

London School of Economics and Political Science

**African Economic Growth Reconsidered:
Measurement and Performance in East-
Central Africa, 1965-1995**

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THESIS ABSTRACT:

Lack of economic growth has overwhelmingly been the focus of studies of the economic history of post-colonial Africa. Ironically, this has diverted attention from explaining the process of economic growth. Explaining African economic growth as it happened, with attention to episodes of growth and changes in incentive structures, is much more demanding of the African growth evidence. There are serious validity and reliability issues with the Africa data. This stands in contrast with the widespread use of the data as functional evidence for economic analysis.

The thesis sheds new light on both methodological and substantive issues through a comparative study of the national accounting methodologies in Botswana, Kenya, Tanzania and Zambia. It is found that baseline estimates and growth estimation methodologies are different across countries, and that these to an extent determine differences in measured growth, and therefore might influence conclusions in the literature. The main sources of growth evidence are compared with the national accounts data. It is shown that these different sources do not cohere. These data quality issues are serious enough to compromise research on post-colonial African economic history unless proper care is taken.

The final part of the thesis analyses the growth experiences of these four countries on the basis of the national accounts data. At face value the stylised facts about averaged growth rates match the idealised typologies of African economies based on their policy and institutional frameworks. It is shown, however, that when we examine the changes in economic growth rates during the period, and the sources of those changes, the explanations from the case studies do not cohere with the orthodox narrative. While there are clear differences in the growth performance of the countries, these differences in growth rates were determined by events over which the policy makers and the institutional framework could have only limited influence. The case studies underline the importance of looking beyond the averaged aggregate growth rates, because of, rather than despite, the issues of data quality.

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INTRODUCTION

The failure of economic growth has been the focus of studies of the economic history of post-colonial Africa.¹ This has diverted attention from explaining the actual process of economic growth as it has occurred, and detecting economic change. This thesis takes its starting point in the empirical studies on African growth. 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 continent dummy, has been 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 attempting to account for the economic stagnation of African economies in the post-colonial era has appeared. A rich variety of explanations has been suggested, ranging from poor initial conditions, to low institutional quality and growth-inhibiting policies.

The thesis is a reconsideration of the dominant conclusions and methodology in the empirical growth literature, in three important respects. First, it is observed that the literature has focused on explaining an average shortfall of economic growth in Africa. From an economic history perspective this has diverted attention from important questions about the process of growth on the African continent. The overarching question has been why Africa has grown slowly; rather than asking how African economies did grow. While it is true that on average the African economies grew slower than those elsewhere, this stylised fact obscures the realisation that on aggregate African economies were not lagging significantly behind in terms of economic growth before the late 1970s. It is therefore questioned whether the average shortfall is the appropriate way of describing the African growth experience, and further whether it is the appropriate starting point for explaining African growth. It is examined to what extent the models informed by this stylised fact have reached conclusions with explanatory potential beyond accounting for the imagined event of a chronic failure of growth in Africa. It is suggested here that the extent of diversity of economic growth experiences across time and space is better approached at country level.

To assert that there was quantifiably an important difference in economic growth in one period as compared to another, or in one country as compared to another, raises the question of the accuracy of measurement of economic performance in Africa. The quality of the African growth evidence is widely considered as poor, but there is a lack of empirical research establishing the extent of its weakness. This is the second respect in which the thesis offers a reconsideration of African growth. It is shown that the interpretation of growth episodes is sensitive to the quality of

¹ Throughout the thesis ‘Africa’ is used short-hand for ‘Sub-Saharan Africa’.

the growth evidence. The empirical growth literature has been informed by averaged growth rates over three decades. This configuration of the evidence is not very dependent on the quality of the data. However, when scholars are aiming to associate changes in economic policy with changes in economic performance over time, or associating differences in economic policy and economic performance between countries, the conclusions are dependent on the reliability of the evidence.

The third element of reconsideration, related to the first, regards the method of investigation. The region and the period region have so far been more intensively studied under the present-tense rubric of 'Development Economics' or 'Development Studies'. In examining economic performance, economic history has the fundamental advantage of a stronger emphasis on achieving an accurate description and analysis of the experience over time. The notion of an African growth failure came about in the wake of the two oil price shocks (1973-74 and 1979-80), and has increased in currency as African economies become heavily indebted under Structural Adjustment. The contemporary literature on African growth is heavily influenced by this vantage point. This has resulted in what is here called a 'subtraction approach', where the relative lack of economic growth has found its explanation in negative characteristics of poor countries. A ranking of countries according to average economic rate of growth is very similar to a ranking by absolute income levels. Thus the task of explaining slow recent economic growth has been confused with explaining the long-term condition of underdevelopment. The resulting method of investigation is a 'subtraction approach' where the characteristics of a developed country are compared with the characteristics of an underdeveloped country. The differences between them have been taken to explain slow growth. It is argued that while the dependent variables suggested in the literature can fit with the stylized fact of persistent stagnation they fall short of explaining a change in economic performance. Thus, this approach is not always a useful guide to interpreting the past. The evaluation of economic policy pursued by independent African economies has suffered in particular. The whole post-colonial period has been equated with economic failure and the judgment on African economic policies and policy makers has been accordingly severe. The stylised fact of a chronic African growth failure has had a decisive impact on the writing of the economic history of independent Africa. This thesis revises this view.

While it is certain that state intervention in most African economies has left a lot to be desired in terms of achieved economic development outcomes, this should not be automatically equated with the consistent choice of 'growth-inhibiting policies', nor explained as an inevitable outcome of 'African' conditions. A methodologically sound historical account avoids using the effect to explain the causes. In the economic history of post-colonial Africa this has proved particularly challenging, as the effect; the African growth failure, has loomed large. The typology of 'good policy' versus 'bad policies' takes impetus from the prevailing development policy paradigm.

'Bad policies' are hard to define precisely, and it is not sufficient to identify them as less than perfect decisions. To expect foresight of economic change and transcendence of contemporary policy advice seems to be asking too much of African policy makers in the 1960s and 1970s. That information is less than perfect is common to both state and market decisions. 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 caution should be exercised in a practical and relative comparison of the economic development experience. This thesis finds that in several instances there is reasonable doubt concerning the direct causal link between the typologies of 'good' and 'bad' economic policies and the economic growth record.

To address these questions empirically the thesis considers economic growth in East-Central Africa from 1965-95, specifically examining and comparing the experience in Botswana, Kenya, Tanzania, and Zambia. Following the introductory Chapter 1 that surveys the aggregate literature on African economies since independence, the thesis consists of two parts, comprising three and two chapters. Opening the part titled 'Measurement' Chapter 2 reviews the state of knowledge on the quality of the African growth evidence, concluding that the issues are likely to be important. This claim arises from a comparison of the major data sources. Annual GDP growth rates on the four case-study countries from World Development Indicators, Penn World Tables, Maddison and official national accounts data vary so much as to bring definite statements of the comparative growth experience of Botswana, Kenya, Tanzania, and Zambia into doubt. In order to deal with the uncertainty surrounding the growth evidence the thesis consults the primary source for growth data: national accounts. Thus, chapter 3 investigates the development in national accounting methodologies in the four countries. A basic conflict of aims is identified between the national statisticians and the growth time series analysts. The former are striving for the most accurate level estimate and are therefore constantly seeking to improve measurement, while the analysts need an accurate change estimate and would therefore desire that measurement was constant. The extent of this problem varies across time and between the countries. The implications of creating constant growth series based on the national accounts data in the four countries are discussed in chapter 4. The basic statistical data, methods of measurement and estimation vary. This has decisive impacts on the growth evidence and consequently on the validity of growth comparisons.

Based on the empirical work on measurement presented in the first part of the thesis, the second part, titled 'Performance', begins with a Chapter 5 that tries to offer the most accurate possible comparison of the growth experiences in the four economies. Economic growth is disaggregated by sector and the rates and sources of growth are differentiated 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 in ‘growth promoting policies’, while the dismal experience in 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 the results of a failed ‘socialist’ development experiment. Compared to these prior expectations it is found that in Botswana, with the exception of the mining sector, economic growth was surprisingly low. Conversely in Zambia, except for mining, economic growth was surprisingly fast. Meanwhile the growth experiences of Kenya and Tanzania were surprisingly similar. These contrasts and similarities of the growth episodes in countries and the economic policy interpretations are reconsidered in Chapter 6.

In the concluding chapter these conclusions from the individual chapters are brought together and synthesised. It is worth highlighting one aspect that makes this thesis unique: in addition to interpreting the economic performance, this thesis also considers to what extent scholars are able to interpret economic performance on the basis of the GDP metric. Beyond the specific empirical findings analysed there, the concluding chapter also has some messages concerning approaches to studying economic growth in Africa. A limitation of this thesis, shared with most economists’ work on African growth, is that it takes independence (here 1965) as the entry point of investigation. The link between post-colonial and colonial Africa has been made in the history discipline, but not as yet in quantitative economic history. The most constraining factor here has been the lack of growth time series. As this thesis shows, the econometric work on post-colonial Africa has been done in spite of serious data reliability and validity issues. It is hoped that this thesis research can be a step towards achieving a degree of quantifiable certainty about the African economic past. This way the debate on African growth can be recentred towards explaining economic change, and not solely focussed on the lack of economic growth.

Chapter 1: Explaining African Economic Growth: The Quest for the African Dummy

This chapter traces roughly a decade of research aimed at explaining African growth performance, here called the quest for the African dummy. The emergence of an African continent dummy variable will be explored and it will be shown how the quest to eliminate this dummy progressed, and how, eventually, the African growth shortfall was never satisfactorily explained. In short, this is a critical survey of the regression literature on African growth. First, the chapter reviews the African growth evidence and presents alternative interpretations of the African growth experience. It proceeds by examining the main conclusions reached; how these conclusions were supported by explanatory variables; and finally whether these conclusions cohere with the evidence. The chapter characterises the explanatory framework that has been used and it is shown how the ‘quest for the African dummy’ has had a decisive effect on the writing of the economic history of independent Africa. Because of its importance this literature is the reference point for this thesis and the chapter concludes with some suggestions for further investigation, which maps the way forward for thesis.

In 1991 R. J. Barro published “Economic Growth in a Cross Section of Countries”, a paper exploring causes of economic growth in a global sample of countries. The article spurred a great amount of research. These papers remained with the same methodology - cross country growth regressions in which the dependent variable was the average growth rate of per capita GDP (Durlauf et. al. 2005: 599). Within this literature, henceforth called the regression literature, innovation was found in adding different independent variables, or interactions of them, to the initial baseline estimation. One of the central findings in that seminal paper 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 aiming to eliminate the African dummy, and thus explain the African growth shortfall. Various solutions were proposed and conclusions reached in the following years. The Barro interpretation was taken literally in the magazine the Economist in 2000 where it was asked whether “Does Africa have some inherent character flaw that keeps it backward and incapable of development?”² In a more resigned conclusion, recognizing that despite many efforts, the African dummy had proved elusive and had not been eliminated over a decade of research, in an authoritative synthesis article Collier and Gunning concluded simply that African economies have grown “inexplicably slowly” (Collier and Gunning 1999a: 66).

² (Economist May 13–19, 2000) Quoted in Arrighi (2002)

More recently, while there has been a shift towards explaining growth over longer periods,³ there has been a slump in the publishing of articles on the post-colonial African growth performance, indicating that a limit to invention has been reached. The conclusions of the regression literature on Africa have had a large resonance, partly because the results were to some extent coherent with the policy agenda set by the Bretton Woods institutions. The conclusions have also been successfully furthered to a non-academic audience through recent publications by P. Collier, W. Easterly and J. Sachs, all major contributors to the regression literature.⁴ The findings of the regression literature are treated as established facts. The quest for the African dummy has thus seemingly ended, the answers to why Africa grew so slowly are supposedly found and the conclusions from more than a decade of running regressions on African growth are apparently deemed to be ready for textbook publications. The recently published *The Political Economy of Economic Growth in Africa 1960-2000* (Ndulu et. al. 2008a; b) has its basis in this literature. In the second volume, in 26 country studies the conclusions from the aggregate regressions were used to discipline the search for causes of economic growth to be complementary to the aggregate story (Ndulu et. al. 2008a: 9). That publication sums up the widely accepted account of post-colonial economic performance. This chapter sums up how this account was built incrementally, and argues that certain perspectives on African economic growth were missed on the way.

The questions on the research agenda were an outcome of the specific methodology used, which again determined the handling of the growth evidence. The origin of the empirical growth literature was to explain the “secular” or “underlying” economic growth. The model was developed to test growth theory empirically and was aiming at explaining differences in the steady state growth rate. This initial intent of the model is a separate issue from what it is been claimed to explain in the regression literature. A model has an associated narrative and both parts should be evaluated. The papers under review explicitly aim to explain African economic performance in the post-colonial period. For that purpose the average rate of growth in GDP per capita is used as the dependent variable. In a global sample this leaves what may be termed a negative growth residual for African economies unexplained or a significant negative African dummy. It requires a leap of faith to go from such a cross sectional observation to reach the verdict that this observation is valid through time. What the model actually examines is at times different from its literal interpretation in the literature. This paper will examine how the regression model, and the use of the growth evidence, has influenced the conclusions reached on African growth.

3 As marked by the work of Acemoglu et al.(2005; 2002; 2001); Austin (2007b); Bates et. al. (2007); Easterly and Levine (2003); Engerman and Sokoloff (1997); and; Nunn (2007).

4 *The Bottom Billion* (Collier 2007), *White Man's Burden* (Easterly 2007), *The Elusive Quest for Growth* (Easterly 2001a) and *The End of Poverty* (2005).

The issue at stake here is economic performance. How did the African economies perform and why? This point of departure is relatively uncontroversial. The trajectory of the debate gets complicated as soon as the first step is taken. The mainstream literature takes measured growth in GDP as the evidence of economic performance. Some scholars will not readily agree that this measure constitutes economic development per se, and further object that the data on GDP growth in Africa are inaccurate and unreliable. It is common behaviour to ignore these caveats, and those issues are equally sidestepped in this chapter, but will be dealt with in the following chapters. A further valid complaint regards whether it makes sense to analyse African economies as a coherent unit. Following with the literature this problem is initially disregarded in this chapter, but country level coherence will be treated in a case-study analysis of Botswana, Kenya, Tanzania and Zambia in this thesis.

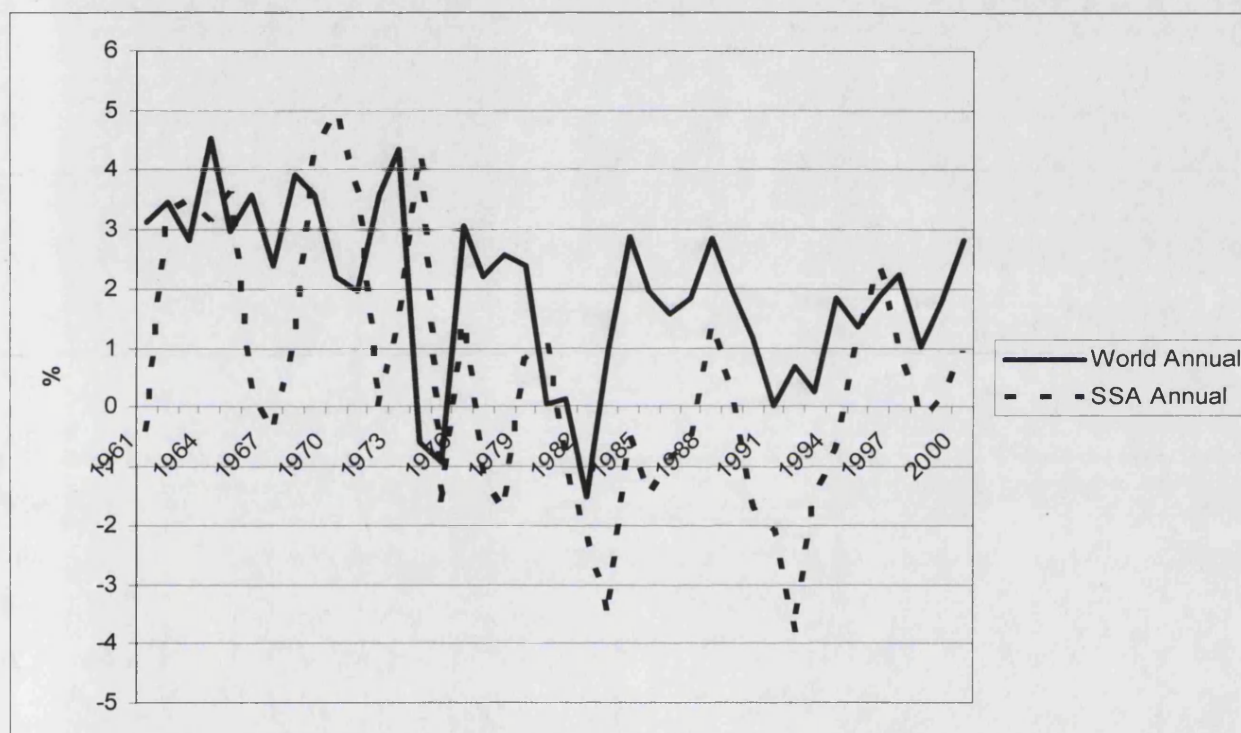
The fact is that there exists a literature that, while sometimes observing these deficiencies, usually ignores them for the sake of the argument. This literature is worthy of a critical review, not for its acute attention to specificities of individual countries or the attention to the quality of the evidence, but for its wide resonance. The parameters for the discussion, in terms of type of evidence and the sample of countries, are set by the literature as embodied in the African dummy. The existence of such a dummy is a result of a specific configuration of the growth evidence. The literal interpretation of the dummy is that African economies have a persistently slower steady-state growth rate than other economies. The literature has then gone ahead and ventured different ideas of why that is, and proposed different variables that capture this negative growth residual vis-à-vis the rest of the world. This is the static story, where this one stylised fact is explained by a range of other facts in a causal relationship. The research agenda was summed up as “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 has Africa grown slowly, instead of asking how African economies grew. There are many unaddressed questions in the wake of this quest for the African dummy. Since the literature has been informed by the average growth in GDP per capita, the question of the timing of growth has gone unaddressed. There has been no probing as regards whether the stylised fact is true. Was there a chronic failure of growth? The fact is that there were episodes of growth, where and when these occurred has received less attention. It is also obvious that usefulness of Africa as a category has its limitations. The view that ‘Africa’ is relevant as an explanatory category in itself has been strengthened by the quest for the African dummy, while there is probably as much variation in growth within Africa, as when Africa is compared to the rest of the world. Beyond the obvious example of the uniqueness of individual country experiences, there are also unaddressed explanations of the aggregate pattern of growth.

The story of economic growth halted by an exogenous shock and followed by a decline in growth has got lost in this research agenda.

Patterns of Aggregate Growth in Africa 1960-2000

The African continent dummy originated in observing a difference between the growth rates in the World as a whole and in Africa. There are many possible ways of presenting the economic growth record of the post-colonial period. Some of them will be explored here.

Figure 1: Economic Growth – Africa versus the World 1960-2000, annual growth rates



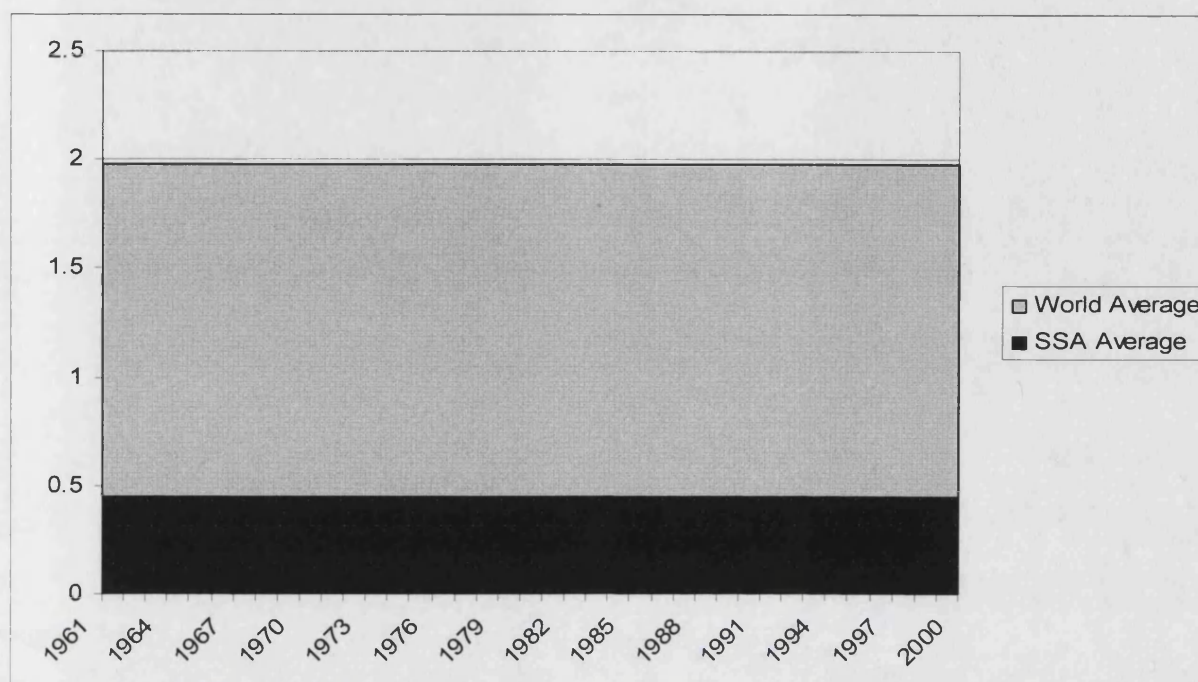
Source: World Development Indicators (2007) Data: GDP per capita (constant 2000 US\$) Annual Growth %.

Figure 1 above displays one way of comparing growth in Africa with the rest of the world between 1960 and 2000. The first two curves plot annual GDP per capita growth in the World and Africa. It is evident that there is a large year-to-year variation in growth, and that the variation is around a higher trend in the first half of the period compared to the second half of the period. It is also apparent that the African GDP per capita growth is often negative from the late 1970s onwards.

In contrast figure 2 shows the average growth in GDP per capita over the period, as a conceptual approximation to the growth evidence that has informed the regression literature. The average growth shortfall over the period is about 1.5 per cent, with an average African growth rate of 0.5 percent compared 2 percent world average. In the seminal cross country regression with

global sample of average growth rates 1960-1985, the African Dummy was found to be 1.1 percent (Barro 1991). The regression literature has aimed at eliminating that dummy. The quest for the

Figure 2: Economic Growth – Africa versus the World 1960-2000, average growth



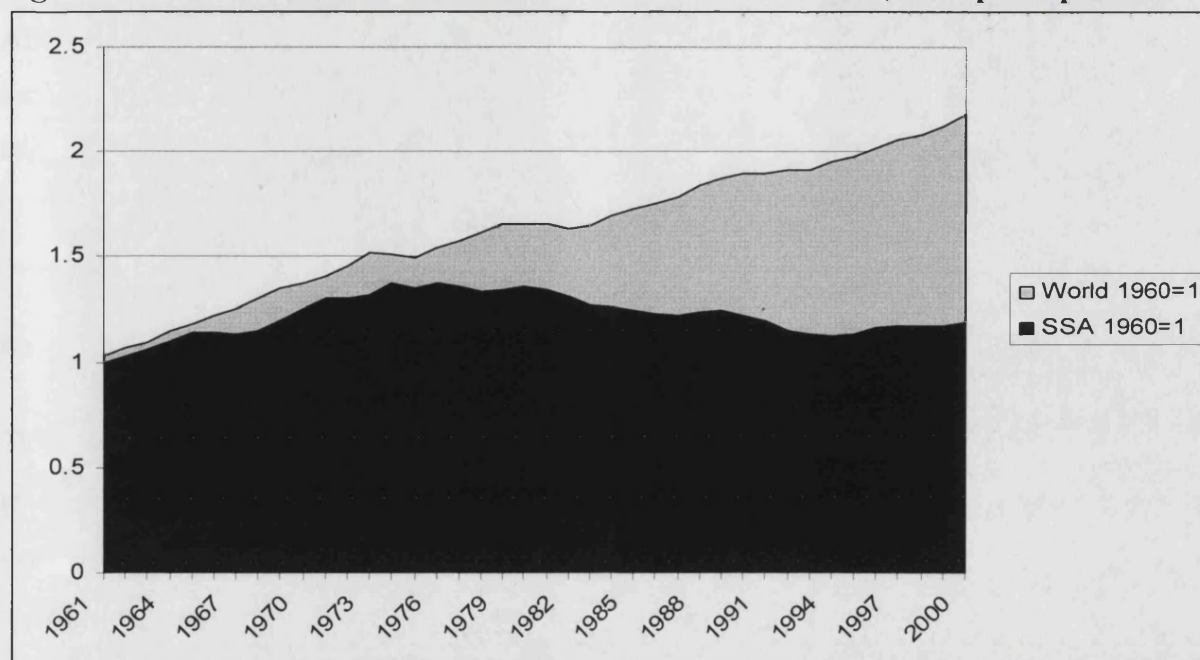
Source: World Development Indicators (2007) Data: GDP per capita (constant 2000 US\$) Annual Growth %.

African dummy has not explained how African economies grew, but taken it as given that this average growth shortfall is the defining characteristic of African growth performance. Collier and Gunning observe this weakness themselves, admitting: ‘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 3 plots indices of GDP per capita (1960=1). The main lesson to take from the indices is that the gap between the two is very small in the first part of the period, and it is only after 1975 that the difference between them is larger than 10 per cent. After that, however the indices diverge dramatically.

The approach taken in this thesis is that, if one adopts a perspective not limited by focusing on an average shortfall in growth, the aggregate growth evidence opens up for other interpretations regarding the timing of the dummy. When did the negative residual accumulate? Again, it also shifts the focus from why there is gap in growth in Africa vis-à-vis the World, toward explaining African growth itself. If one judges that the growth pattern, seen in a dynamic way, does not cohere with the static approximation it would leave the regression model unsatisfactory. This would be the case where the “imagined event” – a persistent negative growth residual – does not cohere with the “real event” to such an extent that it calls for different explanatory variables.

Figure 3: Economic Growth – Africa versus the World 1960-2000, GDP per capita index



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 the World GDP per capita. The African growth shortfall is therefore a more recent phenomenon. Before 1977, in terms of growth rates African economies were not significantly lagging behind. Indeed, viewed in total GDP terms, the African economies grew quicker than the rest of the world in this period, since the population growth in Africa 1961-2000 was one percent higher than in the rest of the World.⁵ The two below contrasts the relative performance of Africa and other regions, using total GDP indices across 1960 to 1975 compared to 1975 to 1990.

Table 1: Total GDP Indices by Regions 1960-1975

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 2: Total GDP Indices by Regions 1975-1990

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

⁵ All data taken from World Development Indicators, This conclusion is not an artefact of my use of the WDI data. Ndulu and O'Connell (1999) finds the same pattern using Penn World Tables. Maddison (1995) supports the same conclusion. Neither is this finding an artefact of aggregation, it is supported by individual country experiences, as is shown by Arrighi (2002) using data assembled by Berthelemy and Soderling (2001).

So, in reality the African growth pattern looks considerably different. The notion of the African growth failure came about in the wake of the 1973/4 and 1981 oil price shocks, and has increased in currency as African economies have become heavily indebted under structural adjustment, and due to the required food aid related to the 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.

Explaining Lack of Growth in Africa

This alternative presentation of the growth evidence above demonstrates that a “chronic failure” of growth in Africa is dependent on a specific configuration of the evidence. With the timing of the divergence of economic performance as a background it would seem that phrasing the research question as why has Africa grown slowly is misleading. The extent to which this initial starting point is incorrect would determine to which degree the independent variables used in the literature have been tainted by this use of the growth evidence. Consequently, this paper now moves to consider the independent variables used in the regressions, review their conceptual soundness and test how well they stand as causal factors of growth in Africa. Has the quest for the African Dummy yielded any results that can provide a coherent explanation of the notion of the rapid growth in the 1960s and early 1970s, and the subsequent retrogression in the late 1970s and the 1980s?

The table below shows the quest for the African dummy, as it progressed over a decade, searching for the right explanatory variable that that would remove the “stubborn African dummy” (Temple 1998: 324). The dummy remained significant with the exception of the Sachs and Warner regression, where the African dummy was superseded by the inclusion of a tropical dummy.

Table 3: The Quest for the African Dummy - A Summary

Regression	Value of the African Dummy	Central Variable
Barro, 1991	- 0.0129 (0.0030)*	
Barro and Lee, 1993	-0.0116 (0.051)*	Black Market Premium
Mauro, 1995	-0.017 [-4.26] to 0.021 [-5.21]**	Corruption
Sachs and Warner, 1997	0.02 [0.05]**	Openness
Easterly and Levine, 1997	-0.013 [-2.46] **	Ethnicity
Burnside and Dollar, 1997	-0.0135 & -0.0161 (0.76)*	Aid
Temple, 1998	-0.0102 [1.74] to -0.0238 [4.38]	Social Capital
Collier and Gunning, 1999	-0.0052 [0.98]	

*Standard Error in parentheses

**T-scores in brackets

The list in the table is by no means exhaustive. Durlauf et. al. (2005: Appendix 2) report that in cross country growth regressions 145 explanatory variables have been found statistically significant, and therefore with an explanatory effect on the rate of growth. Of these 145 variables some entertain similar growth hypotheses, but differs in the measures used. Durlauf et. al (2005: 639) identifies 43 conceptually different “theories” of growth as being “proven” in the literature. The result of Durlauf et. al (2005:5 99) call a ‘growth regression industry’ as researchers have added plausibly relevant variables to the baseline Solow specification.

A natural starting point is the authoritative survey of the regression literature on African growth, ‘Explaining African Economic Performance’, by P. Collier and J. W. Gunning (1999a).⁶ That paper summarized the most significant factors in regressions on African growth, which were summarized under six headings: lack of social capital, lack of openness to trade, deficient public services, geography and risk, lack of financial depth, and high aid dependence. The implicit argument structure in the paper was that the factors can all be derived from the lack of social capital. In their view the cumulative evidence of the regression literature identifies lack of openness to trade and low level of ‘social capital’ as having “large, damaging effects on the growth rate” (Collier and Gunning 1999a: 74).

The lack of social capital is the ‘original sin’ in Collier and Gunning’s synthesis of the regression literature. It causes “bad” policies such as restrictive trade policy and deficient public services, aggravates unfortunate natural endowments, has lack of financial depth as a bi-product and makes aid inefficient. Through this variable, causes that normally would have been considered exogenous or unfortunate initial conditions are made endogenous effects of a lack of “social capital”.

At face value, this list of the significant factors illustrates that by finding explanations for a lack of growth, the regression literature has found variables that give a distinct flavour of a subtraction approach. The subtraction approach can be described as taking the characteristics of a developed country on one side, and comparing it with an underdeveloped country on the other side. The differences between them are taken to explain underdevelopment. This is well illustrated by the list of factors in the paper, and the frequent use of ‘lack of ...’ makes it explicit.

Linked with the subtraction approach is the revival of the notion of the vicious circle of underdevelopment, where underdevelopment is taken to explain itself. This does not cohere with the actual growth record. The African economies have displayed both growth and retrogression; they have not been captured in a low-level equilibrium where poverty has reproduced itself.

⁶ That synthesis article was published in 1999, and one would perhaps object that the study is fairly dated. However, as indicated in the previous section, there have not been major significant new findings in the literature since then. This contention is supported by Durlauf et. al (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 focussed on the same papers reviewed here (Azam et. al. 2002).

Therefore, the factors launched and the circular reasoning in which they are embedded is not immediately convincing. It is already known before reading the regression literature that Africa has performed relatively worse in GDP per capita terms over the post-colonial period as a whole. The African economies are poorer. Knowing that we would also assume that they rank lower on education, health and infrastructural indicators, it is also reasonable to assume that these poor countries receive more aid, and have less developed financial markets. This is confirmed by the regression literature. What it does not tell us, and what would be the key to understanding economic performance, is why the African economies grow and why they regress.

To observe a difference between two countries based on a subtraction approach is a potentially useful start, but not 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 one feels that this basic acknowledgement 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 stricter explanatory framework of cause and effect. This would necessitate an abandonment of the central premise of the cross section regression literature. While these regressions are fitted by averaging dependent and independent variables one is constructing African economic history as a static story of stagnation and slow growth - a story that ignores important quantitative and qualitative changes.

In this respect it could be seen as a paradox that policy is given such a prominent role in the explanation. If one considers the growth pattern presented earlier in the thesis, the African economies grew rapidly when 'bad' policies were implemented. The first structural adjustment package was agreed upon with Senegal in 1979 (Van de Walle 2001). Since then most African economies have been implementing 'good' policies as prescribed by the orthodox scholars, and economic performance has been poor. There is considerable debate on whether these policies were fully implemented. Nevertheless, the reforms that were manifestly implemented targeted specifically the prominent variables in the regression literature. That is, the black market premium through devaluation, openness (also part of the former) by abandoning price controls and reducing tariffs, and lastly financial reforms.

The regression literature has overwhelmingly put the blame for poor economic performance on African policy makers. The literature does to some extent want to explain these 'bad' policies with social arrangements that are specific to Africa, this is where social capital comes in, and is supposed to capture the African exceptionalism of poor performance. As we have seen, Collier and Gunning (1999a; b), emphasise the lack of social capital as the central factor. Or more specifically, as Azam et. al. put it "the choice of bad policies... ..is traced to the lack of social capital and deficient political institutions" (2002: 171). Similarly, Temple summed up the consensus in the

literature as “observable variables capturing initial conditions can account for around three-quarters of the variation in developing country growth rates. These variables affect growth mainly by determining policy outcomes” (Temple 1998:341). In plain language the regression literature initially found that certain policy variables such as overvalued currencies, corruption and general institutional quality were correlated with low average growth rates. In trying to assign a causal link, and avoiding endogeneity, the literature has increasingly sought to explain these policy outcomes with respect to initial conditions. The initial conditions that have been used are “social capital” and “ethnic diversity”.

Social capital is defined as containing two components: public and civic capital. The former should be understood as resulting from social interaction and the latter from institutions. It is further important for its definition that social capital has social causes, but may have economic effects. The main thrust of the argument derives from the effects of narrow constituencies and ethnic fractionalisation. The former relies on work by Bates (Bates 1981; 1983) and explains “bad” or growth retarding institutions, and the latter relies on regression work by Easterly and Levine (1997). There is no regression evidence explicitly supporting the Bates argument. Ethnicity is a poor proxy for narrow constituencies. It should be remembered that Bates’ argument (Bates 1981; 1983) is primarily meant to explain the differing agricultural pricing policies within Africa as policy outcomes determined by whether the ruling elite are rural or urban based, resulting in corresponding policy bias. The ethnicity variable is weakened by its crude formulation. There is good reason to believe that political instability and linguistic fragmentation does not increase proportionally. Rather, two or three equally large groups have proved more detrimental than many small groups. Incidentally, Easterly and Levine show this when attempting to prove that their ethnicity variable works: they compare the two extremes on the ethnic fragmentation measure, Japan and Tanzania. They find that the indirect and direct effect of ETHNIC “accounts for about 4.1 percentage points of the growth difference – which equals the actual growth difference.” (Easterly and Levine 1997:1237). While these numbers add up, it must be noted that ethnicity has not been ascribed a growth-retarding effect by any major scholarly works on the economy of Tanzania.

The basic claim is that the lack of social capital causes ‘bad’ policies. The linguistic fragmentation has a weak ‘instrumental’ explanatory potential in this respect. It only displays a robust impact on the numbers of telephones per capita (Azam et. al. 2002: 204) – a variable to which one would be careful about ascribing too much growth explanatory potential. There are weaker relationships with some of the other policy variables – school attainment, financial depth, and the black market premium. The two former have already been dealt with earlier. Although some African currencies were systematically overvalued (this does not apply to the CFA countries for instance) its extreme values inflating the measure were shock and not policy outcomes. This has

been noted in the growth literature earlier: “If shock variables are omitted, estimates of the effect of the black market premium on growth will falsely attribute externally-induced adversity to policy” (Easterly et al. 1993: 474).

‘Lack of social capital’ is also supported by some ‘subjective evidence’ i.e. different impressionistic rankings of various measures of institutional efficiency based on interviews. These descriptive data are given in Table 4.

Table 4: Evidence Used in the Empirical Growth Literature for ‘Lack of Social Capital’

	SSA	Other LDCs
Corruption	4.97	6.03
Bureaucracy	1.38	1.72
Enforceability	1.95	2.09
Civil War	1.27	0.72
Fractionalization	67.6	32.7
Social Development	1.10	-0.43
Inequality	31.0	31.0

Notes: Corruption: data from International Country Risk Guide for 1982; low score indicates high corruption. Quality of bureaucracy: source as corruption, high scores indicate better quality; range is from 0-6. Enforceability of contracts: data from Business Environmental Risk Intelligence for 1972; low scores indicate weak enforceability; range is 0-4. The index of fractionalization is on the range 0-100 with completely homogenous societies scored as zero. Adelman-Morris Index of ‘social development’ as of the early 1960s is constructed on the effective range 1.86 (least) to -1.91 (most) over 74 countries which they classified as developing at the time. Inequality: the income share of the third and fourth quintiles. *Sources:* Corruption and fractionalization from Mauro (1995); civil war (months per year) from Singer and Small (1994); A-M Index and inequality from Temple (1999)

This table is reproduced from Collier and Gunning 1999a (Table 2: Socio-Political Indicators: Differences between Sub-Saharan Africa and other LDCs p.67).

