their report for 1987–88, government statisticians introduced a new base series at 1985–86 prices that did not coincide with any changes in methodology. The new series covered the same period back to 1974–75, and the report for that year specifically noted that care was taken to leave growth rates unchanged even though the base year was changed (Republic of Botswana, Central Statistics Office 1982, 4). Indeed, there is hardly any difference between the series in terms of growth rates or structural distribution in any given year.

My investigation of Botswana's economic performance will conclude with a review of its growth record from 1974–75 to 1994–95 at 1993–94 prices. During this twenty-one-year period, total output in Botswana increased more than sixfold. This growth in output was mostly driven by expansion in mining. The total value added in this sector contributed 34 percent to total GDP in 1994–95, compared to 12 percent in 1974–75. The value added from the mining sector increased eighteenfold: by 1994–95 it was larger than Botswana's total GDP in 1981–82. That growth was fastest during the first decade; from 1988–89 to 1994–95 the average growth rate fell significantly. The average growth in the mining sector for the whole twenty-one years was 18 percent, but in the latter period of 1988–89 to 1994–95, it was 3 percent. Despite this stagnation in the mining sector, there was growth in the economy. Seventy percent of the total increase in value added in the latter period took place in the trade, finance, and government sectors.

During the entire twenty-one-year period there was no significant increase in agricultural output, and because of statistical growth from increased coverage, growth in that sector was probably negative.¹ This twenty-one-year perspective hides a clear trend of decline from 1979–80 to 1986–87. In one year, 1987–88, the agricultural sector grew 68 percent as the 1982–87 drought came to an end. But there was no growth in agriculture in other years, and the total output was lower than the 1987–88 level for the remainder of the period. Manufacturing growth was sporadic, the result of this sector's dependence on cattle. There was record output in this sector in 1978–79, when the cattle herds were heavily culled after a drought year. This level of output was not reached again until 1985–86. From this year onward there was rapid growth in the manufacturing sector and total manufacturing output increased almost threefold. Note that the combined output of the manufacturing and agricultural sectors was higher in 1974–75 than in 1985–86 and that the 1986–87 output was only marginally higher than at the start of the period. Had Botswana relied on its manufacturing and agriculture sectors it would not have seen any increase in GDP for most of the period. The substantial increase in the mining industry explains why Botswana's economic performance was better than that of other African

Table 4.6. GDP, Botswana, base year 1993–94 (millions of pula)

	1974–75	1975–76	1976–77	1977–78	1978–79	1979–80	1980–81	1981–82	1982–83	1983–84
Agriculture, hunting, forestry, and fishing	426.0	431.6	449.8	447.7	417.9	426.5	384.8	392.4	343.5	297.6
Mining and quarrying	217.1	357.1	375.9	699.5	690.1	978.3	1,311.7	1,554.6	2,274.9	2,635.7
Manufacturing	124.7	159.8	176.1	164.9	221.9	144.0	180.2	225.0	206.6	214.8
Electricity and water	32.0	48.4	40.4	44.4	56.7	54.5	55.6	57.8	57.1	70.9
Construction	264.1	267.0	230.0	313.5	288.0	321.4	318.7	229.0	187.0	287.7
Wholesale and retail trade and restaurants and hotels	163.1	188.9	189.4	186.5	249.3	272.6	207.4	216.2	143.9	105.6
Transport, storage, and communications	27.8	33.5	33.9	37.6	37.1	58.5	62.1	68.2	76.0	86.1
Finance, insurance, real estate, and business services	90.0	97.4	108.5	105.2	149.1	218.2	177.3	198.1	208.9	229.3
Public administration and other services	293.9	365.4	401.5	408.9	459.0	472.4	544.3	591.7	657.7	715.2
Imputed bank service charges	–9.8	–14.7	–27.7	–27.0	–39.3	–51.9	–58.6	–59.7	–69.8	–78.6
Total GDP	1,760.4	2,073.5	2,150.6	2,600.6	2,829.6	3,278.5	3,592.5	3,840.5	4,483.0	5,015.0

	1984–85	1985–86	1986–87	1987–88	1988–89	1989–90	1990–91	1991–92	1992–93	1993–94	1994–95
Agriculture, hunting, forestry, and fishing	290.4	321.9	298.5	494.1	453.9	470.1	483.0	492.5	487.9	483.6	466.7
Mining and quarrying	2,720.2	2,804.7	3,031.6	3,116.6	3,710.0	3,587.5	3,919.2	3,900.9	3,719.9	3,921.5	3,870.9
Manufacturing	171.0	222.4	262.1	340.4	433.4	454.2	484.2	515.2	510.0	507.0	634.5
Electricity and water	85.5	114.2	126.5	144.7	154.0	157.3	170.6	180.3	209.4	240.6	256.6
Construction	296.0	262.8	304.8	360.1	577.3	722.4	775.2	810.5	689.0	714.5	759.4
Wholesale and retail trade and restaurants and hotels	235.5	366.2	342.3	411.5	568.4	670.5	594.6	542.6	552.8	912.8	1,087.5
Transport, storage, and communications	108.2	140.0	139.9	213.0	265.8	286.2	329.1	374.9	403.0	408.2	439.8
Finance, insurance, real estate, and business services	291.0	354.6	355.6	380.3	611.5	782.2	847.9	880.9	1,023.3	1,106.1	1,201.9
Public administration and other services	814.2	886.4	1,027.8	1,266.3	1,570.8	1,651.7	1,778.4	2,028.7	2,112.6	2,177.0	2,267.7
Imputed bank service charges	-78.3	-114.8	-127.8	-148.5	-230.7	-237.0	-230.4	-237.7	-249.7	-294.6	-308.5
Total GDP	5,347.2	5,734.0	6,209.3	7,082.3	8,690.4	9,170.1	9,964.1	10,566.1	10,525.4	10,972.2	11,354.7

economies. This increase was felt directly in other sectors such as construction and electricity provision. Tertiary sectors such as trade and finance and the government sector also benefited both directly and indirectly from economic activity in the mining sector. Even though agriculture experienced a revival late in the period and the manufacturing sector began a period of growth in the late 1980s that lasted through the 1990s, these two sectors contribute less than 10 percent to total GDP in 1994–95. The mining sector accounted directly for 35 percent of total output at the end of the period, a ratio that grossly underestimates its indirect effect of the economy.

POLICY AND PERFORMANCE

Maipose and Matsheka (2008) suggest that the economic history of Botswana can be divided into three periods, loosely based on the evolution of economic policymaking rather than on changes in economic growth. They describe the first period, 1960–75, as “a period of initial base-creating” when “development policy involved experimenting with or [an] emphasis on state-led development in a mixed liberal economy. The institutional base lines were largely similar to those of many African countries at independence” (512).² They describe the next period, 1975–1989, as one of “consolidation of both the market-based state-led development strategy and continuity with the multi-party system of government” (512–13). Maipose and Matsheka distinguish Botswana from other African countries in this period because it avoided the “wave of one-party or military regimes and forms of socialist/communist ideologies cutting across the African continent” (2008, 512–13). The third period they identify, from 1990 to the present, is characterized by a move toward development led by the private sector.

Most mainstream economists consider Botswana’s aggregate growth story to be quite straightforward (Jerven 2010c). It experienced one of the fastest GDP per capita growth rates in the world during the period 1960–2000. Maipose and Matsheka do not offer any qualifications to this interpretation and thus agree with the other authoritative works on Botswana (Leith 2005; Harvey and Lewis 1990). Nor do they link trends in economic growth with the turn toward liberalization in the 1990s, although they mention that the 1990s marked “an end of the economic boom” that was associated with “a considerably faster rate” of growth in government expenditures than the rate of revenue (Maipose and Matsheka 2008, 536). They explain this trend by noting that the ruling party needed to spend to secure its popularity in the 1999 and 2004 elections.

Their interpretation of the earlier periods is that multiparty democracy is what makes the case of Botswana unique and by implication that it was democracy that provided the foundation for economic growth in Botswana. They

do not directly explain how this occurred. They imply that democracy was good for growth because it helped Botswana obtain considerable aid inflows (Maipose and Matsheka 2008, 520). They also hint that democracy was more important symbolically than operationally: "The opposition was not a threat to the dominance of the ruling party; the system operated more or less like a *de facto* one-party system in which the opposition was marginalized" (Maipose and Matsheka 2008, 520). Apparently, this system worked well as long as the economy was booming and no opposition grew so strong that the ruling party felt it needed to increase spending too much, as was the case in the late 1990s.

Maipose and Matsheka accept as a fact that the secure political elite "pursued growth promoting policies" (Maipose and Matsheka 2008, 511). Most explanations for Botswana's success echo this general statement of approval. Acemoglu and colleagues summarized this view: "There is almost complete consensus that Botswana achieved rapid growth because it managed to adopt good policies" (2003, 83). However, they and others assess Botswana's "good policies" as the absence of negative policies. For example, Maipose and Matsheka write that "the national fortune has not been mismanaged" (2008, 535).

The short explanation for Botswana's success is that it had large diamond deposits and the proceeds from these funds were not pocketed by a kleptocratic regime. Scholars often emphasize two factors in explaining how this came about: homogenous ethnicity and democratic rule. However, Leith (2005, 29–30) notes that this assumed homogenous ethnicity is open to interpretation.

It is an undisputed fact that Botswana had democratic rule in the sense of a multiparty system with regular elections. However, the ultimate test of a democracy is whether control is peacefully transferred, and Botswana has not been put to that test because the Botswana Democratic Party has been dominant ever since independence. Kenneth Good (1994, 1996), a vocal critic of Botswana rule, has pointed to increasing trends toward authoritarianism, corruption, and inequality. Good was deported from Botswana in 2005 on an order from the nation's president (BBC 2005). Whether or not this act confirms that the political system in Botswana is authoritarian, it certainly seemed to show that the elite was uncomfortable with criticism.

Acemoglu et al. (2001) argue that the differences in contemporary income levels in Botswana can be partly explained by the nation's legacy of colonialism. Their explanation distinguishes between extractive institutions, which they consider to be bad for growth, and productive institutions, which they see as good for growth. In the econometric model, which kind of institution a nation had in the colonial era was determined by the rate of settler mortality.³ The model proposes that if settler mortality was high, less effort would have been expended to create a generally well-functioning legal system because the institutions that comprise such systems are expensive.⁴ It suggests

that most African economies would have ended up with extractive institutions. Although they did not include Botswana when they tested their model empirically in their 2001 study, Botswana was the subject of an article by the same authors (Acemoglu et al. 2003). Botswana provides a special case because it received relatively few settlers. Acemoglou and colleagues argue that the absence of productive institutions in the colonial period is not related to low income levels today. Instead, they argue that in Botswana there was “only [a] limited effect of British colonization on these pre-colonial institutions because of the peripheral nature of Botswana to the British Empire” (113). This meant that precolonial structures were left intact, and Acemoglou and colleagues argue that this turned out to be good for growth because they believe that the absence of colonial economic systems is linked to postcolonial growth.

Peters (1994) disagrees. He stresses that viewing the Bechuana Protectorate as a “totally neglected backwater of the empire” obscures the agency of both colonialists and the Tswana elite. He also takes issue with the recurring themes of stability and homogeneity as explanations for Botswana’s growth miracle. He notes that before independence the Bechuanaland protectorate was ruled indirectly through the Tswana elite and that stability in rule preceded independence. He notes that “the pre-colonial Morafe is embedded in the modern state” and argues that this is an important reason for Botswana’s democratic character.⁵ He also warns that there are problems with Botswana’s version of democracy, as minorities are excluded from the consensual decision-making processes of its political system (223). He feels that arguments that stress ethnic homogeneity as an explanation for economic growth may be overplayed. There is, however, little doubt that Botswana’s elite were largely homogenous and that this elite was relatively unchallenged during the entire postcolonial era. This ruling elite was drawn from the traditional leaders whose wealth originated in land and cattle.

Bates (1991) and Rodrik (1998) argue that Botswana, Kenya, Cote d’Ivoire, and Malawi are exceptions to the African norm of rural neglect. Maipose and Matsheka (2008, 519) agree and state that an absence of an urban bias underpinned the economic success of these four nations. This is the closest Maipose and Matsheka come to offering a testable proposition that might explain growth in Botswana. While there is no question that Botswana’s elite had interests in cattle, some important questions must be answered before this observation can automatically be linked with economic growth. As the cases of Kenya, Cote d’Ivoire, and Malawi illustrate, the absence of an urban bias does not automatically mean rapid and sustained economic growth. How important were cattle for economic growth in Botswana? How important was the existence of the rural bias for growth in cattle? Did that bias benefit all producers or just the elite? What was the role of agricultural crops? We should keep in mind that a bias that benefits large-scale land-owning cattle farmers does not necessarily mean growth and good fortune for all.

Explanations for economic growth in Botswana that rely on the agricultural sector and the connection of a rural elite to political power are problematic for several reasons. The comparison of growth episodes in this chapter makes clear that agricultural growth was not an important determinant of Botswana's aggregate growth. In fact, Botswana presents an exceptional case because GDP growth there was rapid despite low growth in the agricultural sector. Averaged agricultural growth in Botswana was the slowest of all the four case-study countries. In addition, crop production was very volatile because of sporadic droughts; this is why there is no detectable positive trend of growth in output in the agricultural sector. An illustration of how important rainfall is in Botswana is the name of the local currency, the pula, which means "let it rain." Cooke reminds us that "on adequate rainfall everything else ultimately depends" in Botswana (1979, 8). The nation's currency has had a direct effect on crop production because, as Jones notes, "the exchange rate is unfavourable to agricultural production. For arable crop farmers, the Pula is overvalued" (1981, 33).

In 1974, the Food and Agriculture Organization sent a mission to Botswana to study constraints on the nation's economy. One of the factors the mission examined was external aid; up to that point, Botswana had been one of the largest recipients of World Food Programme aid. The problem highlighted in the mission's report was that too many small farmers lacked access to cattle and could not produce enough food because they lacked draft animals.⁶ Five years later, Jones supported this contention, suggesting that the government should intervene by subsidizing contract plowing, because "the provision of draught power... is a constant problem" (1979, 235). The FAO report (1974) also identified a trend toward unequal distribution of incomes in agriculture. A report in the 1993 agricultural census observed that in 1966 agricultural activity comprised some 40 percent of GDP but that in 1993 its share in GDP had decreased to less than 5 percent. This decline was due to the dominance of the mineral sector in total GDP, while agriculture stagnated. Although the agricultural sector was contributing only a small proportion to the nation's GDP in 1993, around 70 percent of the population depended on agricultural activities for their livelihood. Livestock alone accounted for 3 percent of GDP. According to the agricultural census, there were over 100,000 traditional farms and only 500 commercial farms in Botswana in 1993. Although the traditional farms sold far more cattle than the commercial farms (100,000 as opposed to 50,000), the commercial farmers received higher prices for their cattle (Botswana 1995). Peters (1994, 218) notes that cattle were less equitably distributed in the 1990s than they had been a decade earlier.

Botswana's agricultural sector had problems with distribution that had consequences for crop production and the ability of many small-scale farmers to earn a livelihood. The aggregate cattle population was stagnant and was in fewer hands in the 1990s than in the 1960s. Exports from the cattle industry

through the BMC (which was a state monopoly marketing board) were stable because of the Lomé Convention, through which Botswana gained access to the EEC market for beef at prices above the world market price. Access to Western markets was thus not a problem for Botswana and its beef exporters (Hubbard 1987, 158–66).⁷

Botswana's main export and its engine of growth was diamonds. A number of scholars have pointed out that favorable judgments of Botswana's economic management are based on the observation that the government did not ruin this national fortune. It should be emphasized that the government had no such opportunity to do so. From the start, diamond selling was handled by the Central Selling Organization, a market cartel run by the De Beers family of companies. De Beers made sure that diamonds were sold at high prices throughout the 1970s to 1990s. The structure they established is seen as the most successful buffer stock arrangement in the world (Maipose and Matsheka 2008, 530). It is also worth noting that while mining operations were often nationalized in other newly independent countries, Botswana had no opportunity to nationalize its mineral extraction industry. There was no mining activity in Botswana at the time of independence, and the government had to rely on De Beers to develop and exploit its diamond fields. Later, the revenue-sharing arrangement was improved. "Full details of the new agreement have never been disclosed, but it is reputed to be one of the best mineral exploitation contracts in the world" (Jefferis 1998, 304).

It is useful to look at Botswana's experience with the mining of other minerals. One of its biggest operations was the Shashe Project. These mines held copper and nickel, for which prices were low through the period, particularly in the 1970s and 1980s. The mining project was planned by the government and began in 1968. But it was fraught with problems; Harvey and Lewis (1990) go so far as to say that it had a "record of disaster" (138). The cost of development significantly exceeded the budget, and there were many technical and managerial problems. This provides a useful comparison for Botswana's experience with diamond mining. How successful was Botswana when the commodity was not diamonds and it was managing the project on its own? Harvey and Lewis uses Murphy's law ("Everything that can go wrong will go wrong") and its corollary ("Murphy was an optimist") in their assessment of Botswana's copper and nickel project (1990, 138).

Another factor that researchers point to as important for Botswana's growth performance is the nation's membership in the Southern African Rand Monetary Area for the first decade of independence. Those who hold this view see this decision as imposing self-restraint on the government and businesses (Rodrik 1998, Maipose and Matsheka 2008, 518). However, those who advance this argument do not offer opinions about how important this move was for growth. Beef and diamond exports were handled in separate agreements, which meant that the competitiveness of these commodities in

external markets was not dependent on the exchange rate. The government introduced its own local currency, the pula, in 1976, giving Botswana monetary independence. Maipose and Matsheka speculate about whether the limited independence during the first decade might have “limited the temptation to adopt the growth retarding import substitution industrialisation policies” that were so prevalent in other countries. The absence of a strategy for promoting industrialization meant that until 1975 manufacturing growth was mainly limited to the cattle industry. (The BMC accounted for almost 80 percent of manufacturing value added in 1971–72.) After 1975 there was growth in other manufacturing sectors, and “import substitution was significant as a source for quite a wide range of sub-sectors of manufacturing” (Harvey and Lewis 1990, 166–7). In the 1980s, while import substitution industrialization policies were dismantled in most other African countries, Botswana was designing industrial policies to encourage domestic manufacturing.

It is the timing of these policies that makes Botswana an African exception. The Botswana Development Corporation, a parastatal founded in 1970, increased its activities during the 1980s, after its neglect of industrial investment in the 1970s (Tsie 1995, 127). In 1982, the government introduced a Financial Assistance Policy that provided subsidized financing, automatic tax holidays, and development grants. There was a willingness from the government to implement trade protection provided that the firms met certain requirements relating to employment and foreign exchange savings (Harvey and Lewis 1990, 176–7). Tsie (1995) notes that after 1980, the Botswana Development Company grew rapidly and that during that period, an increasing share of investment from the Company went “into directly productive manufacturing activities” (124).

Despite the policy choices made by Botswana’s government, the bottom line is that what really mattered for economic growth in Botswana was diamond extraction. However, what is important in this case is that diamond extraction in Botswana did not exist at independence. This meant that Botswana’s main export was handled not by the government but by De Beers’s Central Selling Organization. The success of Botswana’s experience with diamond exports could not contrast more strongly with the experience of the other three case-study countries, with their main exports of coffee, sisal, and copper. Consistent high prices and expert management shaped Botswana’s success with its primary export.

Botswana’s other major export was cattle, a commodity that dominated both manufacturing and agriculture. However, not all farmers benefited equally from this commodity. Markets for beef were secured through an agreement with the EEC in a deal that was particularly advantageous to the owners of large cattle operations who controlled the state. Small-scale farmers did not benefit from this agreement and in fact suffered because their crop production depended exclusively on rainfall and access to cattle.

In the first decade after independence, the manufacturing sector was very small; it consisted of the Botswana Meat Commission, the Government Printer, and indigenous brewing. However, the government pursued industrial policies in the 1980s that promoted new manufacturing growth in Botswana even as such growth was failing or slowing down in other African economies. The special feature of Botswana's economic growth trend is that the country did not hit rock bottom until 1979–81; to a large extent this was because Botswana could rely on mining revenue.

NOTES

1. As noted earlier and shown in Table 4.5, there was an ad hoc addition to output following the inclusion of new statistical data. This addition was smoothed backward with an addition of 22.5 million pula in 1985–86. This addition was the equivalent of 12.5 million pula in 1974–75 at 1979–80 prices. To get an idea of the size of this in constant terms it helps to note that total output in the agricultural sector was 321.9 million pula in 1985–86 at 1993–94 prices, while the comparable figure in 1979–80 prices for that year was 75.7 million pula. The price ratio between the two series in agricultural products was 4.25. The statistical increase can then be roughly estimated at 22.5 million pula—12.5 million pula multiplied by 4.25. This would amount to 53 million pula, while the measured increase in agricultural output was 40 million pula over the period. This rough calculation indicates that statistical growth was more important than output growth in the agricultural sector during this period.
2. This matches the observation made here concerning the work of Temple (1998, 1999) and the use of the social development index. Based on “initial conditions,” Botswana is not unique. The issue of ethnic homogeneity, which Easterly and Levine (1997) found to be important, will be returned to later.
3. Settler mortality is used as an instrumental variable.
4. Thus, settler mortality can be instrumental in explaining divergence in income levels today.
5. “Morafe” is the title of the Tswana chief.
6. Small-scale peasants’ lack of access to draft animals made it difficult for them to prepare land for planting crops in the short period after the rains arrived. When rain was particularly scarce, this period was even shorter, so the lack of access to draft animals intensified food shortages in drought years.
7. According to Jones, “The ‘cream’ on beef exports is provided by an arrangement whereby Botswana exports 17,360 tonnes of deboned beef a year to the EEC duty-free, and pays only 10 percent of the levy normally charged on third country exports. Over the life of the first Lomé Convention this gave Botswana a price some 60 percent higher than exports to alternative markets, and approximately doubles the price which Botswana Meat Commission can pay to farmers” (1981, 34).

Economic Growth and Measurement Reconsidered: Kenya

The history of national accounting in Kenya is longer than for the other three case-study countries. Because this book focuses on the postcolonial period, I will touch only briefly upon the early history of national accounting in Kenya. Given that Kenya and its Central Bureau of Statistics (CBS) has such a long tradition of reporting, it is surprising that there are relatively few descriptions of methodology. Specific national accounts reports have not been published in Kenya, unlike in Botswana and Tanzania. Nor has there been irregular reporting, as in Zambia. The national accounts statistics have been published without commentary about methodology in the annual *Statistical Abstract* and with the occasional accounting note in the yearly *Economic Survey*. Without the national accounts reports that are available in the other countries, there is less source material.

In 1977, the Kenya CBS published *Sources and Methods Used for the National Accounts of Kenya*. This book has provided rich material for the present study, almost compensating for the absence of regular detailed reporting. However, a chronological perspective on the national accounts is still somewhat limited. At the CBS in Nairobi in 2007 I was assured that this publication contains “everything you need to know” about national accounting in postcolonial Kenya.¹ The following discussion will be mainly based on this book, although economic surveys, statistical abstracts, and other publications have been consulted for additional information.

The first official estimates of the domestic income and product of Kenya were prepared in 1947. The main sources of information were the annual census of employment, some data on agricultural output, and the accounts of government and other public organizations. “The quality of the estimates was seriously undermined by the lack of information on income from rents, interest, profits, and self-employment and by the limited data on the output of the manufacturing and service sectors” (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 130). The estimates did not cover the

“nonmonetary” economy except for a “weak estimate” of “subsistence” production in agriculture (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 130). In the decade that followed this publication, there was no change in methodology or in the sources used.

The first major revision in the estimate of national accounts was made in 1957. The quality of this series was considered superior since better basic data were available. However, the gross output figures for agriculture and quarrying and information on the ownership and distribution of dwellings were still weak. Efforts to include activities for the nonmonetary economy were expanded, but the end result for forestry, hunting, and fishing was incomplete and unreliable. The new series provided an estimate of capital formation for the first time. A report on the methods and sources indicated that the methodology would remain essentially the same through the years 1954–66 (East African Statistical Department 1959).

The second major revision came in 1967. It also made use of some additional data and attempted a more comprehensive coverage of the nonmonetary sector. Estimates were made for building and construction, water collection, and ownership of dwellings. “However, such estimates, too, were weak being based on limited data and, in some cases, on questionable assumptions” (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 132).

There were no estimates at constant prices until 1969, when they were introduced with 1964 as the base year for the series. This third series (the first was for 1946–54 and the second for 1954–66) was continued until 1974, when the third major revision was undertaken. As mentioned, no report on methods was ever published for the 1964–74 series. The fourth series was introduced in 1976 but was backdated to 1972, which was also the base year for the estimates in constant prices.

The *Economic Survey* of 1967 provides some details about the second major revision. It was undertaken because since 1954 there had “been a significant increase in the availability of economic data with which to assess the size and structure of different industries” (Republic of Kenya, Ministry of Economic Planning and Development, Statistics Division 1967, 3). It sensibly says that “some of these data have been used to improve the bases of the existing estimates of domestic product, but if the new data had continuously been incorporated into the annual calculations, comparability would have been lost between one year’s statistics and the next and rates of growth would as a result have become meaningless” (Republic of Kenya, Ministry of Economic Planning and Development, Statistics Division 1967, 3). It was therefore deemed necessary to undertake a complete revision of the methods of estimating and aggregating different sectors and publish a completely new set of revised figures. This new series covered the years 1963–66. In the survey, which presented the new series alongside the old, the revised calculations were noticeably different from the old. First, as mentioned above, new economic data were incorporated.