There is a critical problem of reverse causality associated with the use of these data. They are all observations from the 1980s and 1990s i.e. in the latter half of the period analysed. Consequently, these are likely to be effects of the growth failure of the late 1970s and early 1980s, and not a cause of growth during the whole period. The data are also far from comprehensive. Knack and Keefer (1995) use only two African countries, South Africa and Nigeria. The data on corruption and bureaucratic inefficiency from Mauro (1995) includes only ten African countries. Among those ten are the notorious and not necessarily representative Nigeria, Zaire and Cameroon. These interviews were conducted in 1981-83. In Nigeria this coincides with the Shagari government which was viewed as particularly corrupt (Othman 1984), in Zaire with the disintegration of the

Mobutu regime and in Cameroon with a government change due to corruption allegations. As seen in table 4, the variables used to measure the effect of social capital could be divided into three different categories, measures of institutional quality, ethnicity, and the third supplement of the social development index. These are all highly correlated. This is not surprising as the quest for eliminating the dummy has been geared towards finding a measure on which African economies scores different than others.

The social development index was developed by Adelman and Morris (1967). This index was used by Temple (1999), Temple and Johnson (1998) and as we have seen, it is reported in Collier and Gunning (1999a). These publications refer to it explicitly as a measure of social capital. The index has the advantage of being dated in the beginning of the period (the measures are collected from the period 1957-1962) as opposed to the more recent surveys of subjective evidence on institutional quality. Therefore the scores on this index cannot have been caused by later processes of economic development in those countries. Granted, the index has this one advantage, but it has many other problems.

First, having been made in the intellectual milieu at the time, this index was made with the idea in mind that societies are to be found on a continuous line of development from 'traditional' to 'modern'. Revisionist scholarship has emphasised that this not the case, and that there are many paths to modernity, rejecting the idea of a unilinear model of development. Second, the index does not cohere with the theoretical underpinnings of social capital. The idea behind using social capital as an analytically distinct term from other types of capital or development is that the capital should have social causes, and economic effects. The phenomena measured need to be unrelated to other types of capital accumulation, in order to make sure we are measuring growth effects that are caused by social capital. Table 5 on the next page shows the weighting of the factors in the index as used by Temple and Johnson (1998) and by Temple (1999).⁷

The measures listed the table are composites derived from various other measures. Some of the values given to countries were based on official available statistics. On other more impressionistic measures or when data for the characteristics were unavailable the countries were ranked according to the researcher's judgment. For example, a value would be given for Tanganyika (mainland Tanzania) on the variable "Degree of modernisation of outlook" or another "purely judgemental indicator" (Adelman and Morris 1967: 12) based on a general feeling about that country. That value would then be sent for consultation to other 'experts'. If those disagreed the value would be adjusted upwards or downwards accordingly.

⁷ In the original Adelman and Morris Index ethnicity was included as a variable as well. However, since the papers referred to here used linguistic fragmentation as a separate independent variable, the ethnicity part of the index was excluded.

Table 5: Socioeconomic Components of the Adelman-Morris Index

	Factor Loading:
Size of the traditional agricultural sector	-0.89
Extent of dualism	0.84
Extent of urbanisation	0.84
Character of basic social organisation	0.83
Importance of indigenous middle class	0.82
Extent of social mobility	0.86
Extent of literacy	0.86
Extent of mass communications	0.88
Crude fertility rate	-0.63
<u>Degree of modernisation of outlook</u>	<u>0.75</u>

Temple is pleased by the fact that when he groups the countries in the sample in three groups “the African countries nearly all fall into the first group - that associated with the most traditional societies. Thus, this variable does seem to offer some hope of removing the stubborn Africa dummy” (1998:324). In that context it is worth mentioning that the only countries that are not African and classified in the least socially developed group are Afghanistan, Laos, Nepal, South Vietnam and Yemen. In this respect it could be argued that one is just redefining the puzzle elsewhere, creating a dummy by another name. It is also problematic that the African exception – Botswana, is not included. Botswana grew very rapidly throughout the period, and is often used as the example that ethnicity and democracy matters, as the country has only main language and has remained relatively democratic throughout the period. It is extremely unlikely; however, that Botswana would have scored significantly different on the A-M index in 1957.

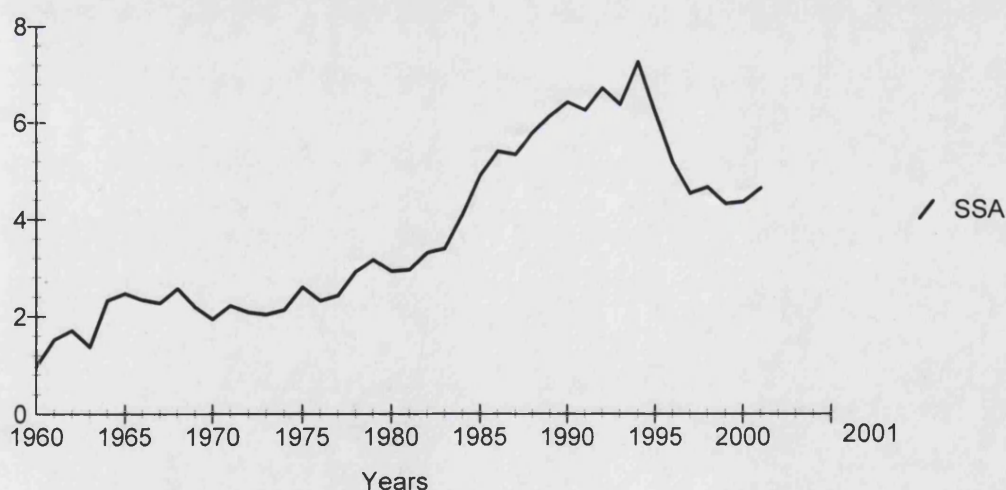
From the list in table three it is clear that the factors are associated with economic modernisation. The index is not a pure measure of social capital, or a capability for modernisation or rapid growth. The factors listed are characteristics of a higher degree of economic poverty, and a lower level of economic development. The measure is very inclusive and contains indicators like health, education and economic structure. The list also includes measures that today by general consensus are widely regarded as a conceptually unsound basis to describe less developed societies. Examples in point are ‘dualism’ and ‘traditional sector’. While it is open to speculation whether the Social Development Index may or may not proxy social capital, it is clear that it does not measure social capital according to its definition. The data behind the index are results of accumulation of human and physical capital, and economic processes such as the degree of structural change and urbanisation. This is related to the confusion in the literature as whether one is explaining being

relatively poor or growing relatively slowly. In essence social capital suffers from measurement problems, but even if the proxies were accepted, the variables fall short of explaining a change in economic performance.

The cross-sectional explanation of African growth suffers from several incoherencies. Keeping the record of growth presented earlier in mind the proposition that initial conditions determine persistent slow growth directly does not make sense. At best, such variables as ethnicity or lack of modernization of outlook can be seen as contingent. It seems that unfortunate initial conditions were overcome, how they came into play at later stage could be part of a historical explanation. However, the cross-sectional story does not accommodate for such explanations. The persistence of the African Dummy became one of the important questions to address in the regression literature. While it was tempting to interpret the dummy as that Africa had a 'character flaw' that made it incapable of economic development, the growth record tells a different story.⁸

The variables that capture the policy outcomes suffer from a different shortcoming. Either their average value (such as the black market premium) is inflated by the economic shocks of the late 1970s and early 1980s, or the observations of institutional quality are made after these economic shocks. It is misleading to take this post-shock phenomenon to explain the whole period.

Figure 4: Financial Aid as percentage of GNI for Africa 1960-2000



Source: WDI 2002

In a telling manner, Collier and Gunning illustrate this when arguing the case that Africa suffers from high aid dependence (Collier and Gunning 1999a:74). It is reported that in 1994 the share of aid to GNP in Africa was almost five times higher than in other low income countries.⁹ WDI (2002)

⁸ (*Economist* May 13–19, 2000) quoted in Arrighi (2002)

⁹ The source of the data for this ratio in the paper is not given.

records aid dependency ratios as a percentage to GNI, which includes all official development assistance, official aid, technical cooperation and all loans with at least 25 percent grant element. The percentages are plotted in figure 2. It is revealed that in picking 1994, Collier and Gunning used the absolute peak observation (in the WDI data it is recorded as 7.3 percent and not 12.4 percent). Relatively high aid dependence is indeed a symptom of the growth experience of the 1980s, but its extreme values are a more recent phenomenon than is usually thought.

A similar misplaced pessimism relates to infrastructure and human capital. As examples of relative indicators of deficiency in public service provision causing slow growth Collier and Gunning report that the rural road density in Africa was 55 km per square km as compared to 800 in India and that “[f]reight rates by rail are on average around double those in Asia” (1999a:71).¹⁰ Before accepting these rankings of infrastructure efficiency and attributing them to irrational policy making based on low social capital, one would need to take account of some other relative indicators. That road density and similarly the prevalence of railways are outcomes of population density seem commonsense. Again, the numbers of users is a critical determinant in the pricing equation and therefore also of the optimal level of infrastructure provision. Consequently, those data need to put in a context appreciating differing physical endowments and factor ratios. The table below shows the relative population densities, and reflects the fact that in 2000 Africa had approximately half the number of inhabitants over five times as large a landmass.

Table 6: Population density (people per sq km)

Year	South Asia	Sub-Saharan Africa
1961	120	10
2000	283	28

Table 7: Arithmetic Average of Total Road Network (in km) 1990-1997)

South Asia	Sub-Saharan Africa	Ratio
2 722 127	1 148 745	2.4

Source: WDI 2002

The data on total road network in the table show that in South Asia the road network is twice as large in total length. Accordingly, when the landmass is taken into account, total road density per square kilometre is ten times higher, a number that corresponds exactly with the ratio of population

¹⁰ Collier and Gunning provides no reference for these data. There is made reference to Yeats and Amjadi (1995) at the end of the paragraph p. 72, but this is not the source of the data.

densities. This can be taken to confirm the hypothesis made earlier – that road length per square kilometre crucially depends on how many people live within that square kilometre.

Table 8: Railways, goods transported (ton-km per PPP \$ million of GDP) 1980-1999

“Asia” (India, Pakistan, Thailand)	“Africa” (Kenya, Tanzania, Cote d’Ivoire, Nigeria and Ghana)	Ratio
100 332 928 333	51 783 078 666	1.9

Source: WDI 2002

For an assessment of the difference in cost of freights by rail the same physical conditions does apply. In addition usage - total tonnage transported - is of the utmost importance. The table above shows a comparison of goods transported by rail. The measures indicate the tonnage of goods transported times kilometres travelled per million dollars of GDP measured in purchasing power parity (PPP) terms. The data show that, normalized for GDP levels, there are almost twice as much tons of goods transported per kilometre by railway in the selected countries representing ‘Asia’ as compared to the ones representing ‘Africa’.¹¹ These two crude numerical exercises show that these descriptive data only can make sense in their context. It is therefore indicative that when one compares vehicles per 1000 inhabitants the picture looks completely different. The data reflect the outcome of differing physical conditions. For some areas railway is the rational choice, for other automobiles. Endowments in a narrow sense is not a good predictor of economic performance or as Hopkins (1973:13-14) put it, “Comparing the natural resources and climates of different parts of the world in order to draw conclusions about whether they stimulated or retarded the economic progress of particular societies is a tempting but unprofitable exercise – rather trying to decide if life is more difficult for penguins in the Antarctic or camels in the Sahara.” The clue is to evaluate other issues such as technology in the light of the specific endowments, before asserting that irrational policies or institutions have hampered economic progress.

Table 9: Vehicles per 1000 People

	Sub-Saharan Africa	South Asia	East Asia and Pacific
1980	21	2	3
1990-96	23	6	16

Source: WDI 2002. The data were only available for the years displayed. The 1990-96 are arithmetic averages of the observations for those years.

¹¹Aggregate data was not available for the regions and sparsely available for individual countries. The category ‘Asia’ covers India, Pakistan and Thailand, and for ‘Africa’ Kenya, Nigeria, Tanzania, Cote d’Ivoire and Ghana, both are arithmetic averages for the period 1980-1999. The selection criteria was availability. Data taken from WDI 2002.

“The public service which has received most attention in growth regressions has been education” (Collier and Gunning 1999a:71). But education is exceedingly unsuitable to explain slow growth in Africa, because enrolment and literacy levels have increased rapidly even when growth has not been high. This is confirmed, using data from WDI (2002), by a correlation coefficient of -0.985 between GDP growth and literacy rates for the period 1970-2000 (annual data). This counterintuitive finding of almost perfect negative correlation would in growth regression terms imply that literacy has a negative impact on growth rates. It reflects that Africa has had 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 however be accommodated in a growth regression. If one regress a relative human capital stock deficit on an average growth shortfall, the result will come out as human capital having 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).¹² But did one now just fit a regression, or was something actually explained?

While there might be a certain threshold of human capital beyond which African economies would start to benefit from human capital based growth, it remains a hypothesis whether it has been the chief constraint on growth in the 1980s. What is certain is that significant progress has been made since independence (Sender 1999), also through times of constrained finances, and external demands of austerity. “Deficient public services” does not capture the evolutionary aspect of public service delivery in African economies. Large improvements were made after independence, despite the initial conditions. Some of these improvements continued through the 1980s despite a growth failure. Africa has not been a chronic failure, in terms of growth, nor in terms of development.

Reflections: Towards Explaining African Growth

In a paper observing that most developing countries’ growth experience has been characterized by instability rather than stable trend growth, it was warned that the “exploding economic growth literature” was “unlikely to be useful” (Pritchett 1998). In another statement that could be taken to be addressing the cross-country growth regressions applying an African dummy, Pritchett wrote that the “use of ‘panel’ data, particularly with ‘fixed effects’ to investigate long run growth effects is almost certainly pointless” (1998: 3-4). In this chapter the regressions on African growth have been evaluated, and it has been stressed that the quest for the African dummy has been solely

¹² Bleaney and Nishiyama 2002 finds this after having made 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.

focused on explaining African economic performance as slow average growth. As a result, the investigation has been misguided, and the value of the findings is accordingly limited.

The central characteristic of the post-colonial African growth has been that with some exceptions, African economies grew rapidly until the middle of the 1970s, and thereafter, with fewer exceptions, these economies saw their growth rates falling. It would further probably associate this growth failure with the concomitant hike in petroleum prices, failing exports and subsequent indebtedness that was aggravated by world wide increase in interest rates. In this review chapter some evidence has been brought forward that puts weight behind the argument that the evidence of economic growth follows that particular pattern. It is not only that the growth rates were 'volatile', but a trend of growth can be discerned. The aggregate growth evidence brings out a pattern of growth, a pattern that is missed and not explained by the regression literature.

Institutional quality or social capital has become the all-embracing variable explaining divergence in economic growth. If one is willing to accept two of Gerschenkron's (1962) propositions a 'subtraction approach' or regressing with institutional indexes (Knack and Keefer 1995) makes little sense. The first proposition is that 'late development' is going to be considerably different from how currently developed countries grew. This difference is to be found in the design of the institutional framework. The second that follows the first – there is no general list of prerequisites for growth, and that these prerequisites can not be distinguished from the 'final' result of development. Efficient institutions are a characteristic of a well functioning developed economy. Acknowledging this proposal is in conflict with such exercises most famously done by Kaufman et al. (1999), where institutional quality is an indicator taking values ranging from -2.5 to 2.5. Here a one size fits all perspective finds its highest level. A brief summary of successful development experiences in the 20th century would inform us that there is no such thing as one size fits them all. Adopting 'best practice paradigm' is a fallacy, not because of the informal institutions as North (1990) argues, but in two other ways: the optimal design of institutions is not an absolute, but changes in response with regard to development level, and efficient institutions are a result of, and not an initial condition for economic development. The regression literature on African growth has not convincingly solved this 'endogeneity' problem. It is plausible to argue that by explaining the African growth failure by subjective institutional indexes taken from the mid 1980s one is essentially explaining the outcome with an effect. To disentangle this muddle of initial conditions, income levels, growth rates, causes and effects it is necessary to bring time and change into the equation.

Important quantitative and qualitative changes took place in Africa over the period. The pattern consisted of growth followed by retrogression, not a permanent stagnation. This observation raises issue of timing, and missed events in the performance narrative. Important qualitative

changes happened during the period. The quest for the African dummy has let two decades of structural adjustment go past unnoticed in the growth regression literature, and falsely attributed situational observations from the 1980s to the whole period, while ignoring the simultaneous policy changes. The average perspective has thus meant that some of the issues that are problematic for a policy explanation have been avoided, or circumvented. This has been an outcome of the model used for analysis. On models Morgan writes: 'Modelling involves a style of scientific thinking in which the argument is structured by the model, but in which the application is achieved via a narrative prompted by an external fact, an imagined event or question to be answered.' Morgan (1997: 361). The explanation of African economic performance has been structured by a model that is only made applicable by imagining the event of persistent slow growth in Africa.

Hopkins (1973: 76) pointed out very convincingly that the idea of stagnant and traditional societies was outdated. Writing on the pre-colonial history of West Africa he concluded:

It has been shown that the pre-colonial, domestic economy was more varied than is often supposed, and that it included manufactures as well as a wide range of agricultural products. Output targets were geared not merely to subsistence needs, but also to trade, which was regular, widespread and of great antiquity. A survey of the principal economic activities has demonstrated that their history was far from static, that their organisation was efficient, and that Africans were receptive to new ideas, where these were suitable and profitable. Several explanations of economic backwardness, ancient and modern, have been considered and rejected: it has been shown that geographical interpretations based on climate and on natural resources are unsatisfactory; that sociological explanations relating to family structure, social mobility, the status-hierarchy and supposedly anti-capitalist values are unacceptable; and that economic explanations concerning the efficiency of the labour force, the organisation of 'primitive' agriculture, communal land tenure and allegedly inadequate commercial institutions, are inapplicable. In short, there is a corpus of popular beliefs about African underdevelopment which needs to be jettisoned.

It seems that Hopkins' recommendation was not followed, and that rather than thrown away and buried, these misconceptions have resurfaced with the growth regression literature. In this respect the regression literature represent a setback for research on African development. When internal factors are used in comparisons they must be reciprocal, the faults arising from the failure to do so are shown in the preceding sections. Education, technology, infrastructure, institutional provisions can only be considered as growth retarding or enhancing in their own physical context and development level. An account of growth in Africa taking the qualitative and quantitative

changes into consideration, explaining African growth as it happened, and not as an averaged negative residual might reach completely different conclusions from the ones on offer in the regression literature.

To do justice, a modest view on the contribution of the regression literature should be heard: “It should perhaps go without saying that, although cross-section econometrics can make a useful contribution, it can only take us so far in understanding the African experience” (Temple 1998: 343). This chapter has suggested that to take a step further in understanding the African growth experience, economic change must be investigated. This involves a suspension of the average growth perspective. Associating economic change with economic policy change raises issues of measurement of economic performance in post-colonial Africa.

MEASUREMENT

The first chapter investigated the conceptual soundness of the explanatory framework evaluating African growth performance, and explored the different independent variables used in the regressions on African growth. Based on the aggregate African growth evidence it was suggested that there is room for alternative interpretations of the African growth performance. This suggests that we need to move beyond accepting the stylised fact of an African growth failure, towards a reconsideration of the African growth performance. This entails examining the African growth record and asking how African economies grew, before explaining why African growth failed. This re-interpretation must be supported by a rigorous approach to the African growth evidence. The empirical growth literature has been informed by the averaged growth rate over the post-colonial period. This has its obvious weaknesses, as we have seen, and it has had less obvious implications for the explanatory framework.

It is another well-known stylized fact that the poor economic performance of African economies goes hand in hand with poor quality of the data. This fact is much cited, but less studied. This acknowledgement is one important justification for devoting a major part of this thesis to the measurement of economic growth in Africa. The other more pragmatic justification is that this reconsideration of growth is more vulnerable to such data quality issues. While an averaged growth rate is a cumulative outcome of year-to-year variation in GDP, it can still be hoped that inaccuracies over time cancel each other out, and that the end-result is a reasonable representation of the accumulated growth record. This does not apply when one investigates change year by year. The investigation pursued in this thesis emphasises economic change over time, and the timing of that economic change. Therefore data quality is an issue that needs to be dealt with.

The evidence at stake is economic growth, measured by change in real GDP per capita. In theory this metric is obtained by adding together all value added activities in the economy throughout one year, and thereafter dividing by population size in that year, deflated by a purchasing power parity term and finally 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 obtain that assumed level of accuracy, even in developed economies. Some economic activity is not measured, a population census is usually undertaken once a decade, and the construction of comparable purchasing power parity indices involves compromises as regards which goods and services to include in the index. The measure is an approximation, and is not as

accurate as economists sometimes assume. However, for all its weaknesses the measure is generally accepted as 'good enough'.

There is some scholarly work on the field. Morgenstern's classic *On the Accuracy of Economic Observations* drew attention to the danger of ignoring the loss of information through quantification, and appealed for greater caution in using economic observations as facts (1963). In the field of history, Platt in his book with the telling title *Mickey Mouse Numbers in World History* pointed out how often authoritative sources such as Maddison, Kuznets and Bairoch have used indefensible and unverifiable primary sources, and recorded how these numbers get picked up by subsequent scholars (1989). Together these works create a feeling that scholars are aware that the numbers are questionable, but that there is a tacit agreement that, in the absence of something better, the current evidence will have to do.

Given that such general scholarship already exists this study will focus on exploring the data quality in Africa. General issues will only be touched upon if they are relevant for this thesis, and the emphasis will be on the parameters used in the regression literature, and the implications for such studies. This thesis supports the view that it is not necessary to know everything to know something. It is essential to know what cannot be told from the data, and the opposite – to make clear what knowledge the data convey. In this way the thesis brings knowledge on economic growth in Africa a step further. The thesis does not seek to provide any re-estimates of African GDP, but to gauge the accuracy of the existing evidence and thereby to help make the best possible use of it.

The first chapter in the 'Measurement' part reviews the general state of knowledge on data quality in Africa and the various approaches to the issue. The general features national accounts in Africa are reviewed based on the existing literature and since GDP per capita is a function of population some issues of population estimates are considered. Finally, it is recognised that there is considerable weight behind the proposition that the quality of the African evidence is poor. This acknowledgement is contrasted with the lack of empirical study that establishes the extent of the problem, and its relevance to quantitative, and indeed to all economic history in Africa. In response the comparative accuracy of four sources of evidence on economic growth in Botswana, Kenya, Tanzania and Zambia is measured. There is a considerable discrepancy between the sources.

At face value it cannot be asserted which of the sources of evidence, *World Development Indicators*, *Penn World Tables*, *OECD* or the official national accounts, is the most accurate guide to economic growth. The national accounts form the basic statistical data for all of the growth time series. It is therefore through a study of the national accounting methods that a picture of how well this data measure real economic change over time can be formed. The second chapter is a comparative historical study of national accounting in the four countries: Botswana, Kenya, Tanzania and Zambia. It is a descriptive study of how the economic growth evidence on the four

countries is assembled and traces the evolution of the national accounting systems.

The third and final chapter in the ‘Measurement’ part is an analytical study of the national accounting systems in the four countries based on the previous descriptive section. The basic assumptions in the baseline estimates are compared where issues of ‘subsistence’ economy and the relative size and importance of the different sectors of the economy are shown to be important. Statistical considerations are powerful determinants of change in measured GDP, and the implications of the statistical assumptions for comparative studies of economic growth are explored.

The section on measurement provides an empirical study of the quality of the growth evidence for Botswana, Kenya, Tanzania and Zambia. It provides the basis for a better informed evaluation of the economic growth of these countries. An attempt to make such an evaluation is presented in ‘Performance’, the second part of the thesis. As a study of the reliability of GDP growth rates it is the first of its kind. This is a considerable step forward, since to this date the literature has generally fallen on either side of the proverbial horse – by either neglecting the issue of data quality and therefore accepting the data at face value, or by dismissing the data as unreliable and therefore irrelevant.

Chapter 2: The Post-Colonial African Growth Evidence: Validity and Reliability

The issue of data quality is best approached by posing two questions, whether the data are valid and/or reliable.¹³ Reliability differs from validity in that a measure can have a predictable mismeasurement. This mismeasurement would make the measure invalid, but the measure would be reliable. In terms of GDP per capita, if the level estimates are inaccurate but this inaccuracy was the same across time and between countries, the evidence could still be useful for comparison. Unfortunately, as will be shown later, this is not likely to be the case. Therefore one has both validity and reliability issues with the Africa data.

A complaint often voiced in econometric work concerns availability. Often the lack of observations for some countries for some variables makes the numbers of observation and geographical coverage decrease as the regression gets more specified. As regards availability of GDP per capita data for Africa the *World Development Indicators* 2002 has listed 48 countries. Between them for a period of 31 years from 1960 until 1990, they provide 1082 of the 1488 observations. This means a coverage of 72 per cent. WDI also give 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 then is 28% guesswork.¹⁴

Concerns about data validity or reliability are sometimes voiced in the regression papers on African growth, but the issue is usually referred to footnote treatment. Collier and Gunning's 1999 synthesis article of studies of African growth does not mention the quality of the quantitative evidence, except for noting that GDP data for seven countries which experienced civil war during the 1990s are either lacking or unreliable.¹⁵ Temple (1998) has many references to availability, and, in the common phrase, hopes that the absence of data for countries are 'random' such as not to bias the results.¹⁶ In Sachs and Warner (1997), once again, there is mention of the lack of availability that narrows the data set, and the same worries about bias resulting from absent countries are voiced. In order not to let the dataset get too narrow the lack of data for some variables for some countries is compensated by inserting the average of the actual observations for other African countries. This was done for 23 African countries which lacked data for three or fewer variables (out of eleven variables). In Easterly and Levine's 1997 paper, it is noted that lack of available data reduces the scope of the dataset, and does not permit the use of some variables. For their prominent variable that measures ethnic fragmentation, they mention the possibility of the data being

¹³ Ariyo (1996) provides this useful distinction.

¹⁴ Or more accurately it is assumed that the absent 406 observations were changing in the same fashion as the actual observations.

¹⁵ These countries were Angola, Burundi, Liberia, Rwanda, Sierra Leone, Somalia and Sudan.

¹⁶ This concerns Gini coefficients specifically p. 321

ideologically biased (because the assembly of the data was done by Soviet researchers in 1960).¹⁷ Barro and Lee (1993) do not refer to data quality, but it is noted that the dataset is limited due to availability of data. Less than half of the African economies appear in the regression. The dataset includes 21 countries, but only 17 of those have observations for both time periods.

The only instance come across where data quality is directly addressed in a regression paper is Harrison (1996). In a section on data quality the lack of availability is mentioned, and the absence of observations for some years means that some observations have been extrapolated. The author does not express concern about the validity and reliability of the actual observations and how this might influence her own study, but a footnote refers to “a more complete discussion of data quality issues” (Harrison 1996: 427).¹⁸ The papers referred to were part of a special issue of the *Journal of Development Economics*, a result of a conference on ‘Data Base for Development Analysis’ held at Yale in 1992. In the introduction to the special issue Srinivasan wrote that the conference originated in “the 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). The issue was directly related to the rapid growth of econometric treatment of development issues, and the view that “that researchers either are not aware of or, worse still, have chosen to ignore the fact that the published data, national and international, suffer from serious conceptual problems, measurement biases and errors, and lack of comparability over time within countries and across countries at a point in time” (ibid).

The papers in that issue were typically general in treatment, highlighting particular weaknesses and recommending that scholars should take more care in noting data deficiencies. They also encouraged users of the data to question the evidence more directly (Heston, same issue p.51). Srinivasan (ibid: 24-25) requested better documentation in the interest of “truth in data retailing” with a specific reference to the *World Development Indicators*. Heston noted that since the studies of Blades (1975, 1980) “seemingly little has been done to provide an overview of national accounting practices across countries” (Heston 1994: 31). Again, in the conclusion Heston referred “to 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.”

Heston is one of the scholars responsible for a specific case of ‘data-retailing’, namely the *Penn World Tables*. These tables do include a quality ranking where countries are assigned to one of four classes from A to D with corresponding error bounds. At A the error bound assigned was plus or minus 10 percent, and at D the error bound was between 30 and 40 percent. According to Summers and Heston (1991: 348) the rankings were “based somewhat subjectively on the error

¹⁷ This doubt is discarded, for apparently good reasons. It is reported that they found that Mauro (1995) in utilizing the same data mistook Chad for Sudan, and the other way around, and that the value for Yemen was incorrectly reported.

¹⁸ The papers are Ahmad (1994), Behrman and Rosenzweig (1994), Heston (1994), and Srinivasan (1994).

patterns displayed in checking consistency in multiple benchmark years and in the residual patterns described.” Thus, this ranking was not a result of a rigorous method, but it did show a systematic pattern. Poorer countries have lower rankings than richer countries. This correlation was picked up on by Dawson et. al. (2001) and formed the basis for an econometric test of systemically biased errors margins in the database. The study aimed to tease out whether one was observing variation in economic information or simply in data quality. The paper offered two possible mutually exclusive conclusions. Either economic behaviour is different in countries with low quality data as compared to countries with high quality data. If one holds that economic behaviour is the same then there are systemic data quality variations. If the latter conclusion was correct “the right thing to do is to exclude the low-quality data” (Dawson et al: 1008). However, this would reduce the sample size in cross-country regressions by two-thirds, and effectively eliminate cross-country variation, and “we [would] find ourselves critically short of tests in several fields of study” (ibid).

The regression literature seems to be more concerned with the quantity than the quality of the data. Any data are of course said to be better than none, but beyond a certain point this ceases to be true. Despite quality issues the econometricians use the best data available to examine growth. Williamson (1983) once quipped “Have you ever met a cliometrician who throws data away?” and this seems to be where the issue stands. With more advanced statistical and econometric techniques available “the weakness of the available data represents a major constraint on the potential of empirical growth research. Perhaps the main obstacle to understanding growth is the small number of countries in the world” (Durlauf et. al 2005:3). That does not look like an agenda for future researchers.¹⁹ Rather, a key to understand growth lies in examining the data available in a more rigorous way, and thereby exploring whether Ward (1971: 977) 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.”

“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 – itself a sign of the underdevelopment of the region.” In this unusually candidly way Riddell (1990:10) introduces a number of quantitative studies on manufacturing in Africa, and admits that this “throws considerable doubt on *all* the aggregate data used subsequently”.²⁰ It is common to find as Hill (1986) notes, statements such as “although these figures are far from perfect at least they indicate the right orders of magnitude and the right trends”, and she sensibly recommends that those

¹⁹ Although incidentally this is one potential policy recommendation based on the earlier reviewed work by Easterly and Levine (1997). It was made explicitly by Englebert (2000:8) who, drawing on his own work and that of Easterly and Levine (1997) and Mauro (1995), found that the effects of this lack of horizontal and vertical legitimacy of the state arising from high ethnic fragmentation was so important that he found it suitable to call for a ‘territorial adjustment’ in Africa.

²⁰ Emphasis in original.

statements should be treated with caution. That the low quality of the data is a sign of the region's underdevelopment is something seemingly easy to agree with. From a different and reciprocal perspective one could interpret it as reflecting the unsuitability of the existing statistical procedures for African conditions – or in general their limited applicability to the Third World as a whole.

The procedures of counting and categorizing were designed for conditions peculiar to the already-developed economies. One of the critical problems is the treatment of the 'subsistence' economy. Large parts of economic activity in Africa economies are not recorded because they do not pass through formal marketing channels. Production (food and marketable surplus), consumption (food, tools, transport, water and fuel) and investment (such as irrigation, road building, and house construction) do only appear in the national accounts to a limited extent.

Lewis viewed economic growth as entailing "the slow penetration and eventual absorption of the subsistence sector by the capitalist sector" (quoted in Hill 1984:52). This view on development and economic growth justifies the ignorance about the 'subsistence' sector as it is only important while it is waiting to be integrated and absorbed by the modern, urban capitalist sector. There are however many scholars (e.g. Hill) that emphasise the capitalistic and dynamic activities of the actors in the rural sector, and would counter that there is no such thing as a 'subsistence' farmer. So the perspective could be turned around and one could rather expect and understand development as something that grows out of the unrecorded parts of the economy.²¹ Unrecorded can unfortunately also mean ignored, as it is mostly aggregate data that inform new policies, and which are used to judge whether previous policies were successful or not. Accordingly, the lack of attention to this issue might have serious implications for the future growth of African and other less-developed economies.

Frankel objected to the idea of measuring incomes on a different basis. To him some societies had such different concepts of income and welfare governed by specific rules and laws that international comparisons of it would be meaningless. The concept of income or wealth would vary from culture to culture to such an extent that the efforts to maximize it could not be compared across cultures. Indeed, Frankel (1952: 6-7) went to the extent of comparing the maximization of income to a game of chess. A game of chess is governed by specific rules and these rules set the aim of the game, and as such the game can not be maximised. This view is consistent with the 'substantivism' in the older African historiography where it was held that some historical economic behaviour of Africans cannot be adequately explained by concepts drawn from market economics. Another strand of the economic anthropology historiography offers the perhaps more sound view,

²¹ This was also the view taken in the 'discovery' of the 'Informal Sector' in the 1970s e.g. Hart (1973) and ILO (1972). There is still some optimism regarding the productive potential of this sector, see King (2001).

that efforts should rather be made to specific detailed micro studies in order to get knowledge on the dynamics of African production processes (e.g. Hill).

Our specific target here is the rate of growth in real GDP per capita. This metric is arrived at following the procedures of United Nations System of National Accounts.²² Kpedekpo and Arya (1981: 208) commented on the working of SNA in Africa: “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.” Morgenstern’s (1963) analysis of the accuracy of economic observations makes it clear that the econometric treatment of economic observations as facts can be highly misleading. He made warnings about viewing economics as an accurate science, and the problems of the adaptation of scientific methods developed for other sciences (like regression analysis) because the output quality depends completely on the input. His treatment is of knowledge in economics in general; here we are more concerned about the specifics of economic knowledge in Africa. There is a wide discrepancy between the sceptics rhetorically asserting that the GDP figures are random, and the regression scholars accepting the available published data at face value. Trying to find middle ground, this analysis will examine how the GDP figures for Africa are arrived at, and from that derive a defensible approach to a quantitative study of African economic development.

Deane (1961: 630) reviewed some new official estimates while national accounting was in its trial phase in Africa and commented that “what was once the happy hunting ground of the independent research worker has become the routine preoccupation of official statisticians and international Civil Servants.” This might explain why there has been less attention to the subject lately, as it might have been considered more a task of standardization than a fruitful area for research. However, Dean (ibid) says that “The fact is, however, that African national-income publications are as heterogeneous under the official stamp as they ever were when privately produced.” Writing at the same time Seers (1952-53: 160) was considerably pessimistic about the rewards of instituting national accounting for the purpose of international comparisons of income and economic development. “In the hands of authorities, such international comparisons may yield correlations which throw light on the circumstances of economic progress, and they tell us something about relative inefficiencies and standards of living, but they are very widely abused. Do they not on the whole mislead more than they instruct, causing a net reduction in human knowledge?” Taken together these views make a good case for studying national accounting practices in Africa and the effects on the growth evidence.

²² Henceforth SNA.

The System of National Accounts in Africa

The data on GDP are collected according the United Nations System of National Accounts. The first version of SNA was ready in 1952, created by the OEEC National Accounts Research Unit, chaired by Stone. The foundations of this system were laid by the 1939 Committee of Statistical Experts set up by the League of Nations that produced a paper 'Recommended System of Accounts' authored by Richard Stone. The original SNA was published in 1953 by the UN as 'A system of National Accounts and supporting tables'. In this version there was provision for imputation for two types of non-marketed activities, farm output and rent of owner-occupied houses. In the revised 1968 version further allowances were made for non-marketed produce and incomes from different kinds of small-scale processing were able to enter the accounts, such as production of butter, wine and cloth. Since the creation of this system efforts have been made to make all nations adhere to it, and it is now broadly implemented in all countries, on paper at least. At the beginning of the period of national accounting the French dependencies adhered to a system based on the 'tableau economique'. This however is not a critical problem for comparison between African economies. A 1960 OEEC study by Ady and Courcier surveyed the implementation of SNA in Africa and concluded that the operation and outcome of the French system was closer to the SNA than generally thought and stated that the difference was not significant enough to necessitate a different interpretation of the tables (1960:10).²³

Seers (1976) examined the specific results of using the SNA system through its fundamental assumptions and had some specific reservations as regards the usefulness of the system for analyzing development. One caution is that SNA assumes that dealing with incomes in total is useful. That totals and averages hide variation and distribution is common knowledge. A further common complaint is that the SNA fails to take into account whether operations such as mining are domestically owned, and that potentially important issues for developing countries such as profit repatriation are not transparent from the accounts. Again, the investment metric derived from national accounting procedures can be misleading. Depletion of natural resources is not accounted for, while investment in luxury flats is treated equally with more obviously productive investment. Investment in human capital is not captured in the accounts, but is recorded as government expenditures. Services are accounted on the basis of input expenditure, and thus leaving no room for evaluation of productivity measures. In fact increased efficiency (for example more transport for less money) would be recorded as a drop in GDP and in value-added contribution. This is an

²³ For a fuller treatment of the evolutionary steps in the different versions of SNA the reader is referred to other publications (Ruggles 1994, Blades and Lequiller 2006 or Ward 2004). The SNA has provided the guidelines, but there has also been considerable flexibility, and in the end the outcomes have been at the discretion of the local statistical agency, constricted by the basic statistical data and institutional resources.

axiomatic point, and is obviously hard to establish factually precisely because of the way services are counted. The method of accounting leaves the distinction between high cost and service delivery open to interpretation. As Kuznets argued, many of the tertiary services in the more developed countries, such as transport, are really cost rather than income items (Kuznets 1946:116).

The SNA method, as all formal statistics, depends on correct reporting. Morgenstern (1963) warned about the likelihood of companies misreporting for taxing purposes, and on balance of trade and payments he comments (ibid: 137) “the balance of trade is an arbitrary and fearfully vague notion. The correct way of speaking, though more cumbersome, would be to say that there is an *excess of statistically reported “visible” trade* in one or the other direction” (italics in the original).

Anyone who sat through meetings (as the author has) in which final balance of payments figures for most invisible items were put together, can only marvel at the naiveté with which these products of fantasy, policy, and imagination, combined with figures diligently arrived at, are gravely used in subsequent publications. (p. 180)

Morgenstern was writing on developed economies at the time, and the state of affairs is not better for African economies. In a World Bank publication Yeats (1990) asked whether the Sub-Saharan trade statistics mean anything. Having compared receipts of importers and exporters he concludes that the data cannot be used to determine the level of trade, and that it is equally useless to assess the direction of trade. The data are further deficient to consider the composition of trade, and does not reflect trends in either magnitude or direction. The only fact to be safely deduced from the evidence is that there is widespread smuggling and/or underreporting.

A central problem in national accounting in Africa is to decide which economic activities should be included in the accounts – referred to as ‘the production boundary’. Since the application of the SNA there has been a discussion of where one should draw this line. For western economies this famously means that housewives’ efforts are not accounted for: in African countries this has wider implications. With specific reference to African economies Arkadie noted “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” (1972/73:15). While in most developed countries there is the distinction of recorded and unrecorded economic activity, where the latter can be summed up as comprising illegitimate economic activity and economic activity within the family household, the issue is far more complicated in African economies. The unrecorded economy is so large and therefore economically important that to leave it as

‘unrecorded’ is unsatisfactory, and therefore the integration of it the national accounts has been defined by the availability of statistical data and different innovative accounting practices at the individual statistical office.

Seers (1952/53: 166) harshly referred to the ‘subsistence output’ as the “well-known morass which those estimating national income of underdeveloped areas either skirt, rush across or die in.” In a footnote Wood (1973: 106) offered a short and accurate comment as to why neither of the terms commonly used for this part of the economy are apt: “There is no satisfactory name for this sector. The non-monetary sector is used in this paper because that is what it is called in the Kenyan National Accounts. The name is misleading since money is widely used in this sector. Other names which have been used to designate this sector are: the ‘subsistence’ sector, although the standard of living is usually above the subsistence level; and the traditional sector, although social, economic and political institutions and behaviour are probably changing as rapidly in parts of this sector as they are elsewhere in the country.”

In the settling phase of national accounting there was no agreement upon how to integrate this sector into the national accounts, or whether it was worth doing so.²⁴ Ady made the typical premature comment that it was “strange that some countries in Africa should be planning to devote so many of their scarce statistical resources to the more accurate measurement of this diminishing component” (1963: 62). A lot of the pessimism about national accounting, particularly about accounting for small-scale production was derived from optimism about the future growth and ‘modernization’ of these countries. “The fundamental difficulty is the same as for international comparison: in a few years an underdeveloped country may have changed so much that for the purposes of the underlying assumptions in economic analysis it can no longer be considered the same country” (Seers 1952/53:161).

Currently it is rather the lack of change and the continued importance of the ‘subsistence’ sector in African economies that is lamented. Precisely because of the lack of information about this sector it is hard to interpret what structural change has in fact happened since independence. The statistical evidence would imply that there has been a growth in the informal sector especially in small-scale manufacturing and services, but whether the growth is a result of increased statistical coverage itself or a structural change is hard to establish. In Sub-Saharan Africa the proportion of the population in rural dwellings was 85 percent in 1960 and was recorded to have decreased to 65 percent in 2000 (an average of 76 percent for the whole period). This indicates the large importance of this issue (WDI 2002). Similarly the informal service sector goes largely unrecorded, including such important activities as transport, retailing and different repairs. WDI reports the contribution of

²⁴ E.g. in the Review of Economic Studies Vol. 20-22 (1952-54)

services, etc.,²⁵ as having a 53.06694412 percent share in GDP in year 2000 (the corresponding value is reported as 45.43378067 percent in 1960). This sector then is very important for the total economy. It is indicative that at the same time as share in value added for the service sector is apparently reported with such minute accuracy, the WDI is unable to provide any numbers as to how many people is employed in the sector for the period. The percentage above is quoted not rounded in order to illustrate what Morgenstern called ‘unjustifiable detail’ (1963:63), adding that “this kind of statistics is exceedingly harmful; it persists although it will not stand up even under a simple common sense criticism.” And although Morgenstern recommended (Ibid: 65) that “A rigorous elimination of this seeming ‘accuracy’ is necessary, even though it is likely to arouse great opposition from vested interests” it still persists. Addressing the same issue Srinivasan (1994: 25) recommended quantitatively-minded scholars to “avoid presenting a single point estimate for any indicator for which the underlying data base would suggest that the true value is likely to [lie] within a broad range.”

Essentially there are two ways of reaching an estimate of the agricultural ‘subsistence’ output. One can make an educated guess about the areas under cultivation for such purposes and multiply it with an educated guess of average yield. This sum would again be multiplied with the price of choice. Alternatively, one can make use of an estimate of average consumption (based on FAO statistics, or a national Household Budget Survey) and multiply it with for figure of the population. Choosing one of the two methods, the issue still remains which price to use.

O’Loughlin and Ewusi (1972:385) noted that a great deal of literature existed on the evaluation of non-market production in the national accounts. The 1968 UN SNA recommends the use of “Producers Price in Local Markets” which has the “advantage of flexibility” for the national accountants. O’Loughlin and Ewusi (Ibid) rightly comment that a “convention of this type is essential if one is to allow for these aggregates being included.” However such an agreement does not seem to have been reached, and flexibility has won over convention, and this in turn has meant that comparability has suffered. If such a convention had been agreed there would still be some difficulties in adhering to the standardization. Wood (1973:116) noted in relation to an International Comparison Project in Kenya that there was a “lack of sufficient price information to calculate national average prices”. Lury (1964:102) brings to attention the problem of which price to use to account for the ‘subsistence’ production. Whether one chooses producer prices (ex-farm) or retail prices, or whether one makes a special subtraction for subsistence products. This has the potential, according to Lury (ibid) to make “a ‘paper’ increase of 50 percent.”

²⁵ Etc. Refers to the practice of using the service sector as a residual when the sector contribution do not match up to total GDP.

Instead of actual registration the practice followed to account for activities in the informal sector is largely that of assuming that it increases proportionally to the rest of the population. This population growth is in turn a result 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 is not economic observations, but merely statistical coefficients.

Domestic food production then is just estimated or excluded in the final GDP data. There are also other objects of interest missing from the national accounts. Such important forms of rural capital formation as land clearing and building construction were not included in the original SNA.²⁶ Arkadie reported that Peacock and Dosser (1958) created national accounts for Tanzania 1952-54 inclusive of activities in 'subsistence' economy such as hut-building, but that the official data of the 1960s did not include such measures. In 1967 construction and rents in the 'subsistence' sector were included. This increased GDP with 10 percent, and together with other changes this increased national income estimates by 25 percent and capital formation by 11 percent (Arkadie: 1972/73).

If such investments as clearing new land, road construction and investment in tree crops as not accounted for it gives the illusory picture that the 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. With such gaps in the data "it is not difficult to get the vision of the rural sector in which 'development effort' is associated with the 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." (Arkadie 1972/73:20). These accounting anomalies are central for some debates in the literature. The vent-for-surplus model developed by Myint (1963) where export growth was assumed to happen without opportunity cost associated with it derives from this gap in the data. The method of accounting has further important implications for economies with large 'subsistence' economies. In reference to the urban bias paradigm, the choice of price could mean that the rural dweller would have both his welfare and production underestimated. His consumption is 'subsistence' and so is his production – basic utility consumption 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 overestimation of progress. Naturally the difficulties of measuring demographic change also makes productivity (per capita) measures hard to make.

Economic information relies on price as a reliable measure. One of the assumptions made by the SNA, deriving from neo-classical value theory, is that market price measures both the welfare of

²⁶ As noted above the revised SNA introduced in 1968 included an improvement, though limited, to account for these activities.

the consumer and the cost to the producer. That this is not true is obvious. Prices are set in the real world, but the academic approach is that there is something existing as ‘real’ prices – which exist in the ideal world without distortions. In the context of national accounting there are different prices that can be chosen, each with different compelling justifications. A public policy of shifting domestic prices, and in this way biasing one sector of the economy towards another, creates problems of accounting for its growth. Growth can appear to be occurring when resources are shifted from one place to another, and there is the issue of choosing which price to choose to account for the production contribution of the ‘distorted sectors’. Hollinger (1954-55: 222) refers to Gerschenkron as having argued that the changes in an economy's scarcity relations wrought by the process of industrialisation are such that prices and quantities are inversely related. “Industrial products are scarce and expensive before industrialisation, more plentiful and less costly after industrialisation. Thus the real rate of growth will be overstated by the use of pre-industrialisation weights, understated by post-industrialisation weights.” There is a further problem displayed by the distinction of GDP at factor cost and GDP at market prices, where the former equals the latter net subsidies and taxes. Where states have distorted the prices and/or subsidised certain sectors comparing one sector's output with another will be inaccurate. In most African countries the extent of indirect taxation is not disaggregated by sector and only sporadically available at aggregate level.

Export prices and their movement create a problem of estimating the real welfare contribution. One can have the case that real output (as measured by ‘real’ prices) is increasing while output valued at current prices (as measured by the actual export receipts) is decreasing. The contribution of the production of produce sold at the world market is accounted for by world market prices. Typically, the main exports of African economies have been and still are primary products, and these markets are characterized by relatively high fluctuations in price. This makes it hard to account for real value added in this sector, as an increase in its GDP contribution can be highly misleading as a measure of productivity. This also has implications for the measurement of the African state as ‘predatory’ towards its peasants engaged in cash crop production. The value of the exploitation is measured as the difference between the price received by the farmer set by the marketing board, and the price fetched at the world market. This measure then will vary with world market price, and one can actually have situations where the African government is subsidizing the farmers. This happened for example at times in the 1980s in Cote d'Ivoire (albeit the opposite was far more common).²⁷ To make sense of the data on agricultural produce one would be better off accounting in physical terms, or/and express it in real importing capacity for example in terms of food or petroleum imports. As put by Okigbo, “If we agree that the real value of exports is the amount of imports we can buy with it, then we should deflate exports by means of an index of

²⁷ Though the really ‘predatory’ pricing happened indirectly through overvalued currencies i.e. implicit export taxation.

import prices” (quoted in Lury 1964:109). However, for comparability of constant growth rates this would not be satisfactory, as one is here interested in physical growth in output, and not in effects of prices. Still, the concept of ‘real’ increase in income can be counterintuitive if what really happened was a decrease in income – as in increased sales at a much lower price. The sophistication of the deflation method and its statistical base vary from country to country, and at face value it can be hard to tell to what extent price effects are eliminated from the estimated growth rates.

The total population and its growth is a central defining term. Not only is GDP per capita obtained with population as the denominator, but in large parts of the economy output and the growth of the population is assumed to be a one to one multiplier. Population is measured by censuses. According to Bondestam (1973:10) the implementation of censuses among 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% 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.

The reliability of these censuses is very much open to question. Censuses in Africa suffer from to little funds for the task to be undertaken. Some places are hard to access, and sometimes the staff not properly trained. In addition, in some countries large parts of the population engage in nomadic/transhumance activities (ibid).

An additional problem referred to is the absence of agreement on how to count internal and external migration, that is whether one should report them according to de facto or de jure residence, resulting in variation of upward or downward bias respectively. Bondestam further referred to the inconsistencies discovered when growth estimations have been done based on the comparisons of one census with a later one. The pattern seems to be that census coverage has been improving and therefore more people are actually counted as time moves on, thereby overestimating the population growth. Bondestam refers to Kenya where the 1969 censuses “gave a population figure of 10.94 million, which came as a shock because it implied a population growth of about 3.4 % yearly when compared with the census figure of 1962, which was 8.64 million. Some statisticians now suspect that the earlier census may have been underestimated the population by as much as 5% in 1962 which would explain the obvious discrepancy between the two population figures, resulting

in the unbelievably high growth rate. And yet, Kenya has one of the best population statistics in Africa!” (1974:11). The table below shows how this discrepancy is communicated in the World Development Indicators (2002).

Table 10: Total Population and population growth Kenya 1962-69

Year	Total Population	Population Growth (%)
1962	8 863 430	3.11
1963	9 147 060	3.15
1964	9 442 210	3.18
1965	9 749 000	3.2
1966	10 068 390	3.22
1967	10 401 140	3.25
1968	10 748 920	3.29
1969	11 113 930	3.34

Source: WDI 2002

The ‘unbelievably high growth rate’ is believable in the World Bank eyes, and the 1962 estimate has been deemed to be 220 000 higher and not the approximate 440 000 as indicated by Bondestam, while the 1969 number has been upgraded by 170 000.

Bondestam also notes (1974: 15) the discrepancy between different sources. In particular he gives an example by sampling official government data on population growth and ECA data for eight countries. He finds that they are only equal in two cases, and concludes that “one finds oneself in a jungle of figures out of which there is hardly possible to get out with final, reliable growth estimates, with the exception of a few countries only”.

A notorious example relating to population estimates is Nigeria. The Nigerian story displays how the political context can bias the count. The 1952/53 census gave the total population as 31.5 million. The ministry of health projection, using a 2 percent annual growth rate, gave the total population number in 1962 as 36.475 million. The surprise was therefore great when the 1963 census gave the final count at 55.7 million (Nigeria, Census 1991). The problem then is which count to trust. It is reasonable to believe that fear of taxation made the 1952/53 census a serious underestimate. In 1963 the political situation was reversed. In independent Nigeria it was expected that transfers from the central government would depend on population numbers (funds allocated to schooling, health and general infrastructure). There was therefore reason to believe that the 1963 number was grossly inflated. Caldwell and Okonjo (1962) assessed the situation as follows: “It may well be that in some areas in Eastern-Nigeria there was an inflation of the population figures. But the magnitude of the population increases recorded is probably to be accounted for more by undercounting in 1953 than by overstatement in 1962.” Caldwell and Okonjo argued that the best

estimate for 1963 would be 45, 332 millions (ibid: 85). The Nigerian National Population Commission distrusts the 1963 census and therefore “has serious reservations concerning using the 1963 census figure as base for estimation of inter censal annual growth rate” (Nigeria, Census 1991). There is then a gap of almost 40 years between the trustworthy (in the commission’s eyes) 1953 census and the 1991 census. The latter gave the total population as 88 992 220 inhabitants. It is hard to navigate between these total numbers from which a population growth rate should be estimated. National Population Commission opts for a population growth of 2.83 percent based on the 1953 and 1991 census. WDI however chooses a higher growth rate and a higher baseline estimate (or final estimate – depending on whether the population number is derived by projecting backwards or forwards). The discrepancy between the Nigerian official numbers and the World Bank figures is alarming. While on average estimating the population growth to be roughly the same as the National Population Commission WDI reports the population as 98 983 million, approximately 10 million more people. This would naturally translate into uncertainty about GDP per capita in the same proportion (with the WDI estimate at 263 \$ and the Nigerian at 293 \$).

Reliability and Validity of GDP Level Estimates

There is a wide range of different approaches to quantitative evidence in Africa. There are different warnings and levels of alarm. GDP estimates and other national account derivatives have their obvious shortcomings, and depending on the purpose of analysis, they are potentially serious. How serious, and for what kind of analysis, is not immediately clear. The most central shortcoming in the question of data quality in Africa is the lack of empirical research on the topic. The question to be addressed is whether a growth rate in GDP conveys meaningful information or not. While there is no empirical work done on growth rates, level estimates have been subject to examination.

The only benchmark study is the work of Blades (1980). He assessed the error ranges in GDP level figures for five Sub-Saharan countries and produced the following table as seen below. The estimates were based on his own experience from statistical work in Africa, informal discussions with national accountants, experts from international agencies, and the qualitative assessments given by the countries themselves. As such it is based on subjective judgement. The error ranges in the table below relate to estimates of total levels. As seen in the table the weighted GDP errors varied around 20 percent, with the error range being as high as 35 percent for Nigeria. Some sectors are considered worse than others. The error range in modern agriculture is between 25% (Nigeria), and 10 percent (Kenya and Tanzania), whereas for ‘subsistence’ agriculture the level estimate is deemed to vary within a 80 percent band for all countries except Nigeria, where

Table 8: Error Level estimates in GDP by sector in five African countries 1969-73

	Botswana		Kenya		Malawi		Nigeria		Tanzania	
	1971-72		1971-73		1970-71		1971-73		1969-70	
	Share of GDP %	Error Range %	Share of GDP %	Error Range %	Share of GDP %	Error Range %	Share of GDP %	Error Range %	Share of 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	3.4	15	7.0*	30	3.9	15
Other	1.2	40	1.6	30	1.4	40			0.8	40
Trade, hotels, 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, communications 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
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, defence:										
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
Gross domestic product at factor										
Cost	100		100		100		100		100	
GDP error range										
(a) Assuming independence		11		8		15		19		11
(b) Weighted average		24		22		29		35		26

Source: Blades (1980).

a band of plus minus 50 percent is assumed. Public administration, which is the best recorded sector, still has a 10 percent error range, while small-scale operations are all considered to be poorly estimated.

Morgenstern (1963: 286) said that if total GDP level estimates had a variation of +/- 5 percentage error the same would apply to the estimates of year-to-year changes. This would be true

if every year the national accountant started with a clean sheet. That is not the case in Africa. The growth data are to a large extent an outcome of assumed movements from a baseline estimate, while only a few sectors are actually recorded each year. The error ranges relate to the level of GDP. It would be of less consequence that the baseline estimate is not in the right magnitude, if the change was correctly recorded. The error in the level estimate has an indirect influence on the rate of economic growth. Consider the example of Nigeria. In 1972 total GDP was estimated to be 16.6 billion (in 1995 dollars).²⁸ Ten years later, in 1982, it was estimated to be 19.4 billion. This corresponds to a total increase of 2.8 billion meaning that the economy expanded almost 17 percent. This would again correspond to a nine years compound growth rate of slightly more than 1.7 percent a year. If it is assumed that the estimated change of 2.8 billion was correct, but that the 1972 figure was a 35 percent overestimation the rate growth would change. The total level in 1972 should then have been 10.8 billion, and the economy would have been reported to have increased with 26 percent, which would correspond to an annual growth rate of 2.6 percent. If the base year was underestimated the same would apply downwards. So, the uncertainty of the base year level estimated leaves us with some uncertainty with regard to rate of change. Note that this is just a measure of the indirect effect of over or under-estimation of GDP levels on GDP growth rates.

This level of unreliability would also render a ranking of countries according to GDP per capita unreliable. Changes of the magnitude of 30 percent would have potentially large effects on an individual country's ranking. As seen the data for small-scale agriculture are the most unreliable, giving reason to exercise great caution before drawing conclusions on rates of growth and inter country comparisons with regard to food and cash crop production. Keeping in mind that is the sector in which something between 50-90 percent of the population are partly engaged (depending on the country), this leaves the aggregate economist with little knowledge about what is going on in African economies.

Blades (1980: 70-72) reviews the commonly-used methods for estimating change i.e. 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 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 for the large trading firms, but in many countries value added from this activity is also assumed to grow proportionally with population. The transport sector is also estimated from other factors. Here registered vehicles and/or volume of agricultural output are commonly used. The government share in value added in output is as noted assumed to equal growth in government inputs. Other services are assumed to grow in

²⁸ Source: *World Development Indicators* (2002).

parallel with other activities. The number of dwellings is assumed to follow the population proportionally. So to a large extent the year-to-year change is based on an assumed movement from the base line 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 recorded, and imports and exports are reported.

Blades' view is that although the level estimates probably have high error attached to them (i.e. are not valid) the change estimates could be said to be better (i.e. more reliable). The data will not pick up much of any short-term change, but would seem fine in the long-term. To Blades the assumption of food production increasing with population and transport together with vehicles seems reasonable in 5 or 10-year perspectives, but "estimates of year to year variation should be treated with extreme caution" (1980:70). He also cautioned that 'the GDP per growth rates published by developing countries have never been examined for their reliability' (ibid:72) His conclusion is 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 per cent may mean anything from no growth at all to an increase of 6 per cent." This is a powerful warning against drawing firm conclusions from cross-country comparisons of growth. A difference between zero to 6 percent in annual growth would call for strong judgments on development policies, from failure to success, and therefore many of these judgements could inadvertently be based on statistical assumptions and not reflect the real economic situation.

Thus there are potential problems with the African growth evidence that might compromise the validity of conclusions relying on such data. Due to the problems of the level estimates rankings of African countries according to GDP per capita need to be treated with caution, and such rankings should allow for minus and plus error bounds. At face value there is no guideline as to tell whether a GDP estimate is likely to be an under or over-estimate. Such judgments would need to rely on knowledge of the basic assumptions of the respective countries' national accounting methodologies. Blades' judgment on the reliability of the level GDP is an outcome of the reliability estimates of the different sector components that make it up. The level of reliability varies considerably from sector to sector. This means that by relying on disaggregated estimates one can avoid some of the reliability issues. This acknowledgement further means that a key for studies of reliability of level estimates, and by implication also growth rates, might be found in the sectoral distribution. If a higher relative weight is given to the unreliable sectors it is associated with greater uncertainty of the level estimate. Growth that derives from these sectors should be treated with caution.

On the total growth rate the estimated annual error of 3 percent is a powerful warning but a poor guide to economic growth studies. It 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 zero

growth to six percent. Taken seriously the estimate effectively means that at most times we can not tell economic growth in year in the same African country from another year, and much less make comparisons across countries. That estimates in the longer run are better is encouraging. However, the inference that in the long run it is safe to assume that growth is in accordance with population growth and new investment amounts to a statement that the assumptions of neo-classical economic growth theory (i.e. the Solow model) are largely correct.²⁹ That might be true, but the quest for the African dummy and the African growth debate is based on the observed deviance from that assumed long-term growth rate. Moreover, while the statement might be correct it certainly reduces the value of the national accounting systems. One of the purposes of growth statistics and the empirical growth literature is precisely to determine whether neo-classical foundations or other theories of growth match up with the empirics.

The lack of empirical study of the topic is the problem, for as noted the annual growth rates of African countries have not been examined for their reliability. The *Journal of Development Economics* special issue on data quality (1994, Vol. 4:1) called for empirical studies, but since the work of Blades (1975,1980) was undertaken under the auspices of the OECD Development Centre the matter has not been subject of thorough research. The 1975 study looked at the coverage and treatment of the 'subsistence' (or non-monetary) sector in the national accounts in a range of developing countries. It was comparative, and thus broad in range, while only covering a part of the national accounts. Consequently the study could not reach any specific conclusions regarding the implications for the construction and use of a time series of growth data in a developing country. The report was justified on the grounds 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). It literary follows that since such care has not been taken, most academic work on economic growth in Africa has been unintelligent. That would perhaps be to draw the implication too far. It might suffice to conclude that the subsequent research has not been properly informed.

The central aim of this thesis is to reduce this gap in the literature. Through a careful use of the growth evidence and its source material the thesis attempts to give the best possible answer to how Botswana, Kenya, Tanzania and Zambia grew in the postcolonial period. This is done by consulting the available primary documents on national accounts estimation. Another and related aim of the thesis is to give an evaluation of the accuracy available growth evidence with potential

²⁹ The major determinant of the estimates of trends of growth in many sector is population growth. The review above clearly informs us that censuses are sporadically undertaken, and that the quality of them is poor. This means that the size of the population in many African countries is an unresolved issue, and that the rate of population growth largely depends on how much one trusts an earlier census compared to a more current one.

implications for other studies of African economies. Based on the reporting of *WDI* and *Penn World Tables*, one might get the impression that the growth evidence is reliable and valid. However, this is not the case. The constant price growth series for 1960-2000 published by those sources are in fact based on discontinuous series, extrapolations over missing years and a great amount of guessing. How serious these shortcomings are has not been established. The last part of this chapter is devoted to establishing how well the different sources of data on Botswana, Kenya, Tanzania and Zambia cohere.

Accuracy in Growth Reporting: Botswana, Kenya, Tanzania and Zambia 1965-1995

This section compares the available growth evidence on these countries. There is an abundance of different numbers in different publications which again have various editions. In addition to the official data published by the respective national agencies, there are also data distributed by different international organisations. Moreover, independent scholars make imputations and alterations based on either of the mentioned sources or on their own estimates. Here four sources are considered: the official data as published by the national statistical agency, the World Development Indicators published by the World Bank, the Penn World Tables (Heston et. al. 2006)³⁰ and the OECD data (Maddison 1995, 2001, 2003). These are the most widely used sources for empirical growth studies and therefore the most relevant data.

The World Development Indicators (2002) indicates their sources as “World Bank national accounts data, and OECD National Accounts data files.” GDP data are given in constant and current price in both local currency and US dollars. The base year for the constant dollars is 1995. The base year for the local currency data is not directly indicated, but can be derived from the implicit GDP deflators. The base year for the Tanzanian series is thus 1992. In Botswana the base year is 1994, the same year chosen for the Zambian series. For Kenya the base year for the constant price series was 1982. These years correspond to the base year in the most recent official data series. For Tanzania GDP data are reported only from 1988 onwards. For the other three economies there are complete series from 1960 until 2001. The PWT reports almost the same base evidence as the WDI. The latest version PWT 6.2 is based on WDI 2002 for non OECD countries. For years and countries not covered in the WDI 2002 (applies to Tanzania) the data were obtained from previous national accounts files used in PWT5.6 and earlier versions. The reason why these data are preferred by many scholars is that The PWT provides purchasing power parity and national income accounts converted to international prices. The steps required to express the national accounts in international

³⁰ Henceforth referred to as PWT.

comparable dollars will not be dealt with here. OECD has published the data produced by Maddison (1995, 2001, 2003).³¹ It gives growth data for all the countries in 1990 International Geary-Khamis dollars from 1950 to 2003.

These three sources of growth evidence will be compared with the government statistics. The reporting of data sources in the international organisations leaves a lot wanting. As noted, one source reports the other as its main source, and the other way around. The series are loosely based on national account data files, but which series and how these series are assembled in continuous constant growth time series is not clear. The primary evidence is the official national accounts data. The key difference between the official national accounts data as compared with the data available from the other databases is that the national accounts do not provide continuous series for the whole post-colonial period.³² The availability of official constant growth data is described in the table below. The differences between these series and the different versions of the official evidence, as well as the underlying data, will be discussed in detail in later sections. To compare the growth rates from the international organisations with the growth data derived from the national accounts data some data assembly is required.

Table 11: Availability of Official Constant Price Growth Series: Botswana, Kenya, Tanzania and Zambia

Botswana		Kenya		Tanzania		Zambia	
Base Year	Coverage	Base Year	Coverage	Base Year	Coverage	Base Year	Coverage
1971/72	1967/68; 1968/69;1971/72	1964	1964-1975	1966	1964-1982	1965	1965-1971
1974/75	1966 – 1978/79	1972	1972-1982	1976	1976-1993	1970	1970-1976
1979/80	1973/74-1985/86	1976	1972-1985	1985	1964-1995	1977	1977-1995
1985/86	1974/75-1988/89	1982	1977-2004	1992	1987-2001	1994	1994-2005
1993/94	1974/75-1994/95						

The metric of interest is percentage annual growth. Figures for this are readily downloadable for the whole period from the databases. The national statistical agencies do not publish their own

³¹ The data used here is downloaded from the OECD website. The data is produced at The Groningen Growth and Development Centre and is copyrighted to Maddison.

³² The period is covered by several growth time series with different base years.

estimates of the time before independence.³³ This means that a comparative growth evidence analysis based on published national accounts can be made from 1965 onwards.

For the purpose of comparison a growth series was compiled for the whole period, based on the different official series. When choosing which annual growth estimate to use the selection criterion is to use the estimate with the most up-to date base year, as shown in the table below. Note that in the international databases the derived growth rate is based on constant continuous total GDP series. In contrast the official evidence consists of discontinuous series. Since the comparison is of growth rates it is not necessary to harmonize these series.³⁴

Table 12: Compiling Constant Growth Rates: Official Series Used for Botswana, Kenya, Tanzania and Zambia

Botswana		Kenya		Tanzania		Zambia	
Base Year	Growth rate	Base Year	Growth rate	Base Year	Growth rate	Base Year	Growth rate
1974/75	1966 1968 1974 1977	1964	1966 1972	1966	1966 1976	1965	1966 1971
1979/80	1978 1983	1972	1973 1974	1976	1977 1981	1970	1972 1976
1985/86	1984 1987	1976	1975 1979	1985	1982 1988	1977	1978 1995
1993/94	1988 1995	1982	1980 1995	1992	1989 1995		

The issues that complicate the comparison between the data series are important findings in themselves. A specific problem relating to the national accounts is that for Zambia and Botswana there are gaps in the constant growth series. In Zambia the new constant price series introduced in 1977 was not revised backwards, so there is no direct data from which to compile a real growth rate for 1977. For Botswana the official data has gaps in the series between 1969 and 1973. Since 1968 constant price estimates have been made only for the years 1971 and 1973, leaving annual growth estimates missing from 1968 until 1974. Finally, as mentioned, for Tanzania WDI does not report any data before 1988. Before plotting the growth evidence, the different data sources for 1965 to

³³ As will be reported in Chapter 4 there were some earlier estimates made in the colonial period. These estimates are not immediately comparable, and this thesis takes the first estimates made by after independence as the starting point.

³⁴ The coherence of the different official series will be dealt with in chapter 5.

1995 are compared. In the case of Tanzania the comparison is only done for the three sources. In order to compare the correlation of the annual growth rates between 1965 and 1995, the data for the missing years in Botswana and Zambia has been extrapolated, assuming that the absolute increment in value added was smooth over the missing years. With these computations the reliability of the annual growth series from four sources (three in the case of Tanzania) can be compared.

This comparison is done with regard to how the annual growth rates agree with each other. At face value we have no criteria for choosing which of the sources is the most correct. This exercise is made to get closer to such a judgement. For instance if one of the four series are very different from the other three this could indicate that there is something wrong with that specific series. Blades' (1980) suggestion of an error margin of plus or minus 3 percent was made as a distinction between the growth rate as an outcome of national accounting practices compared to the actual rate of economic growth in the economy. That perspective will be discussed at length later. At this point it is the extent of agreement between the main sources of evidence which is of interest. That being said, the extent of mismatch between these sources of growth is a powerful indicator of how accurate any given source of evidence is, and as such it tells us how much an annual growth rate is likely to convey meaningful economic information. It will further indicate whether it matters which growth evidence one uses, and for what kind of analysis it matters. The previous qualitative review of the growth evidence indicated clearly that it might be unwise to take any source of growth evidence at face value.

Table 13: Growth Evidence Correlations 1965 – 1995: Botswana, Kenya, Tanzania and Zambia

	WDI	PWT	OECD
Botswana	0.72	0.26	0.38
Kenya	0.54	0.27	0.78
Tanzania	-	0.13	0.78
Zambia	0.83	0.48	0.9

The table presents a first indicative quantitative test of the coherence of the growth evidence. It shows the correlation between the official data and the three other sources on annual growth rates. While the different sources growth evidence are in all cases positively related, the correlations are always less than perfect and sometimes far from that. Five out of 11 times the correlations are closer to zero than to one, the average growth rate correlation between the official growth evidence and any other of the three sources if evidence being 0.55. This indicates that if one is interested in

growth in any given year for one of these countries what one finds will vary depending on which source one has chosen. In particular the discrepancy between the Penn World tables and the official data appears to be large, while the data provided by the OECD and the World Bank correlates better with the official data. In terms of the overall coherence between the national data and the other sources the Zambia data coheres better.

In the table the correlations are shown using the national accounts as the reference source. On face value, we do not have any basis on which to tell whether one source of data is of better quality than another. Yet it makes sense to use the national accounts data as the reference, because it is this evidence that will be further investigated in the coming sections, and because these supposedly form the basis for the other sources as well. The lack of correlation between the different sources how far they use of the official data, and the extent to which the imputations made on the data by the different data providers influence the coherence of the growth evidence.

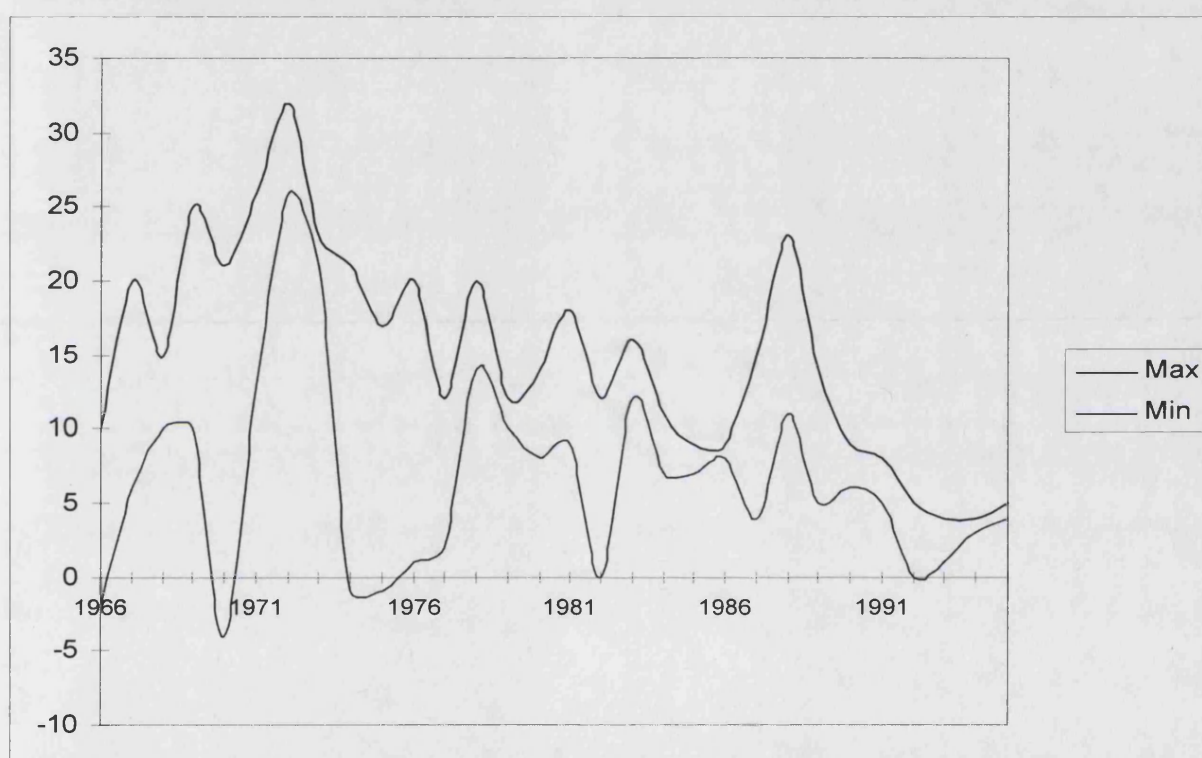
Beyond the correlations shown in the table above, it is of interest to what extent annual growth reported by the other three different data providers correlate with each other. A hypothetical scenario would be that they agree well and that therefore it is the official data that are atypical. However, as the results in the table above indicate, the estimated growth rates in any given year also vary between the internationally-renowned data providers. The highest correlation observed is between the OECD data and WDI on Zambia, with 0.92. The correlations in the growth data on Kenya (0.75) and Tanzania (0.53) are lower. The WDI and PWT agree to a considerable extent on Kenya (0.9), but not for Botswana (0.47) and Zambia (0.61). The OECD and the PWT data are seemingly unrelated in the case of Kenya (0.31) and Tanzania (0.15), while the data show a higher lever of agreement, though not a satisfactory one, on Zambia (0.51) and Botswana (0.78).

To the extent that these correlations can form a basis for any conclusions it can said that based on these four case studies, one source of data cannot be said to better than another, and that if you are interested in a growth rate for any year, the answer you are given depends very much on which data provider you choose. The agreement on growth rates for Tanzania is poor, for Botswana and Kenya it is so-so, while for Zambia it is better.

Another way to measure the degree of disagreement on economic growth in these four countries is to investigate the actual discrepancies in the data, and the timing of them. One angle to approach that issue is to look at the error range for any given year through the period. For this purpose an annual error range is constructed for the four countries. The figures below display the maximum and minimum value of GDP growth quoted in any of the four sources for each year for 1966-1995. The differences between the two lines display 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 higher at the beginning of the period. Between 1966 and 1977 it is 5 percent or higher in every year except 1973, when it is only 2 percent. Only in two other years is it smaller than 10 percent (6 and 5 percent in 1972 and 1968 respectively). In the latter half of the period the error range narrows. Between 1978 and 1995 it reaches double digits 'only' three times, in 1982, 1987 and 1988. From 1990 onwards the series all use the same base year, and the error range average in this period is less than 3 percent.