Second, numerous changes were made in the classification and subclassification of enterprises in order to provide greater consistency and a more accurate assessment of the size of particular sectors. This involved splitting a number of organizations such as East African Railways and Harbours, East African Posts and Telecommunications, and East African Airways into different industries. Third, efforts were made to obtain a more comprehensive estimate of the size of the nonmonetary sector. Finally, an effort was made to introduce greater consistency in methods and make classifications cohere with international standards. The survey promised that “a detailed description of the methods used in the new calculations together with subsidiary industry tables will be published as a separate document” (Republic of Kenya, Ministry of Economic Planning and Development, Statistics Division 1967, 3). However, such documentation was never produced. The new survey claimed a better estimate of the size of the economy. This meant an upward revision from K£33 to K£38 per capita income for 1966.

A description of the methods entailed in the fourth revision follows in the next section. Elements of statistical growth (upward and downward revision of data in past series) are detectable only insofar as they are assessed in *Sources and Methods* (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977). If the source material does not permit a full comparative study over time, there is at least the possibility of comparing over space. I will discuss methodology by first focusing on the agricultural sector and the relevant issues in the estimates of the other sectors; I will then review the deflation method and the official view on the reliability of the data.

KENYA NATIONAL ACCOUNT ESTIMATES: AGRICULTURE AND THE “NONMONETARY” SECTOR

The estimate of agricultural output is based on an annual Integrated Rural Survey (IRS), covering farms up to 20 hectares, and an annual Census of Large Farms, covering what was referred to as the “former scheduled areas.” This sampling frame was a remnant of the colonial system and essentially covered the area that was then occupied by white-owned large farms. Farms not covered by these surveys were called “gap farms.” These were estimated to number 40,000 (compared to 1.4 million farms covered by the IRS). The output data for these farms were constructed using the output estimated in “large IRS farms” and multiplying that by the estimated number of gap farms. The first IRS was undertaken in 1974–75; it is not clear what source of information on small farms was used before this date (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 17–18).

One peculiarity of the Kenyan system is that while there is a separate account for the “traditional” economy, this account does not include food production. Food production for home consumption was formerly included in the “traditional” economy but was excluded from 1977 onward and moved into accounting for the agricultural sector proper (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 12). According to the estimates, about 40 percent of the output of IRS farms was consumed at home. Since the majority of the output at this time was sold to marketing boards, it was deemed appropriate to move this share of the output to the agricultural sector. For the “agricultural sector as a whole home consumption accounts for about 27 percent of total output” (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 18). Since 1977, the traditional sector has consisted of hut building and ownership, water collection, firewood collection, collection of poles and posts, and fishing for own consumption. The guideline for including a “nonmonetary” activity in the national accounts is that the activity must correspond to some activity undertaken in the commercial economy. In theory, this would prevent a misleadingly high estimate of economic growth as activities move from the nonmonetary to the monetary sector (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 12). In practice, this is probably not what happens, as the static estimation methods would not take account of the declining absolute importance of the nonmonetary economy.

An unusually large addition for the value of land improvement was made for “immature permanent crops” in the agricultural sector, which means planting of tea and coffee. The respective product boards provided an approximation of such expenditure per acre, which was then aggregated. An approximate estimate was made for land improvement that included estimates of the hours used for such work; these figures were then grossed up and valued according to the hourly wage rate for casual labor (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 20). Information on the production of cereals, wheat, maize, barley, and rice was taken from the respective marketing boards. Other cereals and pulses were handled by the Maize and Produce Board. In addition, information on “temporary industrial crops,” specifically pineapples, oil seeds, pyrethrum, sugar cane, cotton, and tobacco, was taken from the industrial users of these products. Information on cotton and tobacco was collected from the respective marketing boards. The permanent crops for which data were collected were coffee, sisal, tea, and wattle, which have special marketing boards. Coconuts and cashew nuts were handled by the Maize and Produce Board. The data on quantities and values derived from these sources are “highly reliable” because they derived from data on recorded purchases (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 18).

Allowances were made for home-grown seeds and for produce sold in local markets, consumed at home, fed to livestock, and given to laborers. The

quantities for this produce are based on information taken from the census and surveys referred to above. There is no indication of what proportion of the produce was valued in this way, but it was valued at the same prevailing market prices as the other produce. This certainly results in an overestimate, as an element of transport and distribution costs is included in those prices (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 19).

For value added deriving from livestock, the registered sales to marketing boards and factories were added to estimates of livestock that was sold locally, consumed at home, and given to laborers. Livestock products also contributed to GDP estimates, especially eggs, milk, hides, and wool, which were partly consumed at the place of production and partly sold locally or to marketing boards. The increase in herds, which was divided into mature and immature livestock, also contributed to capital formation. Nomadic tribes were not covered by the census or the *Economic Surveys*; information here is calculated as a residual by deducting all other contributions from an assumed national total of livestock and then valuing its produce at prices fetched at the Meat Commission (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 21).

KENYA NATIONAL ACCOUNT ESTIMATES: OTHER SECTORS

Mining contributed less than 1 percent of the economy; of this, 30 percent was quarrying and the remainder oil prospecting. Information on manufacturing was gathered in the 1972 Census of Industry. This census covered all industrial establishments with five or more employees in urban areas and all "large establishments." Twenty-five percent of smaller urban establishments were sampled. The directory of establishments included all registered companies with a postal address or a telephone. This information was updated annually with a survey that covered all establishments with fifty or more employees and 25 percent of firms that employed twenty to forty-nine people. It was assumed that the smaller enterprises grew at the same rate as the 25 percent sample. Information was also gathered from the public enterprises in this sector (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 38–41).

The 1972 census also covered all enterprises in construction and building with five or more employees and 25 percent of smaller enterprises. Each year the information was updated using the same methodology as for manufacturing. In the traditional economy, "hut-building" was covered in an inquiry in 1966, and it was assumed that growth in this activity followed rural population growth (3.3 percent), with an assumed replacement ratio of 5 to 8 percent, depending on the district. The information for the value of electricity

and water was provided by the two companies responsible. For rural households, an estimate of the number of hours women spent drawing water per household per year was used. Its opportunity cost was valued using the wage rate for casual female labor. Statisticians also made an assumption about the rural economy: "in pastoral areas no alternative employment is thought to exist" (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 59).

The value of private urban distribution and retail trade was estimated based on three figures: total imports and exports, total production in manufacturing less that handled by public corporations, and total agricultural output less that handled by the marketing boards. Total output was estimated using a base year ratio of value added to output. The records of public corporations and marketing boards were available, and companies that distributed petroleum were contacted annually. Urban hotels and restaurants and larger rural establishments were surveyed in a 1975 Survey of Services. Growth was assumed following the base year ratios based on the recorded annual wage bill. Small-scale rural establishments were covered by a 1972 survey, and value added was assumed to grow with the output of small farms (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 61).

The transport and communications sector consisted of large public operators for which data were ready available. For urban transport and private freight, transport by road companies with twenty or more employees were surveyed annually assuming certain ratios of employees per registered vehicle. The output of registered operators that were not surveyed was estimated assuming proportionality. For banking and other financial services, available records were used. The estimates in the real estate sector are considered to be weak because these transactions were frequently done by private individuals. For smaller services, data from the annual survey of employees and self-employed people were used. In rural areas, growth in services was assumed to be two-thirds of the growth in urban areas. Ownership of dwellings contributed some 6 percent to GDP. "Modern" dwellings were valued according to the official registry, and the value of rural huts and their imputed rent was estimated using assumptions similar to those in the construction sector (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 78).

KENYA NATIONAL ACCOUNT ESTIMATES: DEFLATION AND SUMMARY CONCLUSIONS

For deflation, different methods are used from sector to sector. Physical indicators are used for water and electricity. The wage index is used for the broad

service sectors, including government. For manufacturing, a physical indicator of output is used that collects data on the 300 most important products. This composite index is updated for structural changes in the sector. In the agricultural sector the double deflation method is applied, with separate indices for input and output for the three types of farms. Instead of deflating commodity per commodity, a weighted contribution for each product to total sales is used.

Sources and Methods provided a table that depicted the reliability of the estimate levels by sector (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 192). Reliability is judged as ± 40 percent for the traditional economy and ± 10 percent for agriculture and manufacture, while private service sector estimates are considered far less reliable (± 20 percent) than public services (± 5 percent).

The source material gives few perspectives on how these 1977 methods differed from the earlier methods and whether the surveys were continued or discontinued in the following decades. The *Economic Survey* of 1982 noted that it "is becoming increasingly obvious from enquiries into selected sectors of the economy and from general observation, that the methods used to make estimates of the GDP need to be revised. While any revisions of this nature are only likely to have a small impact on growth rates year by year, they could in total lift the whole level of GDP such that GDP per head might be significantly higher than is currently portrayed" (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1982, 4). A footnote in the same survey identified transport and communications and finance, insurance, real estate, and business services as potential subjects for upward revision. It added that as further data became available it would "probably show that the agricultural sector is also one in which substantial upward revision may be necessary" (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1977, 6).

Based on information in the *Economic Surveys* for 1988 and 1989, it is clear that the surveying of agriculture proceeded in the same fashion (Republic of Kenya, Central Bureau of Statistics, Ministry of Finance and Planning 1988, 2; 1989, 2). The Agricultural Productions Survey that was instituted in 1986–87 provided supplementary information, and in 1988 a new Rural Household Survey was conducted. In 1981–82, a rural household budget survey was conducted that covered 2.4 percent of the rural population. These revisions were included in the new constant price series from 1982. The base year has not been changed since then.

PERFORMANCE

This is an account of the economic performance of Kenya from 1965 to 1995 according to the official growth evidence.² The postcolonial growth record of

Table 5.1. Availability of official constant price growth series: Kenya, 1964–2004

Base year	Coverage
1964	1964–1975
1972	1972–1982
1976	1972–1985
1982	1977–2004

Kenya is covered by four constant price series (see Table 5.1). The first decade can be evaluated using a growth series based on 1964 prices. This series is continued to 1974. Two official series cover the 1970s: one based on 1972 prices and another on 1976 prices. The 1972 series was continued until 1978; the 1976 series covered a decade of economic growth, 1974–83. Finally, a series based on 1982 prices covers the 1980s through 1995. There is little overlap between the four national statistics series for Kenya. Although the nation's performance in the 1970s can be assessed using two different series, only one time series is available for assessments of the 1960s, 1980s, and 1990s. One advantage of this is that it produces a lower rate of inaccuracy in the international databases, although some discrepancies have been noted. Another advantage is that reporting is consistent; there are no gaps in the series. As I noted in Chapter 2, it is unclear to what extent accounting methods in Kenya changed during the period from independence to 1995.

The Kenyan national accounts report the monetary and nonmonetary accounts separately. National statistical reports do not supply tables with all activity included. In order to obtain a figure for the agricultural sector that can be used to compare Kenya's agricultural performance with that of other African nations, one must add the value of nonmonetary value-added activity in agriculture, forestry, and fishing to the value of agriculture, forestry, and fishing in the monetary account. For the purposes of comparison, the data I provide in this chapter is given in all-inclusive totals in the same aggregate as for the other countries, in keeping with the UN's International Standard Industrial Classification (ISIC) format. In the 1972 series (the reports for 1970–78), although the tables do not use the ISIC format, all agricultural goods are treated as monetary (Republic of Kenya 1977). This means that in the 1964 series for the year 1974, the nonmonetary sector accounts for 21 percent of the total GDP, while in the 1972 series, the figure is 11 percent.

During the first decade after independence, growth in Kenya was stable, balanced, and modest. The exception was 1965, when drought led to a marked decrease in agricultural output; the result was a stagnant total GDP. These adverse climatic conditions were reversed in 1966, when the rains were

“extremely good” (Republic of Kenya, Ministry of Economic Planning and Development, Statistics Division 1967). In 1971 there was another drought, and a decrease in agricultural growth can again be observed. Kenya’s *Economic Survey 1972* reported that this drought caused a negative growth in agricultural output, but the data reported in the *Statistical Abstract 1975* do not agree. Agricultural output revived with better rain in 1972. Agricultural growth averaged 5 percent during the period 1964–74, just one percentage point lower than total GDP growth. The structural change reflects this lagging behind, as the sector’s contribution to GDP fell from 39 to 34 percent during the same period.

The manufacturing sector (including repairs) grew faster than the rest of the economy at a relatively steady 9 percent each year. It contributed 15 percent of the total increase of value added during the period, and its contribution to GDP increased from 10 to 13 percent. The only sectors that grew faster than manufacturing were finance and government; these two sectors accounted for almost half of the increase in total output from 1964 to 1974, both more than doubling their value. Total GDP grew at an average of 6 percent a year, and agriculture was the only diversion from that steady growth trend. The growth in GDP was quite evenly shared: agriculture, manufacturing, and finance and government, which together made up three-quarters of GDP in 1964, accounted for 80 percent of the growth in total output from 1964 to 1974 (see Table 5.2).

The short series that covers the years 1972–78 indicates a slight slowdown in growth; average GDP growth fell from the 6 percent of the previous period to 5 percent. The entire economy slowed in this period except for the manufacturing sector, where growth picked up to an average rate of 12 percent per year, compared to 9 percent in the previous period. Agricultural output grew at an average of only 3 percent each year, a rate that would have been lower had it not been for strong agricultural growth in 1977. That year the output responded to a boom in the price of Kenya’s agricultural exports and a record amount of coffee and tea was marketed. In the following year, prices fell in the world market and marketed output stagnated. According to the Central Bureau of Statistic’s *Economic Survey 1979*, the volume of coffee marketed decreased almost 15 percent in 1978. The effect of the decrease in the unit value of the output is not apparent in a constant price series, but according to the same *Survey*, the decrease in prices resulted in a reduction in coffee earnings from Ksh 192.9 million to Ksh 115.6 million, a decline of more than 40 percent. Before the decrease in prices, the increase in earnings stimulated manufacturing growth in terms of both demand and the supply of capital goods for new projects. The increase in export earnings from coffee and tea also resulted in a relaxation of import controls, which stimulated growth in trade and wholesaling.

Table 5.2. GDP, Kenya, base year 1964 (K£ million)

[illegible]

Taken together the 1972 and 1976 series allow a comparison of the overlap years of 1974–78. Significant changes in world market prices were transmitted to the domestic economy during this period. In the 1976 series, as expected, agriculture has a larger share of the economy: for 1978, the share of agriculture in GDP was 38 percent in the 1976 series, compared to 31 percent in the 1972

	1972	1973	1974	1975	1976	1977	1978
Agriculture, hunting, forestry, and fishing	242.42	248.33	250.93	258.17	256.11	279.29	283.48
Mining and quarrying	2.22	2.98	2.74	3.11	3.41	3.53	3.53
Manufacturing	77.93	89.24	94.5	94.31	111.92	129.69	148.40
Electricity and water	13.93	14.31	15.25	16.45	18.46	19.81	21.55
Construction	46.51	46.63	43.33	42.41	41.3	44.55	47.08
Wholesale and retail trade and restaurants and hotels	66.26	73.98	71.67	66.24	71.72	79.65	85.38
Transport, storage, and communications	38.21	42.38	41.94	40.67	44.91	46.13	48.69
Finance, insurance, real estate, and business services	85.31	87.09	98.67	103.29	111.23	119.66	127.51
Public administration and other services	115.69	123.2	132.09	143.73	151.89	160	168.23
Imputed bank service charges	-13.05	-9.85	-14.10	-14.68	-15.36	-18.27	-20.03
Total gross domestic product	675.43	718.29	737.02	753.70	795.59	864.04	913.82

Agriculture	3%
Manufacturing	12%
GDP	5%

series. As a result, the manufacturing sector has a lower relative share in GDP in the 1976 series, though this difference is smaller than that observed in agriculture (3 percent at the highest in 1978). The 1972 series gives a 1 percent annual average growth in GDP for 1974 to 1978, compared to 5 percent in 1972. The 1976 series is significantly more optimistic about agricultural growth; it averages 4 percent in that series, compared to only 2 percent in the 1972 series. In the 1972 series, manufacturing growth was particularly strong, with an average annual growth of 12 percent. In the 1976 series this growth appears more modest at 7 percent annual average. These different growth rates in agriculture and industry are largely canceled out in the aggregate growth rates, but because the 1976 series gives a greater weight to agriculture, the economy appears to grow slightly slower in aggregate in the 1976 series as compared to the 1972 series.

According to the 1976 series, aggregate growth during 1974–83 was stable and, apart from the coffee and tea boom year of 1977, was never far from the annual average of 5 percent. Output in agriculture appears to have been stimulated by favorable price conditions in the world market up to 1978, but it stagnated thereafter, with negative growth recorded in 1979 and 1980. Output recovered in the early 1980s, and the sector contributed 31 percent of the growth in total value added from 1974 to 1983. Manufacturing growth slowed down compared to the earlier periods; the average growth rate was six percent from 1974 to 1983. However, this growth rate should not be taken at face value. The 1972 and 1976 series present some surprising discrepancies in data on annual growth rates. The most conspicuous is that in 1976, the manufacturing sector records a growth rate of minus 1 percent. The 1972 series, however, recorded a growth of 19 percent. The source of this difference is unclear. Be that as it may, the growth in manufacturing did slow down markedly in the beginning of the 1980s compared to earlier periods, and the sector contributed only 15 percent to the increase in total value and did not increase its relative share in GDP for the period 1974 to 1983. The finance and government sectors grew fastest, contributing to 42 percent of the total value added for the period (see Table 5.4).

In the 1982 series, there was a slowdown in aggregate growth for the period 1979–95 compared to earlier periods; GDP growth averages only 4 percent in this period. Two periods of particular stagnation in growth can be identified. During the first six years (1979–84), growth averaged 3 percent. From 1985 to 1990 growth improved, averaging 6 percent, but in the first half of the 1990s it averaged only 2 percent. This growth trend is paralleled in manufacturing and agriculture, which slowed to an annual average growth rate of 4 and 3 percent, respectively. Agricultural and manufacturing output revived somewhat in the later 1980s. Their annual average growth was 5 and 6 percent respectively for this six-year period. The decline in agricultural growth began earlier in the late 1970s, and from 1987 to 1995, total output increased by only 4 percent, and the average growth rate for this seven-year period

Table 5.4. GDP, Kenya, 1974–83, base year 1976 (K£ million)

was somewhere between 0 and 1 percent. Manufacturing output grew at an annual rate of 3 percent from 1990 to 1995 (see Table 5.5).

I present the data for 1979–95 as a continuous series in Table 5.5, but the table was compiled using the data from *Statistical Abstracts* published in 1985, 1990, and 1996, in which years national accounts data were published in constant prices for the years 1979–84, 1983–89, and 1989–95, respectively. The table uses data from the *Statistical Abstract 1990* from 1985 onward. There is a problem of comparability of the different series published in the different statistical abstracts. According to the series in the table there is considerable growth from 1984 to 1985 (7 percent). Part of this growth is statistical, as is revealed by comparing the 1983 and 1984 estimates in *Statistical Abstract 1990* and *Statistical Abstract 1985*.

In the 1990 data, agricultural output for 1984 was revised upward by 30.89 million K£. Since the earlier data were used until 1984, any agricultural growth from 1984 to 1985 is in part statistical, as the numbers for the same year published in the 1985 and 1990 statistical abstracts have simply been raised in the 1990 version.³ The 1990 *Statistical Abstract* also revised data for building and construction upward by 8.66 million K£ in 1983 and 9.24 million K£ in 1984. The revision for the water and electricity sector, perhaps surprisingly, goes the other way. According to *Statistical Abstract 1990*, the sector is 23.05 million K£ smaller in 1983 and 25.03 million K£ smaller in 1984. The 1990 data also revised the value added by transport and trades upward. In transport the increase was about 7 million K£ in 1983 and 12 million K£ in 1984, while in trade it was almost 33 million K£ in both years. The total upward revision of GDP in the 1990 abstract is 112.99 million K£ in 1983 and 112.47 million K£ in 1984. Since the 1990 statistical abstract did not revise the value added in manufacturing, the remaining half of the total of this upward revision for 1985, which corresponded to almost 4 percent of total value added, is mainly in the finance, real estate, and public administration and other services sectors. The category ownership of dwellings was revalued significantly. The total effect of the upward revision accounts for about 4 percent of total GDP in 1984. This means that the average growth in GDP and agriculture is slightly overstated in the series.

According to the series published in the 1990 statistical abstract, the share of agriculture in total GDP dropped from one-third in 1979 to one-quarter in 1995. This structural shift was not a result of growing reliance on the manufacturing sector, as growth in this sector was modest over the period and its share in GDP increased only slightly, from 13 to 14 percent. The share of the “productive” sector of the economy was reduced, from accounting for almost half of GDP in 1979 to only one-third in 1995. The most rapidly growing sector in the Kenyan economy from 1979 to 1995 was finance, followed by public administration; these two sectors grew at annual growth rates of 9 and 7 percent, respectively. These sectors accounted for almost half of the increase in

Table 5.5. GDP, Kenya, base year 1982 (K£ million)

[illegible]

total value added during the whole period, and account for about one-fifth of total GDP each.

The economic performance of Kenya during the period 1965–95 can be summed up as stable growth with a decelerating trend. In particular, growth in manufacturing and agriculture slowed in the latter part of the period. Because of the absence of consistent reporting about methodology, it is more difficult to reach a firm conclusion on the importance of statistical growth in Kenya during this period. It is not easy to tell how well the agricultural sector was accounted for in the early period and whether there was a significant increase in coverage over time. Nonmonetary agriculture accounted for 54 percent of total agricultural output in 1964 and was estimated to grow more slowly than commercial agriculture through that period (1965–74). In 1974, its share had decreased to 52 percent. From 1972 onward, the *Economic Survey* did not disaggregate the estimates for nonmonetary and monetary agriculture, and since this is the sector where one would expect statistical growth, it is difficult to detect. Because of what we know about the statistical resources that were available in Kenya at independence, it seems likely that there was less statistical growth in this country than in the other countries in the early years after independence. When Kenya's agricultural sector is reported as one aggregated sector, its share in GDP increases somewhat. The agricultural share of GDP was 1 percent higher in 1972 prices for the three years that the 1972 series coincides with the 1964 series (1972, 1973, and 1974), and agricultural growth slows down. However it is not clear whether this is because of changes in statistical methods. The reporting in the PWT and WDI is very irregular for the years when the base year changed. In these sources, growth in 1971 and 1972 is reported to be 22 and 17 percent and 28 and 17 percent, respectively, while the growth rates in the official national statistics for these years are only 6 and 7 percent, respectively.

While growth in the productive sectors slowed down in the latter part of the period, the aggregate was slowing at a lower rate. The finance and government sectors grew rapidly. Government data would not be expected to be subject to statistical growth, but some has been noted in finance, in particular relating to the evaluation of real estate. Thus, in the Kenyan economy, there is higher growth in the “supportive” sectors than in the “productive” sectors. This acknowledgment might make Kenya's economy look less healthy than other economies if performance is measured using data for agriculture and manufacturing.

POLICY AND PERFORMANCE

In their chapter on Kenya for *The Political Economy of Economic Growth in Africa*, Mwega and Ndung'u (2008) observe that although Kenya has

experienced growth, since the late 1970s the economy has failed to fulfill its potential. They assert that Kenya outperformed sub-Saharan Africa as a whole until the 1970s (326). This conclusion is at odds with my interpretation of the growth evidence. I have found that Kenya's early growth was rapid but was roughly in line with the other sub-Saharan African economies and that the uniqueness of Kenya's growth performance is rather that it did not experience a rapid decline after the late 1970s. Relative to its own past, Kenya did indeed decline, but not relative to other African economies.

Mwega and Ndung'u identify four growth periods: rapid growth from 1960 to 1974, poor performance from 1975 to 1984, a slight recovery from 1985 to 1989, and a slowdown in growth in the 1990s. These growth episodes, which correspond roughly with those I have identified, are related to the political economy, especially to the eras of Jomo Kenyatta (president 1964–78) and Daniel arap Moi (president 1978–2002). The basic argument is that the change to the Moi political regime was bad for growth (Mwega and Ndung'u 2008, 327). The common hypothesis is that Kenyatta represented the Kikuyu, and since the Kikuyu had economic interests in cash crops for export, the Kenyatta government implemented policies that favored agricultural exports. The orthodox view holds that these are the policies that are good for growth. In contrast, Mwega and Ndung'u argue, Moi represented groups that had been disadvantaged as Kenyatta's presidency redistributed resources. Bates (1989, 149) seems to support this conclusion. In an earlier work, Bates (1987, 91–2) described the policy responses to food crises in 1979–80 and 1984–85 and argued that Moi used these subsistence crises to stabilize his rule. While the Kenyatta presidency rested on the urban industrial base and export agriculture (tea and coffee) and was partly antagonistic toward the maize-growing centers, Moi's power base lay in the grain-growing areas. Thus, Bates argues, the crisis provided Moi with a chance to channel financial resources to maize-growing areas and bolster his support there.