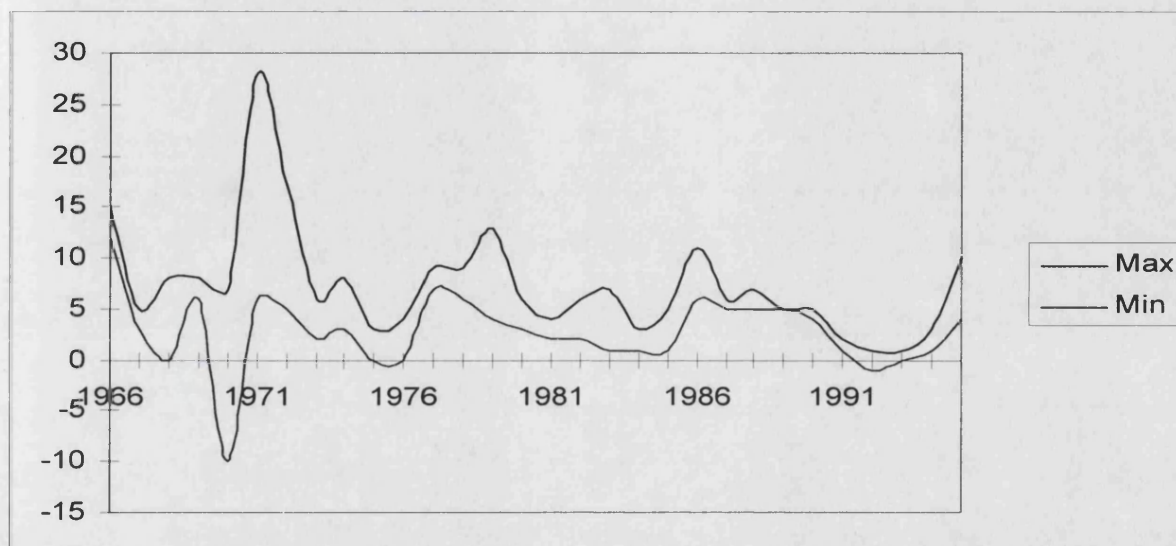
Figure 5: Annual Error Range in GDP Growth Rate, Botswana 1965 - 1995



There are four periods in which the error range is particularly large. For the early years 1966-1971, this is particularly true with an average error of 14 percent. This is not that surprising given that there were no official growth estimates on which the series could be based for 1969 and 1970. The period between 1974 and 1977 was characterised by economic shocks both domestically and externally (drought and the petroleum prices) and the way the data has picked this up seems to differ. In particular the official data reports no or negative growth in 1974 and 1977, while the other sources indicate rapid growth. The timing of boom or bust seems to matter here. In the other two periods of large discrepancy 1981-1982 and 1987-1988, it is driven by relatively low estimates of growth by the Penn World Tables, while the other sources report high growth. All in all, the range

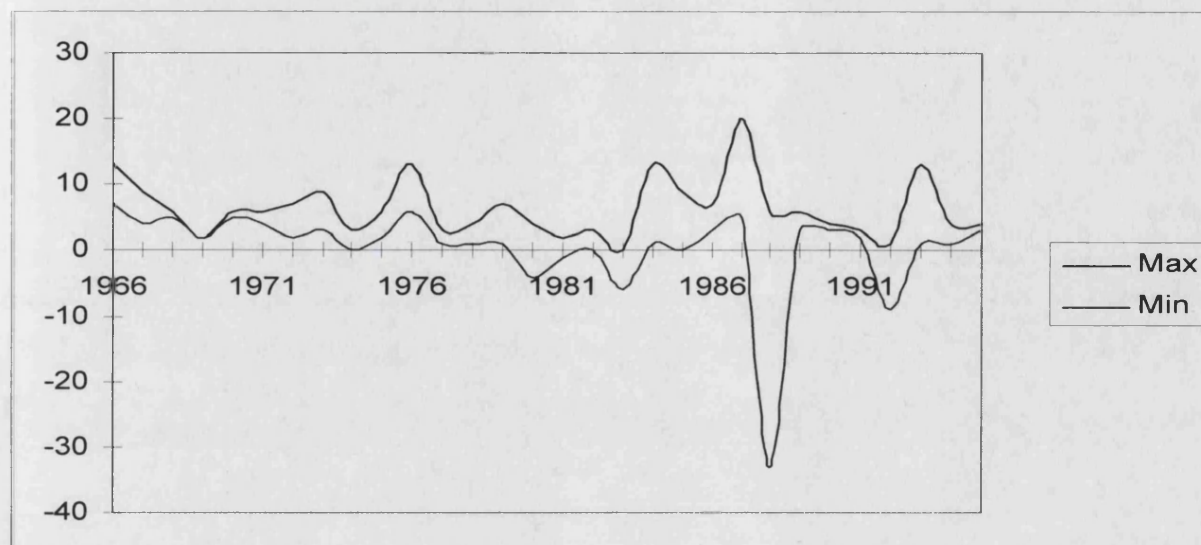
between the lowest and highest estimates is very large in the Botswana data. The coherence of the data is better as we approach present times.

Figure 6: Annual Error Range in GDP Growth Rate, Kenya 1965 - 1995



In the case of Kenya the average annual error range is lower, but still considerable at 4.6 percent. This high average is driven by a very large discrepancy in the data between 1970 and 1972. For these two years there are two competing versions of growth. If one trusts WDI or PWT, the economy shrank in 1970 (by 5 or 10 percent respectively) and then grew very fast through 1971 and 1972 (22 and 17 percent and 28 and 17 percent respectively). However, if one is more inclined to trust the official or the OECD data instead, the rate of growth was stable between 5 and 7 percent during those three years. There seems to be an error common to both WDI and PWT which explains the spike in the error range those years. The official data for Kenya have 1982 as a base year for its constant price series. This means that the weights are probably less correct for the late years, but since it has the same base year as the data from the other series the error range is narrower. Between 1980 and 1995, this range is only higher than 5 percent once (6 percent in 1983) and the data are very consistent between 1987 and 1994 when the error range is never larger than 2 percent. As indicated in the data correlation exercise earlier on, it is the PWT data that mostly dictate the error range, and the second spike in 1979 is caused by PWT, when growth is reported as 13 percent, while the official and OECD data agree on 4 percent growth. The lessons from the error range are that there are some errors common to the WDI and PWT series. The pattern of higher disagreement in the early period in Botswana is repeated in the case of Kenya. The latest official series was based in 1982 which may explain why the error in the series narrows earlier.

Figure 7: Annual Error Range in GDP Growth Rate, Tanzania 1965 - 1995

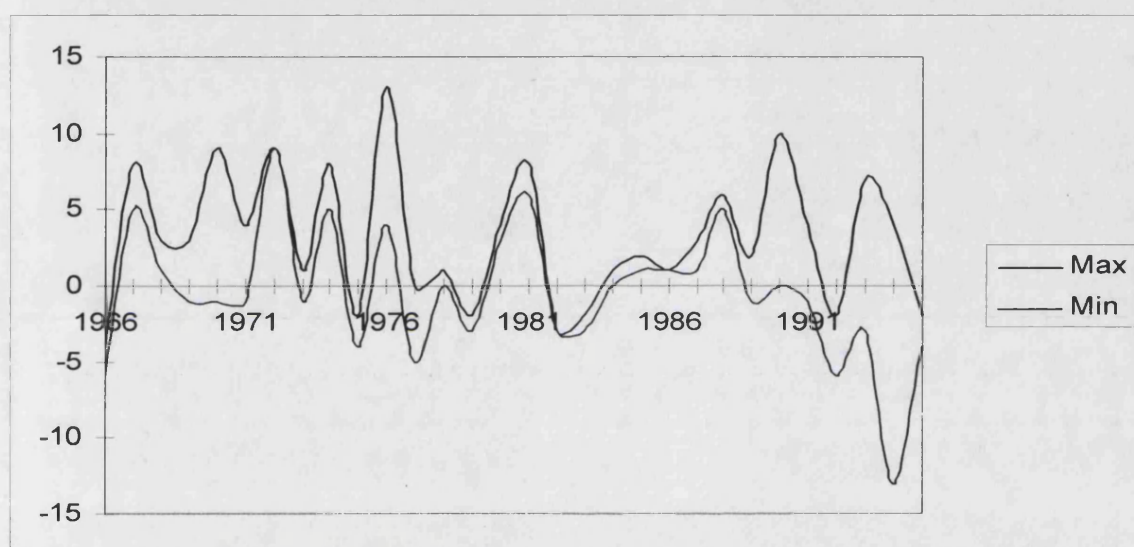


In the case of Tanzania the average error range is 6 percent. That average is not evenly distributed, and in contrast with the other countries the discrepancies in the data are higher at the end of the period. The WDI does not report growth data for Tanzania before 1988, and just the fact that this error range is based on three sources, and not four, would normally have reduced the error range somewhat. As reported earlier the correlation between the PWT and the official data is very low, only 0.13, and it is the difference between the PWT and the official data which drives the error range. The big discrepancies come in the later period. In 1987 PWT recorded a GDP growth of 20 percent with a negative growth of 33 percent in 1988. This is due to a mistake in the data, and is also the reason why WDI does not report data before 1988. The growth recorded in 1987 was due to an inclusion of the informal sector. The decline recorded in 1988 was due to another change in the statistical methods. This time a World Bank mission judged that the agricultural and manufacturing estimates were too high. The PWT data for Tanzania are therefore not good enough: these large statistical errors in data could easily be misinterpreted.

This has indeed happened, in the distinguished case of Durlauf et. al. who argued that a typical phenomenon among low income countries are negative 'output' shocks. Not realising it was a statistical error shock, Tanzania (1987-1990) is included in the 'top ten list' of output shocks in that paper (2005:574) based on the PWT data. The mistake does raise an important issue, which pertains to all African economies, but in our sample particularly to Zambia and Tanzania. There was a shift in the late 1970s from state channels towards market channels. This shift was in part due to reform as through structural adjustment programmes, and in part it was a result of the state failing to secure produce. The state was unable to offer reasonable prices for agricultural produce, and resources

were not available to keep parastatal companies at the same level of activity. This meant a considerable challenge to the statistical agencies. There was a large structural shift from formal to informal activities and channels at the same time that the administrations were strapped for resources. The statistical office, and later the database assemblers, then faced a choice of reporting a dramatic reduction in economic activity as activity in the formal sectors reduced, or assume that this reduction in formal activity was compensated by an increase in the informal sectors. The mistakes in the PWT data derive from failing to keep up to date with the changing assumptions in the basic data collection in Tanzania in the late 1980s.

Figure 8: Annual Error Range in GDP Growth Rate, Zambia 1965 - 1995



For Zambia the average annual error range is 3.6 percent, the lowest in our sample. It should be noted that the size error ranges cannot be directly compared. The absolute size of the error range is to some extent dictated by the average growth rate, which is lower in Zambia. The gap in the series 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 experienced in Tanzania, and the discrepancies in the data arising from this are clearly visible. The other years when the discrepancy was particularly large, 10 and 9 percent in 1970, and 1976, coincides with the change of base year in the official data.

There are some common themes and some specific issues to highlight. In general the Penn World Tables seems to be more often out of tune compared to the other sources. Another general theme is that it is more likely that WDI and PWT contain mistakes when there is a change of a base year in the official data. These two sources are evidently based on the official data series, but are not always successfully harmonised over time. In the evidence on Botswana and Kenya there is

observed a trend towards better agreement as one get closer to the present. In the case of Zambia and Tanzania the onset of structural adjustment was far more disruptive both to economic structure and public administration resulting in confusion about which sources to use in compiling economic growth statistics.

The low correlation between the data sources, and the observed large error ranges between the data sources, univocally confirm that observed year-to-year variation in growth rates should be treated with extreme caution. The annual error range varies. In some years it is very large, while the four sources agree about the exact growth in one year in one country in only 5 of the 120 instances under review. The data never agree on the exact growth rate in Botswana, agree once each on Kenya and Tanzania, while there is agreement on the Zambian data three times. The average error range over the period was 8.5 percent in Botswana, 4.6 percent in Kenya, 6 percent in Tanzania and 3.7 percent in Zambia. The size of this error range is to some extent a function of the absolute size of the growth rate. In order to get a comparable measure of the accuracy in reporting this needs to be controlled for. The annual error ranges, the difference between the reported maximum and minimum annual growth rate, was computed and plotted above. If we calculate the mean error range, the sum of the annual error range divided by thirty years, we can express this in a percentage of the average growth rate for the whole period. In order to get an unbiased measure, and because we have no reason to decide which growth rate is better, the average growth rate used is an average of the four sources of growth evidence. By that measure the average accuracy of any annual growth rate is computed to have an error in +/- percentage 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 per se, but a measure of accuracy in reporting. If a scholar consults one random source of data for an annual growth rate in a given year for Botswana – the average difference of the result obtained compared to using another source would be 78 percent. This range is upwards and downwards, so that hypothetically if one finds that in a year the growth rate was 5 percent according to one source, the average bound in which other sources would report growth is from 1 percent growth to 9 percent growth.

The common way to counter the problem indicated in such reliability measures is to note that this error only relates to one observation, and one observation alone does not normally inform an economic performance evaluation. In the long run errors can be hoped to be less important. It is true, derived from mathematical logic, that one mistake in reporting in one year has less implication on the average growth rate if the average growth rate is calculated over many years. So the extreme case of the negative 33 percent growth rate in Tanzania reported by *PWT* in 1988 would mean a negative growth effect of 6 percent over 5 years, 3 percent over 10 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 an error or errors in another direction. It may perhaps appear 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. The tables below show the difference in average growth rates between the sources of growth evidence.

Table 14: Accuracy in Growth Reporting, Botswana 1965-1995

	WDI	BOTSWANA	PWT	MADDISON	Average	Min	Max	Error Range	Inaccuracy
1966-1970	11.0	16.8	7.0	10.0	11.2	7.0	16.8	9.8	88%
1971-1975	18.2	16.2	17.2	18.6	17.6	16.2	18.6	2.4	14%
1976-1980	12.2	9.0	13.2	13.2	11.9	9.0	13.2	4.2	35%
1981-1985	10.0	11.2	7.6	10.0	9.7	7.6	11.2	3.6	37%
1986-1990	11.8	12.2	9.2	10.4	10.9	9.2	12.2	3.0	28%
1991-1995	4.0	3.4	4.6	3.4	3.9	3.4	4.6	1.2	31%
1966-1975	14.6	16.5	12.1	14.3	14.4	12.1	16.5	4.4	31%
1976-1995	9.5	9.0	8.7	9.3	9.1	8.7	9.5	0.9	9%
1966-1995	11.2	11.5	9.8	10.9	10.9	9.8	11.5	1.7	15%

Table 15: Accuracy in Growth Reporting, Kenya 1965-1995

	WDI	KENYA	PWT	MADDISON	Average	Min	Max	Error Range	Inaccuracy
1966-1970	5.8	8.2	2.6	7.6	6.1	2.6	8.2	5.6	93%
1971-1975	10.0	5.0	11.4	4.2	7.7	4.2	11.4	7.2	94%
1976-1980	6.4	5.6	5.8	6.4	6.1	5.6	6.4	0.8	13%
1981-1985	2.6	4.2	2.2	3.0	3.0	2.2	4.2	2.0	67%
1986-1990	5.6	5.2	6.6	5.6	5.8	5.2	6.6	1.4	24%
1991-1995	1.4	3.2	1.6	1.4	1.9	1.4	3.2	1.8	95%
1966-1975	7.9	6.6	7.0	5.9	6.9	5.9	7.9	2.0	29%
1976-1995	4.0	4.6	4.1	4.1	4.2	4.0	4.6	0.6	13%
1966-1995	5.3	5.2	5.0	4.7	5.1	4.7	5.3	0.6	12%

Table 16: Accuracy in Growth Reporting, Tanzania 1965-1995

	WDI	TANZANIA	PWT	MADDISON	Average	Min	Max	Error Range	Inaccuracy
1966-1970	-	6.0	5.8	6.0	5.9	5.8	6.0	0.2	3%
1971-1975	-	4.6	3.8	4.2	4.2	3.8	4.6	0.8	19%
1976-1980	-	3.2	4.4	3.0	3.5	3.0	4.4	1.4	40%
1981-1985	-	0.8	4.2	0.4	1.8	0.4	4.2	3.8	211%
1986-1990	-	5.6	0.2	3.8	3.2	0.2	5.6	5.4	169%
1991-1995	1.8	2.2	2.2	2.0	2.1	1.8	2.2	0.4	20%
1966-1975	-	5.3	4.8	5.1	5.1	4.8	5.3	0.5	10%
1976-1995	-	3.0	2.8	2.3	2.7	2.3	3.0	0.7	24%
1966-1995	-	3.7	3.4	3.2	3.5	3.2	3.7	0.5	14%

Table 17: Accuracy in Growth Reporting, Zambia 1965-1995

	WDI	ZAMBIA	PWT	MADDISON	Average	Min	Max	Error Range	Inaccuracy
1966-1970	1.6	3.2	1.2	1.6	1.9	1.2	3.2	2.0	105%
1971-1975	2.4	2.4	3.4	2.4	2.7	2.4	3.4	1.0	38%
1976-1980	0.4	0.8	2.4	0.4	1.0	0.4	2.4	2.0	200%
1981-1985	0.6	0.6	0.8	0.6	0.7	0.6	0.8	0.2	31%
1986-1990	1.8	3.6	2.0	4.0	2.9	1.8	4.0	2.2	77%
1991-1995	-1.2	-2.4	-0.2	-2.2	-1.5	-2.4	-0.2	2.2	-147%
1966-1975	2.0	2.8	2.3	2.0	2.3	2.0	2.8	0.8	35%
1976-1995	0.4	0.7	1.3	0.7	0.8	0.4	1.3	0.9	113%
1966-1995	0.9	1.4	1.6	1.1	1.3	0.9	1.6	0.7	53%

The error range is the difference between the smallest and highest reported average growth rate. The inaccuracy measure is a percentage of the error range with respect to the average rate of the four different sources. As was logically expected the error range is smaller when one compares the average rates over the whole period. The differences between the highest and lowest estimate in the 30-year average growth rates vary between 1.7 percent in Botswana and 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 uncertainty about the rate of growth translates to uncertainty about levels. The compound of the error range is one way of measuring this, the compound difference in the high and low rate 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.³⁵ By the second measure, the comparison of the accumulated low and high growth rate, if in 1965 GDP equalled 1, in Botswana the 1995 level would be between 17 and 26, in Kenya 4 and 4.7, in Tanzania 2.6 and 3 and in Zambia 1.3 and 1.6.³⁶

Whether these discrepancies in annual growth rates over 30 years compromise the analysis depends on what question is being investigated, and which method is used. The empirical growth literature which used precisely this kind of evidence might contend that there is a clear-cut difference between the star performer Botswana, and the poor performer Zambia. This analysis of the growth reporting presented in this chapter 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 it is inconclusive from this analysis whether there is any systematic bias of underestimating the annual growth rates of African countries. The *PWT* growth rates, which are used in the regressions, have the lowest estimates for Botswana and the highest for Zambia, and in the other cases it is the other sources of evidence that take the extreme values. While it is usually inferred that Kenya outperformed Tanzania over the period as a

³⁵ The formula used here is Level error = $(1 + (\text{Error range}/100))^{30}$.

³⁶ The formula used here is Low Level = $(1 + (\text{Min}/100))^{30}$ and High Level = $(1 + (\text{Max}/100))^{30}$.

whole, the validity of this conclusion might be put in doubt from these inaccuracies in reporting. The lowest estimate of growth for Kenya is 4.7 (Maddison) and the highest estimate for Tanzania is 3.7 percent (official data), and taking the general underlying weaknesses in the underlying data one might want to be careful about being conclusive on the comparative growth performance of these two countries.³⁷

Comparing 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 applies 5 year averages as is seen in the tables. According to PWT Botswana had an average growth of 7 percent in the first 5 years after independence. There is not a large difference between Tanzania and Botswana for this period, according to PWT which records an average growth of 5.8 percent in Tanzania. In contrast, in Maddison and the official growth evidence there is a marked difference between the two countries. In Kenya during the first five years 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. Using national data for Kenya and Tanzania, and comparing it with scholarship applying *PWT* data on Botswana one would find that Kenya outperformed Botswana in the early years and that Tanzania grew slightly slower. A comparison of Zambia and Kenya alone, using official data in Zambia and *PWT* in Kenya, would have Zambia growing quicker.

In the period 1971-75 Zambia performs comparatively well at 3.4 percent average growth according to *PWT*, and kept good pace with Tanzania at 3.8 percent according to the same source, while it might come to a surprise to some that Zambia was not lagging significantly behind Kenya, growing at 4.2 percent according to Maddison. Comparing Tanzania using national data, to Kenya with Maddison's series, Tanzania outperforms Kenya during this period. It is usually noted 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, as compared to Kenya that handled the re-adjustment fairly well. On this important historical period, *PWT* takes the opposite view: reporting growth in Tanzania at 4.2 percent through 1981-1985 compared 2.2 percent in Kenya.

This study in accuracy in growth reporting for these countries shows that trusting 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 in wide use, means that cross-country comparison cannot be conclusive based on growth rates alone. There is scope for a wider work on this issue, covering more African economies. To improve the conduct

³⁷ These are total GDP growth rates. If measured in GDP per capita, the difference would be smaller, since the average population growth in Kenya 1965-1995 was 3.5 percent compared to 3.2 percent in Tanzania (WDI 2007). Note that with 3.2 percent population growth, the conclusion that Tanzania had a negative GDP per capita growth over the period is supported by the Maddison data, while the official data and PWT would report a positive GDP per capita growth.

of quantitative economic history in Africa it is critical to be open about which sources have informed the respective works, and it is advisable to double check with other sources for coherence. The empirical study has so far only taken into consideration the coherence between the sources. It has not dealt with how well any given source agrees with what actually happened. If one studies 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 1981-1985 and another reports 4.2 percent for the same country? And what if, for the same period for another country one source reports a 2.2 percent growth rate and another source 4.2? Did the first country experience rapid economic decline in per capita terms, or did it cope fairly well? Did it perform better than the other country? This is precisely the questions one faces if one compares growth in Tanzania and Kenya between 1981 and 1985. Based on the available growth data it is not given how African economies performed.

The underlying evidence for all these sources is the national accounts data series. The sources differ in annual growth rates because of different methods of harmonizing official series over different base years and different treatment of gaps in the series. The natural starting point to answer whether the growth evidence reflects actual economic change in these economies is the national accounting methodologies.

Chapter 3: National Accounts Methodology: Botswana, Kenya, Tanzania and Zambia

The preceding comprehensive review of the literature on data quality and accuracy in growth reporting revealed that there is a considerable weight behind the argument for considering data on economic growth in Africa as poor, inadequate, unreliable, inaccurate and even random. This contention in the small literature that exists on the subject stands in contrast with the widespread use of the data as functional evidence for economic analysis. It was further noted that there is a lack of rigorous research trying to establish exactly how poor, inadequate, unreliable, inaccurate and random the African growth evidence is. This chapter studies the evolution of the national accounting systems in Botswana, Kenya, Tanzania and Zambia. It is investigated how the growth evidence is assembled and how this assembly changed over time. The underlying basic statistical data for the estimates and changes in methodologies will be described. This study serves to clarify to what extent the available growth evidence can be used to explain how these economies grew from 1965-1995 and to what extent the changes in GDP are comparable across the economies. This chapter is a mainly a descriptive study, which will be followed by Chapter 4 with further considerations on the validity and reliability of the evidence and its usefulness for comparison.

The national accounts, as compared to sources like *WDI*, *PWT* or the Maddison data, are primary sources. The data available from the international series have been passed from the respective governments and statistical bureaus, and have then been modified, harmonized to fit the purpose of the data retailer and its customers. They should therefore be considered secondary sources. These alterations create some problems, and as was shown in the previous chapter, a comparative judgement on economic performance might depend on which source of growth evidence was used. It is unsatisfactory to work with data where no proper sources are given, and where there is no immediate indication as to why the different sources disagree on growth. The conclusion of the previous chapter underlines the importance of consulting primary evidence in economic history analysis.

The growth evidence in the databases are bridging over years where no official data was available, and over different base years. The only way inconsistencies in the data and effects of revisions can be dealt with satisfactorily 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 for the assembly of the accounts are changed, these changes are reported. The inconvenience 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 a research visit to the statistical offices of the four countries.³⁸ In each country reports and handbooks on methodology have been collected. This information has been supplemented by consultation of the representatives of the respective central statistical offices.

These visits have to some extent confirmed one expected problem of the statistical services, that of institutional memory. The officers I made contact with, without exceptions, had only been employed at the offices during the recent decade, and therefore the current employees did not know much about practices in the period this study is looking at – the three decades after independence. Consequently, this study relies on which documents were available for examination in the archives and at the statistical bureaus' own archives/libraries. Ellis (2002) called for the writing of histories of contemporary Africa. It was anticipated that writing 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" (Ibid: 12). "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"(Ibid:13). These anticipations were to some extent confirmed, and the particular problems will be returned to 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.

³⁸ Gaborone, Botswana, in February 2007, Lusaka, Zambia in February/March 2007, Dar es Salaam, Tanzania in March 2007 and Nairobi, Kenya in March/April 2007.

History of National Accounting in Botswana

The economy of Botswana underwent a major structural transformation during this period, aptly summarised as rapid growth in mining. At independence there was no mining extraction and therefore the initial contribution to GDP from this sector was nil. Agriculture, consisting mainly of cattle rearing accounted for almost 73 percent of total value added in 1964. Three decades later agriculture accounted for just 4 percent of GDP, while mining constituted more than one third of the economy. This structural shift had implications in national accounting terms. The share of the economy that could be appropriately accounted for has increased over time. In the latter part of the period relatively a larger share of the growth data has a firm basis in actual statistical data, while at independence the majority of the economy, both in production and consumption, and was subject to estimation with a rudimentary statistical basis.

The following sections present a history of national accounting in Botswana. The first attempt at constructing national accounts was made in 1955, an individual academic effort.³⁹ The Central Statistical Office in Gaborone was established in 1966, and began operation during the latter half of 1967. In 1968 the first official national accounts were published as the *National Accounts 1964 to 1966*. Thereafter national accounts for 1967-68 and 1968-69 were published in 1970 and 1972 respectively. In 1973 the national accounts for 1971/1972 was 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 onwards, national accounts were prepared and published consistently on an annual basis. This section on national accounting in Botswana is organised as follows. First, the three first estimates are investigated. The 1971/72 report came with several new methodological alterations, and is therefore treated separately. The period from 1973/74 to 1979/80 forms a separate section, before the introduction of a new base year for the constant price growth series in the 1980/81 report provides the natural cause for a fourth section, while the last section treats the estimates from 1986/87 until the end of the period.

Botswana National Accounts Estimates: 1964-1966, 1967/1968 and 1968/1969

The preparation of the first report was considered as “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

³⁹ E.P. Erasmus, ‘The National Income of Bechuanaland Protectorate 1955’, in L. H. Samuels (ed) *African Studies in Income and Wealth* (1963).

information available”.⁴⁰ The resulting GDP estimates should be considered 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”.⁴¹ In the third report the reader is reminded that “[w]e still depend on estimates and intelligent guesses due to the unavailability of certain data” indicating that the lack of basic statistical data and under-coverage was not dealt with in the space of the first three reports.⁴² 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”.⁴³

It is worth mentioning that, in contrast with most national statistical agencies, the data reported by Botswana is in accordance with the agricultural year. The first report gives data for the respective calendar years 1964, 1965 and 1966, while in the following report the data pertain to the year starting in 1st July 1967 and ending on 31st June 1968. This practice is then followed throughout. Apart from the incoherence and following confusion this creates with international comparison, the practice also causes some accounting difficulties. In the 1967/68 estimate the government data relate to the year ending 31st March 1968, local government to calendar year 1968, Botswana Meat Commission accounts are for 1968, while non-freehold farming data and the rail road accounts are consistent with the year ending 30th June 1968. That the agricultural data correspond is the most important. The small-scale private sector is a matter of estimation so the timeliness of this data has only a limited bearing on the validity of the estimates.

In accounting procedures the agricultural sector is divided according to production and type of land holding. It distinguishes between crop production and livestock. Only a small share of the crops produced is commercially marketed, and therefore the reliability of the data on this sector of the economy is really limited. In 1967/68 the marketed production was measured at 24 percent of the estimated total production. A large contribution to value added in agriculture comes from cattle. Recorded slaughters of livestock alone accounts for almost 40 percent of value added. In addition there is also value added deriving from hides, milk and increases in livestock.

A second distinction is made between freeholder and non-freeholder farmers, where the latter farm on state or tribal land, while the former owns the property which is farmed. In economic terms it could be desirable to distinguish on size instead, since the traditional sector includes some very large-scale farms, while there are some very small-scale freeholders as well. The number of

⁴⁰ *National Accounts 1964 to 1968* p. 1.

⁴¹ *National Accounts 1967/68* p. 1.

⁴² *National Accounts 1968/69* p. 1.

⁴³ *National Accounts 1967/68* p. 2.

non-freehold farmers is considerably higher with an estimated 65 000 non freeholder farms compared to 400 freeholders in 1971/72. In statistical terms the distinction does makes sense, however. The information on freeholders is based on income tax data, while the larger part 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".⁴⁴ Presumably, this would also affect the quality of the data collected by the Annual Agricultural Sample Survey.

For the estimation of crop production the point of departure was the total acreage of crops under production obtained from two sources: the agricultural department and the agricultural sample census of 1967. The CSO considered the total acreage data obtained from the agricultural sample census an underestimate. To calculate the total acreage under crops for 1964 to 1966, the relationship between the sampled farmers' acreage and the total acreage reported by the agricultural department was used. It also made allowance for the increase in total acreage in accordance with increase recorded among the sampled farmers through this period. In other words the increase in total acreage is happening by assumption. The distribution of crops was considered to be proportional on the basis of the 1967 distribution. To get the production of crops, the obtained acreage figures were multiplied by the average yield per acre as estimated by the Department of Agriculture. These quantities were multiplied by the farmers' prices (also reported by the agricultural department). It was assumed that 5 percent is the correct ratio for intermediate inputs in this sector, leaving 95 percent of total output as value added.⁴⁵

The reported numbers of slaughtered cattle were revised upwards when it was seen that the exports of hides were higher than the numbers reported slaughtered by owners. In order to estimate the cattle slaughter figures by owners, the officially recorded slaughters were subtracted from the export figures for hides. The underestimate of own-slaughtering would equal the number of hides that were not exported. However, the CSO deemed the number obtained this way for 1965 and 1966 too high. Since these were drought years, it was assumed that 50 percent of these cattle were dead from drought and not eaten. The remainder 50 percent was valued at R15 assuming lower quality of the cattle due to drought. The butchers' slaughters were valued at R33 per head, which was the Botswana Meat Commission (BMC) buying price for condemned cattle. For pigs, sheep and goats it was assumed a 20 percent off-take each year. For chicken reported numbers were used. It was assumed that 50 percent of the cattle give 100 gallons of milk each year, and for goats it was assumed that one third of the goats gave 25 gallons of milk each year. Both game meat and

⁴⁴*National Accounts 1968/69* p. 3.

⁴⁵*National Accounts 1964 to 1968* p. 11-12.

gathering of food were obtained by assuming 3 percent growth from the 1965 baseline estimate.⁴⁶ The estimation of agriculture does not cohere with the International Standard of Industrial Classification (ISIC) as cattle trading and safari activities that actually belong in Division 6 are included.

The main source of data for traditional (or non-freehold) farming was the above-mentioned Agricultural Sample Survey, which sampled 900 holdings of an estimated 53 750 traditional farms in 1968/69.⁴⁷ In comparison, 1967/68 it was reported that the survey covered a total of 46 000 holdings and it was estimated using available population data that there were approximately 7000 non-freehold holdings in the omitted area. These holdings were considered to contribute little to crop production, and it was estimated that production would be from approximately 7000 acres of cultivated land. This compared to a bit more than 300 000 acres for the surveyed holdings. The estimates from the survey have therefore been raised by a factor of 1.023. For livestock the omitted holdings was considered likely to contribute on a much larger scale. According to the CSO there was no reason that they should differ from the surveyed holdings in this respect, and therefore the ratio used for livestock was 1.13, i.e. proportional.⁴⁸

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 5000 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".⁴⁹ In the 1968/69 report it was noted that "agricultural production is subject to annual fluctuation mainly due to erratic climatic conditions", and it was explained that the three-fold increase in crop production from 1967/68 to 1968/69 was because the latter "was a good year".⁵⁰

The manufacturing sector in Botswana was very small at this time, with no formal activity reported apart from the Botswana Meat Commission (BMC) and the Government Printer. In addition there is made allowance 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".⁵¹ For this sector, an estimate of 500 000 rand, with an addition for 100 000 rand

⁴⁶ *National Accounts 1964 to 1968* p. 13.

⁴⁷ *National Accounts 1968/69* p. 3.

⁴⁸ *National Accounts 1967/68* p. 3.

⁴⁹ *National Accounts 1967/68* p. 5.

⁵⁰ *National Accounts 1968/69* p. 4.

⁵¹ *National Accounts 1968/69* p. 12.

for home brewed beer consumed at home, and a further 200 000 rand for home brewed beer commercially sold. These numbers were used in all three reports, and were not subject to change.

For transport, banking and trading the reported wage bill for tax purposes is used as a departure point. 10 percent of registered vehicles were assumed to be in commercial use. It is pointed out in the 67/68 report that no allowance was made for adding water provision in the 'subsistence' sector estimate in the SNA. This makes little sense in Botswana where such provision is costly and crucial. There is provision for collection of firewood, but not water. Construction data come from income tax. The estimate of own housing construction of 1.500.000 with an operating surplus of 50 percent from the first report is re-used in the two subsequent reports.

ISIC sector 6, trade etc. had about 600 enterprises. Tax incomes were available for about 180 of those. The remainder 420 were mainly small rural stores, which are not taxed. The 1967/68 Labour Census estimated the total wage bill for this sector as almost R1.6 million. The income tax for the 180 firms indicated that just above R1 million was paid in wages, so it was assumed that R550 000 is a good estimate for the remaining 420 firms. This distribution of costs was used to account for intermediate consumption as well. It was reported that "there are small-scale transportation activities going on in this country" but that "no estimate was made to cover [for] this section of the sector", because "information is not available".⁵²

Botswana National Accounts Estimates: 1971/1972

The 1971/72 estimate was the result of adding together the accounts the Central Government, 13 local authorities, a bit more than 800 private firms in addition to 300 freehold farmers, and finally the estimated contribution from 65 000 traditional farmers. The CSO still depended "on estimates and intelligent guesses due to the unavailability of certain data".⁵³ It was further noted that "the data on which this report is based are of very uneven quality", with the data varying from the "very high quality... for the Central Government, and at the other extreme are some unusable returns sent to us by a few private firms." It is 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".⁵⁴ In these estimates the mining sector was for the first time important, and accounted for most of the increase in GDP.⁵⁵ This report presented a constant price series of growth.

The South African Union Agreement caused problems because duties are collected outside Botswana. In result intermediate consumption became too high and indirect taxes too low. The

⁵² *National Accounts 1968/69* p. 17.

⁵³ *National Accounts of Botswana 1971/72* p. 0-3.

⁵⁴ *National Accounts of Botswana 1971/72* p. 0-3.

⁵⁵ *National Accounts of Botswana 1971/72* p. 0-3.

receipts were settled with RSA on aggregate, but it was not possible to disaggregate this by sector. Therefore industrial origin of GDP can only be computed at factor cost.⁵⁶ There was a large increase in indirect taxes as a result of the renegotiation of the South African Union Agreement, and an increase in the volume of imports for mining developments.⁵⁷

There were an estimated 65, 000 non-freehold farmers. The source for the data in the national accounts was the 1971/72 Agricultural Survey Report. The survey was based on a sample of 525 farmers out of assumed population of 63.700.⁵⁸ To arrive at the estimates the CSO consulted officials in the ministry of agriculture and the important annual report of the BMC. The data for arable farming were raised with a mark up of 1.038 to compensate for under-coverage and for livestock with a factor of 1.071.

It was considered 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”.⁵⁹ Still, the 1968/69 estimate of 53 750 traditional farmers was thought to be too low by about 10 percent, and which meant that the value added for that year was too low. In addition, according to the report analysis of purchaser’s 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 means 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.⁶⁰

The numbers of freehold farms was considered to be about 400 run by 300 farmers. Where farmers had not completed their accounts for 1971/72 the account for the previous year was used. Incomplete accounts were estimated. The figures in this report are considered less reliable than the ones from 1968/69, because the data collection had not been successful for this report.⁶¹

The source on the modern manufacturing sector was the Census of Productions and Distribution. For village industries the 1968/69 National Accounts estimate was re-used.⁶² In this report, as opposed to the earlier ones, construction activities by mining companies and by the government are transferred to construction sector from the mining sector.⁶³ Holding companies and

⁵⁶ GDP at market prices = GDP at factor cost + indirect taxes.