A common way of analyzing the Kenyan growth experience is to say that economic policies were not perfect but that it was still better than in other places. Bates notes, however, that "under Moi, Kenya has come more closely to resemble her African neighbours" (1989, 149). Himbara (1994) makes little distinction between the two regimes and notes in a discussion of the policy environment for the local bourgeoisie: "To its credit, the Kenyan state did not squander the skills of this segment (as did its more reckless Tanzanian and Ugandan counterparts); however, the Kenyatta and Moi governments have not provided an environment in which this faction, together with foreign capital and the *jua kali* sector, could deepen Kenya's industrial base to the extent their technical capacity would have allowed" (1994, 88). Anyang' Nyong'o notes that difficulties arose in industrial development because of the change in "political pacts" (1988, 38).

According to my analysis, Mwega and Ndung'u's claim that the change in the political economy is the main determinant of aggregate growth is debatable. The Kenyatta era coincided with rapid growth (with the exception of the

slowdown in the late 1970s) and the Moi era with slow growth (with the exception of the improvement in growth in the late 1980s). The introduction of multiparty politics in 1991 is associated with a marked slowdown in growth; the argument goes that political competition resulted in adverse policies and poor spending practices. The chapter on Botswana in the same volume (Maipose and Matsheka 2008) echoes the view that intensification of competitive politics can be bad for growth. The difference is that in Kenya the emphasis is on the dissatisfied ethnic groups that were disadvantaged under Kenyatta, whereas in Botswana it was economic groups that needed appeasing.

It is true that economic and political change in Kenya coincide to some extent. However, to follow this line of causation strictly one has to disregard the fact that the slowdown occurred before the political change and ignore the growth of the late 1980s. It is not so obvious that Kenya performed badly during the Moi era and it is even less obvious that it did so because of economic policy. During the Moi era, Kenya performed considerably better than the African average. The average GDP per capita growth for sub-Saharan Africa was close to minus 1 percent for the period 1978–2000 (World Bank 2007), whereas the data presented here for Kenya indicate that Kenyan economy was growing at a rate of 4 to 5 percent, thus about 1 to 2 percent positive growth in per capita terms.

Mwega and Ndung'u refer specifically to the "mismanagement" of the 1976–77 coffee boom (2008, 329). Two things should be noted here: this boom took place during the Kenyatta era, and such "mismanagement" was not unique. In both Tanzania and Kenya, governments responded to the coffee boom by liberalizing foreign exchange and import controls. This was a natural response to an improvement in external conditions, but another reason for this policy convergence is that the World Bank strongly advised it (Bryceson 1993, 9). In retrospect, this was an unfortunate choice because the coffee boom soon ended and foreign exchange turned out to be very scarce in the face of a second oil shock in 1979–81. But it is not entirely correct to ascribe this policy choice to poor management. Kenya, like most economies, experienced exogenous shocks. The effects of those shocks accumulated and hampered economic growth during the Moi era. In addition to the coincidence of the end of the coffee boom and the 1979–81 oil shock, there was drought in the early 1980s. It is therefore difficult to determine which part of the economic decline was related to shocks and which was related to policy. In addition, Kenya relied on exports of manufactured goods to other African countries, in particular to the East African Community (EAC), to a larger extent than most African economies (Coughlin 1990, 251). This export-led growth was seriously undermined when the EAC disintegrated when Tanzania declared war on Uganda after it had attacked and invaded Tanzania in 1979.

The Kenyatta government's response to the first crisis following the oil shocks in 1973 was to increase the extent to which the state controlled the economy. It

imposed controls on bank lending and interest rates, foreign exchange licenses, and import quotas, and instituted some direct price controls on domestically traded goods. While foreign exchange controls were temporarily lifted in the immediate aftermath of the coffee boom, these controls remained largely intact until reforms in the 1980s. In contrast, the Moi government responded to the second crisis in the 1980s by liberalizing controls. These reforms were largely driven by donors. Under Kenyatta, the response to shock was controls, while under Moi the eventual response was liberalization. The crucial determinant of Moi's response to crisis was probably not ethnic allegiance but the changed environment of policy advice from external lenders. These changes in policy cannot be entirely attributed to the internal political economy, but may rather be due to a change in what was considered sound economic policy at the time (Fahnbulleh 2005). As Table 5.6 shows, there were other complications, related to the performance of manufacturing and agriculture production during the late 1970s; how this looks depends very much on which series one uses. The difference in the available growth evidence of this period leaves judgments on economic performance in doubt.

The rapid growth in the manufacturing sector in the early period was a direct result of state intervention. As Mwega and Ndung'u (2008, 340) note, "Helped by high import-protection, import substitution was initially successful." In the late 1970s and early 1980s, three factors combined to slow this growth. The breakdown of the East African Community depressed export demand, and domestic demand was repressed when the coffee boom ended, and access to foreign exchange was severely constrained, causing import shortages. The observed slowdown in manufacturing may also have been caused in part by the difficulties of moving beyond the first stage of import substitution. The import substitution/industrialization strategy cannot be considered

Table 5.6. Economic growth rates, Kenya, 1975–78 (percent)

	1975	1976	1977	1978	Average
<i>Gross domestic product</i>					
1972 series	2	6	9	6	6
1976 series	4	2	9	6	5
<i>Agriculture</i>					
1972 series	3	–1	9	2	3
1976 series	7	2	10	4	6
<i>Manufacturing</i>					
1972 series	0	19	16	14	12
1976 series	1	–1	16	13	7

a complete failure. Growth continued during the adverse conditions of the 1980s, albeit more slowly. Compared to the absolute decline experienced elsewhere in Africa, this suggests that some of the manufacturing growth was indeed sustainable. Sharpley and Lewis (1990, 239–40) contend that while the manufacturing sector was in a “serious mess” after liberalization, “experience with exports from a number of subsectors” persisted and there were “considerable opportunities” in manufacturing.

From 1980 to 1985, import restrictions were rolled back and tariffs were reduced. Forty-eight percent of all imports were free of restrictions in 1985, and overall tariffs on other goods were reduced by 8 percent (Mwega and Ndung’u 2008, 343). In 1988, liberalization was taken further, and in 1991 trade was free. In the same period, domestic price controls were almost completely abandoned. The last markets to be liberalized were petroleum and maize in 1995, after strong pressure from donors. Price controls had been implemented on these products in the 1970s, and liberalization began in 1983.

Mwega and Ndung’u (2008, 359) state that exchange rates were “relatively well managed” and compared favorably with those of other Anglophone African economies. According to them, black market premiums never exceeded 20 percent, except in 1972–73 (they explain this with reference to the Asian exodus, when parts of the Asian community in Kenya left in response to restrictions in business legislation for non-African entrepreneurs) and in 1982. Vandemoortele points out that during 1974–83 the country followed a flexible exchange rate policy and that in 1975 the currency was devalued for the first time, by approximately 14 percent. “Three more devaluations followed in 1981 and 1982 so that on average the real effective exchange rate did not revalue significantly between 1974 and 1983” (1985, 95).

Temporary controls were implemented as a response to economic shocks. When the direct effect of these shocks passed, liberalization was extensively implemented. The correlation between liberalization and growth is not unequivocally positive. There are reasons to question whether too much has been made of the differences in the rates of growth in the Kenyatta and Moi years. These two administrations clearly had different political agendas and favored different groups, but the direct growth effect of their respective policies is unclear and caution should be used when claiming that economic policy and growth can be connected.

This caution is based on three factors. First, the growth differential between the Kenyatta and Moi era is not that marked. The effect of the negative economic shocks during the Moi era and the relatively positive performance of Kenya compared to other African economies in the same period means that the growth differential needs to be rethought. Second, economic growth was rapid in the beginning of the Kenyatta era, but “this came to an abrupt end in 1973” (Vandemoortele 1985, 88) and did not coincide with the change in administrations. Third, the Moi era is associated with what current orthodox

policy advice regards as “good” policies,⁴ but this liberalization did not have a discernible positive growth effect. Little growth occurred after agricultural trading and the exchange rates were liberalized. The abandonment of the import substitution industrialization strategy at a point when Kenya was losing access to the East African market was also important in explaining the relative slowdown of the economy in the 1980s. As a result, manufacturing grew more slowly. In addition, agricultural growth suffered from some drought years. The whole economy suffered from a large debt inherited from the shock years of the 1970s and 1980s and instability caused by donor negotiations. The absence of freedom to create economic policies and the lack of fiscal means meant that Kenya had to dismantle its industrial goals at the very time that Botswana was increasing its support for infant industries.

NOTES

1. Interview with Collins M. Omondi, statistician, Central Bureau of Statistics, Kenya (April 2007, Nairobi).
2. See Jerven 2011b.
3. Two sets of data also exist for 1983. For 1983 the difference between the two abstracts is 29.53 million K£. The statistical growth is approximately 3 percent in this sector.
4. The changes in the development paradigm correspond closely to the changes in development policy in Kenya.

Economic Growth and Measurement Reconsidered: Tanzania

The first published series of statistics for Tanganyika's GDP was prepared in 1955 for the Royal Commission of East Africa.¹ The Tanganyika Unit of the East African Statistical Department continued the series using more or less the same methodology.² In 1968 the Bureau of Statistics, with the assistance of the UN Technical Assistance Programme, embarked on a detailed and comprehensive revision of the National Accounts.³ Between 1980 and 1985, the Bureau of Statistics, again with the assistance of a national accounts expert made available through the United Nations, embarked on a detailed and comprehensive revision of the national accounts series with the aim of changing the base year from 1966 to 1976.⁴ The introduction of a new base year and the accompanying revisions of 1992 onward offers the third natural distinct period for this history of accounting.

TANZANIA NATIONAL ACCOUNTS ESTIMATES: 1964–76

The first national accounts prepared by the Central Bureau of Statistics (CBS) were published in the 1966–68 report. The 1964–70 estimates were made using the same data sources and methodology as those for 1966–68 by simply adding two years on each side. Between the first report and the 1974 report, two important bodies of new data became available: the Household Budget Survey in 1969 and the 1967 Population Census. The 1972 report contained revisions of the estimates because of fresh data on manufacturing, mining, construction, and trade. “The available basic statistical data pertaining to Tanzania suffer from many limitations and gaps,” a UN report commented, but it added that “the system follows the SNA closely[;] it has been developed and substantially meets the needs of the Ministries” (United Nations Development

Programme 1975, 4). The 1964–70 series was considered final. The UN report remarked that “the work as realized is considered one of the best actually done for African countries” (United Nations Development Programme 1975, 5). The report noted that the problem of the series was not the method but the availability and reliability of the basic data. This pertained especially to agriculture, small-scale industries, transport, and internal trade. A census of agriculture might improve the coverage, but the report concluded that “unless the system of collection of annual data on output of agricultural commodities is substantially improved, the year-to-year changes in estimates will continue to be unsatisfactory” (United Nations Development Programme 1975, 6).

The CBS acknowledged that despite the importance of agriculture to the national economy, “the available information on crop acreage, output etc. is very meager,” except for export crops (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1971, 2). Because the crops grown primarily for export purposes were marketed, fairly reliable and comprehensive statistics relating to them existed. For the remaining crops, which were by and large grown for “subsistence” consumption, “only inadequate and somewhat unreliable statistics are available” (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1971). The main source of information for the latter crops was the Ministry of Agriculture (KILIMO). Data were available on the crops handled by the National Agricultural Products Board (NAPB) on volumes purchased at the prices it set. For most of the other crops, the Bureau of Statistics compiled quarterly averages of prices paid to growers for each region separately on the basis of the monthly reports from the regional and district agricultural officers. The data on crop production were also compiled from the periodic crop reports of regional and district agricultural officers, which were “mainly based on eye observations and market reports” (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1971, 3).

For non-export crops no direct data on production were available. The reported data had been accepted after a “close scrutiny of the figures for each crop at regional level over a period of years and after making all possible efforts to make the annual figures comparable” (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1971, 3). For some crops, such as maize, rice, beans, cassava, and fruit and vegetables, alternative estimates of production were built up on the basis of data obtained through preliminary results from the scheduled Household Budget Survey of 1969, which was based on a sample of 824 households spread throughout the country. These results were preferred to corresponding KILIMO estimates, which national statisticians believed to be considerable underestimates, even according to NAPB estimates (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1971, 3).

The limited availability of data about the livestock population was felt to be the weakest part of the agriculture estimates. KILIMO estimated that livestock herds increased from 8.5 million to 11.1 million between 1963 and 1967. Flocks of goats and sheep were considered to be stable at 4.4 and 2.8 million, respectively. However, the statisticians concluded that "these estimates cannot be considered quite reliable." In addition, the available data on production and prices of forestry products were considered "insufficient to build up satisfactory estimates of contribution to GDP from this industry" (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1971, 14, 20). For this sector, Food and Agriculture Organization estimates were used because the recorded production accounted for only a small proportion of the total. The growth rate of the rural population was assumed to be proportional with the growth in the sector.

The manufacturing sector was considered in two subgroups. Establishments with five or fewer employees were considered household and cottage industries. A Survey of Industrial Production of 1966 provided the basic data. It was intended to cover all establishments employing ten or more, but the response rate "was very poor" (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1971, 32). Thus, the first task was to agree upon an appropriate markup to account for the non-respondents. The second task was to account for enterprises with more than five but fewer than ten employees. The extent of the markup was supplied by an Employment and Earnings Survey, which reported that establishments employing between five and ten staff account for about 7.3 percent of total employment and 5.5 percent of the earnings of establishments employing ten or more. This formed the basis of the 1966 base year estimate. The next problem was to derive similar or comparable estimates for 1967 and 1968 in absence of relevant surveys. The Industries Division of the Bureau of Statistics maintained statistics of annual production (quantities only) of a number of selected important commodities, such as canned meat, wheat flour, beer, cigarettes, textiles, paint, and cement. These data were supplemented by data from agriculture; when agricultural commodities were used as inputs for manufacturing, the agricultural data were used as production indicators. When neither type of data was available, the employment or earnings survey was used. Weights from the baseline estimate were used to estimate growth and output of other products not covered was assumed to grow proportionally. The estimates were then all made at 1966 prices. The CBS reported that "the estimates at current prices have been obtained by superimposing the effect of price fluctuations" (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1971, 34).

The data available for household or cottage industries "are very scanty and it has been possible only to build up only rough estimates of the contribution of GDP from this group" (United Republic of Tanzania, Bureau of Statistics,

Ministry of Economic Affairs and Development Planning 1971, 37). The population census of 1967 and some case studies were used to estimate how many people were engaged in these activities. This number was multiplied by the average earnings obtained in the 1966 Survey of Industrial Production. This benchmark estimate was then adjusted for quantity and price changes. In the absence of data on quantity changes, this had to be estimated indirectly using data on agricultural output, manufacturing output, and population growth, giving manufacturing half the weight of the other two.

The CBS acknowledged that “only very scanty data are available on trade” (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1971, 43). Data from parastatal trading companies were directly available, and non-parastatals were surveyed in the earnings and employment survey. Eight hundred were contacted for this survey, but only 200 replied. This compared to an estimated 2,000 establishments in this sector and the contribution was marked up accordingly. For smaller enterprises the estimate was less reliable. Different sources were used from other sectors to establish a markup. In addition, the data were “not comprehensive enough to build up independent estimates for each year, so the same margin has been used for each year” (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1971, 49).

The validity of the estimates was considered in a separate section. It was thought that about one-third of GDP consisted of exports, mining, manufacture, electricity and water provision, parastatal trade and transport, finance, and public administration. The figures for this part of the GDP were reported as having a 5 percent error margin. Non-exported but marketed agricultural production, meat and hides, construction, trade, road transport, and some services were together thought to contribute another third of GDP, with a 10 percent error margin. The final third of the GDP estimate, which comprised food, livestock, handicrafts, and very small-scale trade and services, “should be considered very rough” (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1971, 118).

TANZANIA NATIONAL ACCOUNTS ESTIMATES: 1976–92

The second constant price series coincided with a revision of sources and methods. “In the light of this change the revised series, 1976–1984 is not strictly comparable with the earlier series prior to 1984 both at current and constant prices” (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1984b, 1). The new estimates were based on data collected for the 1976–77 Household Budget Survey, the

1976 Input-Output Table of Tanzania Mainland, the 1978 Population Census, the 1978 Industrial Census, and the 1972–82 Analysis of Parastatal Enterprises.

The first report in the new series covered 1976 to 1984. In the 1985 report there were already some changes. The data on agriculture was revised “after careful re-examination,” and from this report onward the estimates for manufacturing were made using quantity indices (United Republic of Tanzania, Bureau of Statistics, Ministry of Economic Affairs and Development Planning 1985, 2). The 1986 report revised the estimates from 1983 onward. Curiously, an examination of the tables shows that only the aggregates were changed, so the total would be smaller if one summed up by industry. From the 1987 report, the estimates for public administration were made using employment indices instead of the minimum wage indices used earlier. In addition, there were invariably some changes to the most recent years in each report (which were published annually to 1994).

In these accounts, estimates for agriculture were compiled for forty agricultural products, fifteen livestock products, and producers of government services. The output of agricultural products at current prices was estimated using the officially announced producer prices. Data on consumption items such as sweet potatoes, barley and other cereals, yam and cocoyam, potatoes, cooking bananas and plantains, dried peas, lentils and other pulses, and yogurt were available through the Household Budget Survey for 1976–77. For the other years, consumption was assumed to grow with the rural population, which was assumed to be growing at 2.825 percent annually. The estimates for manufacturing were made using the 1978 industrial census of firms employing five or more; some adjustment was made for nonresponse. The input-output table of 1976 contained output estimates for twenty-nine groups of manufacturing establishments. There was no reliable information about manufacturing establishments employing fewer than five people or for manufacturing carried out on a small scale by households, such as brewing beer, tailoring, making mats and baskets, making footwear, saw milling, and wood carving. One-third of the estimated “subsistence” output in this sector was assumed to be accounted for by households and small-scale manufacturing establishments.

Quantities and volumes in mining were available from economic surveys. Gross output in land improvement, residential and nonresidential buildings, roads and bridges, water supply, and other construction works for the period 1976 to 1984 was estimated to be 30 percent higher than the recorded data. This proportion was assumed to be 43 percent in the case of rural own-account construction. For the other sectors, data from the dominant parastatals provided reliable data for the formal part of the economic activities.

For transport, storage, and communications the consumption of diesel was used for both current and constant price estimates and the 1976 estimate was based on the parastatal accounts. The ratios of cargo to passengers and gross product to output were assumed to be proportional for the whole period. For

government, it was assumed that the current and constant price estimates were the same, except when there was a change in the minimum wage per month. This occurred in 1980, 1981, and 1984. When the wage bill was deflated, it was assumed that the wage increase affected 25 percent of the total wage bill. When the value of education and health services was deflated, an estimated number of students and clients, respectively, was used.

NATIONAL ACCOUNTS FROM 1992

The 1993 report contained preliminary estimates at constant 1985 prices, while the 1994 report presented preliminary revised national accounts aggregates. This was the result of work on the revision of national accounts carried out with financial support from Eurostat and Sweden. The national accounts were revised at current prices from 1976 to 1990. This revision was later extrapolated to 1994, incorporating results of the most recent surveys and the most recent census. As a result of the revision, in 1990, the revised total GDP estimates were 62 percent higher than the original official total GDP estimate, government final expenditures were 37 percent higher, and household final consumption expenditures and capital formation were 36 and 30 percent higher, respectively, than the former official estimates. The report stated that "the revision of the national accounts is going on to include the revision of national accounts at constant prices with new base year. These revised estimates will be published in next year's national accounts publication" (Republic of Tanzania, National Bureau of Statistics, National Accounts Department 1996, 1).

The report accompanying the new constant prices series at 1992 prices held that "strong efforts were made to determine what is the story behind the figures, whether the data applies to what is experienced as happening in the industry. This has not been emphasised earlier" (Republic of Tanzania, National Bureau of Statistics, National Accounts Department 1996, 1). The new estimates incorporated the 1993 SNA. As time passed, some structural changes took place in the economy that were not reflected in the available statistics, especially in the latter part of the 1980s, resulting in an underestimate of value added. "Estimates of the size of this deficiency ranged from 30 percent to as much 200 percent of GDP." GDP was measured at 3,452 billion shillings in 1996, an increase of 100 percent over the old published figures. The 62 percent increase noted above was commented on as follows: "From the perspective of the national accounts staff, this revision was an ad hoc adjustment as the methodology from that revision was not fully incorporated into the estimation procedures" (Republic of Tanzania, National Bureau of Statistics, National Accounts Department 1996, 1).

The new level estimates were reached by incorporating all available data into the accounts, including the results of new surveys of the transport, trade, and construction sectors that were undertaken as part of the project. "Not all the revisions have increased the level of the estimates—the agriculture growth rates have been drastically reduced." There were problems with balancing the accounts "because of continuing deficiencies in trade data and incomplete information on aid-funded expenditure outside of the Government Budget. For this reason, the production figures should be taken as the measure of Tanzania's economic growth" (Republic of Tanzania, National Bureau of Statistics, National Accounts Department 1996, 3).

Statisticians believed that in the previous methodology of 1976, the "private sector was under covered—sometimes not covered at all—and the growing informal sector was not generally accounted for." The new data came from the Survey of Construction, Trade and Transport, Tanzania 1994, which surveyed ten of the most important regions, covering an estimated 85 percent of output in the sector. It was aimed at a sample of 50 percent of enterprises employing five to nine persons and 100 percent of larger businesses (Republic of Tanzania, National Bureau of Statistics, National Accounts Department 1996). The 1991–92 Household Budget Survey provided new benchmark levels of agricultural production, housing, expenditures for household health and education, and total household consumption. In 1991 a study of the informal sector was undertaken for the first time. Based on that study and on the 1995 *Informal Sector Survey of Dar es Salaam*, new estimates were made for this sector. The surveys increased the level of the old estimate for the informal sector threefold and showed that the growth in this sector in Dar es Salaam had exceeded 10 percent in recent times. A time series was developed by extrapolating these trends and taking account of the fact that the informal sector would be expected to increase when the formal sector is in decline instead of moving with it.

"Major changes were made to the agricultural indicators, where a series of ad hoc adjustments had caused the series to grow at more than double the rate reasonably expected of a country like Tanzania, and at many times the rate actually shown by the data from the Department of Agriculture" (Republic of Tanzania, National Bureau of Statistics, National Accounts Department 1996, 5). Fishing statistics showed considerable variation from year to year, and "it was shown that this was due to variation in coverage, not in actual changes in fish catches." As in earlier estimates, cash crop data were obtained from the Marketing Development Bureau. Data on food and other crops were taken from the Household Budget Survey. The major change was in how this data was treated. There was a "removal of ad hoc adjustments to crops growth rates which had distorted the long term growth pattern" (Republic of Tanzania, National Bureau of Statistics, National Accounts Department 1996, 6). The new figures had a much smaller long-term growth pattern for

agriculture, which in turn led to a smaller growth rate for the whole economy. It was reported that a correction to a deficiency in a question in the benchmark Manufacturing Census led to a 50 percent increase in the estimate of value added in the formal sector for that industry. Improvements were also made to the standard of accounts analysis in a number of other areas, such as finance and insurance (Republic of Tanzania, National Bureau of Statistics, National Accounts Department 1996, 7).

A 2003 IMF report on Tanzania's observance of accounting standards concluded that "the availability of source data for the national accounts is rather limited. The base year is outdated and 1993 SNA [is] not fully implemented." It added that since "[the 1992] baseline[,] the statistical techniques have largely been based on extrapolation. Intermediate consumption is in most cases compiled as a fixed ratio of output, and the single indicator method is used to estimate GDP at constant prices. The deflation techniques for general government expenditures and subsidies are not in line with good practice" (International Monetary Fund 2003, 1).

PERFORMANCE

I now turn to an account of the economic performance of Tanzania during the period 1965–95 according to the official growth evidence.⁵ The postcolonial growth record of Tanzania is covered by four constant price series (see Table 6.1). Unlike the official data for the other three case-study countries, these series run over long periods of time. For instance, the first series in 1966 prices was continued until 1982. This means that we have evidence for much of the period within the first series. However, simple averages over this period miss important changes in economic performance. The second series, based on 1976 prices, covers most of the second part of the period, from 1976 to 1993. The third series, which is based on 1985 prices, provides a second view of the entire period: it covers all the years from 1964 to 1995. The fourth series,

Table 6.1. Availability of official constant price growth series: Tanzania, 1964–2001

Base year	Coverage
1966	1964–1982
1976	1976–1993
1985	1964–1995
1992	1987–2001

based on 1992 prices, provides the opportunity to review the latter half of the period under review; it covers the years from 1987 to 2001.

The first, second, and fourth series each coincided with some revision of national accounting methodologies. The revisions in the fourth series were so far-reaching that WDI declined to undertake a harmonization of the four series and only reports data based on this fourth series. PWT does report a full series, with resulting erroneous growth rates in the late 1980s. These discrepancies in the official growth evidence necessitate careful consideration of the different versions. Derived growth rates for the purpose of comparison differ widely depending on which series is chosen and over which years the comparison is done.

The 1966 series stretches over a period when there was a marked shift in economic performance in Tanzania (see Table 6.2). The entire economy expanded until the late 1970s, then total GDP declined in the early 1980s. Average annual GDP growth from 1964 to 1982 was 4 percent. From 1978 to 1982, total GDP barely increased, and growth in output was negative in 1981 and 1982. However, if these latter years of stagnation are excluded and an average total GDP rate is calculated for the period 1964 to 1978, the average rate of expansion is more than 5 percent a year. That average rate hides some fluctuations: GDP growth was slow in 1965, 1969, 1973, and 1974, all of which were drought years. This points to the relative importance of agriculture in Tanzania. The agricultural sector accounted for almost half of total output in 1964, but according to the 1966 series, its share of total output fell to one-third in 1982.

Agricultural output increased during the first part of the period under review, despite periodic setbacks. Average annual growth from 1964 to 1977 was 4 percent, even though output growth was negative or close to zero in six of these fifteen years. From 1974 to 1979, when agricultural output recovered from the 1972–74 drought and export crops were stimulated by high prices in the world market, growth in value added averaged 7 percent per year. When coffee and tea prices collapsed in 1979, agriculture went into decline with the rest of the economy. During 1979–82, growth in agriculture averaged –3 percent. It should be emphasized that agriculture was the slowest-growing sector in the economy in the period covered by the 1966 series.

Trade was the only other sector that did not increase its relative share in GDP from 1964 to 1982. Tanzania is the only one of the four case-study countries where this happened. This indicates that the decrease in value added to the Tanzanian economy from 1979 onward was attributable to a marketing collapse, not to a production collapse. The constant price data for sectoral distribution for Tanzania is particularly misleading, and the increase in the government sector's share in GDP from 11 percent to 25 percent is a statistical artifact derived from the practice of using public wages as a deflator for this sector.

Table 6.2. GDP, Tanzania, base year 1966 (TZS million)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Agriculture, hunting, forestry, and fishing	2,623	2,575	2,952	2,954	3,062	3,080	3,205	3,166	3,425	3,458	3,315	3,596	3,772	4,104	4,326	4,257	4,560	4,184	3,819
Mining and quarrying	141	163	192	183	137	148	97	152	119	91	88	73	95	104	70	81	69	74	72
Manufacturing	394	446	525	584	627	687	716	784	850	888	900	903	1,063	1,152	1,104	1,244	1,048	761	568
Electricity and water	51	53	62	66	72	82	92	96	106	114	127	139	135	147	168	193	212	218	232
Construction	190	198	222	299	315	293	327	380	402	418	413	392	360	358	347	406	419	504	479
Wholesale and retail trade and restaurants and hotels	670	710	825	853	950	973	984	972	990	1,039	1,068	1,074	1,092	1,181	1,127	1,170	1,166	1,107	989
Transport, storage, and communications	387	400	482	536	618	644	729	814	869	905	958	997	1,033	1,170	1,287	1,187	1,284	1,317	1,350
Finance, insurance, real estate, and business services	575	618	618	707	709	745	763	800	831	867	929	941	957	997	1,034	1,070	1,111	1,148	1,194
Public administration and other services	620	658	689	741	764	771	866	952	1,071	1,157	1,362	1,581	1,790	1,986	2,013	2,107	2,313	2,673	2,907
Imputed bank service charges	-32	-48	-49	-98	-80	-85	-99	-115	-124	-137	-140	-143	-134	-146	-153	-158	-168	-174	-183
Total gross domestic product	5,619	5,773	6,518	6,825	7,174	7,338	7,680	8,001	8,539	8,800	9,020	9,553	10,163	11,053	11,323	11,557	12,014	11,812	11,427

Average annual growth rates

	1964–82	1964–77	1979–82
Agriculture	2%	4%	-3%
Manufacturing	3%	7%	-14%
GDP	4%	5%	0%

The manufacturing sector grew rapidly during the early period, at an average of 7 percent from 1964 to 1977. In 1979 manufacturing output reached its peak, at a level that was more than three times higher than output in 1964. Tanzania's increase in manufacturing output was faster than that of Kenya for the period 1964–74. However, the unique element of Tanzania's growth experience is the negative growth in manufacturing output from 1979 onward. From 1979 to 1982, manufacturing output almost halved: total output in 1982 was smaller than output in 1967 and only 44 percent higher than output in 1964. Economic growth in Tanzania was respectable until 1979, with a particularly rapid growth in manufacturing, although agricultural output fluctuated due to climatic conditions. But from 1979 onward, the economy contracted as manufacturing output declined rapidly and officially marketed output (as measured in both the agriculture and trade sectors) decreased. Over the entire period, the most important structural change was a decline in the agricultural sector's share of GDP. However, this finding is partly caused by the fact that the government share in output at constant prices was grossly overstated through the whole period, especially from the 1980s.

The 1966 series provides data about the size of the nonmonetary sector for the period 1964 to 1980. This sector accounted for 33 percent of total GDP in 1964, but decreased somewhat over the entire period; in 1980 its share of GDP was 31 percent. However, this sector's share was lower in the mid-1970s, when it was about 27 percent. This confirms the prediction that a large "subsistence" sector slows down measured economic change. The monetary economy grew faster from 1964 to 1979, at an average rate of 6 percent. In fact, from 1975 to 1980, the nonmonetary economy grew faster than the monetary economy, presumably because the government was prioritizing expansion in maize production after the drought and the ensuing food shortage. Another factor that likely contributed to the growth of the nonmonetary economy in Tanzania was the production that was taking place in newly established Ujamaa villages. In 1964, 53 percent of agricultural output was nonmonetary (agriculture for own consumption), a share that remained relatively stable for the next decade. From 1974 to 1980 this share increased to 66 percent.

It would perhaps have been natural to continue this account of economic performance using data from the next published series, the 1976 series. However, since the 1985 series covers much of the same ground, I now turn to that later series, which provides a second view of the early period. In this series, the annual average growth in GDP over three decades was modest at 3 percent. Total GDP increased more than three times from 1965 to 1995 measured in 1985 prices. As seen in Table 6.3, this average conceals marked differences in performance in sectors and over time.

Growth was episodic. Manufacturing growth was rapid during the first decade, then declined from 1977 to 1984 and stagnated after that. GDP and agricultural growth did revive after 1985, but this improved performance in total

Table 6.3. GDP, Tanzania, 1964–93, base year 1985 (TZS million)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Agriculture, hunting, forestry, and fishing	29,753	29,192	33,467	33,486	34,714	34,917	36,334	35,890	38,829	39,202	37,581	40,765	42,730	43,222	42,504	42,825
Mining and quarrying	607	702	827	789	489	637	417	655	513	392	379	314	410	442	362	383
Manufacturing	4,899	5,544	6,528	7,263	7,796	8,545	8,902	9,750	10,570	11,041	11,192	11,229	13,241	12,440	12,859	13,288
Electricity and water	176	183	213	227	249	283	317	332	366	393	438	478	466	519	608	676
Construction	2,145	2,237	2,508	3,381	3,560	3,312	3,693	4,295	4,543	4,722	4,667	4,428	4,061	4,203	3,597	4,038
Wholesale and retail trade and restaurants and hotels	7,911	8,383	9,741	10,073	11,217	11,490	11,617	11,476	11,689	12,266	12,607	12,679	12,893	12,634	12,702	12,893
Transport, storage, and communications	2,963	3,034	3,658	4,067	4,686	4,886	5,528	6,170	6,589	6,864	7,268	7,562	7,841	7,687	7,906	7,604
Finance, insurance, real estate, and business services	2,437	2,618	2,618	2,996	3,004	3,157	3,233	3,390	3,521	3,674	3,973	3,986	4,050	4,156	4,392	4,651
Public administration and other services	2,411	2,559	2,681	2,883	2,972	2,999	3,367	3,702	4,166	4,501	5,279	6,149	6,954	7,414	8,898	9,664
Imputed bank service charges	-229	-344	-351	-702	-573	-610	-709	-823	-888	-981	-1,002	-1,024	-961	-1,047	-1,099	-1,135
Total gross domestic product	53,073	54,108	61,890	64,463	68,114	69,616	72,699	74,837	79,898	82,074	82,382	86,566	91,685	91,670	92,729	94,887

Table 6.3. Continued

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Agriculture, hunting, forestry, and fishing	44,487	44,927	45,531	46,830	46,830	51,634	54,770	56,502	59,380	61,425	66,084	72,120	75,245	81,965	83,638	89,466
Mining and quarrying	362	369	369	333	356	333	298	302	265	274	428	659	941	1,182	1,360	1,441
Manufacturing	12,638	11,220	10,853	9,906	10,170	9,772	9,752	11,010	11,183	11,935	12,038	1,2075	11,074	11,144	10,593	10,487
Electricity and water	850	886	892	878	933	980	1,253	1,164	1,356	1,152	1,196	1,439	1,396	1,492	1,708	1,783
Construction	4,281	4,088	4,272	2,522	3,031	2,761	3,218	5,338	7,320	5,754	8,483	7,200	8,416	5,643	5,792	4,584
Wholesale and retail trade and restaurants and hotels	12,893	12,375	12,116	11,362	11,989	14,195	14,521	15,330	15,988	16,083	17,105	18,663	19,099	20,417	21,046	22,237
Transport, storage, and communications	8,460	7,687	7,883	6,854	6,896	7,021	7,274	7,702	8,038	8,056	7,732	7,858	8,266	8,154	8,796	9,613
Finance, insurance, real estate, and business services	4,939	5,031	5,375	5,604	5,936	6,059	6,445	6,589	6,776	7,490	7,684	7,945	8,334	8,957	9,750	10,530
Public administration and other services	9,466	10,543	10,558	10,531	10,537	10,735	12,855	12,871	13,282	13,899	14,237	14,649	15,202	15,044	15,932	15,859
Imputed bank service charges	-1,203	-1,244	-1,511	-1,622	-1,711	-1,806	-1,998	-2,033	-2,087	-2,142	-2,174	-2,224	-2,304	-2,600	-2,854	-2,997
Total gross domestic product	97,173	95,882	96,338	93,198	94,967	10,1684	108,388	114,775	121,501	123,926	13,2813	140,384	145,669	151,398	155,761	163,003

GDP was not matched by continued growth in manufacturing. Two other sectors that stagnated from 1977 to 1984 were trade and transport. In both sectors growth picked up in the mid-1980s, markedly so for the trade sector. The share of agriculture in total GDP was 56 percent in 1964 and 54 percent in 1995, indicating no structural change across the period. In 1979, the contribution of the agricultural sector to total GDP had declined to 45 percent. This structural change coincided with development in the manufacturing sector, which also shows no indication of structural change from 1964 to 1995; its contribution to total GDP was 9 percent in 1964 and 6 percent in 1995. In the late 1970s, however, manufacturing contributed almost 15 percent to GDP.

While the 1985 series shows a marked deterioration in economic performance in the late 1970s and early 1980s, it understates the percentage decline in manufacture and agriculture compared to the 1966 series. In the 1966 series, agricultural growth averaged -3 percent and manufacturing growth averaged -14 percent in the years 1979-82. In contrast, the 1985 report cites an average 1 percent growth in agriculture and -4 percent growth in manufacture. Contrary to what one would expect from such data, the 1985 series reports an average of -1 percent annual growth in the total GDP growth for the period (Table 6.4). The 1966 series, which was so pessimistic about productive output in the four-year period, reports a marginal increase in total GDP over the period (an annual increase of .25 percent). The difference in the shares of agriculture and manufacturing in GDP in the two series explain this difference. According to the 1966 series, the productive sectors accounted for 48 percent in 1979; the 1985 series reports 56 percent for the same year. This difference is rooted in the deflation measures used by statisticians. In Tanzania, relatively weak deflators are used for the supportive sectors and relatively strong deflators for the productive sectors. This means that over time, growth and the relative share of the manufacturing and agriculture sectors is underestimated compared to the nonproductive sectors of the economy.

The lesson to take from this is that economic performance is best evaluated using up-to-date base years. We therefore proceed to consider the late 1970s and 1980s using data from the 1976 series. These data can be compared with the 1985 series. In the 1976 series, average GDP growth from 1976 to 1993 was 2 percent, a slightly more moderate estimate than the 1985 series, which showed

Table 6.4. Average annual growth rates, Tanzania 1965-95 (percent)

	1965-95	1965-76	1977-84	1985-95
Agriculture	4	3	1	6
Manufacturing	3	9	-3	0
GDP	3	5	0	5

it at almost 4 percent. In the 1976 series, the total value added in Tanzania was less in 1985 than in 1976, indicating an aggregate growth of 0 percent in this decade. This corresponds with near-stagnant output in agriculture and a marked decline in manufacturing output. (Although manufacturing output increased by 77 percent in 1985, this was probably because a long-standing shortage in foreign exchange was relieved that year.) From 1985 to 1993 agricultural output improved, increasing at an average of 6 percent. In the 1976 series manufacturing GDP also grew, at an average of almost 4 percent.

The data in the 1976 series (Table 6.5) shows that from 1976 to 1985, a period of stagnation in total GDP, there was a slight growth in agricultural output, but the manufacturing, trade, transport, and construction sectors all declined. There was not a more marked decrease in total output because the finance and government sectors both increased by more than 50 percent. In the 1976 series, these sectors together accounted for almost 30 percent of the economy in 1985, compared to 18 percent in 1976. This structural change in the economy was reversed in the period of relative growth, 1985–95. The government sector barely expanded in this period, while expansion in the finance sector slowed down compared to GDP growth. Consequently, the shares of these two sectors in total GDP decreased. Agriculture accounted for 60 percent of the increase in output from 1985 to 1993, reversing the trend of its decreasing share in GDP. The construction, trade, and transport sectors also grew in this period.

The 1992 series covers only the period of renewed growth, 1987–95 (Table 6.6). However, in this series the rate of growth is much lower than in the 1976 and 1985 series. In the 1992 series, the average rate of GDP growth for the period 1987 to 1995 is measured at 3 percent. Data from three series exist for the period 1987–93. In the 1976 series, GDP grew at an annual average of 4.5 percent, in the 1985 series it grew at an annual average of 5 percent, and in the 1992 series it grew at an average of less than 4 percent. This difference is more pronounced in the agricultural sector. The 1985 series has the most optimistic estimate for this sector: it reports annual average growth of almost 7 percent. The 1976 series reports growth in this sector at an annual average of 6 percent, while the 1992 series reports an annual average of 3 percent growth.

The differences in growth for the period 1987 to 1993 across the three series are larger than the differences in GDP by sector. For the year 1987, the share in GDP for agriculture is 46 percent in the 1976 series and 49 percent in both the 1992 and 1985 series. The major difference in the three series is that for 1987 the government sector was estimated at 12 percent in the 1976 series, 11 percent in the 1985 series, and only 8 percent in the 1992 series. For that same year, the finance sector was shown at only 6 percent in the 1985 series, while it was 13 percent in the 1976 series and 10 percent in the 1992 series. Another important difference is that the 1992 measures the trade sector at 16 percent

Table 6.5. GDP, Tanzania, 1976–93, base year 1976 (TZS million)

[illegible]

Table 6.6. GDP, Tanzania, base year 1992 (TZS million)

	1987	1988	1989	1990	1991	1992	1993	1994	1995
Agriculture, hunting, forestry, and fishing	521,725	533,184	553,805	584,070	604,921	612,402	631,422	644,718	682,338
Mining and quarrying	8,465	8,529	9,634	11,226	12,436	13,503	14,608	16,803	18,768
Manufacturing	94,781	97,730	102,814	107,008	109,002	104,589	105,244	105,042	106,750
Electricity and water	14,005	15,312	16,707	18,029	20,026	19,766	19,937	20,329	21,578
Construction	50,660	62,368	53,660	70,016	65,064	68,860	58,955	59,783	50,983
Wholesale and retail trade and restaurants and hotels	176,220	181,040	184,896	198,611	203,575	202,207	201,370	203,684	210,813
Transport, storage, and communications	53,225	54,938	56,153	56,453	57,963	66,191	66,256	66,875	70,833
Finance, insurance, real estate, and business services	103,324	109,249	119,494	121,567	123,300	127,971	134,103	137,727	138,510
Public administration and other services	90,225	99,034	102,805	105,895	111,176	117,419	112,879	112,787	109,763
Imputed bank service charges	-41,270	-42,365	-52,223	-53,639	-54,431	-56,992	-63,767	-68,805	-65,090
Total gross domestic product	1,071,360	1,119,019	1,147,745	1,219,236	1,253,032	1,275,916	1,281,007	1,298,943	1,345,246
<i>Average annual growth rates, 1987-95</i>									
Agriculture	3%								
Manufacturing	2%								
GDP	3%								

of total GDP, compared to 13 percent in the 1985 series and 12 percent in the 1976 series. This is because the 1992 series included more information about informal marketing activities. The differences by sector do not directly indicate the reasons for the different views on agricultural output performance in the late 1980s and the first half of the 1990s.

It is difficult to harmonize the different series to understand economic performance after the decline in the late 1970s in Tanzania. The differences in the estimates for marketing output and trading in the three relevant series probably derive from different ways of taking account of agricultural output that is marketed outside the official marketing channels. In addition, the differences in how the three series estimate the economic revival of the late 1980s through the early 1990s will depend on how sensitively each series recorded “new” output in informal marketing channels and “old” output in the formal sector. For example, if a 1985 estimate that recorded output as the output that went through official marketing channels is followed by a 1992 estimate that takes into account the official marketed output plus an addition for informally marketed output, then the 1992 series will overestimate growth. An overestimate of growth also occurs when officially marketed (and therefore recorded) output increases as a reaction to better prices in official channels at the same time that unrecorded marketing decreases. This is why the conservative 1992 estimates are likely to be a better approximation of the true rate of growth. To what extent the decline in output was overestimated in the early 1980s is hard to tell.

Tanzania’s growth performance was marked by rapid expansion in manufacturing and a not-so-rapid expansion in agriculture from independence to the late 1970s. From the late 1970s to the mid-1980s, recorded output declined in most sectors. There was a slight revival in the 1990s, but growth in that decade was not as rapid as some of the earlier estimates indicate. Older estimates probably exaggerate both the decline and the revival, but while the newer data in the 1992 series measured the revival more conservatively and probably more accurately, the extent of the decline is a matter of judgment. If one is interested in GDP numbers as a way to assess the growth of physical production, most data from 1978 to 1985 are probably too poor. All of the series fail to capture the real trends in production, so the extent of economic decline in the 1980s and the revival in the 1990s is misstated in the available economic growth evidence. But if one is interested in GDP figures as a measure of Tanzania’s ability to produce agricultural output, the data are probably more accurate.

POLICY AND PERFORMANCE

Mwase and Ndulu (2008), who contributed the chapter on Tanzania to *The Political Economy of Economic Growth in Africa*, identify four decades of

episodic growth in Tanzania. They also identify a “strong control regime” for the period 1970 to 1985, which coincides with part of the presidency of Julius Nyerere. They find that there was early success during the first ten years of independence but that “Tanzania’s growth experience during the control regime period was low, largely on account of economic mismanagement” (2008, 427). They also note that Tanzania’s move toward liberalization was “accompanied by a strong revival in growth” from 1985 to 2000. While this summary neatly matches a narrative in which liberalization causes growth and controls slow growth, the coherence of this analysis with the growth evidence can be questioned.

First, there is an element of confusion, if not gerrymandering, in how they correlate growth episodes and the periods of the “control regime.” The introduction to their chapter refers to a ten-year period of growth after independence (1961–71). But when Mwase and Ndulu calculated average growth rates for the control regime, they used the period 1970 to 1985. Later in the chapter they use the term “early growth” to refer to the period 1961 to 1967, and the term “period of strong control” for the period 1967 to 1985. In other words, the coincidence of slow growth and strong control is not consistent in their chapter.

Second, Mwase and Ndulu claim that while there was a renewal of growth after 1985, it was not strong and did not characterize the entire fifteen-year period (1985–2000). It is true that Tanzania’s economy experienced a renewal in growth after a prolonged period of negative growth, but that growth episode does not compare favorably to the rate of growth in 1967–73, the years of Tanzania’s move toward a socialist economy and the first oil price shock, as I have shown above. There is also uncertainty about the direction of causation. Economic controls increased in response to exogenous economic shocks. These shocks constrained growth directly. Because Mwase and Ndulu’s “strong control regime” coincided with the period when these economic shocks occurred, it is difficult to tell whether it was the external shocks or the increased economic controls that affected the rate of growth. Mwase and Ndulu note that government-initiated reforms were implemented as early as 1982, but they identify the first decisive move toward a market-based economy as taking place in 1985, when Ali Hassan Mwinyi succeeded Nyerere and donor-supported reforms began. They write, “The single most important success of this regime was the freeing-up of the key product and resource markets and removal of the rents associated with price and exchange controls” (Mwase and Ndulu 2008, 408). Campbell and Stein (1992) contest this account of the events. They point out that the Tanzanian leadership emphasized that economic liberalization predated the IMF reforms of 1985 and argue that the presence of Nyerere during the reform process was “crucial” (1992, 81).⁶ The success of the structural adjustment reforms in the 1980s was certainly mixed, and the extent to which rents were appropriated in 1985 is questionable. It is

more likely that no actors were benefiting from the economic situation from 1980 to 1985 and that reforms were therefore easier to embrace. According to Mwase and Ndulu, there was a weakened commitment to reform in the early 1990s, but when Benjamin Mkapa succeeded Mwinyi, reforms got back on track (Mwase and Ndulu 2008).

In Mwase and Ndulu's treatment of Tanzania there are two notable departures from the practices of the previous growth literature. First, the authors noticed that in 1988 there is a mistake in the PWT data for Tanzania. In a footnote to their Figure 1.1 (Ndulu et al. 2008, 7), they note that in the econometric analysis "1988 is treated as a missing observation because the series shows an erroneous massive downward adjustment in that year." This is an improvement from the analysis of Durlauf and colleagues, who treat this statistical error as one of the top ten output shocks (2005, 574). On the other hand, treating 1988 simply as void is not satisfactory and does not solve the problems of the PWT series. Why would one accept 1988 as void and then accept the rest of the series? When one examines the data, there are good reasons to discard the entire PWT series for Tanzania as unreliable. To accept 1988 as void and keep the rest of the series increases the reliability of the series (Table 6.7). The resulting evidence misleadingly strengthens support for the hypothesis of a sharp recovery in growth in the reform period.

For the year 1987, the national statistics made a massive and erroneous upward adjustment that was retained by the PWT; it records 20 percent growth for that year. There is another massive and probably erroneous adjustment in 1992 and 1993. This means that the revised PWT series seriously overestimates post-structural adjustment growth in Tanzania. If data for the year 1988

Table 6.7. Tanzania 1985–95: Sharp recovery in GDP growth?

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Average
<i>Penn World Tables</i>												
PWT 6.1	9	6	20	–33	5	3	3	–9	13	1	3	1.9
PWT Revised	9	6	20	VOID	5	3	3	–9	13	1	3	5.4
Maddison	0	3	5	4	3	4	2	1	1	2	4	2.6
<i>Official National Statistics</i>												
1976 Series	–3	3	5	4	4	5	6	4	4	—	—	3.6
1985 Series	7	7	6	6	2	7	6	4	4	3	5	5.2
1992 Series	—	—	—	4	3	6	3	2	0	1	4	2.9

is retained, as it is in the original erroneous series from PWT, the growth for 1985–1995 averaged almost 2 percent. This was probably an underestimate. However, when the data for 1988 is omitted, as Ndulu and O’Connell opted to do, the average rate of growth for 1985–95 is 5.4 percent.

Mwase and Ndulu make another claim that is a clear improvement in the historical narrative. They argue that Tanzania is characterized by political stability and ethnic cohesion built around the common language of Swahili and that this is because of Nyerere’s sustained effort to foster unity (Mwase and Ndulu 1998, 430). This analysis contrasts with the erroneous impression created by scholars such as Easterly and Levine (1997, 1237) who use the index of ethnolinguistic fractionalization to explain economic growth. On that index Tanzania appears to be the most fragmented country in the world; Easterly and Levine argue that all the growth differential between Japan and Tanzania in the 1970s and 1980s can be explained by the fragmentation they claim prevailed in Tanzania. They also assume that this fragmentation could explain the high black market premiums observed in Tanzania. That kind of explanation can be safely disregarded. The growth differential and the black market premiums had other causes. The high black market premiums are more directly explained by the fact that the political leadership chose to follow fixed exchange rates in this period. Therefore, when the economy was exposed to economic shocks that constrained access to foreign exchange in the late 1970s and the 1980s, the black market premiums increased rapidly.