⁵⁷ *National Accounts of Botswana 1971/72* p. 0-6.

⁵⁸ *National Accounts of Botswana 1971/72* p. 1-2.

⁵⁹ *National Accounts of Botswana 1971/72* p. 1-2.

⁶⁰ *National Accounts of Botswana 1971/72* p. 1-3.

⁶¹ *National Accounts of Botswana 1971/72* p. 1-12.

⁶² *National Accounts of Botswana 1971/72* p. 3-1.

⁶³ *National Accounts of Botswana 1971/72* p. 5-1.

management consulting were transferred to Finance and Business.⁶⁴ A pilot project was undertaken to survey small-scale traders and from a sample of 50 the total product was estimated to be R1.3 million. It was not covered before and therefore this was statistical growth. Both data for small and large traders are considered to be of bad quality. The large traders were estimated to account for R6.2 million.⁶⁵

On the constant price estimates provided in the report it is commented 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”.⁶⁶

Botswana National Accounts Estimates: 1973/1974 - 1979/1980

National accounts were not prepared for 1972/73. There is a considerable amount of statistical growth in this early period, but this ‘settles’ somewhat in the later part of the 1970s. The reporting of constant prices time series is improved upon during the period. The year for the new constant price series was 1974/75 and this complete series with a description of the methodology was presented in the 1977/78 report.

Botswana broke away from the Rand Monetary union in September 1976 and introduced the Pula to replace the Rand. The national accounts use Pula as the currency unit from the 1974/75 report onwards. The 1973/74 report was prepared along the lines of the 71/72 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”.⁶⁷ The backbone of the national accounts is the Census of Production and Distribution. In the first year the CPD response rate was over 0.78. However there were sectoral variations between 0.42 and 0.94, which confirms the variability of the quality of the data from sector to sector. The quality of the responses also varies. The accounts of government and large firms are good, while “at the other extreme are unusable returns from some private firms”.⁶⁸ It is emphasised that since the statistical office was still unsure of when the correct baseline estimate is reached, the “[g]rowth 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”.⁶⁹

⁶⁴ *National Accounts of Botswana 1971/72* p. 7-1.

⁶⁵ *National Accounts of Botswana 1971/72* p. 6-2.

⁶⁶ *National Accounts of Botswana 1971/72* p. 14-11.

⁶⁷ *National Accounts of Botswana 1973/74*: 0-1.

⁶⁸ *National Accounts of Botswana 1973/74*: 0-12.

⁶⁹ *National Accounts of Botswana 1973/74*: 0-13.

The 1974/75 report referred to the 1973/74 report as the “edition that should be consulted for reference and methodology”.⁷⁰ It was further claimed that “because coverage and quality of data have continued to improve, it was no longer found necessary to adjust for under coverage”.⁷¹ This would prove to be a premature conclusion. However, what was meant in the report was that the systematic use of a mark-up to compensate for under-coverage was abandoned with this report onwards. Coverage in the report approximates to the Census of Production response rate (of 1974/75) which was 0.84, with a sectoral variation between 0.77 and 1.00, an improved rate on the previous year.

The constant GDP and current GDP for 1974/75 was revised upwards in the 1975/76 report by P10 million. There is a further revision in the current GDP by origin for previous year. Agriculture accounts for half of the upward revision, mining for 3 million and there was a marginal increase in manufacturing.⁷² Further revisions were made in the time series 1973/74 to 1975/76 for freehold farms and in the Trade sector. In the revision the absolute level of activity has been reduced while the changes from year to year were maintained. The effect of this is that the growth in the national accounts figures (i.e. in the economy) has been left unchanged, while the relative importance of these sectors has been reduced.

In 1974 there was a Rural Income Distribution Survey (RIDS) that formed the basis for the agricultural data for a decade to come. It was still considered that the number of 65,000 and 400 farms run by non-freehold and freehold farmers respectively was representative.⁷³ It was believed that the previous agricultural surveys underestimated the size of output in the traditional farming sector. The RIDS gave for the first time “reliable information” on milk production for own use (R9.7 million) and value of dead animals consumed (R4.9 million).⁷⁴ The 1971/72 output was increased by R5.0 million to adjust for this previous downward bias. The data from the RIDS were not yet fully available, so it was warned that there would be future revisions. Despite a huge increase in estimated total output it was still only judged as “quite certain” that the 1973/74 output level was significantly higher than in 1971/72, but perhaps by not as much as is shown in the accounts; “the 1971/72 level of output probably still is underestimated”.⁷⁵

As already mentioned it was assumed that there are about 400 freehold farms run by about 300 farmers. These freehold farms were covered by the CPD with a response rate of 0.85. An estimated 18 percent of the farmers not responding were assumed to be active. The figures of production derived from CPD were therefore raised by 18 percent. From 1974/75 to 1978/79 the

⁷⁰ *National Accounts of Botswana 1974/75*: 0-1.

⁷¹ *National Accounts of Botswana 1974/75*: 0-11.

⁷² *National Accounts of Botswana 1975/76*: Table 1.1.C.

⁷³ *National Accounts of Botswana 1973/74*: 1-3.

⁷⁴ *National Accounts of Botswana 1973/74*: 1-4.

⁷⁵ *National Accounts of Botswana 1973/74*: 1-4.

data on crop production exclude freehold farms, beyond that it include them. In 1975/76 data on millet are not available. Data on beans and pulses are not available until 1977/78.

With the exception of 1973/74 the data on crops output were based on agricultural surveys. An insight on the change in the production was provided by the statistical office as follows: “As the traditional sector mainly produces crops for own consumption, (i.e. prices in the market are too low to cover production and transport costs) the rich harvest in 1973/74 resulted in surplus stocks of grain in 1974/75, and consequently planting was substantially reduced that year to equate to output needs. The 1975/76 figures clearly indicate that the traditional farmers’ productive capacity in crop production is again fully utilised”.⁷⁶ In the 1975/76 report the estimate for traditional agriculture was revised upward by P6 and P7 million for 1974/75 and 1975/76 respectively. This expansion in statistical coverage happened without a corresponding increase in intermediate consumption and it was not commented on in the report.

In the 1976/77 report the CSO evaluates its agricultural data in a relative perspective and concludes: “The statistics on in-formal activities, like traditional agriculture, are most probably better covered in Botswana than in most developing countries amongst other things because of the Rural Income Distribution Survey 1974/75. Among current information Agricultural Statistics on crops and cattle add valuable information to the yearly estimates for the informal sector activities”.⁷⁷ The subsistence hunting estimate was revised downwards in 1975/76 “due to a change in statistical base material”.⁷⁸ It was further noted that the estimates on the production by the cattle herd should be treated with caution as “no reliable information on the total number in the herd, as well as its growth, exists”.⁷⁹ The cattle herd data are further elaborated on and it is noted that the series up to 1971 is not comparable to the 1972/77 series. The former is based on veterinary counts, while the latter is based on three baseline CSO sample surveys (1972, 1973 and 1976). The latter years were estimated based on information of off-take, births, deaths and age composition of the herd. The 1976 survey estimated the national herd at 2,968, 600, the traditional sector having 2,618 600 plus the freeholders’ stock of roughly 350,000 cattle. “This tallies remarkably well with the estimate in the table of 2,832,000”.⁸⁰ The error bound was suggested to be around a maximum of 300,000.

For the 1977/78 report the livestock and crop survey 1979 provided new and probably more reliable data. On this basis the time series of the national cattle herd from 1972/73 was revised. The price estimates for valuing the herd are also revised. The Rural Income and Distribution Survey constitute the benchmark for the computation of the activity in the traditional sector, and in 1978/79

⁷⁶ *National Accounts of Botswana 1975/76*: 2-1-5.

⁷⁷ *National Accounts of Botswana 1976/77*: 1-1.

⁷⁸ *National Accounts of Botswana 1976/77*: 1-1.

⁷⁹ *National Accounts of Botswana 1976/77*: 2-1-2.

⁸⁰ *National Accounts of Botswana 1976/77*: 2-1-2.

it was expressed concern that the RIDS was “becoming increasingly outdated, and extrapolations are getting more and more uncertain”.⁸¹

The Shashe Project was completed during the 1973/74 period, and the large copper/nickel complex at Selebi-Phikwe opened. The increasing influence of the new mining complexes was felt throughout the economy, and raised some important questions for the national accounting. Through the period there was a shifting practice regarding which activities were accounted for in the mining sector and which were not. The shift went towards accounting for the activities that were related to the mines, but not strictly mining, in the corresponding ISIC sector. In 1971/72 there was only some value added (R4 million) from the establishments in the mining sector related to non-mining activities that was not accounted for in the mining account. This increased rapidly through the period. There was an increase in the construction some of the mines’ own construction, engineering, brick-making etc. was included. Indirectly there also was an accelerated expansion in tertiary sectors (especially in trade and finance, etc.). One of the mines carried out a substantial works and construction. This was included in the construction sector.

A significant change in methodology took effect from the 1979/80 report onwards. A revised price index of diamonds changed the constant price figures back to 1973/74 substantially, while the current value figures however were unchanged. De Beers Botswana Mining Company provided CSO with detailed price statistics for each type of diamond produced in Botswana; this enabled the accountants to work out a Paasche Price Index for the gross output in the diamond sector. This revision changed the recorded growth pattern of the Botswana economy from 1973/74 to 1979/80. The average growth rate in this period was been reduced from 8.5 percent to 6.9 percent per annum.

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”.⁸² The rest of the growth was due the huge investment programme in Jwaneng and continued build-up of the country’s infrastructure. This illustrates that the issue of statistical growth is not solved. It is impossible based on sampling to know whether an increase in recorded activity means utilization of idle resources or a shift of resources to within the sampling frame.

There were reportedly 967 known trading enterprises in 1973/74 and of those 181 were small- scale. From the CPD a response rate of 0.74 was obtained. It was assumed that the response rate was much lower in the small establishments. The figures for small establishments were multiplied by 2.68. Finally, to adjust the final result for insufficient coverage, the whole sector was

⁸¹ *National Accounts of Botswana 1978/79*: 3.

⁸² *National Accounts of Botswana 1979/80*: 6.

upwards revised with a cautious 10 percent. "It is strongly felt that the 1971/72 results for the sector have been seriously understated".

In the 1976/77 report it was reported that "[d]ue to shortage of price statistics we have difficulties in deflating the national accounts figures. In consequence, all tables in that publication were presented in current prices only. However, results from preliminary attempts to deflate the time-series of the national accounts aggregates (like GDP, Imports etc.) are available in the National Accounts Unit, C.S.O."⁸³ The 1977/78 report included constant price estimates of GDP, and the deflation method was explained. The CSO applies the double deflation method. A deflator is worked out for each sector, with a separate deflator for production and intermediate consumption. These components are deflated separately, and then value added is derived as the difference of the two constant price figures. This was done because for some sectors the price developments have been very different, though for some sectors detailed price data have not been available and the same deflator has been used for production and input.

Price data available for the period covered are considered "very poor" in the report. CSO is only collecting data for the Cost of Living Index (COL), Copper/Nickel, Coal and Beef prices. A few other indexes were worked out based on domestic data e.g. diamond prices, sorghum, maize, government wages and a few subgroups of the COL-Index. However, a major part of the indexes worked out was based on price statistics from South Africa. It is highlighted that the "constant price figures must be treated with caution" since the constant price figures are based "on very weak price data".⁸⁴

Botswana National Accounts Estimates: 1980/1981 to 1985/1986

Considering this a new 'era' of accounting is not only justified by convention of the turn of a decade. The 1980/81 report coincides with the change of base year for a constant price series. This is a good opportunity to look more closely at the statistical growth effects caused by such a change. The reason for changing the base year was based on two arguments. "Firstly, the SNA recommends base years be changed frequently. Thus the current base year of the UN Year Book of national accounts is 1980. 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".⁸⁵ The method and the basic data did not change significantly. The South African price indices were still being used.

⁸³ *National Accounts of Botswana 1976/76: 4.*

⁸⁴ *National Accounts of Botswana 1977/78: 4.*

⁸⁵ *National Accounts of Botswana 1980/81: 2.*

The immediate growth effects were to be felt in the reporting of constant figures. GDP was estimated to be P770.5 million that year, compared to P689.4 million the previous year. This made for an increase of 11.8 percent in current prices compared to the real growth rate estimated at 12.5 percent. A higher real growth rate was possible because in 1980/81 there was a serious decline in prices of both diamond and copper/nickel with an average decline of 17 percent. Still mining output increased. In agriculture the opposite occurred. At current prices the increase was almost 9 percent, the real growth rate was recorded as negative 10 percent. Even though the BMC slaughtering increased due to an improved market situation for beef, the total off take did not increase because the slaughtering outside BMC declined dramatically. This underlines the importance of the timing of prices and the constant time series. The latter example from the cattle sector also exemplifies the complexity in the relationship between cattle price and supply.

In the 1981/82 report the new constant price series is elaborated upon. "The growth rates of the series published earlier have been maintained to the extent possible. But some sectors and some types of expenditure have been altered in order balance both supply and expenditure sides while changing the base year".⁸⁶ The method of deflating intermediate consumption was revised. Prior to 1979/80 RSA indices which seemed reasonable for the inputs structure of the sector were utilized in the deflation. The revised method deflates each commodity of the intermediate consumption. The sources of information were still the RSA indices. However, the breakdown of each commodity of the intermediate consumption is given by the CPD and therefore no longer assumed to be the same as in RSA. For each commodity group applicable price indices from RSA were used or where possible, Botswana price information. "The deflation of external trade (exports and imports) is also carried out on a commodity by commodity basis. But because of lack of good price information they are deflated for rather wide commodity groups." Despite the sophistication of the method the price data are described as "rather scanty".⁸⁷

A perhaps slightly surprising feature of the reports in the period from 1982 onwards including the 1985/86 report is an occurrence of small miscalculations, a range of smaller and larger unmentioned revisions. The existence and preponderance of these mistakes is an indication of how 'provisional' the estimates can be and gives force to the earlier warnings about not attaching too much importance to individual figures. This period is also characterised by constant modifications in the treatment of the diamond prices, depreciation methods, accounting for the financial sector and decisions of which activities to be included or excluded in the mining sector.

The first change in the method of depreciation was made in the 1982/83 report. Previously book value of depreciation was used. It was now changed to be based on previous fixed capital

⁸⁶ *National Accounts of Botswana 1981/82: 4.*

⁸⁷ *National Accounts of Botswana 1981/82: 4.*

formation.⁸⁸ This means that the number was revised backwards to 1973/74. In 1984/85 came the second change in the calculation of consumption of fixed capital. The calculation was still based on a straight line basis with reference to the expected economic lifetime of the individual assets. The old procedure took account of the original cost of the asset over its expected economic lifetime. The new method uses the estimated replacement cost of the asset. The revised estimates of fixed capital have resulted in changes to some of the other important National Accounts aggregates, and specifically in value added in General Government since the latter is derived from costs. The finance sector was also revised downwards in 1984/85, with effects back to 1979/80. The size of the revision increased with time. At the largest P40 million was subtracted from this sector. The change was in the method used for calculation of imputed bank service charges.⁸⁹

Meanwhile GDP by activity at current and constant prices was revised upwards. There was an increase of 10 to 20 percent in Central Government and in Agriculture. This revision means that GDP per capita increases by P20, with a marked acceleration at 1978/79 estimate, a growth that was a result of a change in statistical method. The increase could be traced to the traditional agriculture and sales of cattle. This change went without specific mention, and also without revising the data on the national herd that document off-take of cattle.

It is repeated in the 1981/1982 report that the series on the cattle herd up to 1972 is not compatible with the 1972-79 series. The former was based on veterinary counts. The latter is the result of baseline sample surveys conducted by the CSO. The results from the surveys are tied together by assuming an annual rate of net natural increase of 16 percent for all years in between. The figures should be regarded as approximation. The estimate from the 1981 Agricultural Survey has a coefficient of variation of 6.7 percent. In 1981/82 it was noted without further comment that “the benchmark for informal economy data is still the RIDS from 1974/75”.⁹⁰ As noted, two years earlier the office was more alarmed about this. By the end of this accounting period it is just noted that the benchmark input data for traditional agriculture “is taken from RIDS, now 10 years old”.⁹¹

Agriculture was further revised 3 million upwards in the tables for 1982/83, without any mention. This change can be traced to an upward revision of the non-marketed GDP for traditional agriculture for the same year. That increase in turn, was a result of a downward revision of the earlier estimate of livestock reduction that year. ‘Other’ off take was revised downwards.

In the 1983/84 report the method of valuing diamond stocks was changed compared to previous final National Accounts reports. The revision involved the elimination of inconsistencies in the valuation of changes in diamond stock at current and constant prices as well as the

⁸⁸ *National Accounts of Botswana 1982/83*: 2.

⁸⁹ *National Accounts of Botswana 1984/85*: 4.

⁹⁰ *National Accounts of Botswana 1981/82*: 5.

⁹¹ *National Accounts of Botswana 1985/86*: 6.

elimination of inconsistencies in the valuation of diamond stocks as part of production (value added) and gross capital formation. The change in diamonds stocks is valued at cost per carat. As part of this revision the diamond exports figures have been changed. From the 1983/84 report the price index of diamond sales were used to deflate diamond exports. Previously the price index on diamond production was used to deflate diamond exports. This revision of the contribution of the diamond sector was manifested by a reduction in value added from 1979/80 by P10 million, except for 1982/83 where there is a slight increase.

Botswana National Accounts Estimates: 1986/1987 – 1994/95

The 1986/87 report's estimate incorporated the 1985/86 Household Income and Expenditure Survey, 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 the years as far back as 1974/75. Most importantly here was a transfer of the diamond trade and sorting from the trade and business sectors respectively to mining, as well as the revaluation of stocks (from cost to market prices).

Informal activities were revised to incorporate the results of the 1985/86 Household and Expenditure Survey (HIES). The HIES provided information on two informal activities that were not previously included in the National Accounts: business services (the renting out of property) and informal retail trade. Meanwhile the level of construction output was reportedly increased in line with the demand for construction.⁹² In the new series the trade sector rose from P319.9 million to P384, an increase of 20.1 percent. Without duties the increase was 9.8 percent. Compared to the old series the mineral trading, as mentioned above, was now 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 have been significantly changed compared to the previous series.

The agricultural sector was revised upwards without specific mention. In the accounts the change could be traced to 'other production marketed' which was increased from estimates below P1 million to P5 million. In 1984/85 P8 million was added to the original estimate of 2 million. From 1978/79 – 1984/85 the estimates of production for own use was increased for each year by 10, 12, 15, 15, 15, 17 and 22 million respectively. Meanwhile, intermediate consumption was revised downwards for 1980s onwards and by as much as P5 million 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

⁹² *National Accounts of Botswana 1986/87: 2.*

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 in a footnote as “The most important item is milk, followed by crops and meat from deceased animals”.⁹³ In the 1987/1988 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. “Some sectors and types of expenditures have been adjusted in order to balance supply and demand”.⁹⁴

According to the CSO the report containing the 1991/1992 and 1992/1993 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 till 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 up 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 further one in 1993/94 and the estimates of the traditional sector was interpolated between the two HIES. The CPD was in this period complemented by a yearly Census of Manufacturing and Construction. South African price data were still used in the preparation of constant price and some of the current data. The constant price data still used 1985/1986 as the base year through the 1990s, while in 2000 a new constant price series based on 1993/94 prices, was published, covering the period back to 1974/95.⁹⁵

⁹³ *National Accounts of Botswana 1986/87*: Table 3.1.2:44.

⁹⁴ *National Accounts of Botswana 1987/88*: 3.

⁹⁵ *National accounts statistics of Botswana, 1974/75-1994/95*.

History of National Accounting in Kenya

The history of national accounting in Kenya is different in that it is longer than in the other countries. Because the emphasis is on the post-colonial period the early history of national accounting in Kenya will only be touched upon briefly. Considering that Kenya and its Central Bureau of Statistics has such a long tradition of reporting, it is surprising that there is a relative scarcity in methodology description. There have not been regular publications of specific national account reports in Kenya, as has been done in Botswana and Tanzania. Nor has there been the irregular reporting as in Zambia. The national accounts statistics have been published without methodology commentary in the annual *Statistical Abstract*, and with the occasional accounting note in the yearly *Economic Survey*. Without the national accounts reports that have been available in the other countries there is less source material to use.

In 1977 the Kenya Central Bureau of Statistics (CBS) published *Sources and Methods used for the National Accounts of Kenya*. This book provides rich material for the present study, almost compensating for the shortcoming of the lack of regular detailed reporting; however the chronological perspective on the national accounting 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 post-colonial Kenya.⁹⁶ The following discussion will be mainly based on this book, while Economic Surveys, Statistical Abstracts and other publications have been consulted for additional information.

Although lacking in regular reporting, the Nairobi-based national accountants do give the most poetic introduction to the domestic product. “It is possible to use a number of criteria in order to assess the progress of the economy, but the usual measure of the rate of economic development is the estimate of Gross Domestic Product. Estimates of domestic product are not, however, among those statistics which are a definite measure to which there can be only one precise measure comparable to the number to the number of oranges in a bag. It is in fact an aggregation of numerous data which vary substantially in order of precision”.⁹⁷ How this precision varies, and especially how the precision compares to other countries’ accounts is the subject of this analysis.

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 organisations. “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

⁹⁶ In interview with Collins M. Omondi, Statistician, Central Bureau of Statistics, Kenya (April 2007, Nairobi).

⁹⁷ Kenya, *Economic Survey* 1967: 2.

sectors". The estimates did not cover any of the 'non-monetary' economy except for a "weak estimate" of 'subsistence' production in agriculture.⁹⁸ There was no change in the use of methodology or sources in the following decade.

The first major revision in the estimation of national accounts came in 1957. The quality of this series was considered better since there were better basic data available. Nevertheless the gross output figures for agriculture and quarrying and the information on the ownership and distribution of dwellings were still weak. The efforts to include activities for the non-monetary 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. There was a report on the methods and sources published and the methodology remained essentially unchanged through the years 1954-1966.⁹⁹

The second major revision came in 1967. It also made use of some further data, and attempted a more comprehensive coverage of the non-monetary 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".¹⁰⁰

Until 1969 there were no estimates at constant prices. In that year they were introduced with 1964 as base year for the series. This third series (the first was for 1946-54 and the second covered 1954-1966) was continued until 1974 when the third major revision was undertaken. As mentioned, there was no report on methods was ever published for the 1964-1974 series. The fourth series was introduced in 1976, but backdated to 1972, which was also the base year for the estimates in constant prices.

In the *Economic Survey* 1967 some details are given on the second major revision. It was revised 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".¹⁰¹ It sensibly says that "[s]ome 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".¹⁰² It was, therefore deemed necessary to undertake a complete revision of the methods of estimating and aggregating different sectors and to publish a completely new set of revised figures. The new series covered the years 1963-66. In the survey the new series was presented alongside the old and the revised calculations were noticeably different

⁹⁸ *Sources and Methods used for the National Accounts of Kenya*: 130.

⁹⁹ *Domestic Income and Product in Kenya (A description of Sources and Methods with Revised Calculations from 1954 to 1958)*, East African Statistical Department, Nairobi, (1959).

¹⁰⁰ *Sources and Methods used for the National Accounts of Kenya*: 132.

¹⁰¹ *Kenya, Economic Survey* 1967: 3.

¹⁰² *Kenya, Economic Survey* 1967: 3.

from the old ones. First, as mentioned above, new economic data were incorporated. Second, numerous changes were made in the classification and sub-classification of enterprises in order to provide greater consistency in this and a more accurate assessment of the size of particular sectors. It involved splitting a number of organizations like the 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 non-monetary sector. Finally, there was an effort made to introduce greater consistency in methods and make classifications cohere with international standards. The survey further 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”.¹⁰³ However, such (a) document(s) was never produced. The new estimates claimed a better estimation of the size of the economy. This meant an upward revision from K£33 to K£38 per capita income for 1966.

In the following a description of the methods entailed in the fourth revision will be given. Elements of statistical growth, upward and downward revision as compared to past series will only be detected as far as they are assessed in *Methods and Sources*. If the source material does not allow a full comparative study over time, there is at least the possibility of comparing over space. The methodology will be discussed by first focussing on the agricultural sector estimates, the relevant issues in estimates of the other sectors, before the deflation method and the official view on reliability of the data is reviewed.

Kenya National Account Estimates: Agriculture and the ‘non-monetary’ sector

The estimate of agricultural output is based on an annual Integrated Rural Survey (IRS) and an annual Census of Large Farms. The former covers farms up to 20 hectares. The latter covers what referred to as the “former scheduled areas”. This sampling frame is a remnant of the colonial system and essentially covers the area then occupied by white-owned large farms. Farms that were not covered by these surveys were called “gap farms”. These are estimated to number 40 thousand (as compared to 1.4 million total IRS covered farms). The output data for these farms are made using the output estimated in “large IRS farms” 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.¹⁰⁴

It is peculiar to the Kenyan system that while there is a separate account for the ‘traditional’ economy, this account does not include food production. Food production for home consumption

¹⁰³ *Sources and Methods used for the National Accounts of Kenya*: 3.

¹⁰⁴ *Sources and Methods*: 17-18.

was formerly included in the ‘traditional’ economy, but has been excluded from 1977 onwards and moved to be a part of the agricultural sector proper.¹⁰⁵ According to the estimates about 40 percent of the output on the IRS farms was consumed at home. Since the majority of the output was now 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”.¹⁰⁶ Since 1977 the traditional sector consists of hut building and ownership, water collection, firewood collection, collection of poles and post and fishing for own consumption. The guideline for including a ‘non-monetary’ activity in the national accounts is that the activity corresponds to some activity undertaken in the commercial economy. Theoretically this would hinder a misleadingly high estimate of economic growth as activities move from the non-monetary to the monetary sector.¹⁰⁷ Though in practice this is not likely to hold, as the static estimation methods would not take account of the declining absolute importance of the non-monetary economy.

For the agricultural sector in Kenya an unusually large addition for land improvement was made and ‘immature permanent crops’, which means planting of tea and coffee. The respective product boards provide an approximation of such expenditure per acre, which are then aggregated. For land improvement an approximate estimate was made of the hours used for such work, which was grossed up, and valued according to the hourly wage rate of casual labour.¹⁰⁸ Information on production of cereals, wheat, maize, barley and rice paddy is taken from the respective marketing boards. Other cereals and pulses are handled by the Maize and Produce Board. In addition information on ‘temporary industrial crops’, specifically pineapples, oil seeds, pyrethrum, sugar cane, cotton and tobacco are taken from the industrial users of the products. Information on cotton and tobacco is collected from the respective marketing boards. The permanent crops for which data are collected are coffee, sisal, tea and wattle for which special marketing boards operate, while coconuts and cashew nuts are handled by the maize and produce board. The data on quantities and values derived from these sources are “highly reliable” through the recorded purchases made.¹⁰⁹

In addition allowances were made for produce sold on local markets, home consumed, fed to livestock, given to labour and finally for home grown seeds. The quantities of this produce is based on information is taken from the Census and Surveys referred to above. There is no indication of the proportion of the produce that is valued in this way. It is valued at the same prevailing market

¹⁰⁵ *Sources and Methods*: 12.

¹⁰⁶ *Sources and Methods*: 18.

¹⁰⁷ *Sources and Methods*: 12.

¹⁰⁸ *Sources and Methods*: 20.

¹⁰⁹ *Sources and Methods*: 18.

prices as the other produce; this is certainly an overestimation, as an element of transport and distribution costs are included in those prices.¹¹⁰

For value added deriving from livestock, the registered sales to marketing boards and factories are added to estimates of locally sold, own consumed and given to labour. In addition there is a contribution to GDP from livestock products; especially eggs, milk, hides and wool which are partly consumed at the place of production, and partly sold locally or to marketing boards. The increase in herds is divided into mature and immature livestock and contributes to capital formation. Nomadic tribes are not covered by either of the Census or the Survey, and information here is calculated as a residual by deducting all other contributions from an assumed national total of livestock and its produce is valued at the prices fetched at the Meat Commission and the dairy.¹¹¹

A sophisticated and comprehensive estimate of intermediate consumption is made where provisions are made for the use of fertilizers, veterinary services, fuel, power, spares, bags, manufactured feed, seeds, office expenses, small implements, marketing, research, artificial insemination, aerial spraying, tractor services and other transport costs. According to the handbook this information is compiled annually, while that for insurance and 'other (twine etc.)' are projected forward from a base-year estimation. In addition surveys on employees and self-employed gives estimates on labour cost. For small farms the contribution of labour is a part of the operating surplus.¹¹²

For hunting "no reliable information exists" and therefore "guesstimates are resorted to".¹¹³ The value of output is taken to be equal to the value of ivory exports plus the cost of issued hunting licenses. For forestry the data from the Forestry Department supplies data on its own planting and royalty incomes from private loggers were used. Data on private logging were obtained from the licensed operators, and based on a 1967 survey on logging outside the forestry reserves the amount is grossed up assuming proportional activity. The use of charcoal is based on estimated quantities per household from the 1969 population census assuming 3.3 percent population growth in rural areas and 8.9 percent in urban areas. The prices are obtained using the Index of Consumer prices. Posts and poles are estimated at 9 percent of 'hut-building'. For firewood collection 42 working days per year per household are assumed and valued at the rate of casual female labour.¹¹⁴

The Fishing department provides estimates on catches in inland waters and at sea. For home consumption 10 percent of the monetary economy is chosen. Costs of boats, diesel, nets and other

¹¹⁰ *Sources and Methods*: 19.

¹¹¹ *Sources and Methods*: 21.

¹¹² *Sources and Methods*: 24-25.

¹¹³ *Sources and Methods*: 28.

¹¹⁴ *Sources and Methods*: 30.

equipment are subtracted (the costs of boats are assumed to increase with the cost of imported paint).¹¹⁵

Kenya National Account Estimates: The other Sectors

Mining contributes less than 1 percent of the economy, and of this 30 percent was quarrying, while the remainder was oil prospecting. Information on manufacturing was gathered in the 1972 Census of Industry. This Census covered all industrial establishments with 5 or more employees in urban areas and all 'large establishments'. 25 percent of smaller urban establishments were sampled. The directory of the establishments includes all registered companies with a postal address or a telephone. This information is updated annually with a survey covering all establishments with 50 or more employees and 25 percent of the firms employing 20 to 49. For the smaller enterprises the same growth is assumed as in the 25 percent sample. In addition information is gathered from the public enterprises in the sector.¹¹⁶

Rural non-beer production was surveyed in 1972 (valued at 1 percent of total manufacturing) and is assumed to grow in proportion with the rest of the sector. Beer production was estimated based on a 1963 household survey that found that the average spending on traditional alcoholic beverages per household was 10 shillings per week. This amount was multiplied by number of households, and 25 percent subtracted as intermediate consumption.¹¹⁷

The 1972 Census also covered all enterprises in construction and building with 5 or more employees and 25 percent of smaller enterprises. Each year the information is updated in the exact same fashion as for manufacturing. In the traditional economy 'hut-building' was covered in an enquiry in 1966, and it is assumed that this follows rural population growth (3.3 percent), with an assumed replacement ratio of 5-8 percent depending on the district. For Electricity and Water all necessary information was provided by the two responsible companies. For rural household an estimate of women's hours per household spent drawing water per year was used. Its opportunity cost was valued according to the wage rate for casual female labour. Meanwhile "in pastoral areas no alternative employment is thought to exist".¹¹⁸

The private urban distribution and retail trade is estimated based on the total imports and exports; the total production in manufacturing less that handled by public corporations, and the total agricultural output less that handled by the marketing boards. Total output is estimated using a base year ration of value added to output. The records of public corporations and marketing boards are

¹¹⁵ *Sources and Methods*: 36.

¹¹⁶ *Sources and Methods*: 38 – 41.

¹¹⁷ *Sources and Methods*: 43.

¹¹⁸ *Sources and Methods*: 59.

available, and companies in the distribution of petroleum are contacted annually. Urban hotels and restaurants and larger rural establishments were surveyed in a 1975 Survey of Services. Growth is assumed following the base year ratios based on the recorded annual wage bill. The rural small-scale establishments were covered by a 1972 survey and value added is assumed to grow with output of the small farms.¹¹⁹

The transport and communications sector consists of large public operators for which data were ready available. For urban transport and private freight transport by road companies with 20 or more employees are surveyed annually assuming certain ratios of employees per registered vehicle. Output of un-surveyed operators (but registered) is estimated assuming proportionality. For banking and other financial services available records are used. The estimates in the real estate sector are considered weaker since these transactions are frequently done by private persons. For smaller services data from the annual survey of employees and self-employed persons were used. In rural areas services growth is assumed to be two thirds of the growth in urban areas. Ownership of dwellings contributed some 6 percent to GDP. Here 'modern' dwellings are valued according to the official registry, and the value of rural huts and the imputed rent of these are estimated using similar assumption as in the construction sector.¹²⁰

Kenya National Account Estimates: Deflation and Summary Conclusions

For deflation different methods are used from sector to sector. For water and electricity physical indicators are used. For the broad service sectors including government the wage index is used. In manufacturing a physical indicator of output is used collecting 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 made for input and output for the three types of farms. Rather than deflating commodity per commodity, a weighted contribution for each product to total sales is used.

In the *Sources and Methods* a table depicting the reliability of the estimates levels per sector was made.¹²¹ The estimates vary from being considered as accurate as +/- 40 percent for the traditional economy, +/- 10 percent for agriculture and manufacture, while the 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 decades to come. In the Economic Survey of 1982, it was noted that it "is becoming increasingly obvious from enquiries

¹¹⁹ *Sources and Methods*: 61.

¹²⁰ *Sources and Methods*: 78.

¹²¹ *Sources and Methods*: 192.

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”.¹²² A footnote in the same survey identified transport and communications and finance insurance, real estate and business services as being potential subjects for upward revision. It added that as further data become available it would “probably show that the agricultural sector is also one in which substantial upward revision may be necessary”.¹²³

Based on information in the Economic Survey 1988 and 1989 it is clear that the surveying of agriculture proceeded in the same fashion as described above.¹²⁴ The Agricultural Productions Survey instituted in 1986/1987 provided supplementary information, and in 1988 a new Rural Household Survey was conducted. In 1981/82 a rural household budget survey was conducted covering 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.

¹²² Kenya, *Economic Survey 1982*: 4.

¹²³ Kenya, *Economic Survey 1982*: 6.

¹²⁴ Kenya, *Economic Survey 1988*: 2 and Kenya, *Economic Survey 1989*:2.

History of National Accounting in Tanzania

The first published series of Tanganyika Gross Domestic Product was prepared in 1955 for the Royal Commission of East Africa.¹²⁵ The Tanganyika Unit of the East African Statistical Department continued the series using more or less the same methodology. 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. The latter estimates were based on a combination of production and income approaches. 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. 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*, *1966-1972*, *1966-74*, *1966-1976*, *1966-1980* and *1970-1982*.

Between 1980 and 1985 Bureau of Statistics again with the assistance of a National Accounts Expert made available through the UN embarked on a detailed and comprehensive revision of the national accounts series with the aim of changing the base year from 1966 to 1976. The results of this exercise can be found in the following publications: *National accounts of Tanzania 1976-1984 : sources and methods*, *National Accounts of Tanzania 1976-1984*, *1976-1986*, *1976-1987*, *1976-1988*, *1976-1989* and *1988-2001*.

The introduction of a new base year and the accompanying revisions of 1992 onwards offer the third natural distinct period for this history of accounting. This study of Tanzanian national accounting methods will make use of the different documents as referred to above and consult some additional documents prepared by international agencies that gave Tanzania technical assistance at various points in this period. The study will start with the first estimate of national accounts made after independence.

Tanzania National Accounts Estimates: 1964 – 1976

The first national accounts prepared by the Central Bureau of Statistics (CBS) was the 1966-68 report, published as a “revised series” with reference to the methodology in the 1960-62 estimates. The accounts were corresponding to SNA (1952) regulations with an exception of Automobile repairs which were not considered services, but rather added to manufacturing. “This is the only recommendation of the SNA that is not adopted”.¹²⁶ The 1974 report further conceded that the data

¹²⁵ In addition a study was undertaken by Peacock and Dosser published as *The National Income of Tanganyika, 1952-1954* (1958).

¹²⁶ *Sources and Methods 1966-68*: 2.

were not completely in accord with the then revised SNA (1968). “The tables on GDP in this report are on the factor cost concept (i.e. excluding indirect taxes net of subsidies) and not at the producers’ value as derived in the revised SNA which include the indirect taxes net of subsidies”.¹²⁷ It had not been possible to distribute indirect taxes by sector, a common deficiency across national accounts in the region. It should be emphasised that the estimates presented in all these reports relate only to mainland Tanzania and not Zanzibar. The product method was used for estimating agriculture, mining and manufacturing, while for the remaining industries the income method was used. In the case of public administration wages were taken as the contribution to domestic product. The 1964-70 estimates were made with the exact same data sources and methodology as in the 1966-68 estimates, 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 (HBS) 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” an UN report commented, and continued that “the system follows the SNA closely, it has been developed and substantially meets the needs of the Ministries”¹²⁸ The 1964-1970 series was considered final and a report from the UN remarked that “the work as realized is considered one of the best actually done for African countries”.¹²⁹ The problem of the series is not the method, but the availability and reliability of the basic data. This refers particularly to agriculture, small-scale industries, transport and internal trade. A census of agriculture might improve the coverage: “however, 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”.¹³⁰

The CBS acknowledged that despite the importance of agriculture to the national economy, “the available information on crop acreage, output etc. is very meagre”, except in the case of the export crops.¹³¹ The crops grown primarily for export purposes are marketed and therefore fairly reliable and comprehensive statistics relating to them do exist. The remaining crops, which are by and large grown for ‘subsistence’ consumption, “only inadequate and somewhat unreliable statistics are available”.¹³² The main source of information for latter crops were available through the Ministry of Agriculture (KILIMO), while from the National Agricultural Products Board (NAPB) data on volumes purchased at the prices set by NAPB were available on the crops handled by the board.