Mwase and Ndulu argue that the early growth in the period 1961–67 is attributable to a continuation of colonial-era policies, and they see the Arusha Declaration of 1967 as a decisive move toward growth-retarding policies that were not reversed until the reforms associated with the Mwinyi administration in 1985.⁷ They characterize the period from 1967 to 1985 as one of strong regime control. However, they looked at growth rate per capita for only part of this period of “strong regime control” (1970–85) and found an estimated annual growth rate of 1 percent (Mwase and Ndulu 2008, 433). The direct effect of the controls on growth is actually more difficult to measure than one would think from Mwase and Ndulu’s account. The combination of the end of the coffee boom in 1978, the oil price shock in 1979, and the war with Uganda in 1979 contributed significantly to the decline in growth in the 1980s, but Mwase and Ndulu argue that it was the policy reaction to these shocks that was the decisive factor in the decline. They observe what they refer to as a “sharp recovery” in income growth per capita from 1985 to 1989, and they find that a period of low growth followed in 1990–95 as “adherence to the reform process” diminished. However, it is not clear that the evidence supports this interpretation. The PWT data are too weak to be the basis for any conclusion. But turning to the Maddison dataset does not solve the problem; according to Maddison there is no discernible difference between these two periods. As the earlier part of this chapter demonstrated, there are problems with how the

official national statistics measure performance in both the period of decline (1985–89) and the period of relative improvement (1990–95). Although the only series that covers all the years (the 1985 series) does not indicate any marked change in performance between 1985–89 and 1990–95, the growth evidence is too unreliable to evaluate the direct growth effect from the reforms.

One of the clear achievements of Nyerere's rule was the unification of Tanzania and the avoidance of major strife over the distribution of economic gains. Nyerere's government placed a premium on equality, and state intervention in maize marketing during his administration was aimed at equalizing development across Tanzania. When his government introduced pan-territorial pricing, trading companies became responsible for the transportation and other costs associated with procuring goods from distant locations. In addition, the government set prices to ensure acceptable consumer prices. The fact that these practices led to losses for the parastatal trading companies is well known (Mwase and Ndulu 2008, 445), but the policies were pursued for sound reasons, such as equity in regional income distribution. The other main feature of Nyerere's agricultural policies was the Ujamaa, or villagization, program, an effort to create a cooperative structure that would replace independent small-scale peasant production. The ideals behind this program were similar to those that informed pan-territorial pricing. Equal access to public services such as health and education was an important justification for this policy. There is some debate about how effective these policies were. For example, scholars disagree about whether the food crisis in 1974–75 was caused by the drought or by the collectivization policy. Hyden takes the position that "the argument that villagization was the principal cause of Tanzania's decline in agricultural production in the mid-1970s does not hold water" (1980, 146). However, these policies were costly and may not have been justified from an efficiency perspective.

Mwase and Ndulu concede that "it must be stressed that without investment in creating a united nation of diverse ethnic groups, Tanzania would probably have succumbed like some of her neighbours to inter-ethnic squabbles leading to political and/or civil instability" (2008, 449). Barkan confirms this and compares the situation in Tanzania to conditions in Kenya (1994, 23): "Whereas Kenyatta wanted to encourage the growth of exports and was not concerned that the benefits flowed mainly to the members of one ethnic group (i.e. his fellow Kikuyu), Nyerere was intent on equalizing incomes among all rural dwellers." However, an analysis that relies on the inefficiencies of the state marketing system alone isn't adequate; it fails to take into account the economic externalities of market-led development. Furthermore, the growth differential in agriculture for Kenya and Tanzania was negligible. In addition, Kenya's agricultural exports grew at annual rate of 7.4 percent, compared to 6 percent for Tanzania for the period 1959–71 (Stein 1979, 91). It should also be taken into account that during this period the world market for Tanzania's

principal export (sisal) collapsed and the output of sisal in Tanzania decreased sharply, partly because of the predicted decline of the trade (Green, Rwegasira, and Van Arkadie 1980, 83).⁸ This is not inconsistent with the view that political motivations were different in Kenya and Tanzania, but it does support the claim that growth differentials were not that evident in the period.

The spectacular decline that took place in the 1980s cannot be accounted for solely by the sacrifices that were made for the sake of economic equality and political stability. Mwase and Ndulu note that for producers who lived close to urban markets there was a temptation to turn to parallel markets for their produce (2008, 445). However, they do not say how large these parallel markets were in the 1970s or how disruptive they were for economic growth. Crops sold in parallel markets would of course not be part of the official statistics and, as a result, the growth of such markets would have been measured as a direct negative growth effect (in the sense that growth in black market goods is recorded by their disappearance from the recorded economy). The negative growth effect from parallel markets is accounted for precisely because the trading of these goods is not recorded in the official statistics. In 1986, Collier et al. reported that "the country's informal economy has claimed much of the produce of the predominantly peasant agricultural sector. Peasants appear to have shifted from export and non-food crops to food crops for their own subsistence and for local informal trading" (135–6). Tripp (1997) emphasized the growth of the informal economy in cities during the same period, and Maliyamkono and Bagachwa (1990, 133) estimated that in 1990 the unrecorded economy had "reached some 30 percent of official GDP." These observations confirm the data collection problems of the 1980s and early 1990s. It is likely that the official data overestimate the decline of economic activity in the 1980s, and overestimate its increase in the 1990s after liberalization measures.

Bevan et al. (1990) explain the differences in the economic performances of Tanzania and Kenya in the late 1970s by looking at the coffee boom in both countries from the late 1970s to 1984. They argue that the divergence in outcome can be explained by the initial policy environment. Green et al. (1980, 85), on the other hand, point to the external market constraints on exports. "Both the terms of the International Coffee Agreement and the weight of international advice strongly discouraged any initiative to expand coffee output in the late 1960s," they conclude. The International Coffee Agreement subjected Tanzania to a quota for coffee exports. Although Tanzania could get around the quota by exporting to countries that were not members of the International Coffee Organization, it would be difficult to argue that the Tanzanian government should have practiced an expansive pricing policy to that end, because of the diplomatic repercussions such activities would have had and because sales in the oversupplied markets of nonmember countries fetched significantly lower prices. Clarke (in Helleiner 1968, 170–1) has noted that Kenya conducted the bargaining for the coffee agreement "with great skill." However,

Clarke also pointed out that there was an element of luck. Immediately before independence (1962–63), 70,000 acres were planted with coffee in Kenya, and without this planting Kenya's bargaining position would have been much weaker. For Tanzania, Clarke remarked that "there is no point whatsoever in paying people to produce coffee which cannot be sold" and that the problem there was "how to prevent coffee growers from increasing production beyond these quantities." Mshomba's (1993) analysis of coffee-smuggling to Kenya from Tanzania supports this view; he notes that the "export quotas set for Kenya and Tanzania have normally been lower than these countries' exportable outputs." The official data from the marketing board in Tanzania reported in Sharpley (1985, 76) show that coffee exports from Tanzania stood at about 50,000 tons throughout the 1970s. This could be analyzed as "stagnant" output or as the result of adhering to actual export quotas, as discussed in Clarke. However, Mshomba (1993) estimates that the volume of smuggled coffee increased from 1,500 tonnes in the early 1970s to 5,000 tonnes in 1976 before it decreased during the coffee price boom in 1977 and 1978 and then increased to more than 10,000 tonnes in 1984 and 1985.

Mwase and Ndulu note that Tanzania's marked industrial decline in the 1980s was a direct cause of the "decline in foreign reserves following the external shocks of the late 1970s" (2008, 446).⁹ The government responded to a foreign exchange crisis in 1973 by increasing foreign exchange controls. These controls were temporary measures to deal with the economic shock, and when the coffee boom made it possible, import restrictions were relaxed. Tripp explains: "At a crucial juncture in 1977 the IMF and the World Bank advised Tanzania that its accumulation of external reserves was too high and that it should not hoard its reserves but spend them to develop more rapidly. Thus, following the advice of the Fund and Bank, Tanzania 'deconfined' its imports from control by six parastatal organizations under the Board of Internal Trade; that is, it liberalized imports, allowing importers to purchase goods outside government control" (1997, 66). However, Tanzania aborted this import liberalization after the external shocks of the collapse of coffee and tea prices in 1979. In the 1980s, black market premiums spiraled out of control for the first time. The currency had been stable against the dollar in the 1970s, but from 1980 to 1985, the premium increased to over 200 percent (Mwase and Ndulu 2008, 450). Thereafter exchange rates were subject to some realignment and liberalization, but the black market premium persisted into the 1990s.

Mwase and Ndulu do not offer a strict account of Tanzania's decline in economic growth, but they loosely associate increasing growth with liberal policies and periods of decline with restrictive policies. They do not say what they think the Tanzanian leadership should have done differently. From the evidence I present here, it seems plausible to argue that the economic shocks were the drivers of changes in both policy and performance. It is worth remembering that, initially, bilateral donors were very supportive of Nyerere's rule and

his version of African socialism. That changed in the 1980s when multilateral donors demanded policy change as a condition for continued support.¹⁰ This is a strong indication of the shift in economic development thinking and a reminder that judgments about the rationality of economic policies are products of their times. Whether or not a legitimate link can be made between economic control and slow growth, on the one hand, and liberalization and rapid growth, on the other, depends on which periods one chooses to look at and which growth evidence one relies on. Although Mwase and Ndulu (2008) seek to distinguish the effects of economic shocks from the effects of economic policies by extending the period of “strong control” backward to 1967, Ndulu and Mutalemwa earlier argued that “the first major break in Tanzania’s economic growth occurred in 1978” (2002, 48). Until 1978, eleven years after the Arusha Declaration, Tanzania’s economic performance was not significantly different from that of Kenya. Barkan (1984, vii) has described Kenya and Tanzania as “virtually pure examples of the two most significant models of development,” patron-client capitalism and one-party socialism, respectively. One of the lessons he suggested from the comparison was that “slower rates of progress” would “accrue to countries pursuing socialist, as opposed to capitalist, development objectives” (1984, 35). In a follow-up study in 1994, Barkan noted that since 1979, stagnation and structural adjustment meant that economic policy in the two countries had converged. While he acknowledged that the downturn in economic performance could partly be explained by external factors, he argued that the principal cause of decline in Tanzania was “excessive state intervention.” The results were predictable. From 1965 through 1980, Tanzania’s overall annual rate of economic growth, as well as the annual rates of growth in agriculture and manufacturing, were roughly half those of Kenya. Though Kenya established its own parastatal enterprises in pursuit of import substitution, these state-owned industries never dominated the country’s manufacturing sector as in Tanzania (1994, 23).

Barkan has made too much of the contrast before 1980, and his interpretation is not supported by the growth data I have presented in this chapter. The factor that makes Tanzania’s economic performance different from that of Kenya is the depth of the decline after the price shocks of 1979. Whether or not its aggregate growth recovered is a matter of accounting controversy, but there is no doubt that the manufacturing sector did not recover from the external shocks of the late 1970s and the subsequent reforms.

NOTES

1. In addition, a study undertaken by Peacock and Dosser (1958) was published as *The National Income of Tanganyika, 1952–1954*.

2. The series was published as *The Gross Domestic Product of Tanganyika 1954–1957*. The *National Accounts of Tanganyika 1960–62* was published in May 1964.
3. The work done in this regard is published in *National Accounts of Tanzania 1966–68*; *National Accounts of Tanzania 1966–68: Sources and Methods*; *National Accounts of Tanzania 1964–70*; *National Accounts of Tanzania 1966–72*; *National Accounts of Tanzania 1966–74*; *National Accounts of Tanzania 1966–76*; *National Accounts of Tanzania 1966–80*; and *National Accounts of Tanzania 1970–82*.
4. The results of this exercise can be found in *National Accounts of Tanzania 1976–84: Sources and Methods*; and *National Accounts of Tanzania 1976–84*; *National Accounts of Tanzania 1976–86*; *National Accounts of Tanzania 1976–87*; *National Accounts of Tanzania 1976–88*; *National Accounts of Tanzania 1976–89*; and *National Accounts of Tanzania 1988–2001*.
5. See Jerven (2011d).
6. Nyerere resigned from the presidency in 1985 but stayed on as chair of the ruling party, Chama Cha Mapinduzi (CCM), until 1990.
7. Some would contend that 1967 was not such a decisive break. Coulson (1981) sees continuously strong and misguided state intervention in agricultural policy from the “groundnut scheme” of 1945–55 through the villagization campaign of 1969–76.
8. “However, the expansion of sisal processing has meant that both the value added and the export earnings in the industry have declined less than would be suggested by the output or export price performance” (Green, Rwegasira, and Van Arkadie 1980, 83).
9. Wangwe (1988, 76) reports negative industrial growth from 1979 to 1985 and links the decline to balance of payment problems. De Valk (1996) documents continued decline in the textile industries after liberalization measures in 1985.
10. This was partly because of a change in donors; the trend was away from bilateral aid and toward multilateral aid.

Economic Growth and Measurement Reconsidered: Zambia

Before independence in 1964, Zambia's 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, where the national accounts for 1964 were prepared on "substantially the same frameworks as for earlier years" (Republic of Zambia, Central Statistical Office 1967, 37).¹ However, in the context of the new economic and political conditions associated with independence, 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 both supply and demand. In other words, the national accounts had to be based on the "commodity approach" instead of the "income approach" that had been used in previous years. This implied an upward revision that would include nonmonetary activities such as production for own consumption and smaller-scale transactions. In short, an earlier neglected part of the population was now seen as economically and politically—and therefore statistically—important.

This analysis of the evolution of the Zambian national accounting methods is based on the reports available from 1964 onward. The Lusaka reports were available only until 1973, after which only an annex report to the 1973–8 accounts was obtainable. Between that report and 1992 there is a unfortunate lack of reporting on the methodology used to prepare Zambia's national accounts. This means that very little is known about the estimates and the procedures used to create the accounts in the 1980s. There is a publication containing estimates of current and constant price GDP for the period 1965–2000, so there is some official data for that period, but it does not bridge the gap in our knowledge about the methods used for estimating in the 1980s. At the Central Statistical Office in Lusaka neither the national accountants nor those responsible for library/data dissemination functions could say whether no reports had been issued in this period or whether they had simply gone missing.

It is indicative of the economic development experience that “the lost decades” (Easterly 2001b) have indeed been lost in national accounting terms. It also exemplifies the loss of institutional memory: the national accounting team cannot account for the estimating procedures used for a decade or more. Finally, it shows how the lack of economic resources and state finances hinders efficient economic planning. Librarians at the University Library Special Collection, which functions as a legal depository of official documents, and the national archives, which have the same legal rights, lamented this fact. Publications for the 1960s and early 1970s were present and cataloged, but after that there was a gap in the documents deposited. It was explained that while the libraries had the legal right to the documents, there were no funds for transportation and acquisition either at the Special Collection or in other libraries. The librarian in each location explained that they would have had to collect the documents personally, and understandably this had not happened.²

This survey will, then, be essentially a study of how national accounting was carried out in the early years. Those methods can be compared with those used in the 1990s. Zambia is a distinctive case in this sample of countries, as there was a radical shift in the method of accounting during the period covered by the study. The practice of using basic statistical data to compile production-based accounts that was followed in the early period was replaced with an estimation method that almost exclusively uses performance indicators. This could be interpreted as an accommodation to the growing lack of resources for basic data collection. The new method, which was introduced late in the period, is unique in this sample and will be examined later. First, I will describe the accounting methods of the 1960s and 1970s.

ZAMBIA NATIONAL ACCOUNTS ESTIMATES: 1964–73

The 1964–67 report cautioned that “the statistical basis for a commodity approach is far from satisfactory. By making full use of the scattered information available in the existing statistics[,] however, and by making a special enquiry, the results obtained seem reasonable” (Republic of Zambia, Central Statistical Office 1967, 37). However, the author of the report felt that “the basis for an income approach is [in] most cases more unsatisfactory” (Republic of Zambia, Central Statistical Office 1967, 37). In the next report, which covered 1968, no such modesty was expressed and no warnings were issued about the statistical basis, although there was no improvement in the basic statistical data. The usual practice was to include input and output tables in the annual reports. In the 1968 report they were missing, because “a considerable part of the professional personnel of this office was engaged in the work relating

to Census of Population and Housing, 1969” (Republic of Zambia, Central Statistical Office 1968, 1). This provides a good indication of the personnel shortage that constrained what the CSO could do at that time.

The national accounts estimates in the early reports were mainly based on a special National Accounts and Balance of Payments inquiry, which “covered all industrial groups except agriculture, forestry, hunting, fishing, manufacturing, construction, electricity and water” (Republic of Zambia, Central Statistical Office 1967, 37). In practical terms this meant that the census covered relatively few sectors (four out of nine ISIC sectors), although it reportedly covered all enterprises in the metal mining, banking, financial institutions, and insurance groups. In addition, in other sectors, enterprises that accounted for more than 20 percent of the gross production value in their respective sectors were covered in the statistics. It was not reported how this applied in practical terms.³ In order to get the aggregate number, “the results for each the industrial groups were grossed up in the same proportion as that between total employment in the group according to employment statistics and the employment in the sample investigated, except for manufacturing, construction, electricity and water” (Republic of Zambia, Central Statistical Office 1967, 37). A later report conceded that this method involved “some margin of error... since it assumes the relations between employment in responding and non-responding units to hold good for all other characteristics also” (Republic of Zambia, Central Statistical Office 1973, 6).

The 1970 report stated that the annual national accounts inquiry “cover[s] only distribution and service sectors; it is conducted as a census of all the large and medium size units and a sample survey of small units” (Republic of Zambia, Central Statistical Office 1973, 6). To supplement this inquiry, the annual Census of Production covered the mining, manufacturing, construction, electricity, and water sectors. An annual survey of commercial farmers supplied the necessary data for “the organised agricultural sector,” while for the “the rural subsistence sector, rough estimates are made and incorporated in the accounts” (Republic of Zambia, Central Statistical Office 1973, 6). The report commented that the rate of response had improved and that in mining and electricity there was a 100 percent return. In addition, “in the case of many other important ISIC sectors the responding establishments accounted for more than 70 percent of the volume of business” (Republic of Zambia, Central Statistical Office 1973, 7).

The 1972 report (the 1971 report could not be found in the CSO library or any other legal depository) was not published until 1978, a considerable delay. For that report, statisticians decided that instead of revising the data backward, they would keep the 1965–70 accounts according to the old SNA. For 1970, estimates according to both versions were made, and in the 1971 and 1972 reports, the accounts used the new SNA (Republic of Zambia, Central Statistical Office 1978b, 1).

The basic statistics on agriculture in the first national account reports covered commercial farming (non-African) and registered sales from African farms. These reports estimated subsistence farming and hunting “mainly in accordance with information given by the F.A.O. about per capita consumption of different kinds of commodity” (Republic of Zambia, Central Statistical Office 1967, 37). The agricultural statistics provide no information about input in farming. Fishing statistics provide information about the quantity of total catches and sales. In the tables, the output of the agricultural sector is divided into commercial farming and “other.” It should be noted that the registered sales from “African” farms are included under commercial farming.

The 1970 report (published in 1973) stated that it “ha[d] been felt for a long while that data incorporated in the national accounts in respect of the rural subsistence sector are far from satisfactory” (Republic of Zambia, Central Statistical Office 1973, 6). The 1967 report made this comment about the treatment of the nonmonetary sector: “In principle all production of goods and services should have been included in the national accounts whether exchanged for money or not. It is, of course, impossible to follow this procedure rigidly simply because there is not sufficient information about all activities in the country. Accordingly, all unpaid services and other production at home, such as preparing food, cleaning and sewing and repairing clothes and footwear, etc. are not included. Excluded are also a great number of minor services exchanged between people, some rendered free or others paid for” (Republic of Zambia, Central Statistical Office 1967, 38). In effect this meant that in the total production data, only products from agriculture, forestry, hunting, and fishing were included plus “what has been consumed by the producers themselves” (Republic of Zambia, Central Statistical Office 1967, 38). Unfortunately, this report offered no information about how big this own-consumption proportion was assumed to be. Of other goods and services, only those that had been exchanged for money (except net rent of owner-occupied dwellings) were included.

For “subsistence” agriculture no further revisions were made to the benchmark estimates for volume changes on the basis of population increase in rural areas and for annual price variations. The report on the First Census of Agriculture 1970–71 (which included a sample survey of noncommercial farmers) provided benchmark data for this sector for the years 1969–70 and 1970–71. Figures for retention of crops for consumption by the “subsistence” sector were obtained as a residual after subtracting the value of commercial sales from production values. For items not fully covered by the Census of Agriculture, available evidence on consumption from a pilot Household Budget Survey (HBS) of rural households during 1972–73 was used. The provisional results of the Agriculture and Pastoral Production Survey (Non-Commercial Farmers) for 1971–72 were not considered to be very satisfactory and were said to be reviewed against the results of the Agriculture and Pastoral

Production Survey of 1972–73 (Republic of Zambia, Central Statistical Office 1978b, 5). The 1971 report contained the first constant price estimates by sector. The first four ISIC sectors were deflated using the wholesale price index. Construction was deflated with the Index Numbers of Building Materials. Of particular importance for constant price series in Zambia is the treatment of the price of copper. Since copper prices were fluctuating in the international markets, the GDP at 1965 prices that had been obtained by deflating the series by price indices, as indicated above, would lead to a rather distorted picture of the growth of real income in the country, which relies heavily on exports of copper and other metals. The CSO considered the quantity of goods and services that could be purchased every year from abroad using copper export earnings to be more relevant than a series indicating the quantity of production of copper. It was therefore decided, from the 1971 report onward, to allow for changes in terms of trade. This allowance was made by taking the deflated series of GDP at 1965 prices and adding the difference between (1) the current value of exports deflated by the import price index; and (2) the series obtained by deflating exports by the export price index. This was done for copper only, and the correction was incorporated in the GDP for mining and quarrying and carried through to the total GDP series.

In 1971, the total GDP figures thus compiled for all economic activities differed slightly from the totals compiled by deflating the different categories of GDP expenditures. This difference is shown as “errors and omissions.” In 1972 the deflation method for the construction sector was improved by using the indices of average annual earnings of construction workers in the calculation of weighted averages of building material price indices. Other adjustments were made to the real estate and business services sectors. These improvements and adjustments affected the estimates at current and constant prices on both the production and the demand sides. In 1973, the value of “subsistence” agriculture was deflated on the basis of the size of the population in rural areas, which was used as a volume index. In the 1973 report, double deflation was used in some industries and in commercial agriculture and mining. Using the population measure to deflate “subsistence” production means that there will be no growth in constant terms, since current growth is obtained by inflating for population growth.

ZAMBIA NATIONAL ACCOUNTS ESTIMATES: “THE BETWEEN YEARS”

From 1973, national account reports and any other publications relating to accounting methodology are not available. As mentioned above, in 2007 the Central Statistical Office was unable to determine whether this was because reports had gone missing or because they had never been published. Before

I describe the changes in the methodology, starting with the 1994 revision, I will piece together the little information we have on these gap years.

One unpublished report, entitled “Annexes to Provisional Estimates: Consolidated National Accounts 1973–1978” indicated some accounting uncertainties. In Annex 1, it was noted that the data from 1973–75 were likely to undergo some revision and that the data from 1975–78 were denoted as “provisional.” This report also featured the informal terms applied to some of the numbers in the accounts: one asterisk indicated a “guesstimate” and two asterisks a “guesstimate with a weak basis.” The report also noted that the 1978 data on agriculture was based on forecasts, which “probably [were] taken too high” (Republic of Zambia, Central Statistical Office 1978a, App. 2.1.2), and that during surveying, some of the tables containing some miscalculations had been discovered. In addition, the Agriculture and Pastoral Production Survey of 1977–78 added some information to the estimates for agriculture in the late 1970s. The survey reported that the response rate had increased from 22.3 to 25.8 percent: in 1977–78 the survey had sent out 2,025 questionnaires and 523 farmers had replied.

A *Seminar Report on Statistics Required for Economic and Social Planning*, which the CSO published in 1977, indicated that the surveys of agriculture were consistently performed in the 1970s and that plans were being made to expand that survey. Mulenga, the director of the CSO at the time, expressed some reservations about the response rates: “Although the Census aims at complete enumeration there has usually been a high degree of non-response. Aggregates are estimated by using suitable expansion factors to allow for non-responding farms.” Mulenga also noted that “there are deficiencies due to methods of estimation. For instance, as far as Zambian estimates are concerned, the subsistence sector in agriculture and informal sector in industries, trade, transport and construction have not yet been properly accounted for due to lack of adequate information” (Republic of Zambia, Central Statistical Office 1977, 31).

The *Statistical Bulletin No. 4* (June 1992) confirmed that it was likely that this method had been used earlier, based on the types of indicators that were published in the annual *Zambia in Figures*. According to a report about the 1994 rebasing, 1977 was the base year previously used, and it is probable that the predominant use of performance indicators date from that year and that the progressive lack of basic statistical data prompted a gradual shift toward estimation by proxy. Detailed information on estimation is not available until the reports associated with the 1994 rebasing.

ZAMBIA NATIONAL ACCOUNTS ESTIMATES: FROM 1994 ONWARD

This section’s description of the national accounting methodology in Zambia in the 1990s is based on four documents, two of which were unpublished and

were compiled for internal distribution at the CSO. Together the documents give up-to-date and detailed information about how GDP has been estimated in Zambia from the new benchmark year 1994 up to the present day. These documents were still being used as guidelines for the estimation of GDP in 2007.⁴ The first published document relates to the GDP 1994 revision and rebasing and the second was a short explanation accompanying the publication of full current and constant estimates of GDP for the period 1965–2000.

The report for the 1994 revision begins by stating that “inflation rates of more than 200 percent in the early 1990s had adverse effects on the provision of macroeconomic statistics” (Republic of Zambia, Central Statistical Office 1994, 1). Creating meaningful data on year-to-year real economic growth in those circumstances is complicated. Furthermore, structural adjustment brought large structural shifts, and among other things “the break up of the former large parastatals meant that previous sources of data were not available.” As a result, a revision and a rebasing were overdue; it was acknowledged that the current “base year of 1977 was obsolete” (Republic of Zambia, Central Statistical Office 1994, 1), since the previous estimates largely “excluded [the] informal sector and therefore impaired the value of GDP estimates over time, in all sectors except agriculture.” The new estimates used economic performance indicators to project from the benchmark valuation to make new national accounts estimates. These benchmarks “were becoming inadequate, and over time provided less accurate estimates” (Republic of Zambia, Central Statistical Office 1994, 1).

The adoption of a new base year must be informed by several important considerations. It must be normal in terms of prices and economic stability, not subject to a boom or a depression or the effects of catastrophes such as floods or droughts. In addition, the base year must be in the recent past. The base year should be one for which most data required is sufficiently available for reliable estimates. In addition, the base year should ideally be of some economic importance for the country. The CSO stated that “relative to 1992 and 1993, 1994 was considered stable, in terms of prices. There was no drought, so the prices were not affected by a bad agricultural harvest” (Republic of Zambia, Central Statistical Office 1994, 3). What mattered most was there had been an HBS in 1994, the first since 1975–76.

National accounts estimates at constant prices are compiled to measure changes in the volume of goods and services produced in a national territory. The objective is to show the changes in production with the effect of price changes stripped out. Because of changes in relative prices, the shift in base year affects annual changes in GDP. For example, an industry with higher relative prices in 1994 than in 1977 will have a larger impact on the growth rate of GDP at 1994 prices compared to the rate at 1977 prices. As I have mentioned, in the estimates before 1994, the informal sector (except for agriculture) was largely excluded from the national accounts and other official statistics in

Zambia. This sector became particularly important after the economic reforms of 1991. Informal sector estimates were included in the benchmark year and in the years that followed.

The revision of the benchmark year and the new projections caused some changes. Value added for the agricultural subsector was revised upward, mainly because of new data relating to crops and livestock. Value added in forestry and construction was revised downward. According to the revised estimates, total GDP was 13 percent higher than before. The shares of agriculture and mining in GDP before the revision were estimated as 18.2 and 6.4 percent of total GDP, respectively; their respective shares after revision were 13 and 9 percent. The implementation of the SNA increased the value added estimates for the agriculture, food processing, and government sectors. However, the value added decreased for financial intermediaries and the amount of taxes on commodities because of new guidelines for estimating indirect taxes.

After informal sector activity was added to the total GDP, the formal sector share was estimated at 58 percent in terms of value added. Thus, the informal sector share, which was estimated independently, was 42 percent of the total GDP. The CSO 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 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" (Republic of Zambia, Central Statistical Office 1994, 9).

Putting together estimates of GDP by type of activity highlights areas where information based on sound evidence is not available. According to the CSO, in the national accounts for 1994, "gaps were difficult to fill in the estimates of commercial farming, forestry, fishing, construction and real estate. Surveys of commercial farms give poor quality results due to poor response. The surveys of forestry and fishing are irregular and their methodologies not very clear. The census of construction output has not been very successful over time, resulting in the sector output being estimated indirectly" (Republic of Zambia, Central Statistical Office 1994, 10).

The major reason given for compiling the new benchmark estimates was to provide an up-to-date basis for extrapolating base year estimates. The CSO acknowledged that this would require "maintenance and renewal of indicators relevant to each sector of the economy. This requires soundly based economic statistics. However, there are limitations in the estimates. The problem in Zambia is exacerbated by the informal sector activity and the difficulty of keeping routine data collecting going" (Republic of Zambia, Central Statistical Office 1994, 12).

Although the CSO felt that the 1994 benchmark national accounts were soundly based, they had the following limitations. First, the data needed to

be designed in such a way that they could easily be applied to macroeconomic research and analysis. Second, the system of national accounts was incomplete: some sectors lacked production accounts. Third, the projections were quickly becoming out of date because of the amount of structural change taking place. Mr. Simbangala at the National Accounts Division gave an example: estimates of the construction sector using the cement index were misleading.⁵ Fourth, the CSO as an institution had suffered and continued to suffer a high rate of staff turnover resulting in interruptions of programs. The institution has lacked and continues to lack skilled staff with the experience to carry out exercises such as rebasing and constructing specialized commodity flow accounts and input-output tables.

I now turn to the two unpublished documents on sources and methods for the 1997 and 2001 estimates in order to analyze this particular method of using performance indicators.⁶ The Census of Industrial Production (CIP) and the National Income Inquiry data had not been used for some time for the national accounts estimates, mainly because of low response rates, according to the CSO 1997 document. "In the absence of the complete analysis of these surveys, the method of economic performance indicators is used for the estimation of national aggregates. (The method is adequate provided the benchmark is recent, the extrapolating period is short, and indicators are complete and up-to-date.) Where the current indicators have been found inadequate, alternative ones have been identified. The objective is to improve the indicators and the method used in estimating value added for all economic activities."⁷

The estimation is carried out using indexes of economic performance to extrapolate from the 1994 base year. In that year, a National Income Inquiry formed the basis for the benchmark year estimate. The main indicators used for extrapolation were the Index of Industrial Production (IIP), the Consumer Price Index (CPI), the Index of Building Materials (IBM), the Wholesale Price Index (WPI), and employment. The other sources of information used include mineral production, electricity production, domestic sales of cement, hotel occupancy rates, road haulage and passenger traffic, rail freight and passengers, crude oil movement, and number of telephone calls.

The IIP measures changes in the volume of industrial production in enterprises with twenty or more employees. The CPI is a basket of goods at retail prices, while the WPI is the same, only at wholesale level. The IBM depicts changes in unit costs of materials. The number of people employed is used as a volume indicator. The inquiry covered the formal sector only. All these indexes have been published annually and quarterly by the CSO. The various indicators are used to estimate the different sectors as is deemed appropriate and relevant. Physical (volume or quantity) indicators are used to estimate aggregates at constant prices. Price indicators are used as inflators to convert constant price estimates to current price estimates.

The value of production in the agricultural sector was calculated based on 1977 constant prices. The estimate consisted of three parts. First, crops were estimated based on the Crop Forecasting Survey (which covers only eight crops). Second, the livestock population was gauged from the veterinary and tsetse control services. Third, vegetable production was assumed to increase in proportion to the population growth rate. These three contributions were weighted 0.75, 0.2, and 0.05, respectively, and then inflated with the WPI for agriculture. Forestry was assumed to increase by 4 percent annually, and fishing data is provided by the Fisheries Department. Data for the mining sector is supplied by Zambia Copper Mines Limited. For manufactures the IIP and the WPI were used. "The indices used relate to each of the manufacturing sub-sectors. Presently, the base period for the National Accounts is 1977, while the base periods for the indicators are different (1980 and 1966 respectively). Therefore, if both series are to be used together, their bases ought to be shifted to the same year (1977)."⁸ Data on electricity were provided by the major power distributor. For water the population growth rate was used. Until 1995, employment was used as the quantity indicator in the construction sector. In 1996, it was replaced by the volume sales of cement on the domestic market. Output in trade is estimated indirectly, based on the output of agriculture and manufacturing. For a long time the hotel and restaurant sector was estimated using the number of foreign visitors. It was changed to bed occupancy rates. By 1997, there had been significant structural changes in the transport sector, including divisions of companies and large-scale privatizations. The result was that the indexes were not reliable. Therefore the basis for the estimate was changed from haulage and freight data to the number of registered buses and taxis. "Capturing the activities of private truckers has not been easy," the 1997 document reported. "There have been difficulties in securing response from Tazara."⁹ For the finance sector employment was used, and government real estate was calculated from the compensation of employees. For private real estate the mid-year population was used. The estimate for business services was based on the value added from the trade sector (which in turn was indirectly estimated). For community, social, and personal services, data on formal employment in the sector were used. Import duties were obtained directly.

According to the 2001 document, there had been very few changes in the estimation method since 1997. In agriculture, the Crop Forecasting Survey was still used, but coverage had increased to twelve crops. The rate of increase for the forestry sector was still assumed to be 4 percent. A sample survey that was done in 2001 had a very low response rate but found the growth rate to be 4.3 percent for that year. Construction was still estimated using cement sales. This data was taken from the state-owned central cement manufacturer, and it was acknowledged by representatives that this did not take into account the extensive and perhaps increasing activity in private quarries.¹⁰ Trade was still indirectly estimated through agriculture and manufacturing, but now data on

traded imports was also used. The estimate of restaurants and bars was reported as “a derived self-computing measure from the index of industrial production,” while hotels still used bed occupancy (Republic of Zambia, Central Statistical Office 2001, 4). For rail transport, data on passengers and cargo carried from Zambia Railways was used, although the TAZARA still did “not usually respond on time.” For road transport, data on registered taxis and buses was used, supplemented by fuel consumption. Previously communications had been estimated using data from ZAMTEL and ZAMPOST, the former state monopolies in telecommunications and postal services. The list now included CELTEL, TELECEL, POSTNET, and ZAMNET, the new private operators in the sector. Meanwhile “Personal Services is automatically calculated in the database” (Republic of Zambia, Central Statistical Office 2001, 6–7).

Finally, we should take note of some considerations mentioned in a bulletin that presents estimates of GDP for the period 1965–2000 at both current and constant prices by type of economic activity and type of expenditure. The single deflation method was used in the compilation. It was reported that the “methodological procedure of estimation for all the data series is more or less similar” (Republic of Zambia, Central Statistical Office 2000, 1). This should be qualified. The data series using 1965 as the base year was compiled following the guidelines of the 1953 SNA, whereas the series based in 1970 and 1977 followed the 1968 SNA, and the series based in 1994 followed the 1993 SNA. The bulletin reported that various performance indicators were used for each sector, indicating that the use of these indicators had been extrapolated backward. Readers were advised to be cautious when linking data between two different base years. It was further reported that part of the national accounts were based on a remote year (1977). Measuring changes in production on this base did not give a true picture of developments in an economy that had undergone many structural changes.

The bulletin reported that the data sources were the same, and it noted that “most of these Surveys suffer from outdated sampling frames and outdated weights.” The report concluded that “to a large extent accuracy and reliability of estimates depend on coverage, data availability and data source. In Zambia, like many other developing countries, there are generally severe constraints in the area of data availability and collection, completeness of the universe, quality of information, non-response, time-lags and under-reporting. Even resources to enable the collection of requisite data are, quite often, never sufficient” (Republic of Zambia, Central Statistical Office 2001, 3).

PERFORMANCE

I now turn to an account of the economic performance of Zambia 1965–95 according to the official growth evidence. The postcolonial growth record of

Table 7.1. Availability of official constant price growth series: Zambia, 1965–2005

Base year	Coverage
1965	1965–1971
1970	1970–1976
1977	1977–1995
1994	1994–2005

Zambia is covered by four different constant price series (see Table 7.1). There was a shortfall in growth reporting in Zambia in the middle of the period. This was rectified by a retrospective publication of series covering the period 1965–95. This period was covered by three non-overlapping series based in 1965, 1970, and 1977 prices. Later, a fourth series was issued that estimated GDP at 1994 prices and extrapolated back to 1990. The availability of an official publication with series covering the whole independence period and the fact that three of the four series do not overlap go some way to accounting for the relatively higher accuracy in international reporting of Zambian growth rates.

The first series covered 1965–71. Annual aggregate growth for this five-year period was modest, averaging 3 percent. Average annual growth in the agricultural sector was slow, at only 2 percent. There was almost no growth during the first four years (1 percent on average). In 1969–71, growth in agriculture increased to an annual average of 4 percent. The mining sector was in decline during the period; total output decreased at an average of 6 percent per year. This trend was apparent in all years for the period 1965–71 except 1969, when output increased. During the last two years, total output in the mining sector decreased by 25 percent. Because mining output accounted for 40 percent of value added in 1965, this decline had a large impact on the average growth rate. Non-mining GDP increased by an average of 7 percent from 1965 to 1971 (see Table 7.2).

Growth in the manufacturing sector was rapid in this six-year period, particularly in the early years; it averaged 10 percent each year. However, total value added increased only 16 percent over the period because of the large decline in the mining sector. When the mining sector is excluded, total output increased 50 percent from 1965 to 1971. The manufacturing sector accounted for 18 percent of that growth and the agricultural sector for 7. Thus, only a quarter of the increase in output took place in the “productive” sectors. The only sector that accounted for a larger share in the increase than manufacturing was government (34 percent), which increased its share of total GDP from 9 to 16 percent over these six years. All other sectors contributed evenly to growth, except the finance sector, whose value added doubled during the period.

Table 7.2. GDP, Zambia, 1965–71, base year 1965 (millions of kwacha)

	1965	1966	1967	1968	1969	1970	1971
Agriculture, hunting, forestry, and fishing	97.4	99.6	98.8	99.6	101.6	109.5	112
Mining and quarrying	291.8	243.5	229.9	222.0	254.9	223.8	195.1
Manufacturing	48.0	57.5	66.8	72.7	74.2	81.0	85.6
Electricity and water	5.4	7.3	7.5	10.4	14.6	16.2	19.5
Construction	40.9	44.8	38.4	34.3	39.9	40.1	39.5
Wholesale and retail trade and restaurants and hotels	84.5	77.3	88.6	99.8	76.3	97.8	95.1
Transport, storage, and communications	32.8	30.1	42.5	40.3	35.5	42.1	50.2
Finance, insurance, real estate, and business services	31.8	35.3	42.7	47.0	57.2	61.6	61.0
Public administration and other services	64.0	68.9	80.0	86.0	82.8	124.5	134.0
Import duties	14.5	18.0	21.5	23.1	21.5	25.1	23.0
Imputed bank service charges	—	—	—	—	—	6.1	6.4
Total gross domestic product	711.1	682.3	716.7	735.2	758.5	827.8	821.4
<i>Average annual growth, 1965–70</i>							
Agriculture	2%						
Mining	–6%						
Manufacturing	10%						
GDP	3%						

From 1970 to 1976 GDP growth again averaged 3 percent a year. During this period growth in agriculture picked up, averaging 4 percent. Except for a drop in output in 1973, this growth was stable. Manufacturing growth slowed on average, but the average hides the fact that the sector continued its rapid growth (an average 9 percent each year) until 1974. Manufacturing productivity fell markedly in 1975, and the decline continued into 1976. At constant 1970 prices, the mining sector did not have an overall negative impact on the economy during this period; its output grew by an average of 2 percent, albeit with large fluctuations (see Table 7.3).

The economy grew fairly steadily in these six years. The productive sectors accounted for 43 percent of the increase in GDP from 1970 to 1976. The sectoral shares of GDP by percentage are almost identical in 1970 and 1976. The two notable exceptions were a very rapid growth in the construction sector

Table 7.3. GDP, Zambia, 1970–76, base year 1970 (millions of kwacha)

	1970	1971	1972	1973	1974	1975	1976
Agriculture, hunting, forestry, and fishing	132.0	139.4	145.6	143.9	150.5	157.0	166.9
Mining and quarrying	462.4	415.8	478.1	463.1	474.3	427.9	503.2
Manufacturing	127.4	144.3	162.7	165.1	178.9	157.6	151.9
Electricity and water	15.5	23.5	31.4	32.5	46.0	48.9	52.6
Construction	82.3	88.9	94.3	99.9	114.5	138.5	99.5
Wholesale and retail trade and restaurants and hotels	130.1	129.5	141.8	130.1	147.9	123.8	127.2
Transport, storage, and communications	52.0	58.8	54.6	51.7	54.6	57.6	67.0
Finance, insurance, real estate, and business services	95.8	99.2	103.2	121.3	119.5	132.9	136.4
Public administration and other services	144.7	158.1	163.5	159.4	172.6	180.6	188.4
Import duties	32.1	29.4	29.2	24.8	28.8	26.9	20.1
Imputed bank service charges	16.4	17.6	10.9	14.0	13.7	13.6	13.1
Gross domestic product	1,290.7	1,304.5	1,415.3	1,405.8	1,501.3	1,465.3	1,526.3
<i>Average annual growth, 1970–76</i>							
Agriculture	4%						
Mining	2%						
Manufacturing	3%						
GDP	3%						

and an actual decrease in the trade sector. The decline in the value added of the trade sector is particularly strong from 1974 to 1975. This took place at the same time that physical output in the mining and agricultural sectors increased, although the manufacturing sector also declined from 1974 to 1976. The growth in the government's relative share of the total output stops during this period.

The third official series runs from 1977 to 1995 in 1977 prices. This means there is no official estimate of the growth of the economy for 1976 and 1977 at constant prices. In 1976, at 1970 prices, the mining sector was measured as contributing 33 percent to total GDP. Using 1970s prices, output fluctuated

in the mining sector but was on a growth trend over the period 1970–76. The 1977 estimate tells a different story. In 1977 prices, mining output was only 11.5 percent of total GDP. This meant that while the volume of mining output grew at an average of 2 percent a year, the value of this output was falling rapidly, probably by more than 50 percent: when measured in 1970 prices, mining output in 1976 was worth 503 million kwacha, but the next year, which used 1977 prices, the value of mining output was 234 million kwacha, less than half the value at 1970 prices. The value of most sectors doubled when it was expressed in 1977 prices instead of 1970 prices. Although the constant price series seems to show that the economy was growing modestly during the 1970s, the fact is that the value of the most important sector and the most exported commodity were decreasing significantly in value. For this period the concept of “real” growth as measured in constant prices is misleading, because receipts from copper sales were in decline, while the physical output was increasing.

The collapse of the mining sector and slow growth is apparent from the 1977 series. GDP growth averages zero from 1977 to 1995. Years of negative and zero growth were fairly evenly distributed over the period. Total GDP was at its highest in 1988, when there was a massive increase in the output of the manufacturing and agricultural sectors. These sectors grew at 18 and 19 percent, respectively, while total GDP increased only 6 percent that year. After 1988, total output declined each year of the period except for 1994. This decline was devastating: total output was recorded as lower in 1995 than it was in 1981.

This stagnation in GDP growth from 1977 to 1995 was not primarily attributable to the manufacturing and agricultural sectors. Growth in both these sectors averaged 3 percent a year over the period. Agriculture increased its share in GDP from 16 to 20 percent and manufacturing increased its share from 17 to 24 percent. The agricultural sector stagnated; total output decreased between 1977 and 1982. From 1984 output was higher, and good growth rates were achieved in the late 1980s. But from 1989 to 1992, the experience of Zambia showed how momentary and fragile productive gains in agriculture can be: total output in the sector declined by 40 percent. At the end of the period, in 1995, the sector's output was 33 percent higher than it had been in 1977, but it was the equivalent of the output in 1988. Manufacturing growth halted in 1981: the sector was either in decline or stagnating until 1986, after which growth in manufacturing revived. Growth was rapid in the sector until the peak year of 1992 but declined from 1992 to 1995. From 1986 to 1992, growth in the manufacturing sector averaged 7 percent a year, but from 1992 to 1995 the sector shrank by an average of 7 percent (see Table 7.4).

The other sectors of the economy were generally disappointing in the period 1977–95. Mining output in 1994 was only half what it had been in 1977. There was growth in value added in the electricity and water sector from 1977 to

Table 7.4. GDP, Zambia, 1977–93, base year 1977 (millions of kwacha)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990 ¹	1991	1992	1993	1994	1995
Agriculture, hunting, forestry, and fishing	325.6	327.5	309.7	303.9	328.7	290.3	314.6	332.2	343.8	373.8	365.6	436.2	424.5	386.7	406.7	272.2	457.6	488.7	433.7
Mining and quarrying	233.7	245.2	195.1	205.2	214.8	215.2	221.7	200.0	185.8	176.6	184.2	160.4	175.8	162.7	148.0	166.9	152.3	127.4	117.5
Manufacturing	353.0	370.5	392.9	383.5	430.2	415.1	384.5	389.3	421.6	425.3	462.9	547.0	544.1	586.7	586.6	657.3	587.9	550.7	525.8
Electricity and water	47.6	60.6	63.4	65.8	71.0	75.8	72.2	70.9	72.7	71.1	62.2	61.3	49.9	58.8	63.8	67.5	69.8	64.9	65.0
Construction	113.7	104.1	89.0	102.8	78.9	84.0	88.6	88.6	77.1	81.1	77.3	70.3	63.8	62.6	61.8	58.5	60.4	38.7	33.5
Wholesale and retail trade and restaurants and hotels	223.7	224.7	210.9	236.3	248.6	231.8	227.6	216.9	226.0	221.2	228.0	234.1	233.0	234.9	226.4	244.3	252.2	242.4	227.3
Transport, storage, and communications	131.4	119.8	123.9	117.5	118.3	116.8	119.4	116.2	109.2	110.1	114.5	113.1	110.2	102.1	97.1	84.6	79.7	73.7	81.8
Finance, insurance, real estate, and business services	201.8	194.5	207.0	211.3	218.3	226.5	234.5	242.0	239.6	235.4	240.0	251.1	245.6	236.5	232.8	237.9	238.6	247.9	258.6
Public administration and other services	329.4	329.1	328.6	346.0	391.9	393.9	355.7	354.9	365.6	358.1	370.6	373.5	375.6	381.5	387.6	385.3	173.3	399.3	407.9
Import duties	49.0	40.6	37.1	42.3	36.4	27.7	18.5	18.0	19.9	22.5	23.1	16.7	17.0	—	—	—	—	—	—
Imputed bank service charges	22.5	18.8	20.6	18.8	18.2	19.8	18.5	17.5	16.8	15.8	14.1	16.6	14.6	—	—	—	—	—	—
Gross domestic product	2,031.4	2,035.4	1,978.2	2,033.4	2,155.3	2,096.9	2,055.8	2,046.5	2,078.1	2,091.0	2,142.5	2,280.3	2,254.1	2,212.5	2,210.8	2,174.5	2,071.8	2,233.7	2,151.1

Average annual growth, 1977–93

Agriculture	3%
Mining	–3%
Manufacturing	3%
GDP	0%

¹ From 1990 onward, the data on import duties and bank service charges were incorrectly reported in the *National Accounts Bulletin*. They are therefore excluded here. This has no effect on the growth of the sectors, but it does affect total GDP. The growth rate from 1989 to 1990 might be slightly inaccurate by +/-1 percent.

1982, followed by stagnation until 1986, when it started declining. In 1989 the total value added in the sector was the same as it had been in 1977. This sudden drop in important infrastructure is uncharacteristic of an economy's normal trajectory. A similar and more dramatic decrease is seen in the construction sector, whose total value added in 1995 approached only one-fourth of its 1977 value. Similarly, there was a decrease, albeit less dramatic, in value added in the transport sector, while the trade sector stagnated. In other words, while the overall trend in the manufacturing and agricultural sectors is reported to have been positive, the sectors that keep an economy together and provide upkeep of the infrastructure were either stagnating or in dramatic decline. The public and finance sectors saw some growth in value added over the period, though neither experienced stable slow growth. In 1993, the value of the public services sector (Public Administration and Other Services) decreased by 50 percent, but this decline was reversed the following year, indicating a one-off cessation in service provision, as in a general strike.¹¹ The finance sector grew gradually until 1984, after which it stagnated until the very end of the period, when there was a sudden improvement from 1993 to 1995.

The 1994 series provides a second look at the first half of the 1990s. The most striking difference from previous series involves the contributions of the various sectors to GDP. At 1994 prices, the mining sector's share of GDP increased. In 1977 prices, it contributed only 5 to GDP in 1995. In 1994 prices, it contributed 22 percent in 1990 and 14 percent in 1995. The mining sector shows negative growth from 1990 to 1995 in both series, averaging -6 percent at 1976 prices and -10 percent at 1994 prices. Since its share in GDP was more than three times larger at 1994 prices, the mining sector had a larger negative impact on GDP growth in this series. If the series were to be extrapolated backward at these prices, the sector's impact on negative growth in the 1970s and 1980s would also be larger. At 1977 prices, GDP growth averaged -0.5 percent from 1990 to 1995, while in the 1994 series, GDP growth averaged -3 percent. In most years the two series agree on the direction of change. However, the 1977 series reported 8 percent growth in GDP in 1994, while the 1977 series reported an 11 percent decrease for the same year. In the 1977 series, the impact of the negative growth in the mining sector was much smaller. This explains some of the difference between the 1977 and 1994 series. In addition, the agricultural sector also had an increase in output in the 1994 series that was not recorded in the 1977 series.

The government sector is much smaller in the 1994 series. It reported that the public sector contributed only 8 to 9 percent to GDP, while the 1977 series reported that it contributed 17 to 19 percent. This difference is attributable to methodology in the CSO and shows the change in different base year series. The 1977 series reported a large decline in this sector in 1993, but this decrease does not occur in the 1994 series. The dismal growth reported in the 1977 series for the transport, electricity and water, and construction

sectors is repeated in the 1994 series. However, there are significant differences in how the two series report data for the trade sector. Its share of GDP had been measured at an unchanged 11 percent in the previous series. In the 1994 series, the trade sector contributed 19 percent to GDP in 1990. Although output had been shown as stable in the previous series, this sector experienced a significant drop in value added according to the new series. Finally, although growth in the manufacturing sector is almost identical in the two series, its share of GDP is different. The 1994 series reports a contribution to GDP that is only half of what the 1977 series reports.