¹²⁷ *National Accounts of Tanzania 1966-74*: 1.

¹²⁸ UNDP (1975), *Statistics (National Accounts) Tanzania – Project Findings and Recommendations* : 4.

¹²⁹ UNDP (1975), *Statistics (National Accounts) Tanzania – Project Findings and Recommendations* : 5.

¹³⁰ UNDP (1975), *Statistics (National Accounts) Tanzania – Project Findings and Recommendations* : 6.

¹³¹ *National Accounts of Tanzania 1966-68 Sources and Methods*: 2.

¹³² *Sources and Methods 1966-68*: 2.

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 are also similarly compiled from the periodic crop reports of the Regional and District Agricultural Officers and these are “mainly based on eye observations and market reports”.¹³³

For non-export crops no direct data on production are available. The reported data have 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”.¹³⁴ For some crops like maize, rice, beans, cassava, and fruits and vegetables alternative estimates of production were built up on the basis of data obtained through preliminary results from the scheduled Household Budget Survey (HBS).¹³⁵ The survey was based on a sample of 824 households spread throughout the country and these results were preferred to corresponding KILIMO estimates which were believed to be considerable under-estimates even according to NAPB estimates.¹³⁶

The basic method of estimating the net output was to evaluate the total output, including ‘subsistence’ production, at prices received by the producers (at regional level to the extent possible) and then it was allowed for the cost of production incurred by them. In the case of some export crops, it was found easier to use the total export value derived from the statistics compiled by the respective marketing board or association. For most other crops estimates of production at regional level were compiled by KILIMO “with certain corrections and improvements found necessary as a result of the close scrutiny”. Prices paid to growers of such non-export crops compiled by the NBS formed the basis for the estimates.¹³⁷

In the case of export crops such as sisal, tea and sugarcane both agricultural and manufacturing activities are undertaken by the same establishment and it was therefore desirable to distinguish between the two activities. Thus, the production of tea up to the stage of raw tea leaf has been considered as an agricultural activity, while processing of raw tea-leaf into manufactured tea, and packing etc., have been classified as manufacturing. Similarly, production of sugarcane is considered under agriculture and sugar production under manufacturing. In the case of sisal however, it was not possible to separate the two activities, so the production up to the stage of sisal fibre, which should have been considered manufacturing, was included entirely under agriculture.¹³⁸

¹³³ *Sources and Methods 1966-68: 3.*

¹³⁴ *Sources and Methods 1966-68: 3.*

¹³⁵ It was undertaken in 1969.

¹³⁶ *Sources and Methods 1966-68: 3.*

¹³⁷ *Sources and Methods 1966-68: 4.*

¹³⁸ *Sources and Methods 1966-68: 4.*

Production figures for sisal were regularly available from the monthly returns of Tanganyika Sisal Marketing Boards as well as the annual reports of the Tanganyika Sisal Growers' Association. The average F.O.B. export price was used after making allowances for marketing expenses. Costs of production of sisal fibres were collected from seven large sisal estates.¹³⁹

Cotton is a peasant crop in Tanzania, marketed through Lint and Seed Marketing Board in two quality grades, prices for which are fixed in advance of the season. Expenses were estimated to amount to 15 percent of output based on data from 7 cotton growing areas. The value added deriving from the marketing board was accounted under trading and not agriculture. Coffee is marketed through four agencies affiliated with the Tanzania Coffee Board. The subsistence production of coffee was placed at about 2950 tons in compliance with the International Coffee Organisation.¹⁴⁰ Tea is an estate crop and only 3 percent is grown by peasants. All tea passes through the Tanganyika Tea Board which handles both exports and domestic sales. The net output is estimated from the value of the total production making allowances for marketing and production costs, based on 8 representative estates. All tobacco goes through Tanganyika Marketing Board; the costs are estimated to a total of 12.8 percent based on case studies of four estates. Pyrethrum is mainly a peasant crop, but is exported, and the data were collected from the respective marketing board.¹⁴¹ The East African Community gave reliable estimates of the quantity of sugar produced each year. The bulk is converted into sugar while a portion is consumed in other ways. For this consumption only rough estimation has been possible. "For chewing KILIMO gave a figure of 11.000 tonnes for one year in respect of six regions. In consultation with KILIMO, a figure of 40.000 tons for sugarcane consumed as such has been considered reasonable".¹⁴² Price data were collected from the two major producers. The National Agricultural Products Board (NAPB) handles the bulk of the cashew nuts, which is entirely a peasant crop. A portion of the crop comes through other channels. The subsistence consumption has rather arbitrarily been placed at about 4000 tons and 4200 tonnes in 1967 and 1978 respectively. Costs for production and depreciation have been set to 4 and 1 percent respectively on the basis of data obtained from some of the farm studies. The KILIMO data on the food crops maize, rice, sorghum, beans, cassava, sweet potatoes, coconuts and fruits and vegetables were reportedly considered to be gross underestimates. The HBS data were preferred as the baseline estimate while the growth rates from the 1967 baseline estimates have been made on the basis of the same discarded KILIMO series.¹⁴³

The availability of data on livestock population is considered the poorest part of the agriculture estimates. KILIMO estimated that the herd increased from 8.5 million to 11.1 million

¹³⁹ *Sources and Methods* 1966-68: 4.

¹⁴⁰ *Sources and Methods* 1966-68: 5.

¹⁴¹ *Sources and Methods* 1966-68: 6.

¹⁴² *Sources and Methods* 1966-68: 6.

¹⁴³ *Sources and Methods* 1966-68: 7.

between 1963 and 1967. For goats and sheep the herd was considered stable at 4.4 and 2.8 million respectively. “These estimates cannot be considered quite reliable”.¹⁴⁴ In the absence of other information they were accepted and included in the accounts. As regards milk production KILIMO assumes the ratio of cows being 44 percent, compared to 40 percent in the 1964 census of commercial farming. The proportion of cows giving milk was assumed to be 37.5 percent, compared to a 1964 estimate of 33.3 percent. The quantity of marketed milk was taken to be 20 percent. All milk was evaluated at the average price paid for milk by factories. The production cost for livestock was set at 15 percent “on the basis of discussion with some farmers”.¹⁴⁵ Meat for subsistence was considered to grow in proportion with the population.

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”.¹⁴⁶ For this sector FAO estimates were used because the recorded production only accounted for a very small proportion of total production. The growth rate of the rural population was assumed to be proportional with the growth in the sector. Wattle bark production from two factories was added to this sector estimate. On honey data on exports and the KILIMO data did not match. In 1966 the marketed production estimate fell short of the amount exported, while in the two years after that the marketed production was higher than the exports. A figure in slight excess of both were chosen, and assumed to grow with population. Costs were taken at 10 and 2 percent for production and depreciation respectively.¹⁴⁷ For fishery fairly good data are collected. Five sixths of the catch was made in lake fishing. These catch data are adjusted upwards to account for other collection of products and fishing by non-professionals. The adjustment is rather arbitrary in the absence of any basic data. The costs are made on estimates of prices of different kind of boats and seemed quite detailed. Curing of fish was assumed to constitute 7.3 percent of total production. For the estimation of hunting the data on official hunting incomes are multiplied by 5.¹⁴⁸

For mining reliable and comprehensive data are available. 95 percent of the diamond production is done by a parastatal. There were two salt mines in the country for which data were available from the parastatal companies.¹⁴⁹

The manufacturing sector was considered in two subgroups. The ones with 5 or fewer employees were considered household and cottage industries. A Survey of Industrial Production of 1966 gave the basic data, intended to cover all establishments employing 10 or more. However the

¹⁴⁴ *Sources and Methods 1966-68*: 14.

¹⁴⁵ *Sources and Methods 1966-68*: 19.

¹⁴⁶ *Sources and Methods 1966-68*: 20.

¹⁴⁷ *Sources and Methods 1966-68*: 23.

¹⁴⁸ *Sources and Methods 1966-68*: 26.

¹⁴⁹ *Sources and Methods 1966-68*: 28.

response rate “was very poor”.¹⁵⁰ Thus, the first task was agree on and appropriately mark-up to account for the non-respondents and the second task to account for those enterprises with more than 5 but less than 10 employees. The extent of the mark-up was supplied by the ‘Employment and Earnings and Survey’. It was found there that establishments that employ 5-9 persons account for about 7.3 percent of the total employment and 5.5 percent of the earnings of those employing 10 or more people. This formed the basis of the 1966 base year estimate, the next problem was to derive similar or comparable estimated for 1967 and 1968 in absence of relevant surveys. Data from the Industries Division of Bureau of Statistics maintain the statistics of annual production (quantities only) of a number of selected important commodities (such as canned meat, wheat flour, beer, cigarettes, textiles, paints and cement). These data were supplemented by data from agriculture: where agricultural commodities were used as inputs for manufacturing the agricultural data were used as production indicators. Where neither kind of data were available the employment or earnings survey was used. For the estimation of growth weights from the baseline estimate were used, so production of other products not covered were assumed to grow proportionally in production. The estimates were then all made at 1966 prices, and “the estimates at current prices have been obtained by superimposing the effect of price fluctuations”.¹⁵¹

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”.¹⁵² The population census of 1967 and some case studies were used to estimate how many people were engaged in these activities and this number was multiplied by the average earnings obtained in the same survey. This benchmark estimate was then adjusted for quantity and price changes. With no data on quantity changes this had to be estimated indirectly through agricultural output, manufacturing output and population growth with the weight of manufacturing being half of the two others. For price changes a retail price index for Dar es Salaam was used.

For electricity data come from the state supplier TANESCO while own generation of electricity was included in the sector to which the establishment concerned belong. Data for output in water supply were taken from government accounts relating to such expenditures. Data for construction were taken from public companies, while the account for own-construction was based on surveys. The CBS stated that “Only very scanty data are available on trade”.¹⁵³ Data from parastatal trading companies were directly available while non-parastatals were surveyed in the earnings and employment survey. 800 were contacted, but only 200 replied. This compared to an estimated 2000 establishments in this sector and the contribution was marked up accordingly. For

¹⁵⁰ *Sources and Methods 1966-68*: 32.

¹⁵¹ *Sources and Methods 1966-68*: 34.

¹⁵² *Sources and Methods 1966-68*: 37.

¹⁵³ *Sources and Methods 1966-68*: 43.

smaller enterprises the estimation is less reliable. Different sources were used from other sectors for establishing a mark up etc. The data were however “not comprehensive enough to build up independent estimates for each year, so the same margin has been used for each year”.¹⁵⁴ For Hotels and Restaurants the data was calculated from the 1967 census for the non-parastatals, with the estimated employment numbers were multiplied with average wage. Fairly detailed and reliable statistics did exist in respect of communications, air transport, railway, transport and harbour activities. However, complications did arise because such statistics were normally maintained for Tanzania, Kenya and Uganda as a whole. “The corporations keep activities in all countries and do their best to live up to the national accounts requirements. The remaining activities are covered by meagre data, and only rough estimates can be made.” This referred to the data on road transport where an estimate of operators were obtained from the population census and compared with the number of licensed vehicles. This number was again multiplied by wage data.¹⁵⁵

In deriving the constant price estimates, according to the CBS, current year quantities of production of individual commodities and services were evaluated at base year prices wherever possible. In the other cases ad-ho quantity indices or price indices were built up and used as deflators. With respect to activities such as transport, communications, electricity generation, trade, and health and education as far as possible indicators of physical work done such as passenger miles, freight ton miles, letter handled, parcels handled, telegrams sent, telephones in use, quantum of electricity generated, quantum of commodities handled by trade, number of patients treated, students trained, number of teachers etc. were utilised. In respect of public administration and defence the effect of salary and wage adjustment (relative to 1966 levels) on the total wage bill was been estimated on the basis of material contained in the budget documents and allowed for. In the case of miscellaneous personal services and rental value of dwelling the retail price indices of goods consumed by wage earners in Dar es Salaam National CPI were used as deflators in the absence of anything better. Government services were not deflated as it was not considered necessary. Government value added is accounted for as compensation to employers, and there was no wage increase during 1966-1968.¹⁵⁶

The reliability of the estimates was considered in a separate section. It was thought that about one third of the GDP consisted of exports, mining, manufacture, electricity and water provision, parastatal trade and transport, finance and the 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 also thought to contribute a third of GDP, with a 10 percent error margin. The final third of

¹⁵⁴ *Sources and Methods 1966-68*: 49.

¹⁵⁵ *Sources and Methods 1966-68*: 52.

¹⁵⁶ *Sources and Methods 1966-68*: 111-115.

the GDP estimate, containing food, livestock, handicrafts and very small-scale trade and services “should be considered very rough.”¹⁵⁷

The first national account series at constant prices had 1966 as the base year and that series was expanded as far as to 1982. The structure of the economy and relative price-level of different groups of commodities and even the wage level had all significantly changed since 1966. In 1975 a UN report stated “it would be desirable to shift the base year to a more recent period to reflect the changes in real terms more faithfully. The year 1971 or 1972 might have been appropriate but for the fact that there have been significant fluctuations in 1973 and 1974 both in production and price-level, rendering 1971 or 1972 already out of date for the purpose in view. Perhaps a relatively stable year subsequent to 1974 will be preferable. In any case, the matter has to be examined further and a suitable year decided upon later”.¹⁵⁸ It was later decided to use 1976 as the new base year.

Tanzania National Accounts Estimates: 1976 – 1992

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”.¹⁵⁹ The new estimates were based on the data collected for the HBS, 1976-77, Input-Output Table of Tanzania Mainland 1976, Population Census 1978, Industrial Census 1978 and Analysis of Parastatal Enterprises, 1972-1982.

The first report in the new series covered 1976 to 1984. Already in the 1985 report there were some changes. The data on agriculture was revised “after careful re-examination” and from this report onwards the estimates for manufacturing were made using quantity indices.¹⁶⁰ The 1986 report revised the estimates from 1983 onwards. Curiously, an examination of the tables shows that only the aggregates were changed, so summing up by industry the total would be smaller. 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 (published annually to 1994).

In these accounts estimates for agriculture were compiled for 40 agricultural products, 15 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, dry peas, lentils and other pulses and yoghurt were available through the

¹⁵⁷ *Sources and Methods* 1966-68: 118.

¹⁵⁸ UNDP, *Statistics (National Accounts) Tanzania – Project Findings and Recommendations* : 9.

¹⁵⁹ *National accounts of Tanzania 1976-1984 : Sources and Methods*: 1.

¹⁶⁰ *National Accounts of Tanzania 1976-85*: 2.

HBS for 1976-77. For the other years consumption was assumed to grow with the rural population assumed at 2.825 percent. The products that are mainly consumed in the monetary sector were estimated using different methods. The quantity of consumption of mature coconuts for other years was adjusted on the basis of changes in the quantities of copra.¹⁶¹ The growth rate of vegetables, chicken and other poultry was based on the quantities of consumption in the HBS data while indicators for cattle meat, sheep and goat meat and pork relate to the number of livestock slaughtered, according to records from abattoirs.

Consumption in the 'subsistence' sector was measured at producer prices, which are estimated from the retail prices of goods consumed by urban dwellers. Retail prices are available for sweet potatoes, cooking bananas, ripe bananas, oranges, pawpaw, tomato, cabbage, onion, coconut, meat with bones and meat without bones. With these data price indexes were produced for vegetables and fruits. The producer prices of meat were based on the average price at public markets. An under coverage of 10 percent was assumed, and the estimates were marked up accordingly.¹⁶² The estimates for manufacturing were made using the 1978 industrial census of firms employing five or more persons, where some adjustment was made for non-response. The input-output table of 1976 contained output estimates for 29 groups of manufacturing establishments. There was no reliable information relating to manufacturing establishments employing fewer than five persons and manufacturing carried out on a small-scale by households such as beer brewing, tailoring, mats and basket making, footwear, saw milling, and wood carving. Accordingly, one third of the estimated 'subsistence' output in this sector was assumed to be accounted for by such household and small-scale manufacturing establishments.

Quantities and volumes in mining were available from economic surveys. Gross output in land improvement, residential and non-residential 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 the data from the dominant parastatals provided reliable data for the formal part of the economic activities.

To reach estimates of gross domestic product at constant 1976 prices both official prices and volumes were available for the gross output of 40 agricultural products and 15 livestock products. Hunting was deflated by the average of export prices of ivory. Forestry output was deflated by an index of government revenue from forest royalties. Fishery was deflated by the average price of fresh water fish. Mining output was estimated at 1976 sale prices. Annual economic surveys yielded figures for the quantities of manufactured commodities. No information was available about the

¹⁶¹ The dried kernel of the coconut.

¹⁶² *National accounts of Tanzania 1976-1984 : Sources and Methods*: 22.

value of the gross output of these commodities (canned beef, wheat flour, biscuits, konyagi, beer and chibuku, cigarettes, textiles, sisal ropes, fish nets, carpets, plywood, pyrethrum, fertilizers, paints, petroleum products, cement, rolled steel, iron sheets, aluminium, radio and dry cells).¹⁶³ In the absence of any information about the producer prices of these major commodities, constant 1976 price estimates were made deflating the current price estimates by the cost of living index of clothing and footwear consumed by urban dwellers in Tanzania Mainland. Electricity and waters was simply estimated with the use of physical indicators, though such information in respect of rural areas was not available. For construction a special index of the cost of production was used. In the case of rural own-account construction the gross output at 1976 prices is based on growth of rural population. The data for wholesale and retail trade, restaurant and hotels was obtained from the input-output table for 1976 projected to other years. Its growth rate was constructed on the basis of the total of gross output at 1976 prices estimated for agriculture, forestry and logging, fishing, hunting, mining and quarrying, and manufacturing industries, plus the value of imports (again at 1976 prices). For transport, storage and communications the consumption of diesel has been used for both current and constant price estimates and the 1976 estimate was based on the parastatal accounts. The ratio of cargo to passengers and the relation of gross product to output were assumed to be proportional for the whole period. For government it is assumed that the current and constant price estimates are the same except when there was a change in the minimum wage per month. This occurred during 1980, 1981 and 1984. In deflating the wage bill it was assumed that the wage increase affected 25 percent of the total wage bill. For the deflation of education and health services an estimated number of clients were used.

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 1976-1990. This revision was later extrapolated to 1994, incorporating results of the most recent surveys and census. As a result of the revision, for example, in 1990, the revised total GDP estimates were 62 percent higher than the original official total GDP estimate, government final expenditures was 37 percent higher, household final consumption expenditure and capital formation were 36 and 30 percent respectively higher 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”.¹⁶⁴

¹⁶³ Chibuku is the generic term for home brewed beer. Konyagi is the local spirit, made on cashews.

¹⁶⁴ *Report on the Revised National Accounts of Tanzania 1987-1996*: 1.

National Accounts from 1992

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”.¹⁶⁵ The new estimates incorporated the 1993 SNA. As time had passed, some structural changes took place in the economy, especially in the later part of the 1980s, which were not reflected in the available statistics, resulting in an under-estimation of value added. “Estimates of the size of this deficiency ranged from 30 percent to as much 200 percent of GDP”. GDP was measured to 3 452 billion shilling in 1996, and compared the old published figures this was an increase of 100 percent. 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”.¹⁶⁶

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 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”.¹⁶⁷

It was considered 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 “Survey of Construction, Trade and Transport, Tanzania 1994” which surveyed 10 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 5 to 9 persons and 100 percent of larger businesses.¹⁶⁸ The 1991/92 HBS provided new benchmark levels of agricultural production, housing, household health and education expenditure and total household consumption. In 1991 the first time a study of the informal sector was undertaken. 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 informal sector estimate three fold, and showed that the growth in this sector in Dar es Salaam had exceeded 10 percent in recent times. A time

¹⁶⁵ *Revised Accounts 1987-1996*: 1.

¹⁶⁶ *Revised Accounts 1987-1996*: 1.

¹⁶⁷ *Revised Accounts 1987-1996*: 3.

¹⁶⁸ *Revised Accounts 1987-1996*: 3.

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, rather than move 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”.¹⁶⁹ 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 are taken from Marketing Development Bureau. Food and other crops are taken from the HBS. The major change was 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”.¹⁷⁰ The new figures have a much smaller long-term growth pattern for agriculture which in turn has led to a lesser growth rate for the whole economy. It was reported that the benchmark Manufacturing Census had a deficiency in the questionnaire which, when corrected, led to a 50 percent increase in the estimate of formal sector value added for that industry. Improvements were also made to the standard of accounts analysis in a number of other areas, such as finance and insurance.¹⁷¹

The base year for constant prices estimation was changed to 1992. With this rebase, the growth in recent times has increased. For example, in 1985 prices, the growth in 1996 was 3.7 percent but in 1992 prices the growth rate rose 4.2 percent. This type of change can be expected because as the base year becomes outdated, the industries that are growing faster than the average become underweighted and those that are growing below average become over-weighted. The growth in crops in recent years also reportedly increased with the rebase as cash crops have greater weight in 1992 prices.¹⁷²

The choice of an ideal base year is not easy. It should be a year which is relatively normal, and the years between 1992 and 1995 all had some abnormality about them. Either drought affected production or there were big changes in government and/or aid funded expenditure. 1992 was chosen because of the HBS. In place of a proper import deflator a manufacturing value index from the G5 countries was used; though these prices only applied to about 40 percent of imports.

The high level of unrecorded domestic trade was mentioned above. A consistency between Tanzania’s various economic statistics was desirable, but hard to reach as the level of unofficial trade was not accurately known. The accounts have used the balance of payments trade figures, based on Customs data, Bank of Tanzania records and depended on data from the pre-shipment inspection companies. It was well known that a lot of imports entered mainland Tanzania via

¹⁶⁹ *Revised Accounts 1987-1996*: 5.

¹⁷⁰ *Revised Accounts 1987-1996*: 6.

¹⁷¹ *Revised Accounts 1987-1996*: 7.

¹⁷² *Revised Accounts 1987-1996*: 9.

Zanzibar, where the duty rates were lower. Furthermore it was held that “it is apparent from discussions from importers, that even imports coming through official channels, may not always be properly recorded”.¹⁷³ The report referred to a 1997 study by USAID that showed that the informal cross border trade between Tanzania and its neighbouring countries was of the order of \$270 million, with exports exceeding imports by around 70 million.

A 2003 IMF report on Tanzanian 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 not fully implemented” and since “that [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”.¹⁷⁴

¹⁷³ *Revised Accounts 1987-1996*: 11.

¹⁷⁴ IMF(2003), *Report on the Observance of Standards and Codes*: 1.

History of National Accounting in Zambia

Before independence, up to 1963, 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”.¹⁷⁵ 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, 1954-1964* issued in Lusaka. Zambia had been part of The Federation of Rhodesia and Nyasaland, also called Central African Federation. It was created in 1953 and broke up in 1963. The break-up of the federation caused a number of social and economic changes. “Economic Planning was an important task for the Government and the need for statistical information had therefore increased considerable. The compilation of an input-output table as a part of national accounts was seen as necessary”.¹⁷⁶

With the new economic and political conditions there was a need to revise the data for the level of private consumption and other categories of expenditure. Essentially this meant estimating the magnitude of supply as well as of demand. In other words the national accounts had to be based on the ‘commodity approach’ rather than the ‘income approach’ adopted in the previous years. This implied an upward revision compared to earlier years when non-monetary activities such as production for own consumption and smaller-scale transactions would be included in the accounts. 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 and onwards. In Lusaka the reports were available only until 1973. Beyond that just an annex report to the 1973-1978 was obtainable. Between that report and 1992 there is a regrettable gap in the reporting on national accounts methodology in Zambia. This means that very little is known about the estimates and their procedures in the 1980s. There is, however, a publication containing estimates of current and constant price GDP for the period 1965-2000, so there is official data covering the whole period. It has not succeeded in bridging the gap in the knowledge of the estimation methodologies in the 1980s. At the Central Statistical Office in Lusaka neither the national accountants nor the persons responsible for library/data dissemination functions were able to clarify whether there were no reports issued in this period, or if the reports simply had gone missing.

¹⁷⁵ *National Accounts 1964-1967*: 37.

¹⁷⁶ *National Accounts 1964-1967*: 37.

It is indicative of the economic development experience that ‘the lost decades’ (Easterly 2001b) were indeed lost in national accounting terms. It also exemplifies the lack of institutional memory as the national accounting team is unable to account for the estimation procedures for a decade or more. Finally, it shows how 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 with the same legal rights, both lamented this fact. Publications for the 1960s and early 1970s were present and catalogued, but after that there was a gap in the deposits. It was explained that while the libraries had the legal right to the documents, finance of transports and acquisition was not provided for on either side. The librarian in each place explained that the documents would have to be collected by them personally, and understandably this had not happened.¹⁷⁷

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

Zambia National Accounts Estimates: 1964-1973

In the 1964 -1967 report it was 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”.¹⁷⁸ It was held however, that “[t]he basis for an income approach is most cases more unsatisfactory”.¹⁷⁹ In the following report, covering 1968, such modesty was not present and no warnings were issued as regards the statistical basis, though there was no improvement in the basic statistical data. Normally input and output tables were also prepared. 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

¹⁷⁷ This information was revealed to me in two independent conversations at the University Library, Lusaka and the National Archives, Lusaka during February 2007.

¹⁷⁸ *National Accounts 1964-1967*: 37.

¹⁷⁹ *National Accounts 1964-1967*: 37.

Census of Population and Housing, 1969".¹⁸⁰ This gives a good indication of how constrained the CSO was for personnel at the time. In the 1970 report it was stated that this Census of Population and Housing made it possible to improve the data on rent of owner-occupied dwellings.¹⁸¹

From the 1969 report onwards there were efforts to accommodate to the revised SNA of 1968 (as opposed to the original 1952 version). Furthermore, in the 1970 report there were some improvements in the data. This introduced some discontinuities in the series. For some important tables data for the year 1970 are shown on the old basis as well as on the new basis. The discontinuities resulted mainly from newly-introduced imputations. There was an upward revision in 1970 of K40 million, or almost 4 percent. This increase originated in service, agriculture. Transport and mining in that order of importance in absolute number. In terms of relative increases within the sectors the highest upwards revision was for commercial agriculture, an increase of 91 percent.¹⁸²

The national accounts estimates in the early reports were mainly based on a special 'National Accounts and Balance of Payments' enquiry. In addition they used statistics compiled as part of routine procedures in respect of external trade, employment, government accounts and agriculture. The annual Census of Mining, Manufacturing and Construction were also used to break down figures of production and of inputs of goods and service according to commodity groups.

The national accounts enquiry "covered all industrial groups except agriculture, forestry, hunting, fishing, manufacturing, construction, electricity and water".¹⁸³ In practical terms this actually meant that the census covered relatively few sectors (4 out of nine ISIC sectors), although it reportedly covered all enterprises in the metal mining, banking, financial institutions and insurance groups as well. In addition it was noted that for other sectors enterprises that accounted for more than 20 percent of the gross production value in its respective sector was covered in the statistics. It was not reported how this applied in practical terms.¹⁸⁴ 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".¹⁸⁵ It was in 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".¹⁸⁶

¹⁸⁰ *National Accounts 1964-68*: 1.

¹⁸¹ *National Accounts 1970*: 7.

¹⁸² *National Accounts 1970*: Table 5.

¹⁸³ *National Accounts 1964-1967*: 37.

¹⁸⁴ The specific unanswered question is: 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?

¹⁸⁵ *National Accounts 1964-1967*: 37.

¹⁸⁶ *National Account 1970*: 6.

In the 1970 report it was stated that the annual National Accounts Enquiry “cover 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”.¹⁸⁷ To supplement this enquiry the annual Census of Production covered the mining, manufacturing, construction and 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”.¹⁸⁸ It was further commented that the rate of response has improved and that in mining and electricity there was a 100 percent return, “and in the case of many other important ISIC sectors the responding establishments accounted for more than 70 percent of the volume of business”.¹⁸⁹

The 1972 report (the 1971 report was missing from the CSO library and any other legal depository) was not published until 1978, a considerable backlog. It was further decided that instead of revising the data backwards that the 1965-1970 would be kept according to old SNA. For 1970 estimates according to both versions were made, whereas the years 1971 and 1972 were accounted for according to the new SNA. This report contained “further improvements as has been possible in the wake of the publication of revised production data in the Industry Monograph, revised wholesale price indices and on the basis of additional data on owner occupied dwellings, drinking places in the country and consumption patterns of households in both urban and rural areas”.¹⁹⁰

The response rate in the annual Census of Industrial Production (CIP) improved. In 1972 there was an overall response rate of over 90 percent. In mining there was again a full response. The lowest response rate was found in the construction sector. In 1973 the response rate in this sector was still reported as being “low”. The National Income Inquiry (NII) was instituted and covered large and medium sized enterprises, where special care was taken to account for enterprises with more than 100 employees. Small units were covered on a sample basis. It was in 1973 reported that “although all formal economic activities are covered the response rate needs to be improved”.¹⁹¹ Other areas in which current price estimates were improved were the metal mining industry and some manufacturing sectors. The changes were necessitated by revised production data, published in the Industry Monographs, which reviewed on a time series basis the performances of the sectors over the period 1968-73. It was reported that in “a number of cases, the new estimates were different from those published in the CIP reports and used for national accounts purposes”.¹⁹² In the 1973 report there were further minor upward revisions in the total figures, both according to new and old SNA from 1970 onwards. The change increased in size with time and the upward

¹⁸⁷ *National Accounts 1970*: 6.

¹⁸⁸ *National Accounts 1970*: 6.

¹⁸⁹ *National Accounts 1970*: 7.

¹⁹⁰ *National Accounts 1972*: 1.

¹⁹¹ *National Accounts 1973*: 3.

¹⁹² *National Accounts 1972*: 5.

correction amounted to almost K15 million by 1972. There was an increase in the contribution of government and capital formation, because “of an earlier omission of some notable establishments”.¹⁹³

The basic statistics on agriculture in the first national account reports covered commercial farming (non-African) and registered sales from African farms, while “African subsistence farming and hunting is estimated mainly in accordance with information given by the F.A.O about per capita consumption of different kinds of commodity”.¹⁹⁴ The agricultural statistics have no information about input in farming. Fishing statistics give information about the quantity of total catches and sales. In the tables the output in 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.

In the 1970 report (published in 1973) it was 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”.¹⁹⁵ Professor E. de Vries, a consultant from the UN Development Programme, made a study of the ‘subsistence’ sector of Zambia. His estimates of inputs and outputs of the various sub-sectors of the ‘subsistence’ economy suggested that the figures incorporated by the CSO in the accounts for the period 1964-69 were to some extent underestimates. It was further stated that it would be possible to make more dependable estimates for the ‘subsistence’ sector when the final results of the First Agricultural Census of Zambia become available. As regards intermediate consumption it plainly says that there was a “complete lack of information about intermediate inputs of agriculture”.¹⁹⁶

Concerning the treatment of the non-monetary sector the 1967 report states that “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”.¹⁹⁷ In effect this means that in the total production only products from agriculture, forestry, hunting and fishing is included and “also what has been consumed by the producers themselves”.¹⁹⁸ Unfortunately, no information was given in the report on how large this assumed proportion of the own consumption actually was.

¹⁹³ *National Accounts 1973*: 1.

¹⁹⁴ *National Accounts 1964-1967*: 37.

¹⁹⁵ *National Accounts 1970*: 6.

¹⁹⁶ *National Accounts 1970*: 7.

¹⁹⁷ *National Accounts 1964-1967*: 38.

¹⁹⁸ *National Accounts 1964-1967*: 38.

Of other goods and services only those which have been exchanged for money (except net rent of owner-occupied dwellings) have been included.

For commercial agriculture the method of estimation has been broadly the same as 1965-71, with some minor modifications later in the period. With the 1971 report data available on marketed production of agricultural commodities were supplemented by information on production and sales from the Agricultural and Pastoral Production Survey APPS (Commercial Farms). From the marketed quantities, sales by commercial farmers were deducted to arrive at commercial sales by traditional farmers. The latter was valued at prices obtained from the APPS (Non-Commercial Farms). Other minor revisions included the estimation of the value of fruits, vegetables and forestry products on the basis of Urban Household Budget Survey results; inclusion of exported groundnuts which had been omitted for earlier years and the use of an input-output ratio for the whole period, obtained on the basis of the Survey of Commercial Farms 1972.

For 'subsistence' agriculture no further revisions were made to the bench mark estimates for volume changes on the basis of population increase in the rural areas and for annual price variations. The report on the First Census of Agriculture 1970-71 (which included a sample survey of non-commercial farmers) provided benchmark data for this sector for the years 1969-70 and 1970-71. The retention of crops for consumption by the 'subsistence' sector is obtained as a residual after taking out 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 APPS (Non-Commercial Farmers) 1971-72 was deemed not very satisfactory and were said to be reviewed against the results of APPS of 1972-73.¹⁹⁹

Additionally, for the compilation of the figures for the commercial agricultural sector in 1973 report there data on crops from quarterly and annual agricultural statistical bulletins and the APPS were used. The Census of Agriculture (1970-71) included a sample census of non-commercial farmers. Data on inputs in agriculture became available for the first time through the 1972 APPS.²⁰⁰ According to the APPS a commercial farmer is someone who possessed at least 12 acres of land and sold at least 150 bags 200 pounds of maize or any farmer who sold tobacco to the tobacco marketing board. All state farms were accounted for as commercial.²⁰¹

The hugely important mining sector in the Zambian economy is reasonably well accounted for, as described above. During the period there was a re-classification of indirect taxes in the metal mining sector. Before 1970 the mines used to pay export tax which was actually an indirect tax. But from 1970 onwards they have been paying mineral tax which should be treated as a direct tax. This

¹⁹⁹ *National Accounts 1972*: 5.

²⁰⁰ *National Accounts 1973*: 3.

²⁰¹ *A Seminar Report on Statistics Required for Economic and Social Planning*: 31.

makes a difference to the estimation of GDP at factor cost versus GDP at market prices. GDP at market prices minus indirect taxes (net of subsidies) equals GDP at factor cost.

In the 1972 report a revision was made which had a significant effect on the estimates relating to the sector hotels and restaurants. Estimates of the value of the services of bars and other drinking places were revised on the basis of information on the number of bars in the country collected through Provincial Offices of the CSO. This information was used to establish better grossing up factors for production data of the sample of bars from the NII. The same report noted that “the contribution of the informal sector has not been adequately accounted for. Apart from ‘subsistence’ agriculture only bars, construction and services of own houses and domestic service have been reckoned with to some extent. Unorganised trading activity (small marketers), small repair shops, etc. have still been practically left out”.²⁰²

The early reports supplied national accounts figures at 1965 prices. In these reports for the period 1954-64, some of the main series were also deflated to 1954 prices. Most of the basic data used for the years before 1964 became unavailable with the break up of the federation and the methods used earlier could not be confirmed. New deflating methods for later years had therefore to be planned and worked out. Also, as review earlier, independence also meant that there important changes in the methods of accounting for some types of economic activities and accordingly these changes necessitated a change of base year for deflation.

The indices used for deflation were mainly unpublished indices constructed specially for this purpose. For each category of final demand one price index was estimated which was a weighted average of the indices for the supplying sectors. In many cases, however, the sector indices had to be estimated first. The material used for these purposes consisted mainly of the price data collected for the calculation of the consumer price index, the building costs index, external trade statistics and average earnings per employee.. A consistent deflation of national accounts can only be obtained if all deliveries from the industrial sector are deflated. The domestic product in one sector would then appear as the balance between production and input at fixed prices. The sum of final demand at fixed prices would also be equal to the total gross domestic product at fixed market prices.

The reports make clear that the CSO attempted to improve the deflators every year. While compiling the figures for the publication for 1969 and 1970 implicit deflators were worked out in all possible cases making use of the available data in the previous publication. When the 1965 figures were deflated the new sets of price index numbers (wholesale commodity price index, consumer price index for high and low incomes, one each), were not available The base years for these indexes were 1966 and 1969 respectively; therefore these data could not be used to work out precise price indicators for the early part of the period under discussion. It was possible to estimate price

²⁰² *National Accounts 1972*: 6.

changes during 1969 and 1970, using these index numbers and their components. These price changes were superimposed over the implicit deflator.

The 1971 report contained the first constant prices estimates per sector. The first four ISIC sectors were deflated with the wholesale price index. Construction was deflated with the Index numbers of Building Materials. The base year of these series was 1966, so for the estimates of change from 1965 to 1966, an index had to be recompiled with older data. The rate of change in gross output at constant prices thus obtained was assumed to represent the year-to-year change in value added at constant prices. This way the GDP at constant prices for 1966-70 was worked out from the GDP of each of the sectors in 1965 using the rates of growth derived as indicated above. This method implies a constant relationship between material inputs and gross value of output. In the absence of adequate data for double deflation, the above procedure was preferred to deflation of value added by index of wholesale or consumer prices. The combined index numbers of Wholesale Prices of Commodities (excluding copper) has been used to deflate the GDP data relating to Wholesale and Retail Trade, Hotels and Restaurants, Financial Institutions and Insurance, Real Estate, Government Administration, Community and Business Services, and Personal Services. For all the sub-sectors of the Transport sector the index of prices of transport equipment (a component of the CPI Index of High Income Group) was used to deflate the GDP series. The import duties and imputed service charges of banks and insurance units were deflated with Index Numbers of Wholesale Prices (non-copper). Government final expenditure was deflated with the wage index and goods index after using 1965 as a weight for proportional spending.

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 obtained by deflating the series by price indices, as indicated above, would lead to depicting a rather distorted picture of the growth of real income in the country, which heavily relies on exports of copper and other metals. The quantity of goods and services that can be purchased every year from abroad using copper export earnings was considered by the CSO to constitute a more relevant series of figures for the purpose than a series indicating the quantity of production of copper. It was therefore decided, from the 1971 report onwards, to allow for changes in terms of trade. This was made by taking the deflated series of GDP at 1965 prices and adding the difference between (i) the current value of exports deflated by import price index and (ii) the series obtained by deflating exports by export price index. This was done for copper only, and the correction was incorporated in the GDP for 'mining and quarrying' and consequently in the total GDP series.

In 1971 the total GDP figures thus arrived at for all the economic activities, differed by a small extent from the totals arrived at by deflating the different categories of GDP expenditures. This difference has been indicated as 'Errors and Omissions'. In 1972 the deflation method for the

construction sector was improved by adding the indices of average annual earnings of construction workers to the use of weighted average of building material price indices. Other adjustments related to real estate and business services sectors. These improvements and adjustment affected the estimates at current and constant prices on the production as well as demand side. In 1973 the ‘subsistence’ agriculture was deflated on the basis of the size of population in rural areas, which was used as a volume index. In the 1973 report double deflation was used in some industries, commercial agriculture and mining. Using the population measure to deflate ‘subsistence’ production implies that there will be no growth in constant terms, since the current growth was obtained inflating for population growth.

Zambia National Accounts Estimates: ‘the between years’

From 1973 national account reports and any other publications relating to the accounting methodology cease to be available. As mentioned above in 2007 the Central Statistical Office was unable to decide whether this was an issue of reports gone missing or never published. Before describing the changes in the methodology starting with the 1994 revision, the little information we have on these gap years will be pieced together.

One unpublished report titled *Annexes to Provisional Estimates. Consolidated National Accounts 1973-1978* indicated some accounting uncertainties. In Annex 1 the data from 1973-75 were noted as likely to undergo some revision, while 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, where one asterix indicated a ‘guestimate’, and two asterixes meant a ‘guestimate with a weak basis’. It was further noted that the 1978 data on agriculture was based on forecasts, which “probably was taken too high”.²⁰³ Also, during surveying some of the tables some miscalculations were discovered. Adding some information to the estimation of agriculture in the late 1970s the APPS 1977-78 reported that the response rate increased from 22.3 to 25.8 percent. In 1977/78 the APPS sent out 2025 questionnaires and 523 farmers replied.

A *Seminar Report on Statistics Required for Economic and Social Planning* published in 1977 by the CSO indicated that the surveying of agriculture was consistent in the 1970s and was planned to be expanded. There were still reservations about the response rates phrased by Mulenga (the then director of CSO) “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 further noted that “there are deficiencies due to methods of estimation. For instance, as far as Zambian estimates are concerned, the subsistence sector in

²⁰³ *Annexes to Provisional Estimates. Consolidated National Accounts 1973-1978: App. 2.1.2.*

agriculture and informal sector in industries, trade, transport and construction have not yet been properly accounted for due to lack of adequate information”.²⁰⁴

According to the *Statistical Bulletin No. 4. June 1992* it is confirmed that performance and price indicators were used for the GDP figures from 1987 onwards. It is probable that the method was used earlier, based on the types of indicators that were published in the annual *Zambia in Figures*. According to a report relating to the 1994 rebasing, 1977 was the previously used base year, and it is probable that the predominant use of performance indicators derive from that date, and that the progressive lack of basic statistical data prompted a gradual shift towards estimation by proxy. Detailed information on estimation is not available until the reports associated with the mentioned 1994 rebasing, where the detailed study recommences.

Zambia National Accounts Estimates: from 1994 onwards

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 compiled for internal distribution at the CSO. Together the documents give up to date and detailed information on how GDP is estimated in Zambia from the new benchmark year 1994 and until today. These documents were still used as guidelines for estimation of GDP in 2007.²⁰⁵ The first published document relates to the GDP 1994 revision and rebasing and the latter was a short explanation accompanying the publication of full current and constant estimates of GDP 1965-2000.

The report to the 1994 revision starts by stating that “inflation rates of more than 200 percent in the early 1990s had adverse effects on the provision of macroeconomic statistics”.²⁰⁶ Creating meaningful data on year-to-year real economic growth in those circumstances is complicated. Furthermore, Structural Adjustment saw large structural shifts, and among other things “the break up of the former large parastatals meant that previous sources of data were not available.” This meant that a revision and a rebasing was overdue, and it was acknowledged that the current “base year of 1977 was obsolete”.²⁰⁷ 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”.²⁰⁸

²⁰⁴ *A Seminar Report on Statistics Required for Economic and Social Planning*: 31.

²⁰⁵ The GDP estimate for 2006 was just finalized while the author was there in spring 2007, and it was informed that the methods were unchanged.

²⁰⁶ *National Accounts Statistics GDP Revision of Benchmark 1994 Estimates*: 1.

²⁰⁷ *National Accounts Statistics GDP Revision of Benchmark 1994 Estimates*: 1.

²⁰⁸ *National Accounts Statistics GDP Revision of Benchmark 1994 Estimates*: 1.

There are several important considerations as regards the new base year. It must be normal in terms of prices and economic stability, not subject to a boom or a depression or the effects of catastrophes like floods or draughts. In addition the base year must be in the recent past. Second, the base year should be one for which most data required is sufficiently available for reliable estimates. Further, 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”.²⁰⁹ What mattered most was there had been a Household Budget Survey in 1994, the first one 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 physical movement in production without the effect of price changes. Because of changes in relative prices, the shift in base year affects annual changes in the 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 mentioned in the estimates before 1994, except for agriculture, the informal sector was largely excluded from the National Accounts and other official statistics in Zambia. This sector became particularly important after the economic reforms in 1991. In the benchmark year and the years following the informal sector estimates were incorporated.

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

After incorporating the informal sector activity in the total GDP, the formal sector share was estimated at 58 percent in terms of value added. Thus, the informal sector share 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”.²¹⁰

²⁰⁹ *National Accounts Statistics GDP Revision of Benchmark 1994 Estimates: 3.*

²¹⁰ *National Accounts Statistics GDP Revision of Benchmark 1994 Estimates: 9.*

Putting together estimates of GDP by kind of activity highlights areas where soundly based information is not available. According to the CSO in 1994 in “the Zambia National Accounts, 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”.²¹¹

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 difficult of keeping routine data collecting going”.²¹²

The 1994 benchmark National Accounts, though considered soundly based, were still characterised by the following limitations according to the CSO. First, the data need to be designed in such a way that they are easily applied to macroeconomic research and analysis. Second, there was an incomplete system of National Accounts. Some sectors lacked production accounts. Third, the projections were quickly becoming out of date with the amount of structural change taking place. Mr Simbangala at the National Accounts Division gave the example of the construction sector being estimated by the cement index as misleading.²¹³ Fourth, the CSO as an institution has suffered, and continues to suffer a high manpower turnover resulting in discontinuities of programmes. The institution has lacked and continue to lack skilled manpower with experience to carry out exercises such as rebasing and construction of the commodity flow accounts and the input-output tables which are specialised.

Based on the two unpublished documents on sources and methods for the estimation of 1997 and 2001 this particular method of using performance indicators will now be investigated.²¹⁴ The Census of Industrial Production (CIP) and the National Income Inquiry data had for some time not been used for the national accounts estimates, mainly due to 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

²¹¹ *National Accounts Statistics GDP Revision of Benchmark 1994 Estimates*: 10.

²¹² *National Accounts Statistics GDP Revision of Benchmark 1994 Estimates*: 12.

²¹³ In an interview February 2007. The estimation procedure of the construction sector will be returned to below.

²¹⁴ Both documents which are unpublished, consulted at the CSO Lusaka, February 2007.

ones have been identified. The objective is to improve the indicators and the method used in estimating value added for all economic activities”.²¹⁵

The estimation is done using indexes of economic performance to extrapolate from the 1994 base year. In that year there was a National Income Inquiry that formed the basis for benchmark year estimation. For extrapolation the main indicators used are the Index of industrial Production (IPP), the Consumer Price Index (CPI), Index of Building Materials (IBM), Wholesale Price Index (WPI) and Employment. The other sources of information used for the performance indicators 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 Index of Industrial Production measures changes in volumes in industrial production in enterprises with 20+ employees. The Consumer Price Index is a basket of goods at retail prices, while the Wholesale Price Index is naturally the same, only at wholesale level. The Index of Building Materials depicts changes in unit costs of materials. The number of people employed is used as a volume indicator. The enquiry covered the formal sector only. All these indexes have been published annually and quarterly by the CSO. Using this basic information the various indicators are used to estimate the different sectors as found 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.

For agriculture the value of production was calculated based on 1977 constant prices. The estimate consisted of three parts. First, crops are estimated based on the Crop Forecasting Survey (only covers 8 crops). Second the livestock population was gauged from the veterinary and tsetse control services. Third, vegetables were assumed to increase proportionally with the population growth rate. The contributions were weighted 0.75, 0.2 and 0.05 respectively and then inflated with the WPI for agriculture. Forestry was just assumed to increase by 4 percent annually, while fishing data is provided by the Fisheries Department. For the mining sector data is supplied by Zambia Copper Mines Limited. For manufactures the IPP and the WPI was used. “The indices used to 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)”.²¹⁶ Data on electricity were given 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.

²¹⁵ Identification and Use of Economic Performance Indicators for Estimating Gross Domestic Product CSO, February, 1997. (Compiled. Not for Publication.): 1.

²¹⁶ Identification and Use of Economic Performance Indicators for Estimating Gross Domestic Product: 11.

Output in Trade is estimated indirectly, based on the output in agriculture and manufacturing. For a long time the Hotel and Restaurants sector was estimated using the number of foreign visitors. It was changed to bed occupancy rates. There had been significant structural changes in the transport sector. In the transport sector there had been divisions of companies and large-scale privatizations. The resulting in that the indexes were not reliable, therefore one has moved from haulage and freight data to number of registered buses and taxis. “Capturing the activities of private truckers has not been easy,” and “there have been difficulties in securing response from Tazara”.²¹⁷ 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. Business Services is estimated based on the value added from the trade sector (which again was indirectly estimated). For community, social and personal services formal employment of the sector were used. Import duties were obtained directly.

According to the 2001 paper there had been very few changes in the estimation method since 1997. In Agriculture the Crop Forecasting Survey was still used, but coverage was increased to 12 crops. The forestry rate of increase was still assumed to be 4 percent. A sample survey was done in 2001, with a very low response rate. The growth rate was then found to be 4.3 for 2001. Construction was still estimated using cement sales. This data is taken from the state owned central cement manufacturer, and it was acknowledged by representatives that this did not take into account the numerous and perhaps increasing activity among private quarries.²¹⁸ Trade was still indirectly estimated through agriculture and manufacturing but now also data on traded imports was used. The estimation of restaurant and bars was reported as being “a derived self-computing measure from the index of industrial production”, while hotels still used bed occupancy.²¹⁹ For rail transport passengers and cargo carried from Zambia Railways while the Tazara still did “not usually respond on time.” For road transport registered taxis and buses was used supplemented by fuel consumption. Previously communications was estimated from ZAMTEL and ZAMPOST, the former state monopolies in respectively 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”.²²⁰

Finally, we should take note of some considerations mentioned in the bulletin presenting estimates of GDP for the period 1965-2000 with estimates at both current and constant prices by kind of economic activity and by type of expenditure. The single deflation method was used in the

²¹⁷ The company that runs the railway between Kaposhi Mpiri in Zambia and Dar es Salaam, Tanzania. Identification and Use of Economic Performance Indicators for Estimating Gross Domestic Product: 14.

²¹⁸ On the two-hour journey between Kaposhi and Lusaka, March 2007, the author personally saw numerous such small quarries in full operation from the bus window.

²¹⁹ GDP 2001 Explanatory Notes: 4.

²²⁰ GDP 2001 Explanatory Notes: 6-7.

compilation. It was reported that the “methodological procedure of estimation for all the data series is more or less similar”.²²¹ This should be qualified. That the data series with 1965 as base 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. It was reported that various performance indicators were used for each sector, indicating that the use of these indicators had been extrapolated backwards. Users 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 the true picture of developments in an economy that had undergone many structural changes.

The data sources were reported to be the same while it was noted that “most of these Surveys suffer from outdated sampling frames and outdated weights.” Concluding the report said 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”.²²²

²²¹ *National Accounts Statistical Bulletin No. 8: 1.*

²²² *National Accounts Statistical Bulletin No. 8: 3.*

Chapter 4: Baseline Estimates and Projections: Implications for Growth

This concluding chapter of the 'Measurement' part of the thesis is devoted to examining the growth effects deriving from the different national accounting methodologies and the changes in them. The issue of data quality and the problems of comparability and reliability can be handled in different ways. One approach is to disregard the problems, or note them as a caveat to the findings. Another approach is to conclude that the evidence is not reliable enough for quantitative economic history purposes and therefore use other sources of evidence. This can result in history that makes innovative use of other quantitative sources such as anthropometric studies, or economic history that mainly relies on qualitative sources. Another direction or sub-discipline in economic history compromises those scholars who observe the low quality of current estimates or a lack of historical national accounts, and make the admirable effort to create new or improved national account estimates. The pragmatic approach taken here in this thesis is to make the best use of the available evidence. Many of the data quality problems can be overcome by treating the data soundly and pay due attention to the underlying statistical methods, and thereby take into consideration its limitations. It was shown that for the purpose of the comparative study in this thesis the international database data was not satisfactory because for some years and periods these sources report data that would raise contradictory conclusions. The 'Performance' section will therefore rely on the national accounts data. By following economic growth in the respective countries' accounting periods, that is between the changes in base years, and derive conclusions from actual GDP estimates most of the problems of comparison over time can be overcome. The problem of comparison between the countries still remains, and this chapter aims to identify those problems by considering the structural difference in the baseline estimations and the related differences in estimation methodologies and observe the difference in the occurrence of statistical growth.

A full understanding of the growth effects deriving from statistical methods would only be possible through a detailed chronological account of the evolution of national accounting in the countries concerned. The review of the national accounts confirmed some of the predictions found in the existing literature, while it also appears that some of the doubts in the literature were too pessimistic. Most of the accounting in the countries studied has been done according to convention, and therefore to consider the data 'random' would be wrong. While there are some methodological shortcomings, the foremost limitation of the estimates is the quality and availability of basic statistical data. This means the estimates could not easily be subject to a quick fix to make the estimates better. Such improvements would necessitate better basic statistical data, and it is clear that the national agencies have made the most of the data available. A major shortcoming is that the

statistical methods, conditioned by the available data, are not fully standardized across the countries.

A 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. To deal with this issue means that 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. However, as a rule the introduction of a new base year for the series are associated with new statistical data and revision of the series. The growth series are therefore discontinuous. Acknowledging this problem is indispensable to make a valid comparison 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 available new data, discovered errors or change in methods. Furthermore, the most recent data in any given report is 'provisional' and will as a rule be subject to future revision. This and the issues mentioned in the previous paragraph further points to the importance of prudent double checking of the data. The second lesson is that very recent data should be used with care. However, even when such care has been taken the growth evidence can change on a later stage. This refers specifically to using secondary sources for data. As will be shown below 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 has been done before or after the 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 as regards these issues. Three concerns were voiced at the offices,²²³ concerns that are not reflected in the dissemination and use of the growth evidence as practiced by the international organisations and the research community. 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 base year every ten year or so. If there is a growth series from 1970 through 1980 with 1972 as a base year, this series is not continuous and therefore not comparable with the growth evidence from 1969 with a different base year. In the internationally used statistical databases it is however treated as such.

Second, and related to this first issue, is the element of statistical growth. When the base year is changed, and thereby 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 – normally increased coverage. This means the comparison over time is further weakened. 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 the individual country, the third concern regards the comparison over space. In response to direct questions the Kenyan representative concurred that the comparison of annual growth rates between Kenya and Tanzania countries would be invalid.²²⁴ The problems of difference in base years and changes in methodology makes 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 condition the conclusions reached. Similarly, if one compares a country where 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 based on statistical artefacts not empirics.

The cases where a comparison over time and/or space could be invalid are many. The comparison over space, that is comparing growth in one country with another, is constrained by the differences in methodology. In addition the comparison of one country with another expressed in currency terms creates difficulty. Initially expressed in current terms the problem is of 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. The difference in methodology here will be shown to be important. The problem is further that a sector in one economy is estimated in different ways in each country. For instance in one country the growth in a

²²³ In interview 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).

²²⁴ Interview with Collins M. Omondi Statistician Central Bureau of Statistics, Kenya (April 2007, Nairobi).

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 is comparing growth in the respective trade sector, but is in fact comparing trade in one country with agricultural output in another.

The issues that arise when comparison is done over time or when one is looking at year-to-year changes in economic growth can be summarised as five points. First, there is the general increase in prices, i.e. an inflationary effect. Second, there are changes in the quality of production.²²⁵ Third, there are errors and omissions in some years, which 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 finally the growth rate should represent real value added of production. The last three instances mentioned would create statistical growth. The element of statistical growth can be huge in some years. The fundamental issue of comparing growth over time is the inflationary effect. In the countries in question the inflation has in some years been three digit and commonly double digit numbers. This means that the error margin in the reported constant price growth data can be significant.

This chapter has two central purposes. The first is to generalise the implications of national accounting methodologies for growth time series analysis. The second is to clarify the limitations to comparison of the growth experience of the four countries for the 'Performance' part of the thesis. This chapter will first deal with the measured structure of the economies as it 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 more unreliable items in the aggregate measure are subject to different estimation and projection techniques, the options available to the national accountants and how they affect measured growth are reviewed here. In a section of the chapter the first national account estimates made for independent Botswana, Kenya, Tanzania and Zambia are disaggregated, and the implications for the post-colonial growth pattern are considered. In the final section the effect of projecting constant price time series on the GDP per sector distribution is analysed.

²²⁵ This is less important for economies dominated by primary production. But it does complicate matters slightly here as well. Export prices usually will reflect a quality grading of the products, though a general price increase in e.g. coffee 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.

The Measured Structure of the Economy

Most scholarship on economic development focuses either on the aggregate rate of economic growth or deals specifically with the growth of manufacturing or agriculture. The focus on the aggregate follows from viewing GDP as the most appropriate indicator of development. There are also compelling reasons for emphasising the manufacturing and agricultural sector because these are the sectors in which one would expect growth to originate. The other sectors of the economy are supplementary as they are not typically associated with a physical output. As mentioned earlier some of these sectors can sometimes be appropriately thought of as costs, although they by definition contribute to value added. However, trade and transport, i.e. the physical movement of people or goods from A to B definitely do entail a physical and measurable output, similarly construction and the provision of water and electricity could 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 through the period, and has as reviewed not always been followed strictly by the respective national agencies. There have been slight alterations made at the respective national statistical agencies 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 by and large representative for the classification 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 given 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 below.

Table 18: GDP per ISIC Sector in Botswana, Kenya, Tanzania and Zambia, 1963-1966 and 1989-1993

		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* and *Zambia Revised National Accounts 1965-1993*. *Botswana National Accounts 1992/93*, *Kenya Statistical Abstract 1989*, *National accounts of Tanzania 1989-2001* and *Zambia Revised National Accounts 1965-1993*. The figures shown in both tables are own calculations based on Industrial Origin of GDP at Factor Cost.

There are nine major sectors, where for the current purpose the first three can be thought of as the 'productive' sectors, and the last six as the 'supportive' sectors. As noted, this is not entirely correct. However, as was documented in Chapter 3, in the national accounting methods the sectors from 4 to 9 are largely derived from the physical production registered in sector one through three. If the countries growth rate in these sectors are markedly different we can with some certainty identify a difference in economic performance. If the difference between two countries are largely accounted for growth in the 'supportive' or derived sectors, it would be fair to suspect that statistical methodology is part of the explanation of the growth differential.

The three first sectors: agriculture, mining and manufacturing, get the prime focus in the literature. Together these sectors account 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 treatment 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 has been growing by a proportion of 1.5, while in Kenya almost 1.2. In Zambia it could be said that there have been a similar proportionality 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 1 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 as the sector 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 of 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.

There is a further accounting peculiarity associated with ISIC sector 8 which is worth noting here. According to the System of National Accounts there is one part of the accounts of banking and insurance that 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. Therefore the entries for the sector 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 it. It can however also be justified because 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" (CSO, Botswana 1987-88: Introduction). In Botswana

this amount is accounted for in a dummy sector, while the other three countries it is subtracted as 'less imputed bank service charges'. This should be interpreted as a part of 'intermediate consumption' belonging to the economy in general. As a result 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 subsidising business through the banking sector. The amount in this dummy sector varies from year to year. For our current purpose it is worth noting that, for the chosen years in Table 2, the imputed bank service charge as a share in the total of sector 8 was 45 percent for Zambia, 54 percent in Tanzania and 24, 26 percent in Kenya and 26 percent in Botswana.

It should be added that there is no immediately plausible reason to infer that there should have been a faster growth in what has been called the 'supportive' sectors in Botswana and Kenya. This may very well be a statistical phenomenon that has growth effects. Without a more than proportional growth in these sectors Kenya and Botswana would have appeared to grow more slowly than the official record tells us. This reminds us of the importance of the assumptions made in the estimation methodology. The supporting sectors are largely made up of small informal actors, and therefore the measurement of the economic activity is, as reviewed above, necessarily a matter of making assumptions in the face of the lack of basic statistical data.

To illustrate the potential growth effect of statistical methods, an example based on the ratios in the cases of Tanzania and Botswana may be considered (with a 1:1 and 1:1.5 growth relationship in 'productive': '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 change, or a difference in statistical methods. It could be hypothesised 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 (i.e. without basic data) these sectors. Second, that 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 quicker. Generalised these two effects, which both create a relative positive bias on 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 between 'productive' and 'supportive', while in country B there was a 1.5 time proportional growth due to a 'low initial estimate effect' and a 'statistical growth effect'. In 1960 both countries had 500 US dollar per capita. In country 'A' the

‘productive’ sectors contributed 55 percent to GDP, whereas 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.²²⁶ To measure the hypothetical effect on growth, let us assume that ‘productive’ growth per capita between 1960 and 2000 equalled the Sub Saharan annual average at 0.56 percent.²²⁷

Figure 9: Projection of GDP per capita growth without Statistical Growth

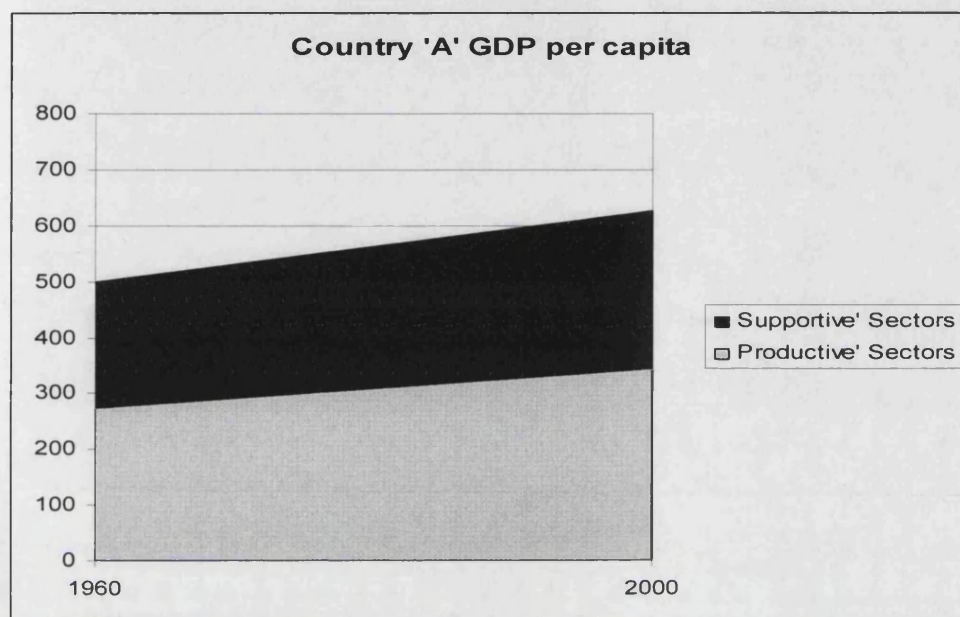
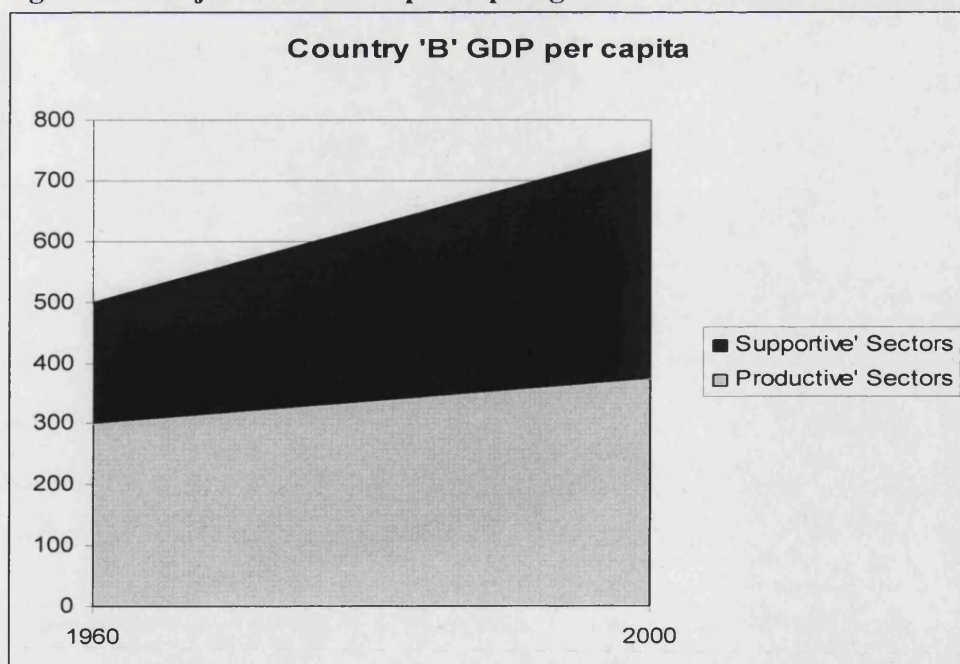


Figure 10: Projection of GDP per capita growth with Statistical Growth



²²⁶ These shares in GDP were observed in the table above for Tanzania and Botswana respectively.

²²⁷ As given in Table 1.1 in Ndulu et. al (2008:4).

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' increases 25 percent after 40 years of cumulative 0.56 percent growth, the corresponding increase in country 'B' is 50 percent, indicating a growth rate of about double. These examples are hypothetical only, though derived from observed ratios and growth rates, and cannot be conclusive about the relative growth performance of these countries. The example does however display the potential implications of statistical growth on the aggregate growth rate, and underlines the 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 only get reliable annual information 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. It was even noted in the national account reports that the data pertaining to local government can be unreliable because of lack of reporting. The remainder of the economy is estimated on various bases. As reported in the previous chapter, the Zambian Central Statistical Office had two levels of denoting when an estimate is questionable: one asterix denotes "guesstimate" and two asterixes denotes "guesstimate on a weak basis".²²⁸ The estimation techniques can however be dealt with in more sophisticated categories.

Estimation Techniques

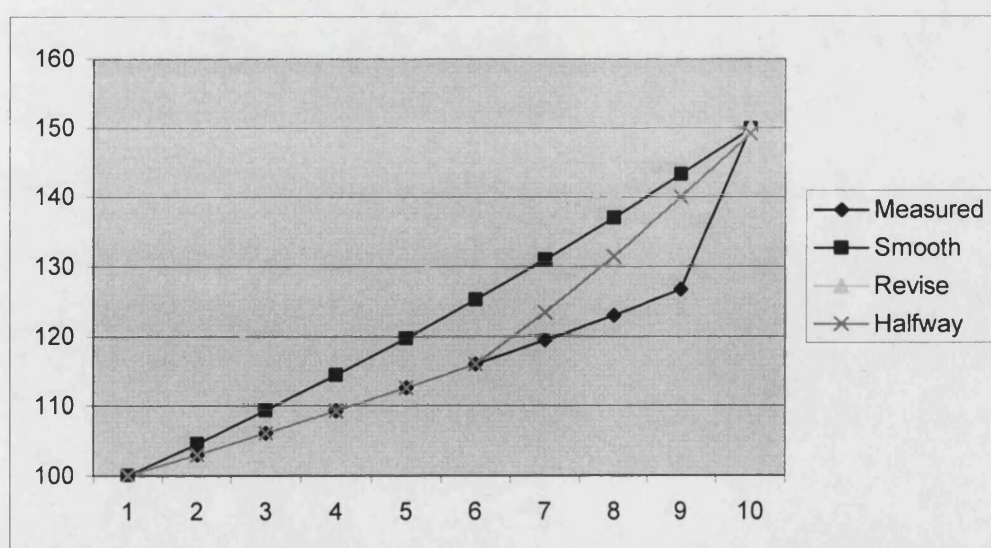
Some distinct methods of making guesses can be identified. The main differentiation is whether the baseline estimate is grounded in basic data or not. One utilized method is that if a sector of the economy is known to consist of one large operator and many small ones a qualified guess can be made as to how much of the sector is dominated by the large operators 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 with the rest. 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 upwards on an annual basis assuming proportionality. These methods are deficient because it is in fact based on guessing, though the guesses might be or less educated or

²²⁸ In annex 1 to *Consolidated National Accounts 1973-1978*.

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 in particular apply to manufacturing, construction, retail trade, transport and other services.

In other cases the national accountants rely on only sporadic censuses for whole sectors or only one baseline estimate. In these cases the means 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 one usually relies on 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 with making a guess as to 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, or extrapolate backwards to change the initial baseline estimate, or simply smooth the growth between the two points of observation. The diagram below illustrates the different choices available to the national accountants.

Figure 11: Stylised revision options



Here 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 to be 150. 'Measured' represents how the growth pattern would appear if no action to correct backwards would be taken. 'Revise' is the option taken if the statistical agency chooses to believe that the year 1 baseline estimate was wrong, and that their 3 percent growth assumption was correct. 'Smooth' is the choice of changing the annual growth measure when faced with the new, year 10 baseline estimate. The 'halfway' measure is often opted for, as the agencies are hesitant to revise the series a long way back.²²⁹ All these choices have been used at various points in the national accounting in the countries studied. The data a scholar uses for evidence for his or her analysis depends on the statistical choice of the accountants, and the evidence obtained in year 9 will be different from the evidence obtainable after year 10.

The example above illustrates the case of a statistical agency having to harmonize two conflicting pieces of evidence. There are also many cases where no such conflict arises as there is no basic statistical evidence at all. This can relate to whole sectors of the economy. Typically this concerns what is called the 'rural subsistence economy', but it is also done with regard to other sectors or the small-scale operations within a sector. Here a baseline estimate or guess is complemented by assumptions of growth. For 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 erroneous. This measure is however widely utilized in absence of any better method. Rural population growth is in all of the countries assumed to be lower than total population growth, and so by definition the rural 'subsistence' sector will be growing slower than the total population. This represents an inbuilt bias towards a decreasing GDP per capita. This can be quite serious in countries where this sector is particularly large, as applies to 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 (1981:3). While this conclusion could be true, it must be true per definition because the evidence is conditioned in that way. Again, the larger the 'subsistence' sector, the slower aggregate growth as measured.

There are other sectors of the economy where growth is determined indirectly through relying on other indicators. This is the case in Zambia, where most growth in the economy is determined in this way in the latter part of the period. For all countries trade, retail and transport are either completely or in part determined by the growth in imports and food production, where food

²²⁹ The use of the 'halfway' backwards revision is particularly pronounced in Botswana, but also figures prominently in Kenya, as will be reviewed in chapter 5.

production already partly is 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 of economic growth. It is important to further 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 within 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 not (for such discussions see e.g. King 1996). This question falls outside the scope of this thesis, however a useful and relevant conclusion based on this study is that the national accounts data are a poor guide to investigate 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 where growth is recorded, while the sectors that grow by statistical assumption will slow apparent GDP per capita growth.²³⁰

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 is 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 from large-scale state-controlled economy towards free market and informal economy activities in all countries, but more radically so in Zambia and Tanzania. An indication of this development is that share of ISIC sector 9 in GDP sector that 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 were active in all sectors, particularly trading, but also 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, which is reflected in the official statistics. The extent this activity has been replaced by informal and unrecorded activities is uncertain. The trade and transport sectors which notably include marketing of agricultural produce is of particular importance. For these sectors it is certain that the reduction in recorded activities went along with an increase in unrecorded activities.

There was a growing gap in statistical knowledge in all of these countries with the onset of structural adjustment, but as mentioned before, more seriously in Tanzania and Zambia. Before structural adjustment formerly registered activity disappeared into the informal economy, when

²³⁰ The notable exceptions being when ad hoc additions are made following the inclusion of new statistical data when accounting for these sectors.

formal channels either failed due to shortages, or traders favoured parallel markets to 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, there was a process of privatisation that made data collection difficult. The statistical story is not straightforward. This issue of the timing and size of unrecorded economic activity will be returned to in the discussion of economic growth in chapter 5. As will be seen in the remainder of this chapter, tracing the effect in terms of structural shares in GDP is further complicated by inconsistent deflation measures.

Baseline Estimates

The GDP baseline estimate is the natural starting point for an investigation of growth. That estimate contains information that is both economic and statistical. From an economic point of view it tells you something about growth potential deriving from the initial structure and size of the economy. This is the intuition behind the convergence argument, and catch-up growth. It is also plain mathematical knowledge that the smaller the economy is the larger is the potential for a high percentage increase. There is also potential for ‘freak’ causes of rapid initial growth, if the base year in the series was associated with sub-normal output due to an exogenous cause like a drought or some other disturbance to the economy. There are also statistical reasons for investigating the base year estimate because it tells us about statistical coverage and assumptions in the national accounting methodology. Finally, when telling a story it usually makes sense to start at the beginning. The beginning in this story starts with independence and the first national account estimates.

Table 19: Initial Conditions Botswana, Kenya, Tanzania and Zambia mid-1960s

	Botswana	Kenya	Tanzania	Zambia
Independence	30. 09. 1966	12. 09. 1963	9. 12. 1961	24. 10. 1964
Baseline estimate	1964-66	1963-1966	1966-68	1964-67
Exchange Rate (\$)	1.4	0.14	0.14	2.8
GDP in Local Current Currency	35 720 666	6 662 000 000	6 957 666 667	602 300 000
GDP in 1965 Dollars	50 008 932	932 680 000	974 073 333	1 686 440 000
Population	548 777	9 601 575	12 510 667	3 670 725
Dollar per Capita	91	97	78	459
Agriculture Per Capita	27	15	15	14
Mining Per Capita	8	10	5	38
Industry Per Capita	8	10	7	215
Government Per Capita	4	12	11	25
‘Other’ GDP Per Capita	31	35	21	175
‘Subsistence’ PerCapita	21	25	24	31

Source: The GDP data are taken from the first published national accounts after independence. The GDP data are averages of the estimates of GDP at factor cost at current prices, given in the first reports. For Kenya this was published in *Economic Survey 1967*. The first report for Tanzania was 1966-1968. Later, in *National Accounts for Tanzania 1964-1972*, the data were extrapolated backwards to cover 1964 and 1965. The former report is used. The source for Botswana and Zambia respectively is *National Accounts of Botswana 1964-66* and *Zambia National Accounts 1964-67*. Botswana used the South African Rand until the introduction of the Botswana Pula in 1976. The population data are averages of the data given in WDI (2003) for the corresponding years of the National Account Estimates.

The GDP data shown in the table are averages, over three years in the case of Botswana and Tanzania and over four years for Kenya and Zambia, and represent the first available estimates published by the central statistical bureaus after independence. The GDP data are reported at factor cost, since the countries are not able to provide GDP per sector on market prices. The GDP data have been converted into dollars using the official exchange rates at the time. The rates reported in the table express US dollars per unit of local currency.

One should be careful not to infer too much from the comparison of the levels of GDP, as they are not PPP adjusted and the data are averages over different years. However, the ranking is probably correct, and corresponds with data from other databases. At independence Botswana was the poorest and Zambia indisputably the richest of the four. Kenya and Tanzania had almost the same aggregate output, but Kenya was richer in per capita terms. The income differential advantage of Kenya as compared to Tanzania was due to a more developed manufacturing sector, while agricultural output was almost identical in per capita terms. The reason why Zambia had a higher GDP per capita than the rest was its copper mining, which in turn was also associated with a more valuable infrastructure. The table below shows the value added per capita in dollars of the sectors denoted as 'Other GDP' in the previous table.