Zambian growth performance is largely dictated by the copper mining sector. The decline of the sector (see Table 7.5) had large implications for the economy. The importance of price changes for copper exports makes the constant prices vulnerable to base year changes, and we cannot draw useful conclusions from the GDP growth rate without considering what was happening

Table 7.5. GDP, Zambia, 1990–95, base year 1994 (millions of kwacha)

	1990	1991	1992	1993	1994	1995
Agriculture, hunting, forestry, and fishing	314.9	331.2	221.6	372.6	302.2	403.0
Mining and quarrying	478.6	435.2	490.4	448.3	373.9	270.9
Manufacturing	229.5	231.1	256.3	240.6	219.8	219
Electricity and water	65.5	71.1	67.5	69.8	72.2	71.1
Construction	185.5	183.1	173.4	140.8	111.5	107.8
Wholesale and retail trade and restaurants and hotels	411.5	401.8	393.0	429.0	368.2	335.0
Transport, storage, and communications	139.1	133.3	136.2	139.5	133.8	125.0
Finance, insurance, real estate, and business services	282.1	282.4	278.5	286.6	295.8	340.3
Public administration and other services	168.6	171.4	169.4	173.3	178.7	176.6
Imputed bank service charges	-66.8	-67.7	-143.4	-101.7	-105.0	-125.3
Total gross domestic product	2,208.5	2,172.9	2,042.9	2,198.8	1,951.1	1,923.4

Average annual growth, 1990–95

Agriculture	11%
Mining	-10%
Manufacturing	-3%
GDP	-3%

in the copper sector, particularly the metal's export price. Growth was positive in agriculture with large fluctuations in some years throughout the period. Although the manufacturing sector grew rapidly in the early years and continued growing until the early 1980s, there were some years of decline after that point. The decline in the mining sector seriously affected the Zambian economy, and its impact can be seen from the decline in all sectors related to infrastructure and trade in the 1970s and 1980s. This happened because there were fewer goods to move: fewer mines to construct and to build roads, electricity and water supplies to. The resulting shortfall in government revenue meant that its capacity to deliver such services to other sectors of the economy was severely limited.

POLICY AND PERFORMANCE

Mwanawina and Mulungushi (2008), who contributed the chapter on Zambia to *The Political Economy of Economic Growth in Africa*, find that Zambia's pattern is similar to that of Tanzania. They argue that Zambia was characterized by a free market economy from 1960 to 1968, by economic nationalization in 1969–90, and then by the familiar U-turn to market-led development in 1991. Their periodization changes, depending on whether they are looking at policies or at economic performance. When they are looking at economic growth, they extend the early growth period to cover 1972, as it is only after this year that growth slows down markedly. They describe the period from 1960 to 1972 as one of moderate growth, but in their conclusion, they extend this period to cover 1974 (2008, 275, 304). Later in the chapter, they refer to 1965 as a turning point. This was the year of Rhodesia's Unilateral Declaration of Independence. After Rhodesia declared independence, it imposed sanctions on Zambia that limited its access to Rhodesia's transportation system. Because Zambia is landlocked, it was forced to reconsider how it would transport goods in and out of the country. The government chose to move toward self-sufficiency and focus on large infrastructure projects to solve this problem. In 1968 it launched a new economic program known as the Mulungushi reforms but referred to simply as "economic nationalization" in Mwanawina and Mulungushi (2008, 284).

In addition, because of the Zambian government's commitment to pan-Africanism, it had difficulty finding external trading partners; it also faced political difficulties with Western nations. The other three case-study countries I examine in this book did not have to deal with this external political and economic resistance. The difference between Botswana and Zambia is particularly striking in this respect. Botswana managed to secure assistance from foreign partners because of its non-confrontational stance toward South Africa. It was also rewarded with favorable trading contracts.¹² In contrast, Zambia was

denied loans to finance alternative infrastructural projects to overcome the sanctions imposed by Rhodesia (Mwanawina and Mulungushi 2008, 286–7). In addition, because Zambia had been categorized as a middle-income country because of its initially high GDP per capita (the copper mines had already been developed before independence), it was not directly eligible for financial aid and concessional financing.¹³

In 1971, Harvey reported robust economic growth in Zambia despite problems associated with the “reorientation from the south,” referring to the problem of not being able to depend on Southern Rhodesia for supplies and markets (Harvey 1971, 41). He found that although the economy was facing some problems (copper production was reduced significantly in 1966–67 because of a fuel shortage caused by Rhodesia’s sanctions), the main constraint on development and growth was that “the sheer distance of Zambia from most of its foreign suppliers sets a limit on the speed at which imports can be increased.” Harvey saw a potentially rosy future for Zambia in 1971: “For the future one can only look to the planned increases in copper production, the promising trend in imports, the large reserves, and keep one’s fingers crossed, as ever, concerning the copper price” (Harvey 1971, 57).

The future Harvey hoped for did not unfold. Mwanawina and Mulungushi (2008) note that a significant decrease in copper prices in 1975 led to a serious shortage of foreign exchange. As a result, some of the industrial capacities that had been built up in the early years were forced to run at very low capacity or even close down because there was no foreign exchange to import the inputs these industries needed. Because of these problems, Zambia turned to IMF financing “in the false hope that the problem was temporary” (Mwanawina and Mulungushi 2008, 287). In addition, the government implemented temporary measures such as import restrictions, austerity budgets, and external financing. White (1997, 59) gives a quick and accurate summary of the experience up to 1985.

The government borrowed heavily in the second half of the 1970s from both domestic and non-concessional foreign sources to bridge its fiscal financing gap and shortfalls in foreign exchange. These funds were used to maintain real consumption levels, whilst investment was allowed to collapse—the consumption rate rose from around 60 percent to over 80 percent and the investment ratio fell from over 30 percent to under 20 percent. The policy of not adjusting was followed on the assumption (made also by the IMF) that the depression in copper prices was a temporary phenomenon; borrowings were made against the prospect of future copper earnings. But the copper price never recovered, and Zambia entered the 1980s not only with the burden of having to adjust to this fact, but with the additional burden of a very substantial debt.

Structural adjustment began in Zambia in 1985. Mwanawina and Mulungushi note that these reforms were poorly sequenced and that the “growth payoffs to reforms were very limited” (2008, 306). After public protests, the Zambian

government broke with the IMF and the World Bank in 1987. Bates and Collier argue that structural adjustment reforms were initially economically sustainable but were politically unacceptable (1995, 115). The government reversed these reforms and foreign exchange was made cheaper, but with a controlled supply. The manufacturing sector and GDP growth responded positively, but the black market premium soared. This condition was not sustainable economically, and in 1990 the government once again implemented reforms backed by the IMF and the World Bank.

Mwanawina and Mulungushi are relatively silent about the direct determinants of growth performance, but they associate poor economic growth with economic nationalism (as opposed to free market policies). It is surprising that their conclusion does not refer to the price of copper as a determinant of growth in Zambia; instead, they focus exclusively on changes in economic policy and on economic reforms. Other works on Zambia have tended to focus on the development in the copper prices because, as the 1975 report from the CSO noted, "the economy depends so overwhelmingly on copper, its future performance will depend upon the future price of copper" (Republic of Zambia, Central Statistical Office 1975, 16). Fully 95 percent of Zambia's export earnings came from copper; the mining sector contributed more than one-third of GDP and about half of the government's revenue. It is therefore not surprising that Kayizzi-Mugerwa's econometric analysis (1990) found that copper prices had strong impacts on the economy that were manifested in income levels, government revenue, and the nation's trade balance. Copper prices also affected relative prices domestically and determined the real exchange rate. A failure to emphasize the importance of this commodity seems like a shortcoming in any analysis of Zambia's economic history.

Du Plessis and Du Plessis have examined the reasons for Zambia's failure to grow. They find Zambia to be "especially interesting because of the remarkable contrast between the Zambian growth performance and that of its south westerly neighbour, Botswana" (Du Plessis and Du Plessis 2006, 352). They note that Zambia is typically portrayed in the literature as an example of a country "dependent upon a rich endowment of natural resources and that has nevertheless suffered a disastrous economic decline" (Du Plessis and Du Plessis 2006, 352). But they find that "the relationship between the copper prices, the copper industry in Zambia and ultimately the economy is...complex" (359). They conclude that their regression analysis "undermine[s] the hypothesis that Zambia's decline was due mainly to the dependence on copper"; instead, they emphasize the "impact of poor quality institutions on the growth path of Zambia" (367).

Their main support for this conclusion is that no link has been established between copper prices and growth and that therefore other factors must be more important. This finding rests on two empirical observations. The first is that "it is very difficult to identify a plausible trend in the time series of the

[nominal] copper prices” (Du Plessis and Du Plessis 2006, 356). This difficulty, as will be shown here, disappears if one considers real rather than nominal prices. Second, Du Plessis and Du Plessis find “no support [for] the hypothesis that copper price fluctuations have dominated the terms of trade for Zambia” because “it was only from 1985 to 1999 that the copper prices and Zambia’s terms [of trade] moved in the same direction” (Du Plessis and Du Plessis 2006, 356). The period they examine covers only the years 1980 to 2003, using five-year averages. It is true that for this period, copper prices and terms of trade did move together in all observations except for the first (1980–84) and the last (1999–2003). The reasons they do not include the first decade and a half after independence in their analysis are that “regrettably, terms of trade data are sparse for Zambia” (Du Plessis and Du Plessis 2006, 356) and that IMF financial statistics provide those data only from 1980 onward. However, despite these deficiencies in data availability, it is possible to look at the probable movement of terms of trade.

In 1964, when Northern Rhodesia declared independence and became the Republic of Zambia, the price of copper was almost US\$7,000 per tonne and the prospects for the country’s economic development looked promising (see Figure 7.1). The only constraint was its need to develop a new system for transporting goods to market. There was no reason to worry about balancing the current account; the principal concern was the physical capacity to import goods, not the financial capacity to do so. In 1967–68, the price of copper fell

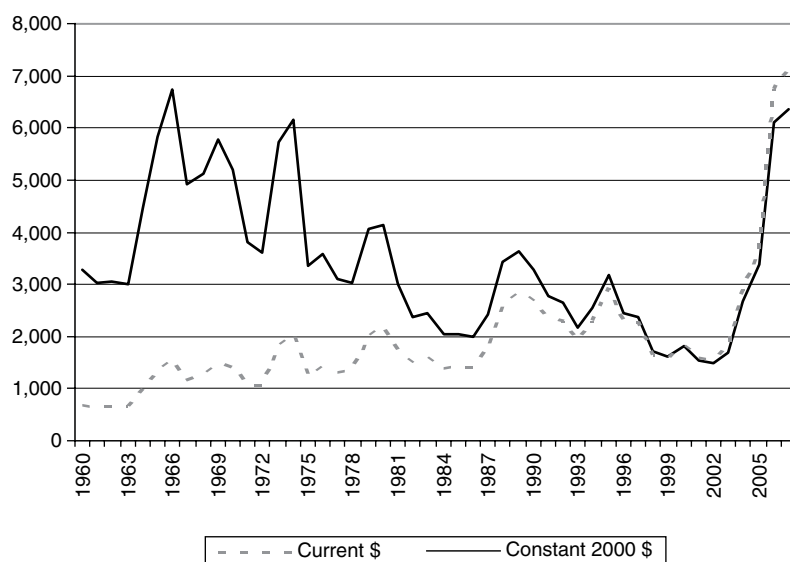


Fig. 7.1. Copper prices (LME, Grade A, cash), 1960–2007, US\$ per tonne

Source: International Copper Study Group (2007).

to just under US\$4,000 per tonne, but it soon increased again, before beginning a long downward trend in the early 1970s. There was temporary relief in 1973 as the price rose briefly, a response to the oil price shock that caused a price increase in most raw materials. The price rise delayed the negative effect of the first oil shock in Zambia until 1975, when the economy began its decline. As seen in Figure 7.1, in real terms the price development in copper is unambiguous. This sudden and lasting decrease in copper prices was accompanied by the sudden increase in the cost of petroleum imports.

The timing of the 1973 oil price shock was particularly unfortunate for Zambia because of the expensive investments it had made in infrastructure. Until the early 1970s, the copper-mining industry suffered from energy and transportation shortages. Zambia's plan for addressing this issue was two-fold: it built a pipeline to Tanzania so it could import oil for the mining industry, thus ending its reliance on coal from Rhodesia, and it accepted foreign aid from China for a railway that connected it with Tanzania. In addition, Zambia's petroleum requirements increased substantially in 1973 when the Indeni Oil Refinery opened in Ndola; imports in that year were almost twice what they had been in 1972. In 1975, TAZARA was not yet open, and when transportation was further disrupted by the civil war in Angola, machinery imports were further delayed and the government was forced to turn to air freighting to bring machines into the country (Republic of Zambia, Central Statistical Office 1975, 50).

The importance of copper to the economy complicates the interpretation of any movement in the GDP indicator. As Harvey notes, "Because of the dominance of copper in the Zambian economy, and because all the copper is exported, it is not possible to produce an unambiguous figure for real changes in GNP" (Harvey 1971, Appendix 1). The heavy reliance on copper is largely responsible for the differences between GDP growth measures at 1970 and 1977 prices. In retrospect it is reasonable to argue that Zambia should have adjusted earlier to the decreasing price of copper. But in 1975, it was impossible to predict a lasting deteriorating trend. Moreover, Zambia's ability to make an adjustment toward becoming an exporter of agricultural goods was constrained by lack of capacity in its infrastructure. While Botswana was able to escape the usual consequences of being landlocked, this escape was greatly helped by its unique position as the owner of diamonds as a natural resource. Zambia had the misfortune of owning copper. The two economies had similar disadvantages in terms of their physical distance to world markets,¹⁴ but there was a marked difference in the political distance to their respective neighboring countries. Because of its socialist, pan-African position, Zambia was forced to build new transportation routes and had no guaranteed external markets to rely on.

In what probably represents popular consensus, Meredith (2005, 380) summarized the period of Kenneth Kaunda's rule of Zambia (1964–91) as "a

catastrophic record of mismanagement.” This chapter revises that view and shows that there were severe challenges to the management of Zambia’s economy during those years. According to Hill and McPherson (2004, 526), “none of the remedies” to Zambia’s problems “requires rocket science.” They identify Zambia’s key problems as unserviceable foreign debt, sluggish export growth, a demand for imports that outstripped foreign exchange earnings, increasing poverty and food insecurity, and acute dependence on aid. This would be solved by putting an end to Zambia’s “long history of start-stop reform” and providing a setting characterized “by low inflation, rising levels of productivity in [the] public sector, and a real rate that allows Zambian firms to compete aggressively in world markets.” This probably underestimates the challenges for Zambia during the period and neglects the element of external events and conditions.

Zambia’s economic performance was better in the early years and deteriorated in the 1970s and beyond. There was a marked policy shift in 1968, when the Zambian state decided to intervene firmly in the economy to build self-sufficiency in terms of infrastructure, industrial development, and energy. The marked shift in economic growth can be attributed to a reduction in the export receipts that were required to finance this transformation. External market conditions were suddenly crucially different when copper prices fell and petroleum prices increased. In retrospect, the decision to invest heavily in petroleum-fueled copper mining could not have been worse. The delays in the decision to accept structural adjustment policies could be interpreted as a consequence of these sunk investments, the inflexibility of the political leadership, or simply a misplaced hope that market conditions would turn in Zambia’s favor. When reforms were finally introduced in 1985, resistance to them was strong. As a result, commitment to reform was openly broken in 1987, only to be resumed in 1990. Growth has improved in Zambia since then because of a boom in copper prices from 2003, not because of economic reforms.

NOTES

1. These early reports were *National Accounts and Balance of Payments of Northern Rhodesia, Nyasaland and Southern Rhodesia, 1954–63*, published in Salisbury, and the *National Accounts and Balance of Payments of Zambia, 1954–64*, issued in Lusaka. Zambia had been part of the Federation of Rhodesia and Nyasaland, also called the Central African Federation, which was created in 1953 and broke up in 1963. The breakup of the Federation of Rhodesia and Nyasaland caused a number of social and economic changes.
2. This information was revealed to me in two independent conversations in February 2007 at the University Library and the National Archives, both in Lusaka.

3. The specific unanswered question is this: In how many of the other sectors were there such large actors and how much of the individual sectors did these large actors account for?
4. The GDP estimate for 2006 had just been finalized while I was there in the spring of 2007, and I was informed that the methods were unchanged. This was still the case when I visited again in 2010.
5. Interview, February 2007. I will return to the estimation procedure for the construction sector below.
6. I consulted both documents, which are unpublished, at the CSO in Lusaka in February 2007.
7. "Identification and Use of Economic Performance Indicators for Estimating Gross Domestic Product CSO," February 1997, 1. This is an unpublished compiled document.
8. "Identification and Use of Economic Performance Indicators for Estimating Gross Domestic Product CSO," February 1997, 11.
9. "Identification and Use of Economic Performance Indicators for Estimating Gross Domestic Product CSO," February 1997, 14. TAZARA is the company that runs the railway between Kaposhi Mpiri in Zambia and Dar es Salaam in Tanzania.
10. In March 2007, I saw numerous such small quarries in full operation through the window of the bus during the two-hour journey between Kaposhi and Lusaka.
11. After an alleged plot to overthrow the government was revealed in 1993, President Chiluba declared a state of emergency. Public sector workers were on strike for a long period (Ihonybere 1996, 191). Interestingly, in the 1994 series no decline in government services is recorded; the 1994 series thus "removes" this period of political turbulence from the economic growth record.
12. Maipose and Matsheka (2008, 517–18) refer to Botswana's "historical economic links with white-ruled South Africa" as "a clear demonstration of a pragmatic approach motivated by self/national interest, while remaining opposed to racist regimes."
13. Later, Zambia encountered difficulties with renegotiating its status so it would be eligible for debt cancellation.
14. And diamonds are much cheaper to transport relative to their final market value.

Economic Growth in Botswana, Kenya, Tanzania, and Zambia Reconsidered

This book has not attempted to reassess the economic policy choices the governments of the four case-study countries have made. Instead, it has focused narrowly on detecting economic change in these countries over the three decades since independence in the mid-1960s. What the data reveals about the different trajectories of economic growth in these countries can be used to revisit some familiar claims in the literature. The conventional wisdom is that economic performance has been excellent in Botswana, relatively good in Kenya, and poor in Tanzania and Zambia. These contentions are based on average GDP growth over the postcolonial period and the observation of severe economic problems during the 1980s in Tanzania and Zambia. Many analysts suggest that strong state intervention and economic controls in Tanzania and Zambia are responsible for poor economic performance and that Botswana and Kenya's stronger performances can be linked to their relatively open economies, by which it is meant that their policies were favorable to exports and pursued free market policies. Some analysts suggest that Kenya's economic performance was not as strong as that of Botswana because Kenya leaned more heavily toward policies that protected infant industries while Botswana refrained from such policies before the 1980s. Analysts also hypothesize that the change from Kenyatta to Moi revealed authoritarian political competition along ethnic lines, which, it has been suggested, led to unproductive redistributions of economic rents. Those who hold this view also note that Botswana's greater prosperity can be tied to the fact that it was ethnically more homogeneous and practiced multiparty democracy, thus avoiding the unproductive frictions that emerged in Kenya.

This book has sought to reconsider and refine these views by disaggregating growth rates for the case-study countries by time periods and by sectors and comparing the results. The growth evidence shows that current interpretations of poor economic performance in Tanzania and Zambia must be qualified. These two economies did not consistently perform badly; at times

and for some sectors, their rate of economic growth compared favorably with that of the other countries, even during periods of strict economic controls and strong state intervention. This throws into doubt arguments that link state policy directly to economic performance. The disaggregated growth evidence I have examined here suggests that the role of negative economic shocks, particularly in the case of Zambia, has been underplayed in the literature: before the shocks of the late 1970s, growth in the agricultural and manufacturing sectors in both Zambia and Tanzania compared favorably with growth in those sectors in Kenya and Botswana (Jerven 2010a).

GDP growth rates by themselves do not always yield accurate conclusions about a country's growth history; they can be used only to determine the range of difference in growth between countries. It is true that the metric of average GDP reveals differences in the four case-study countries I have examined: in Botswana it was high, in Zambia it was low, and in Kenya and Tanzania it was somewhere in-between. However, because of inaccuracy in growth reporting, it is not clear whether the average growth rate in Tanzania was significantly higher than the average growth rate in Kenya. Inconsistencies in the data also mean that we cannot calculate differences in growth rates in these countries with any degree of precision. In addition, averaged GDP growth rates over the three decades do not tell us anything about the timing of growth periods or the causes of growth. When growth is considered over five-year periods (as it often is), it is not always possible to tell whether one country's growth rate differed from that of another. Finally, conclusions about growth depend on which dataset was used.

In this study, the limiting factor for the purposes of comparisons of the four case-study countries is the absence of constant growth data for Botswana. Unlike the other three countries, Botswana has no series based in the 1960s: no constant GDP figures were prepared for Botswana for consecutive years until after 1974–75. One can use 1971–72 prices to obtain estimates for 1967–68 and 1968–69 and then derive a growth rate for the early years of independence, but that observation cannot form a basis for comparison between countries; it is reported in Table 8.1 only for the sake of completeness. Because Botswana's 1974–75 series covered the period 1965 to 1968–69, we have data on three years of growth in constant prices. This data can be used to compare Botswana's growth rate with that of the other countries—with some caveats. The first is that no disaggregation of GDP was made for Botswana in constant prices. Total GDP is therefore the only comparison we can make. The second caveat is that the Botswana accounts run from July 1 of one year to June 30 of another, while the accounting cycles for the other three countries run from January 1 to December 31 of each year. In the comparisons I have made, I have consistently assumed that, for example, the Botswana data for 1968–69 is the equivalent of the 1968 data for the other countries. The third caveat is that the methods for assembling GDP estimates for the early years in Botswana were

Table 8.1. Annual average economic growth rates in Botswana, Kenya, Tanzania, and Zambia, 1965–95 (percent)

Series	Range	GDP	Agriculture	Mining	Manufacturing
<i>Botswana</i>					
1971–72	1968/69	17	14	0	47
1974–75	1966–68/69	13	—	—	—
1974–75	1974/75–78/79	11	–3	47	23
1979–80	1975/76–86/87	12	–3	27	9
1993–94	1975/76–94/95	10	2	18	10
<i>Kenya</i>					
1964	1965–74	7	5	—	8
1972	1973–78	5	3	—	12
1976	1975–83	5	4	—	6
1982	1980–95	4	3	—	4
<i>Tanzania</i>					
1966	1965–82	4	2	—	3
1976	1977–93	2	3	—	2
1985	1965–95	4	4	—	3
1992	1988–95	3	3	—	2
<i>Zambia</i>					
1965	1966–70	3	2	–6	10
1970	1971–76	3	4	2	3
1977	1978–95	0	3	–3	2
1994	1991–95	–2	11	–10	–2

less consistent than in the other three countries. Botswana's Central Statistics Office continually improved upon its method for assembling GDP, but because of this, the growth estimates for the latter half of the 1970s include quite a bit of statistical growth. With these caveats in mind, we can compare average GDP growth in Botswana over three years, from 1966 to 1968 (see Table 8.2).

The rankings analysts assign to these four countries in the literature are confirmed when we look only at total GDP. The gap between Kenya, Tanzania, and Botswana is surprisingly small. Taking into account the measurement alterations and climatic conditions noted in Chapter 3, this difference is probably negligible. At current prices, two-thirds of the growth in Botswana for the period 1965–68 is accounted for by the agricultural sector. If half or one-third of this growth was statistical, there is no real difference between the aggregate

Table 8.2. Average annual GDP growth in 1966, 1967, and 1968, four case-study countries (percent)

Botswana	13
Kenya	9
Tanzania	8
Zambia	1

Table 8.3. Average annual growth, Kenya, Tanzania, and Zambia, 1966–74 (percent)

	GDP	Agriculture	Manufacturing
Kenya	7	5	8
Tanzania	5	3	9
Zambia	3	3	10

performance of these three economies. Zambia, on the other hand, clearly lagged behind in aggregate growth terms. The mining sector (which contributed 40 percent to GDP) declined at an average 9 percent a year for this period, while manufacturing growth averaged 15 percent. The decline in the mining sector was felt across other sectors such as construction, trade, and transport. Non-mining GDP in Zambia grew at just above 4 percent. The growth performance for this limited period is very similar in Botswana, Kenya, and Tanzania, while Zambia lagged behind because of slow mining growth.

The data on the other three countries can be used for a more extended comparison. Using the 1964 series in Kenya, the 1966 series in Tanzania, and the 1965 and 1970 series in Zambia, we can compare the performance of these three countries for the period 1966–74 (see Table 8.3).

The rankings analysts assign to Kenya, Tanzania, and Zambia for these years are confirmed when we look only at total GDP (Botswana is excluded from this comparison because of the aforementioned absence of data for this period). But when we disaggregate the GDP data by sector and look at manufacturing growth, the rankings look different: Zambia's manufacturing growth was higher than that of Kenya and Tanzania. Although this data shows that Kenya's agricultural sector grew at a faster rate, Tanzania's disappointing performance was partly caused by agricultural growth averaging –2 percent in the drought years of 1973 and 1974. In the mining sector, Zambia's negative growth (at an annual average of –4 percent) held back its aggregate growth. When we combine the growth rates in the “productive” sectors (manufacturing and agriculture), it becomes apparent that part of the growth differential in Kenya takes place in other sectors.

Table 8.4. Average annual growth, four case-study countries, 1974–78 (percent)

	GDP	Agriculture	Manufacturing
Botswana	13	–3	23
Kenya	5	3	11
Tanzania	5	5	5
Zambia	2	4	–1

As we move forward to the period 1974–78, we can include data for Botswana. This is the first point at which we can compare Botswana's data with that of the other three countries across the three major sectors for a five-year period. This time the problem of coverage applies to Zambia. Here, two series are knitted together (1970 and 1977), while the year 1977 is treated as void.

For this five-year period, Zambia and Tanzania's agricultural sectors outperformed that of Kenya (see Table 8.4). In Botswana the agricultural sector was in decline. Manufacturing was strong in Kenya and particularly strong in Botswana. Despite the growth differential in their manufacturing sectors, the GDP growth of Kenya and Tanzania is equal. Total GDP growth in Botswana was rapid because of the strong growth of the mining sector, which averaged 47 percent annually during this period.

The next period of comparison is 1978–83, a period when some of the economies were in considerable trouble. The series have similar base years, 1976 for Kenya and Tanzania, 1977 for Zambia, and 1979 for Botswana. Botswana's rapid growth in GDP during these six years was due to an expansion of mining output averaging an annual growth rate of 27 percent. In Zambia, the direction of change was the opposite; GDP growth lagged as the mining sector decreased by 2 percent each year on average. Although Botswana grew the most rapidly of the four countries during this period, its rapid growth was accompanied with a continued decrease in agricultural output. Unlike the previous five-year period, Kenya and Tanzania grew at different rates because of the rapid decline of Tanzania's manufacturing sector during these years (see Table 8.5).

Note that although manufacturing growth in Botswana has appeared to be high on average, this is to some extent caused by the years I chose for comparison. If one calculates growth in the Botswana manufacturing sector from 1977 to 1984 instead of from 1978 to 1983, the average manufacturing growth would have been 2.5 percent instead of 8 percent.

The next comparison period I have considered is 1984–94. From 1984 onward, growth in Botswana is covered by a 1993–94 series,¹ Kenya by a 1982 series, Tanzania by a 1985 series, and Zambia by a 1977 series; these become

Table 8.5. Average annual growth, four case-study countries, 1978–83 (percent)

	GDP	Agriculture	Manufacturing
Botswana	12	–6	8
Kenya	4	3	6
Tanzania	1	2	–12
Zambia	0	0	2

increasingly outdated as we move forward through the comparison period. For this period, the growth estimates for Tanzania and Zambia are probably quite unreliable. The differences in growth in Tanzania and Zambia in old and new series for the early 1990s are dealt with in the separate chapters on these countries.

In this period, it seems that Kenya is the relative underperformer in agricultural growth. Zambia's aggregate growth rate would have been higher had it not been for its consistently lagging mining sector (where growth in this period averaged –4 percent). The high average rate of growth in Botswana's agricultural sector is due to a single-year increase of 66 percent (1987–88). The growth rates for Tanzania and Zambia are probably overestimates. It should be noted that this overestimate would be equal to the underestimate for the previous period. In the 1990s there is statistical growth in the series from Tanzania and Zambia, the result of adding economic activities that were omitted in the 1980s. Thus, the decline in the 1980s was overestimated (the result of declining coverage), as was the increase in the 1990s (the result of increasing coverage).

One difference from the previous period is that while manufacturing growth improved in Botswana and Zambia, it showed no sign of revival in Tanzania, and was slower than in previous years in Kenya (see Table 8.6). All four economies experienced something of a slowdown in growth in the late 1970s and early 1980s. In the case of Botswana the slowdown is less visible because of the persistently strong performance of the mining sector, and in the case of Zambia, the slowdown is less apparent because of the persistent negative growth in that sector. Agricultural growth is fairly similar across the economies, except for Botswana, which had very little growth in this sector. Because of the low quality of the data, it would be unwise to rank the countries. A weighted average of the averages given in this chapter indicates an average agricultural growth of 3.5 percent in Kenya, 4 percent in Zambia, and 5 percent in Tanzania. Based on this data it is safe to say that Kenya was not outperforming Zambia and Tanzania and that Botswana was lagging behind. This is contrary to what one would expect following the orthodox incentive analysis.

Table 8.6. Average annual growth, four case-study countries, 1984–94 (percent)

	GDP	Agriculture	Manufacturing
Botswana	8	6	11
Kenya	4	2	4
Tanzania	5	5	1
Zambia	1	6	4

In manufacturing, all the economies experienced rapid growth in the early period, when growth rates probably depended as much on the size of the industrial base at independence as on industrial policy. All of them suffered a slowdown in the mid-1970s. Tanzania experienced a clear decline, but Kenya appears to have performed slightly better than Zambia and Botswana. Botswana is exceptional, with its push for industrialization in the 1980s. The industrialization project was temporarily abandoned in Tanzania, while growth revived in Zambia. In Kenya manufacturing growth steadily declined throughout the period, but manufacturing does not appear to have been in a true crisis.

It is worth emphasizing that growth occurred in all of the case-study countries in the early part of the period. Contrary to some of the literature, growth occurred in a period when governments pursued what some would characterize as “bad” policy. It is also important to emphasize that, especially in the case of Tanzania, growth and recovery has been overestimated in the data series used and has consequently been overplayed in the literature. It is also important to note that structural adjustment policies did result in manufacturing growth and that most of the growth in agriculture was the result of an increase in the types of agricultural marketing (i.e., private and informal) that were allowed. It seems plausible to argue that to some extent the orthodox literature (in particular Ndulu 2008b) has conflated periods of shock and periods of control. Some analysts argue that it was the controls and not the shocks that explain growth and do not attempt to disentangle this endogeneity problem. The orthodox literature has failed to explain why it is that when the “shocks” had passed and orthodox policy advice had prevailed, growth failed to recover. Indeed, the only country that experienced significant growth in manufacturing in the 1980s was Botswana, which was not subjected to structural adjustment.

A comparison of Botswana and Zambia highlights the importance of looking beyond the aggregate growth rate, which in both countries was determined by the externality of the price of important mineral exports. For a large part of the postcolonial period, Botswana would not have sustained an increase in

GDP per capita had it not been for growth in diamond mining. Conversely, Zambia would have been able to increase its GDP per capita had it not been for the decline in copper mining. While agriculture policies were more favorable for exports in Botswana, at least on paper, these policies were less decisive for the rate of economic growth than has commonly been assumed. Agricultural growth in Botswana was not very important for the GDP growth rate because diamonds were dominant. In addition, although agricultural policies might have encouraged agricultural exports, they were in effect irrelevant because they could not override unfavorable weather conditions. Thus, luck had a great deal to do with the trajectory of growth in Botswana.

Kenya and Tanzania have been viewed as diametrically opposite cases in some of the literature, Kenya as the typical case of African capitalism and Tanzania as that of African socialism. However, the economic growth record of these two countries is very similar. One cannot usefully tell them apart before the end of the coffee price boom and the second oil price shock of 1978–79. This runs counter to some of the literature that sees the 1967 Arusha Declaration and Tanzania's turn toward socialism as the reason for an economic decline.

My research offers a surprising finding about the political economy of growth in Kenya. The existing literature has emphasized the appropriateness of economic policy under Jomo Kenyatta (1963–78) and has judged harshly the policies of Daniel arap Moi (1978–2002). Kenya did indeed experience a decline in economic growth compared to its own past performance, but not when it is compared to other African economies. The “good” policies of the Kenyatta regime did not result in a significantly better growth record, while the “bad” policies of the Moi regime yielded growth that compares very favorably to that of other African economies in that period.

Both Tanzania and Zambia experienced zero or close to zero growth in GDP from 1978 into the early 1980s. Their manufacturing sectors declined during these years, a trajectory that made way for structural adjustment policies that made financial support to cover growing problems with balance of payments conditional on economic liberalization. In Botswana there was no need for such a policy intervention. Kenya implemented structural adjustment programs, though, with its pro-capitalist legacy, the structural changes supported by the IMF and World Bank were less radical than those implemented in Tanzania and Zambia. In Kenya some internal marketing controls were liberalized and protection of the manufacturing sector was reduced. In Tanzania and Zambia, parastatal companies were much more dominant, and structural adjustment there was geared toward creating openings for the private sector internally.² Price controls were more prevalent in Tanzania and Zambia than in Kenya. Before structural adjustment, the unrecorded economy was growing in Tanzania and Zambia, mostly as a response to the uncompetitiveness of controlled prices.

NOTES

1. Botswana also published a series based in 1985–86 prices. Growth and sectoral estimates were identical with those of the 1993–94 series.
2. In fact, data on trade and transport was drawn almost exclusively from the parastatal sector in Tanzania.

Conclusion: Reflections on Measurement and Performance

This book has trodden new ground to illuminate some of the familiar issues in the economic growth literature. Although many researchers have evaluated the economic policies and performance of African countries, not many have evaluated the measurement of economic performance.

My central research question is how issues pertaining to measurement of growth can affect the prevailing conclusions on African growth performance. I have examined this question in several ways. First, I investigated the basics of national accounting, in particular highlighting the importance of the unrecorded economy. Second, I examined the accuracy in reporting of economic growth rates for these economies by comparing how different datasets report growth for the same country for the same years. Finally, I analyzed the sources and, in more detail, data used on the national level. Because the sections on measurement cover relatively unfamiliar terrain, it is important to consider the relevance of my findings to various specific approaches to the measurement of economic performance. The perspectives I offer on the GDP metric are particularly relevant for future research on African economic history.

MEASUREMENT AND PERFORMANCE IN THE CASE-STUDY COUNTRIES

It is worth emphasizing that, especially during the period of structural adjustment, the data on recorded growth are highly uncertain for Tanzania and Zambia. Kenya was less affected, while it is unlikely that Botswana data collection systems were impaired as directly as in Tanzania and Zambia. Accounting for the period of economic decline (from the late 1970s through the 1980s) and the revival during and after structural adjustment (1985–95) brings us to the issue of measurement problems. Collier (2007, 9) notes: “Is this dismal performance just an artefact of the data? I think that, on the contrary, the genuine problems that afflict gathering of economic data in the poorest countries are likely overall to have caused an underestimate of their decline. For the countries that have really fallen apart there are no usable data.”

My research on data collection methods and my reading of the different versions of the growth evidence that resulted from differences in methodology would suggest the opposite interpretation. In the late 1970s and early 1980s, data on the agricultural, manufacturing, distribution (retail and wholesale), construction, and transport sectors were collected by agencies of the states as administrative data (either by parastatals or ministries).

In the case of Tanzania, GDP growth was constructed on the basis of the accounts of the parastatal companies. State capacity to purchase, control, and move goods and services was seriously impaired by the economic shocks of the 1970s. The data for those years therefore recorded a decreasing proportion of the crops that were actually produced, sold, and transported. In other words, the informal or unrecorded economy was growing. No allowances were made for growth in subsistence production and consumption or for the increase in unrecorded or informal trade and transport. The result was an increasing underestimate of GDP levels and growth.

Economic liberalization and structural adjustment temporarily worsened the problems with accounting and record keeping. Liberalization preceded a change in accounting methods in Tanzania that allowed for coverage of informal and market activities. It was not until new GDP series were constructed in the 1990s that new allowances for informal trading based on informal market surveys were introduced. Including these important parts of the economy in the estimates produced an increase in total GDP. I have shown how this sudden increase causes problems for interpreting economic change before and after this rise in GDP.

I have documented how in the cases of Tanzania and Zambia, the series connecting the 1980s with the 1990s need to be treated as discontinuous. If this is not done, the time series data seriously overestimates economic growth in the late 1980s and early 1990s. In the databases the series are treated as continuous, and the growth evidence is misleading in two ways: both the economic decline in the 1980s and the post-structural adjustment growth in the 1990s are overestimated.

IMPLICATIONS FOR THE AFRICAN DEVELOPMENT LITERATURE

What can my findings for the case-study countries contribute to the literature on economic growth and development in Africa? It is worth repeating that I have focused almost exclusively on economic performance as measured by GDP growth. I chose this narrow focus because the economic growth literature has taken average GDP growth as the principal development indicator. I have not looked at how accurately change in GDP reflects

economic development; instead, I have asked whether GDP estimates are likely to reflect actual economic change and to what extent they are a consistent measure of economic change over time and space. My focus on what drove measured economic growth in the selected case studies has made it possible to gauge the plausibility of claims that relate specific economic policies or institutions to economic performance. I have attempted to explain economic growth as an incremental process instead of focusing on explaining a lack of economic growth, as does so much of the economic growth literature.

I argue that there is reason to doubt the validity of analyses that directly link economic policy to economic growth, and I have provided several examples in this book to support this claim. The aggregate growth rate in the four case-study economies I examined was determined largely by the movement in receipts from exported minerals or crops. These receipts are determined by the prices set in external markets and by productive capacity. For agricultural products, that capacity depended on climatic conditions. My finding is that to a certain point, economic policy is largely irrelevant if exogenous factors are favorable. Conversely, economic policy is relatively powerless to counter unfavorable exogenous conditions. The caveat to this conclusion is that economic policy does determine who receives the returns under favorable conditions, and that distribution of resources might have implications for long-term economic growth. It is also important to note that intensified economic controls were in part a response to external economic shocks. To engage in counterfactual debate about whether a more liberal response to the external imbalances in the late 1970s would have yielded better results would probably not be fruitful. It is not at all clear that the swift adjustment envisioned by the IMF and the World Bank with the implementation of their structural adjustment policies would have produced sustained economic growth. Manufacturing growth slowed in Kenya after structural adjustment policies were put in place, and efforts to industrialize in Tanzania and Zambia were aborted. (Botswana did not undergo a donor-supported adjustment.)

With the benefit of hindsight, one could imagine that had Tanzania and Zambia promoted agricultural exports more aggressively in the early years of independence, they might have been better equipped to cope with the exogenous shocks of the 1970s. The policies pursued by these two countries looked inward, although in the case of Zambia this was partly because of external conditions. That these policies preceded the economic decline should not automatically be taken to say that those policies caused the decline. Economic growth seemed to be as robust in Tanzania and Zambia as in the other economies in the early independence period, including in their agricultural sectors. Even with the benefit of hindsight it is hard to conceive how landlocked Zambia, which exported copper, had to import petroleum to support production of

that export, and faced hostility from previously important economic partners, could have devised a package of economic policies that would have taken the country comfortably through the postcolonial period. The fact that Kenya managed better through the early 1980s seems to indicate that Tanzania might have been overly ambitious in its program of self-sufficiency. However, the fact that Tanzania sacrificed efficiency for the sake of distribution may explain how it avoided the ethnic conflicts related to distribution later experienced by Kenya.

It is perhaps not surprising that my findings, which look at measured economic change, do not cohere well with approaches that seek to explain an average shortfall in growth. The failure of African economies to grow was not consistent, omnipresent, or inevitable. Economic failure and decline took place during the postcolonial period, but it did not coincide with the entire period, and independence and economic failure should not be equated. When one looks beyond outcomes that rely on the average growth metric and begins to look for periods of growth, the record of postcolonial growth looks very different.

Initial conditions such as ethnic fragmentation and the availability of social capital do not seem to have a direct role in explaining the failure of African economies to grow in the late 1970s. That failure is explained by a combination of external economic shocks and less-than-perfect policy responses from both international donors and national economic policy makers. Typologies such as the distinction between “closed” and “open” economies or between “bad” or “good” policies do not correlate consistently with the episodes of economic growth. The literature on African economic growth has conflated economic failure with the entire postcolonial period and then falsely linked economic policies and institutional arrangements, which had already co-existed with economic progress, to economic failure. That these early periods of economic growth were not sustained does not mean they had no lasting effects. Gains were made in infrastructure development and human capital that have not been fully reversed.

Looking at average economic growth necessarily removes some complexity and thus provides a simpler answer to the question of what caused economic growth. But behind the aggregate average is a more complex story. My reference point for the discussion of episodes of economic growth and economic policy has been the collection of case studies in Ndulu et al. (2008b). Those case studies have pointed to some of the diversity in economic growth across time and space on the African continent, though their interpretations are sometimes different from those I suggest here. The authors who contributed to this collection make strong claims about the timing of economic growth without explicitly noting the problems that exist with data quality and without probing into whether alternative sources of data on growth evidence support their interpretations.

IMPLICATIONS FOR THE ECONOMIC GROWTH LITERATURE

In theory, reliable and valid growth evidence assumes full and consistent coverage of all economic activity. If a measure is to be comparable across time and space, the growth data must be expressed in constant price terms and the coverage must be consistent from country to country. That is the theory; in practice, there are many shortcomings. Measured growth changes significantly with changes in how data is compiled, which extrapolations are made by statisticians, and when the base year changes. These changes are obscured in the reporting of frequently used databases, such as the Penn World Tables and the World Development Indicators. Another serious and often-overlooked deficiency is the difference between recorded and non-recorded growth. I have attempted to find a middle ground between accepting the data at face value and simply dismissing them as misleading. One need not know everything to know something. The data does convey information, but one needs a historian's approach to disentangle what is actual information from information that is a by-product of statistical methods.

In this book, I have looked at a range of issues relating to the measurement of economic growth in African economies. The first is that there is a surprisingly large discrepancy between the growth rates reported by the different international databases and that this unpredictable error range is so large that it may very well influence rankings between countries, which in turn form the basis for judgments on whether the economic performance of a country is "poor" or "good." The inaccuracies arise from the different methods the compilers of the international datasets used to harmonize different constant growth time series with different base years. These findings offer some important lessons. An observed economic shock, such as a double-digit percentage change in GDP, is very likely not an output shock; it is most likely a measurement shock. When erratic changes appear in the databases, they are often a by-product of the dataset rather than an accurate depiction of the relevant economy. The economic growth literature that emphasizes what it sees as volatility in the African economic growth record has introduced some errors of this type. It is advisable to consult different sources, and one could make a case that plotting error ranges in the growth evidence should always precede analysis of the data. There is indeed a sizeable error margin in the data from international datasets and national statistical data in growth rates in any given year, and a confidence interval should be established for the country that is studied.

I also looked at the conflict of aims between national statisticians and data users (Jerven 2011c), most notably growth economists. National statisticians continually strive toward the most accurate level estimate they can achieve with the statistical resources they have. When possible, they improve their measurement methodology and offer revisions or new measures of economic

sectors. But for growth economists, these improvements in level measurements render the growth rates unreliable.

The extent of such changes varies across time and between the countries, and one cannot tell when and how such changes have been made without consulting the primary sources: the national accounts. A careful consideration of the national accounts and the different published GDP series allows for a consideration of the underlying basic statistical data, the methods used to collect it, and the element of statistical growth. The GDP measure is a composite. In African economies it consists of some parts that are based on collected statistics and some parts that are computed statistics. Growth in the export, government, and large-scale agriculture and manufacturing sectors are recorded with a certain degree of inaccuracy. The rest of the economy is largely unrecorded. One unrecorded element of these economies is peasant agriculture, which in most countries is the most important economic activity. Other components of economies that are not recorded are small- and medium-scale manufacturing; most nongovernment services, such as transport, marketing, and retailing; and construction. The statistical assumptions that are made for these sectors, which often constitute more than a half of an economy, can vary considerably from country to country. This has implications for both level estimates and growth estimates (Jerven 2010a, 2010b, 2013a).

Among the case studies, Kenya stands out as the country with the best basic statistical data. This data was also available at an earlier stage than for the other case-study countries, which means that there was less incremental statistical growth in Kenya's data series. In addition, the fact that Kenya's data is more detailed and more regular also means that the agricultural baseline estimate is more comprehensive and more likely to register intensive growth.

Tanzania is unique among the case-study countries for its large small-scale agriculture sector, which grew at a slower pace than the total economy. Note that this slow growth happened by assumption. Since there is no real data on the small-scale agriculture sector, it was assumed that it grew in line with the rural population, which was measured as growing slower than the total population. Botswana's economy combined a rapidly growing mining sector and a centralized cattle industry. Because both the agricultural and mining sectors were significant contributors to Botswana's GDP, a relatively large share of its economy is well accounted for. Botswana's national accounting system evolved through an incremental process that provided better statistical data each year. When one does not revise backward properly, the data for Botswana incorporates a large element of statistical growth, particularly in the 1970s. In Zambia, the lack of basic data increased to such an extent that the production method of accounting was abandoned in favor of accounting based almost solely on performance indicators. In the late 1980s and beyond, estimates of recorded growth in Zambia were made by proxy or by assumed relationships in the economy. Zambia and Tanzania also stand out in the sample because their

accounting methods were compromised by the changes that began in the late 1970s, when the economy shifted from a state-dominated system toward an informal market economy.

The second chapter provided a review of the literature on the estimating of African national incomes. The first comprehensive estimates began appearing before independence. Reflecting the priorities of colonial administrations, they recorded items that also appeared in the balance of payments in addition to the produce of commercial operations. After independence, the consumption and subsistence incomes of participants in the “subsistence” economy became politically relevant. Some scholars, whose analytical framework followed the optimism about development that was prevalent at the time, doubted the importance of devoting resources to accounting for economic activities that would soon be transformed and integrated into the “modern” or “commercial” economy. Although newly independent African nations were smitten with the prevailing optimism about development, their first national accounts did include such estimates. In the case of Tanzania, these estimates were particularly comprehensive, reflecting both the economic and the political weight of the peasant sector. Statistical resources were not available to continue the ambitious measurement methods introduced in the early reports, at least not on an annual basis. The end result was that these sectors were estimated by proxy for the years between household budget surveys.

By the 1980s, optimism about development had turned to pessimism, and the focus turned to the supply response of small-scale farmers (how agricultural producers respond to prices) and the dynamism of the “informal” sectors. Because of the problems associated with measuring these sectors, the national accounts data is a poor guide to understanding this part of economic development.

LESSONS FOR THE STUDY OF LONG-TERM ECONOMIC CHANGE IN AFRICA

A recent tendency among development economists is the use of econometric models to explain long-term economic change. Economists have developed models that seek to explain centuries of economic and institutional change (Jerven 2011e). African economies are central to these explanations since they include most of the world’s poorly-performing countries. This work by economists challenges economic historians to undertake research with the aim of evaluating the significance and relevance of the quantitative evidence from the African past and judge how well the findings of such inquiry cohere with prevailing interpretations (Jerven 2010d, 2012).

Tracing the cause of current economic success far back in history runs the risk of neglecting important developments that occurred between time $t = 0$ and today (Jerven 2011e). Growth has been episodic in developing countries, and it is a major challenge to distinguish which periods of growth were important and which were unsustainable (Jerven 2010d). Some have simply extended existing postcolonial GDP series backward, using extrapolation or other inventive methods. This approach overestimates the evidential value of current GDP estimates in Africa and may create an indicator of development by appearance only. However, the difficulties of appropriately quantifying the African past are related to the widespread popular perception that the economy of the African continent is persistently stagnant. Economic historians of Africa are faced with some important and intriguing choices, and they should carefully consider the historical accuracy of the evidence used (Jerven 2012). The limitations of the evidence must be weighed against the increasing demands in the current literature that the African past be quantified and the danger that in the absence of data, the experiences of African economies will be marginalized in these meta-narratives.

This book has shown that there has not, in fact, been persistent economic stagnation in Africa in the postcolonial period. My findings on the measurement of performance have led me to reconsider some of the arguments about African economic growth. My study underlines the importance of looking beyond the averaged aggregate growth rates because of, rather than despite, the issues of data quality. I hope that my findings will stimulate and pave the way for new research that will suggest new evidence and methods to explain long-term economic and social change and (by implication) the current predicament of African economies.

Despite policy differences and less-than-ideal initial conditions, the four economies I have discussed did experience progress and widespread economic growth following independence. For Zambia this growth ended in 1974, when the price of petroleum and copper changed considerably in ways that were contrary to expectations. Kenya and Tanzania were given temporarily relief from the external adverse conditions through the coffee boom until 1979, when growth failed in Tanzania and slowed in Kenya. Botswana experienced sustained aggregate growth throughout the period. Looking beyond 1995, *African Economic Outlook 2008* declared that “for four consecutive years Africa has experienced record growth” largely because the continent was benefiting from high international prices on raw materials across the board (Organisation for Economic Co-operation and Development 2008). It has become increasingly clear to many observers that growth has not failed in Africa; rather, it is recurring (Jerven 2010d). If one accepts that growth revived in Africa in the early 1990s, then the view that a decade of decline is representative of African growth characteristics becomes untenable, and the history of African economic growth must be reconsidered.

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