Table 20: 'Other' GDP mid-1960s: Botswana, Kenya, Tanzania and Zambia (USD)

	Botswana	Kenya	Tanzania	Zambia
Construction	4	2	3	32
Electricity and Water	1	2	1	5
Transport	7	8	6	56
Trade	11	10	10	26
Finance	0	4	1*	7
Real Estate	1	4		10
'Other Services'	8	6		39

The data is derived in the same manner as in the previous table.

*Finance, Real Estate and Other Services are all included in this sector for Tanzania.

The further one goes down the list of the ISIC sectors the more problems of unconventional accounting appear. The name of the sectors does not correspond from country to country either. The postal system will be considered as a part of transport in one country and 'communications' in another. The concept of 'Trade' is taken to include other services which would fit into retail defined

very widely – such as restaurants and bars.²³¹ For Tanzania the list stops at ‘Finance, Insurance, Real Estate and Business Services’ and the amount of value added for all these activities is miniscule in total and in relative terms. Based on the relative low evaluation for these activities in Tanzania, there is good reason to believe that these sectors do have relatively less statistical coverage in Tanzania. It is also instructive to note that the geographically largest country, Tanzania, has the lowest value added in transport per capita. Conversely, the high amount attributed to ‘Services’ in the national accounts of Botswana raises the suspicion that some government activity is accounted for here. In the previous table, the number quoted accounting for ‘government’, was in fact called ‘Public Administration’ in the national accounts table. For Botswana this amount was less than half of the contribution to value added reported for the other countries.

That the copper mining in landlocked Zambia involves associated activity in transport is confirmed in the table. The higher share in construction is probably also attributable to the mines. The revenue of copper in Zambia secures the Government a larger absolute per capita contribution, but not in relative terms. The government accounts for 5 percent of per capita GDP, which is rather surprisingly low, with 4 percent in Botswana considered underestimated. In Kenya and Tanzania, by comparison the share was 13 and 14 percent.

Table 21: GDP per capita by sector mid-1960s: Botswana, Kenya, Tanzania and Zambia (%)

	Botswana	Kenya	Tanzania	Zambia
Agriculture	29	15	19	3
Mining	0	0	3	38
Manufacturing	9	10	7	8
Construction	5	2	4	7
Electricity and Water	1	2	1	1
Transport	7	8	8	12
Trade	12	11	13	6
Finance	1	4	2	2
Real Estate	1	4	0	2
‘Other Services’	8	6	0	9
Government	4	13	14	5
‘subsistence’	23	25	31	7

The data is derived in the same manner as in the previous table.

There is no agreed convention for reporting ‘subsistence’ output. In the case of Zambia the number is an approximation. Zambia does report one number for the whole agricultural sector,²³² and in the estimates for 1964 and 1965 there was one number given for ‘commercial’ agriculture, and one for

²³¹ Admittedly, a distinction between a retailer and a bartender can be hard to make in many instances.

²³² It includes Forestry, Fishing and Hunting. This is true for all of the countries.

‘other’. According to the methodology description, as noted in chapter 3, commercial agriculture includes all recorded sales. The ‘non-monetary’ output, denoted as ‘other’, is just an estimation. This disaggregation is not provided in the following years, and it is just assumed that the ratio is the same, with 30 percent of the agricultural output being commercial.

In Botswana ‘ownership of dwellings’ accounts for almost 20 percent (or four dollars in per capita terms) of the non-monetary output, while there is made no such provision in Zambia (or it is not accounted for separately).²³³ The equivalent share in Tanzania is 25 percent. That makes non-monetary ownership of dwellings more economically important than the whole manufacturing output in Tanzania (6 as compared to 5 USD per capita). In the Kenyan accounts all non-monetary estimates are accounted for separately, so that there are specific entries for non-monetary water collection and construction instead of hiding these in the aggregates for the sector according to the ISIC classification. In Kenya ‘ownership of dwellings’ account for only 6.5 percent of the of the ‘traditional economy’ (as it is called in Kenya). In per capita terms this amounts to 1.5 dollar, one fourth of the evaluation in Tanzania.

‘Monetary’ or ‘commercial’ agriculture is far more productive in per capita terms in Botswana, than in the other countries. The return per capita is almost double in Botswana compared to Zambia. On face value it is hard to determine whether this is due to a generous provision in the estimation, or related to productivity. The first hint lies in the proportion of rural population in each country. Since the rural output (and ‘subsistence’) is usually calculated using a derived value multiplied by the number of rural inhabitants.

Table 22: Rural GDP mid 1960s: Botswana, Kenya, Tanzania and Zambia

	Botswana	Kenya	Tanzania	Zambia
Rural Population (%)	96	92	94	76
‘Commercial’ Agricultural Output/Rural Population	28	16	16	18
‘Subsistence’ Output/Rural Population	22	27	25	41
Rural GDP Per Capita	49	43	41	59

The data is derived in the same manner as in the previous table. Proportion of rural population is taken from WDI (2003)

In the table above, the amount given as ‘Rural GDP per capita’ is of course not interpretable in an absolute sense. However, in a relative sense it is interesting how much value added is

²³³ It is not clear, neither in the tables or in the account of the methodology, whether this is included in the aggregate ‘Real Estate’

provisioned per rural capita for these typically ‘rural’ activities. Some of the gap in Agricultural Output is closed by controlling for the relative size of the rural population. The ‘subsistence’ output for Zambia is much higher, indicating that the FAO data which is used in Zambia for ‘retention of produce for own production’ gives a higher proportion than the result of alternative calculations used in the other countries. The agricultural output per rural capita is still higher while the ‘subsistence’ output is not lower with the same proportion, so there is still some surplus productivity that is not eliminated through this review of accounting methods.

In Botswana, as opposed to the other countries, most of the agricultural output derives from cattle. Slaughter of animals accounted for 70 percent of the agricultural output in the baseline estimate. In addition there was value added from increase in the herds, and other produce such as milk and hides. The national cattle herd in 1965 was estimated to 1 481 000 cattle according to the 1975-76 National Accounts. This implies that there was almost three times more cattle than people in 1965. Based on the same data series given in the 1975-76 series it can be imputed that the average price of the slaughtered animals in 1965 was 65 dollars.²³⁴ The off-take that year was given as 161 000 cattle. It is not immediately available how much the addition of one cattle accounts for in terms of value added. This can be imputed from the 1973/74 data. The herd increase was recorded as 199 000 cattle that year, and this corresponded to a total of Pula 9.1 million in value added deriving from ‘net increase in herd’. Accordingly each cattle was valued at P46, or 68 dollars at the 1974 exchange rate. Expressed in 1965 dollars this would be between 32 and 44 dollars.²³⁵ It is worth noting that Botswana was in 1965 inhabited by 3 cattle per person, which per head embodies somewhere between 30 and 40 dollars as accumulated stock, using a 1974 valuation, and in that this cattle in 1965 year had the potential value at about 65 dollars if slaughtered. In comparison with the comparable rural output per capita and the ‘subsistence’ output cattle appears relatively valuable and might explain why there is an higher value added in Botswana.

What are the implications for future growth to draw out of this evidence? Tanzania has a disproportionally large share of its GDP per capita in the ‘subsistence’ sector. This is partly caused by Tanzania’s agriculture being “overwhelmingly peasant based” (Fair 2000:19). In growth terms this sector will be poorly estimated, and partly estimated as proportional to population growth. In terms of non-monetary to monetary share to agriculture the situation is different as seen in the following table.

²³⁴ Using 1975/76 data on herd ‘off-take’ on the 1965 value added from cattle slaughter. In the 1964-66 report it is given that the price of ‘condemned cattle’ at the Botswana Meat commission was 33 Rand, corresponding to 46 dollars, so that imputed price does seem reasonable.

²³⁵ Samuel H. Williamson, "Five Ways to Compute the Relative Value of a U.S. Dollar Amount, 1790 to Present," *MeasuringWorth.Com*, 2008

Table 23: Non-monetary GDP/Agriculture mid 1960s Botswana, Kenya, Tanzania and Zambia

	Botswana	Kenya	Tanzania	Zambia
Non-Monetary/Monetary Agriculture	79%	167%	160%	223%

The prediction of this table, according to the statistical methods is that agricultural growth in Botswana will be the fastest, and the slowest in Zambia. This ratio determines how much of the agricultural output is assumed to grow slower than total population growth.²³⁶ Assume that Zambia doubles its monetary agricultural output. All other things being equal that will result in GDP growth of 3 percent. This is exactly equal to the total population growth so the result of a doubling of the monetary agricultural output would amount to nothing at all in terms of GDP per capita growth. The non-monetary GDP is assumed to grow in accordance with rural population, which for these years averaged 1.3 percent in Zambia. The example of the growth effect of doubling output in agriculture is of course simplified, but gives a good guide to the statistical growth potential of Zambia in agriculture.²³⁷ Consider another not so hypothetical outcome – a halving of prices of copper on the world market. All other things being equal, in new current prices this would result in a negative growth in output of 19 percent.

Measuring Agricultural Output

The problems of measuring agricultural production has been emphasised. In the previous section, taking starting point in the baseline estimates, it has been shown that the agricultural sector, because of its share in GDP will be decisive for the aggregate economic growth with the exception of Zambia where the agricultural sector only accounted for 3 percent of GDP per capita at independence. The shares in GDP per capita was 15, 19 and 29 percent in Kenya, Tanzania and Botswana respectively.

How good is the reliability of the estimates of agricultural growth in these four economies? Based on the methodological accounts in chapter 3 it is clear that Kenya has the best statistical service, and has probably the most valid and reliable measurement of agricultural growth (i.e. most correctly and consistently measured from year to year). In Tanzania a very wide definition of agricultural output was used covering a large number crops, estimating subsistence output as well as crops for exports. This basic data were not updated until a budget survey was undertaken in the late 1970s, and as reported in chapter 3 the initial estimates were considered very rough. The

²³⁶ Or growing at the rate of rural population growth, which in all these four countries is slower than the total population growth.

²³⁷ The Ceteris Paribus would of course not hold. A doubling in output would affect the prices negatively, and the trade and transport sector positively. In a one year perspective it is also unlikely that the infrastructural system would be able to handle a hypothetical doubling of the physical output.

subsistence estimates accounted for a quarter of the agricultural contribution to GDP, and was defined to grow in accordance with rural population. The only country with a higher relative share of subsistence in agriculture was Zambia. It was established by the accounting reports that Zambia initially relied on estimates suggested by the FAO for the agricultural sector. In the 1980s a much better annual survey and forecasting system was put in place.

In Botswana the initial estimates of the traditional sector were probably serious underestimates. In Botswana crop production is relatively unimportant, while it is the cattle herd and the estimated cattle off-take that matters for agricultural growth. It was first in the 1973/74 after a rural survey that the cattle herd estimates were considered reasonable, yet still the central statistical office judged that there was a plus/minus range of 10 percent. It was expressed a concern in the reports that the agricultural estimates were using sampling frames that were out of data well into the 1980s, thereby underestimating total output. This was amended after the 1985/86 Budget survey, and instead of accepting a break in the series, the data for the early 1980s and late 1970s was subsequently altered by adding agricultural output gradually to the total output.

A particular serious problem in Tanzania was the unwillingness to account for informal marketing and transporting of agricultural goods. Data was collected from parastatals following the new guidelines from the 1976 estimates. It is well known that there was a strong growth in parallel markets in this period as state marketing bureaus did not offer attractive prices. This means that there is a serious downward bias in the Tanzanian agricultural data from the late 1970s and through the 1980s, and for this period we know little about agricultural growth. With new accounting guidelines in the 1990s, informal markets were taken into account again and we therefore have a sudden growth in recorded output in the 1990s making the transition through structural adjustment very hard to measure.

The preceding account should give a summary of the existing bias in the agricultural estimates in the four countries, and these points will be returned to when we discuss different growth rates and how to interpret them in chapter 5 and 6. It remains to be considered how the accounting methods adhere to standards and what recommendations can be given based on the documents researched here. As clearly stated in the introduction of this chapter, the problem of the data is not the methods nor the adherence to accounting standards. Estimates are as reasonable as they can be. The constraining factor is basic statistical data. A policy advice in terms of statistical services is therefore quite straightforward: more resources to data collection and regular surveys will radically improve the measurement of growth in these four economies. It is wise to revisit the point made by the Zambian statistical office in this respect. After its 1994 revision it was contended that Zambia probably had the best, defined as most inclusive, informal sector estimate in Sub-Saharan Africa. This positive news came with two cautions. First, it meant that a growth series from

1990 to 1995 would be erroneous, and second, that the office did not have the resources to undertake the same estimate the following year, and therefore there would be no way of monitoring economic change in this sector in the future.

Any policy advice on 'best practice' in national accounting must take into account the basic contradiction in terms of reliability and validity. It is attempted to measure the total income of the country correctly i.e. making the income estimate as valid as possible. Depending on statistical resources and economic fluctuation validity of the estimates does change radically through time, and therefore the measurement of economic change is not reliable i.e. not consistent. Both deterioration or improvement in validity is contradicting an aim of reliability. Best practice advice can therefore most generally be given in terms of transparency. It should be better noted when series are discontinuous. The national account files are re-distributed by international databases without reference to the primary sources, making it impossible for academic and other users to evaluate the validity and reliability of the estimates without undertaking primary research.

Measuring the Economy at Constant Prices

These reviewed baselines estimates provided the basis for future measured growth in these four economies. Considering the starting level is important for economic analysis, but also important in terms of the statistical methods. The more inclusive the initial estimate, the less potential for future statistical growth. The more generous the base level inclusion for non-recorded sectors the larger part of the total GDP growth relies on assumptions. It has been pointed out that the change of base years coincides with the inclusion of new basic statistics, and implementations of new methods of estimation. It has further been noted that one of the sources of inaccuracies in growth reporting is that the time series of the international organisations are based on discontinuous official series. It has been emphasised that constant price growth series are inaccurate because the structural weights get outdated, and therefore can bias growth estimates. Finally, it has been noted that a comparison across countries relying on series with different underlying base years might be misleading. These have all been theoretically derived propositions, supported by documents issued by the statistical agencies. The following section provides an empirical investigation of those propositions.

The official growth evidence 1965-1995 is covered by four or five series with different base years. Some of these series overlap. In order to test the propositions presented above it can be checked how the structural distribution for one year measured in different prices differ. The difference between the estimates show the combined effect of accounting with different prices and revision of the estimates following inclusion of new data. For Botswana there is sparse reporting for

the first decade, which was reflected in the high inaccuracy in growth reporting for this period. From 1974/75 onwards there are four series available, so the consistency can be checked for the different base year estimates. For Kenya and Zambia there are also four series available, but they overlap to a lesser extent. For these two countries the structural distribution in the estimates at the end of one series and the beginning of another can be compared. The very lack of choice of series to choose from when creating a constant price series for the whole period probably accounts for the better 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 1965-1995 series of growth may have contributed to the previously documented inaccuracy in growth reporting.

In the table for Botswana the percentage distribution of GDP of three years, 1974/75, 1979/80 and 1985/86 are shown according to four, four and three estimates respectively. For each year there are some differences between the estimates. Since these are four estimates of the same economy the differences between the years reflect the changes in prices and in estimation methodology. We see that changes in the 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 estimate for the agricultural sector. This structural difference is partly explained by the large revaluation of the mining sector this year.²³⁸ 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 the total GDP growth, albeit not a very large effect. If the agricultural sector declined with 10 percent in 1974/75 prices the total growth would be slowed down a half percent more than at 1979/80 prices.

It is the mining sector that is the most important in 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. This change relating to the estimation methodology of the mines. There was an indecisiveness about whether to account for diamond trading, sorting, and mining construction in the mining sector itself and outside of it. At the beginning of the period

²³⁸ Since these are relative share, the growth of one sector means the decline of the other although no absolute change has taken place.

Table 24: GDP by Sector (%) at different constant price estimates, Botswana 1974/75, 1979/80 and 1985/86

	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.

Table 25: GDP by Sector (%) at different constant price estimates, Kenya 1972, 1974, 1976 and 1982

	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%

Table 26: GDP by Sector (%) at different constant price estimates, Tanzania 1966, 1976, 1982, 1985 and 1992

	GDP 1966 according to:		GDP 1976 according to:			GDP 1982 according to:			GDP 1985 according to:		GDP 1992 according to:		
	1966	1985	1966	1976	1985	1966	1976	1985	1976	1985	1976	1985	1992
Agriculture, Hunting, Forestry and Fishing	47%	54%	37%	41%	47%	33%	42%	47%	45%	51%	49%	52%	48%
Mining and Quarrying	3%	1%	1%	1%	0%	1%	1%	0%	1%	0%	1%	1%	1%
Manufacturing	7%	11%	10%	11%	14%	5%	6%	11%	9%	10%	8%	8%	8%
Electricity and Water	1%	0%	1%	1%	1%	2%	2%	1%	2%	1%	2%	1%	2%
Construction	3%	4%	4%	4%	4%	4%	4%	4%	2%	3%	5%	6%	5%
Wholesale and Retail Trade and Restaurants and Hotels	12%	16%	11%	12%	14%	9%	9%	13%	11%	14%	11%	13%	16%
Transport, Storage and Communications	7%	6%	10%	7%	9%	12%	6%	8%	6%	7%	6%	6%	5%
Finance, Insurance, Real Estate and Business Services	10%	4%	9%	8%	4%	10%	10%	6%	13%	6%	12%	6%	10%
Public Administration and Other Services	11%	4%	18%	10%	8%	25%	16%	11%	15%	11%	11%	10%	9%
Imputed Bank Service Charges	-1%	-1%	-1%	-2%	-1%	-2%	-3%	-2%	-3%	-2%	-4%	-2%	-4%
Gross Domestic Product	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 27: GDP by Sector (%) at different constant price estimates, Zambia 1970, 1976/77 and 1994

	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

diamond trading is accounted for in 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 less than a tenth in the later estimate. There is a similar change in the Finance sector for the same reasons, when diamond sorting is moved from Finance to Mining, as seen most clearly across the estimates of 1979/80 at different prices. In construction the value added moves the opposite way, as construction activities relating to mines are accounted for separately in the later estimates.

For Kenya we have three estimates of the year 1974 and two estimates each for 1972, 1976 and 1982. As seen in the GDP estimates for both 1972 and 1974 there is a statistical growth in the construction sector in the 1972 series. In agriculture 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 growth impact of agriculture. There is a change in evaluation of Government or other services from 1972 and 1976, visible at both 1974 and 1976 prices. It would be hard to imagine that this was a price effect. So it is probably the effect of moving one item previously accounted for here to another sector or the exclusion of the valuation of some service.

In Tanzania there are four constant prices to choose from, and they can be compared at five points in time, in 1966, 1976, 1982, 1985 and 1992 respectively. As series are compared over longer time, one would expect larger effects. There are big differences in the valuation of the agricultural sector across the period. In particular there is an disagreement between the 1966 and 1985 series, which is apparent across the 1966, 1976 and 1982 estimates. In 1976 the contribution of the sector to GDP varies between 33 percent at 1966 prices, 42 percent at 1976 percent, at 47 percent at 1985 prices. The difference between the estimates here 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 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 between 3 and 5 percentage points in a year. The 1985 series gives a larger weight to manufacture, with the estimated contribution varying 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 which estimate to trust the Government appropriates a 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 in 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

things can be drawn from this. 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, public sector wages lagged behind; and the government sector appears to be growing. The constant price series of Tanzania overestimates the growth of the public sector significantly.²³⁹ While the 1985 series revalued the trade sector, compared to the earlier series, the 1992 series represented a further such increase. Together with the finance sector this inclusion in the 1992 series this is an effect of adding a valuation of the informal sector.

In Zambia, there are fewer series to compare. Note that when comparing the 1970 and 1977 series, the comparison 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 the changes in copper prices are decisive for the outlook of the structure of the economy. While prices of copper were favourable 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 measured 1977 prices in 1977. The share in GDP was one third at the former measure, while less than one eighth of GDP at the latter estimate. A positive price development from 1977 to 1994 is apparent as the GDP contribution in 1994 is 19 percent at 1994 prices as compared to 6 percent at 1977 prices. The differences in output share in GDP for the agricultural sector are partly accounted for the change in the relative share of mining. A very large inclusion for the informal sector in the 1994 estimates explains the shift from 11 to 19 percent, and 3 to 7 in the relative share of trade and transport as compared to the estimates made according to 1977 methodology.

The comparison of the different series show that there are growth effects deriving from changes in base years. These differences can at times be attributed to price changes, and at other times according to changes in classification, and expanded inclusion of new activities. Considering the different available evidence to compile constant growth series the discrepancies in the reporting of annual growth rates are less surprising. The study is justified in its own right in the light of the uncertainty surrounding the quality of the African growth data, and the fact that such a study has not been undertaken before. This examination of the growth evidence is immediately relevant to any study that analyses any of the countries individually, and even more so if the countries are studied comparatively.

With regard to the regression literature the implications are less straightforward. As reviewed the cross country growth regressions use average GDP growth per capita over three decades as the dependent variable. It was argued that this dependent variable was highly

²³⁹ Interestingly, this is a well cited statistic. It is an established stylised fact that the growth of the public sector was rapid, and 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 an statistical artefact.

misleading, because it ignores the dominant growth pattern in Africa. It was 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 the 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 comparing 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. This data is not correct. This means that the coefficients cannot be interpreted literally, and correspondingly that growth regressions 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.

PERFORMANCE

This part examines the economic performance of four African economies: Botswana, Kenya, Tanzania, and Zambia. It has two main objectives. The first is to account for the economic growth in these four economies using the national accounts data. The decision to use national accounts is grounded in some very good reasons. First, the national accounts are the primary source evidence for economic growth. Though some scholars treat international database evidence as primary data, it is actually secondary. The data has passed from the hands of the respective governments and through the statistical division of the publisher. This creates some problems. It is unsatisfactory to work with data where no proper sources are given. Sometimes the *WDI* and *PWT* have modified or added information to the data given by the national governments and statistical bureaus, sometimes not. The problem is that one does not know when it has been done. Second, the national accounts data can be disentangled and disaggregated because they are published like accounts, and not just numbers in a data base. Third, the national accounts come with guidelines and commentaries, which are occasionally revised. One is told if the data is based on estimates, survey or census. It has been shown in the previous chapters that there are inconsistencies in the growth data if one compares the different sources. These inconsistencies are better approached in the national accounts. The growth evidence in the databases are bridging over years where no official data was available, and over different base years. The only way inconsistencies in the data and effects of revisions can be dealt with satisfactorily is to consult the primary source. The inconvenience of the national accounts evidence is that it is not readily downloadable nor fully available in most libraries. The evidence presented here has been compiled and collected in the respective countries national statistical offices, archives and libraries.

The second objective is to serve as an informal test of the predictions derived from what has been called the regression literature. Although the following investigation is a study of these economies in its own right, the selection of the case studies has been influenced by this objective. The justification for the selection will be set out in the next section. That also provides an opportunity to review how these countries has been placed in different typologies by the regression literature. While the regression literature dealt with African growth as an average in GDP per capita improvement from 1960 to 2000, it has been noted that this perspective does not allow for treatment of particular growth episodes. Another weakness of the aggregate conclusions is that this perspective has not evaluated the diversity of economic performance within the African continent. A very recent publication summarizing the empirical African growth literature opens up for those perspectives (Ndulu et. al. 2008ab). The second volume contains case studies that inform the

aggregate narratives. It proceeds to identify different episodes of economic growth within each country. In this second volume there are own chapters dealing with Botswana, Kenya, Tanzania and Zambia. It is natural to compare the findings in those chapters to the findings in this growth study.

To pursue the argument as described above and to test the hypothesis the method of case studies is chosen. The countries chosen for the case studies are Botswana, Kenya, Tanzania and Zambia. The four countries could be associated with very different characteristics as regards endowments and development strategies. Whether the countries strategies and their economic and policy outcomes were that different in practice, is an issue that will be dealt with in this part of the thesis. In the regression literature and in the mainstream interpretations of African economic history the countries represent ideal typologies (as given below in the table). Note that the typologies are not necessarily in agreement with the judgment of this author. These are ‘stylized facts’ about these countries (economic performance included) and represents how these countries are denoted in cross country growth regressions, and how they are referred to in anecdotal accounts as examples of African growth experiences.

Table 28: Mainstream Typologies of Botswana, Kenya, Tanzania and Zambia

	Open/ Closed	Democracy	Ethnic Diverse	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 (according to the Sachs & Warner Index).

** And/or ‘anti-export bias’ as in policies biased against agricultural exports.

The typologies and the economic performance cohere very well with the predictions of the regression literature.²⁴⁰ Tanzania and Zambia consistently check with a positive sign in front of ‘growth retarding characteristics’. Kenya is a hybrid case where a partly protectionist stance in trade policy was followed, with an emphasis on capitalism and promotion of agricultural exports as the vehicles of development. Political rule was in part authoritarian, and ethnic fragmentation was present. Botswana is the star performer, and the example of how an African economy can grow

²⁴⁰ The role of settlers is an important topic in the colonial history literature, 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 in per cent of the total population in Northern Rhodesia (3 per cent) than in Kenya and Bechuanaland (1 per cent). Reflecting that European settlers were mainly drawn to Zambia because of copper (Butler 2007: 36-37), the percentage of alienated land or land reserved for Europeans were smaller in N. Rhodesia (3 percent) than in Kenya and Bechuanaland (7 and 6 percent) (Mosley 1983: 7, table 1.1). Tanganyika is not reviewed by Mosley, but according to Brett (1973: 221), African peasants were dominant, and despite efforts “the attempt to create viable white farming community... ..had clearly failed by the end of the thirties”.

rapidly, despite being landlocked and poor, by following growth promoting policies. Judging from the table the selection of the case studies is appropriate for the purpose. At face value the variables found statistically significant in the regression analysis checks out with the right signs. The following sections will examine whether these variables are correct and historically significant.

As a 'test' of the regression literature the selection has its limitations. The geographical focus is narrow, limited to East/South-Central Africa. Ideally some West African economies should have been included, but there is a trade-off between width and depth in such a study. Dealing with more geographically homogenous countries the study is more manageable. Taking account of external factors such as climatic changes and commodity price changes is easier with such a sample, and this study is, as all studies, a pragmatic outcome of the researcher's time and space constraints. The sample is made up by exclusively of former English colonies, thereby ignoring Francophone and Lusophone Africa.²⁴¹ The practical constraints mentioned above naturally apply here as well. There is a further justification from an analytical perspective. In the regression literature the prominent policy variable justifying the conclusion that the poor economic performance had endogenous causes was found to be the black market premium, and therefore overvaluation of the domestic currency. In Francophone Africa this was an outcome exogenously determined by CFA – so as such the study would be less interesting for the former French colonies that were all within the CFA currency union.²⁴² The Portuguese colonies reached independence very late, and therefore the study of independent development policy does not correspond in time. The former Portuguese colonies, Angola in particular, were unfortunately also ridden by internal war in which context a economic investigation becomes difficult. The sample does not include the typical examples of the kleptocratic or failed state. This study takes it for granted that the economic performance of some African countries was determined by war or widespread corruption. However, this applies to just some countries for the whole of the independence period i.e. Angola, Chad and Sudan in the case of war and Central African Republic and especially Zaire in the case of corruption. Others were similarly affected for part of the period i.e. Uganda and Nigeria.

This study is of 'normal' economics and focuses on a range of policy options within that window of normality. In acknowledging the 'extreme' cases mentioned above it is of course true that on the aggregate some of the observed African growth shortfall is explained by these very cases. However, these are and should be regarded as abnormal. That is: African economies do not possess an inherent character flaw, where the predicted outcomes from these presumed inherent flaws varied from kleptocracy and civil war to closed socialist economies. The formulation of coherent and rational economic policy was not only the exceptional case as exemplified by

²⁴¹ Although, mainland Tanzania was under German rule until World War 1.

²⁴² With the exception of Guinea for the early part of the period and Mali for a few years.

Botswana, but more normal than is commonly assumed. More importantly, as this study will show, policy was a less clear cut important determinant of economic performance than the mainstream interpretation holds.

The typology of 'good policy' might 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 there is a curious mistake of applying the term 'bad' policies and 'economic mismanagement' in a normative meaning. In a present tense, descriptive sense it might be useful to distinguish some policy decisions according to economic efficiency. However, when interpreting the past, one must be cautious about labelling management or policy as 'poor' and then subsequently explaining it with reference to 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 of future economic change and transcendence of contemporary policy advice seems to be asking too much of African, or other, policy makers in the 1960s and 1970s. That information is less than perfect is common to both state and market decisions. That decisions are constrained by what is known at the time is one of the central limitations that makes economic policy less than ideal. It is fair to point it these, but more caution should be exercised in a practical comparison of the economic development experience.

Tanzania is a good target for the study since it has a high level of ethnic diversity and is classified as a socialist economy with urban-biased policies. Kenya provides the opposite example of a capitalist, more open and rural-biased economy. Ethnic competition for economic resources has been a feature of its economic performance, and that effect has to be weighed against other causes. Zambia and Botswana provide another interesting pair of economies. Both have been and are reliant on mining - copper and diamonds respectively - for foreign exchange earnings. Botswana is described in the literature as a success - with low ethnic fragmentation and democratic rule, whereas Zambia is diagnosed as a failure with a period of socialist rule after independence. The case studies evaluate which differences between the countries were the most crucial for economic growth and therefore what was the most plausible proximate determinant of success versus failure. Botswana is described in the literature as the exceptional successful developer of Africa. It is invoked to provide confirming anecdotal evidence in the regression literature with regard to democracy, stable foreign exchange rate and low ethno-linguistic fragmentation providing the right fundamentals for economic growth. The focus will be on whether these conclusions contradict, complement or cohere with the findings of the regression literature. The studies will also allow for a consideration of what information is contained in the aggregate data, as to examine in detail whether the conclusions of the regression literature are borne out of the economic data.

The typology table is representative of how these countries are described in the regression literature, but the table can be misleading. That acknowledgement is indicative of the pitfalls of averaging and the frequent use of binary variables. Many variables used in regression literature allow for one observation only; for example as in open or closed to trade. First of all, the ‘open’ parameter as developed by Sachs and Warner and reproduced in the PWT, appears to be slightly ‘doctored’. One will recall that a country would be classified as closed if among three other criteria the exports was done through a state monopoly. Both Botswana and Kenya organized their exports of agricultural produce through marketing boards and should therefore, adhering to the definition, be regarded as closed. The Botswana Meat Company provided the only channel for export sales for the important cattle industry. The only other export of importance for Botswana was minerals, and among them the hugely important diamond trade and mining was in strict monopoly hands of Debswana, a joint venture between the De Beers and the Botswana government.

A related central shortcoming of the regression literature, which is borne out in the typology table, is that it fails to account for policy changes. There were important policy changes in the economies during the period, of which a turn to openness in trade was important. This and other policy changes are related to the structural adjustment programmes, where policy changes were initiated through the intervention of the Bretton Wood Institutions. This change of policy was particularly important in Tanzania and Zambia. Structural adjustment meant the abandonment of price controls relating to both external and internal markets, and the retrenchment of the state through privatization and liquidation of state-run companies. These policy changes had important economic growth effects. Policy, institutions and endowments and other growth determinants will be returned to later. The immediate issue of concern here is economic growth.

Chapter 5: Interpreting the Growth Evidence: Botswana, Kenya, Tanzania and Zambia

This chapter examines the record of economic growth in Botswana, Kenya, Tanzania and Zambia. Growth in each country is first studied separately with use of the official growth evidence. Periods of growth are analyzed according to the available series of constant data. The aggregate GDP growth is broken down into sectors with the aim of identifying the source of growth. As an explanation of growth, this analysis is limited to the origin of the growth in the economy. This perspective allows us further to identify which part of the growth is statistical and which is economic. The second level of interpretation is a comparison of growth between the countries, presented in the final section here. The chapter aims to give the best possible display of the comparative growth record of these four economies, providing the foundation for a discussion of the association of policy and episodes of growth in chapter 6.

Botswana

This is an account of the economic performance of Botswana 1965-95 according to the available official growth evidence. The post-colonial growth record of Botswana is covered by five different constant prices series. Official knowledge on economic growth in constant prices is sparse for the first independence decade. There is one series that covers the early years. It is based in constant 1971/72 prices, and provides an GDP estimate by sector in 1967/68, 1968/69 and 1971/72. This series allows only a limited knowledge of the dynamics of growth in the early period. It is generally agreed that there was rapid growth during the first decade of independence. However, the sparse official reporting has led to wide variation between the different growth estimates. It was noted in the previous section on measurement that, during the first five years after independence (1966-70), the discrepancy between the official growth rates and that of the *PWT* was particularly large. The official estimates indicates an annual average growth of more than 16 percent, while *PWT* estimates a more conservative 7 percent. If the latter estimate was correct, Botswana is 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 10 percent GDP growth rate for each year between 1965 and 1971.

The second official constant price growth series was based in 1974/75 prices. At this stage, the country had already moved from being a very poor, land-locked and agricultural economy, to being a rapidly growing diamond-mining dependent economy. The new series reported total GDP in 1974/75 prices for 1965, 1966, 1967/68, 1968/69 and 1971/72, but only provide a disaggregation of GDP per sector from 1973/74 onwards. The story of growth in the first decade is compromised by lacking an estimate of total GDP in 1969/70, 1970/71 and 1972/73 in neither constant or current prices. Furthermore, these first early estimates were indicative only, and undertaken with very sparse resources, and few basic statistical data. Indeed, as was noted in the section on national accounting history in Botswana, the motivation for making these early estimates was to display and clarify the extent of lack of data. The estimation of GDP in the 1964-66 report was relatively consistent with that of the 1967/68 and 1968/69 estimates. The 1971/72 estimates came with some new data, and changes in estimation methodologies and assumptions. When one compares the estimates through this period they turn out to include a non-trivial element of statistical growth. The constant price estimates which were published in this report came with a warning that it was debatable whether one should attempt such estimates when so much data was missing. In the following 1973/74 report it was noted that the correct level for baseline estimates was not agreed upon in most sectors, so that derived growth rates should be used with caution.

Table 29: Botswana Gross Domestic Product, Base Year: 1971/72 (Rand Million)

	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
Average GDP growth	26%		
Average Agriculture Growth	8%		
Average Manufacturing Growth	76%		

Table 30: Botswana Gross Domestic Product, Base Year: 1974/75 (Pula Million)

	1965	1966	1967/68	1968/1969	1971/72	1973/1974	1974/1975	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	138	205.4	206.5	247.7	246.5	264.1	335.5

Derived Growth Rates:

	(Start – End)/Years:	Average Annual Growth:
GDP growth 1965-1978/79	39%	12%
GDP growth 1965-1973/74	34%	13%
GDP growth 1973/74-1978/79	13%	11%
Agriculture Growth 1973/74-1978/79	-3%	-3%
Mining Growth 1973/74-1978/79	91%	46%
Manufacturing Growth 1973/74-1978/79	33%	23%

The combined effects of the absence of estimates for certain years, changes in methodology and underlying basic statistics leaves the judgment on economic performance uncertain. These limitations of the evidence will be kept in mind when dealing with the derived growth rates.

According to the 1974/75 series, the total GDP increased from 55 million Pula in 1965 to 358.1 million Pula in 1978/79. The measured economy was more than six times larger at the end of the period than at the beginning. In 1978/79 the Agricultural, Mining, Trade and Government sector are all separately larger than the measured economy in 1965. Reported economic growth is uneven during the period, and regrettably it is during the unmeasured years that growth appears to be most rapid. According to the 1974/75 series, growth was strong but relatively slower from 1965 to 1968/69. Total GDP increased by almost 50 percent, as the economy grew at 9 percent the first year, and 15 in the two following years. In 1971/72, after two gap years, total GDP was measured to be 72 or 75 percent higher according to the 1971/72 or 1974/75 series respectively. In 1973/74 after another gap year, the GDP was measured at a level 50 percent higher than in 1971/72. Between 1973/74 and 1978/79 there is a relatively consistent and regular measure of GDP, and growth slowed down considerably. In comparison for the period between 1965 and 1973/74 total GDP increases fourfold, while between 1973/74 and 1978/79 the increase in total GDP is about 64 percent. For this early period the GDP estimation methodology is revised three times, while for the latter it is more consistent. Therefore there is good reason to believe that statistical growth was particularly strong during between 1965 and 1973/74, so the derived growth rate for this period should not be interpreted at face value.

This difference is born out in the reported derived growth rates for 1965-1978/79. The derived growth rate is calculated as a percentage by comparing the GDP at the end of the period with the GDP at the beginning of the period and averaged over 13 years. By this measure GDP growth for the period is 39 percent. If the GDP growth is only calculated for the years for which we have consecutive observations (8 years) one gets an average growth rate of 12 percent for the period. While growth was rapid throughout the period, the explosive nature of growth in Botswana is an impression based on the between years for which we do not have a consistent measure. The implementation of new accounting methodologies in 1971/72 and again in 1973/74 needs some consideration. This is best explored by considering the contribution to GDP per sector.

The growth in agriculture sector from 1968/69 to 1971/72 was 15 percent, much lower than the growth in total GDP. The sector accounts for 9 percent of the total value added between these years, as its percentage contribution to GDP falls from 45 to 30 percent. There was significant statistical growth in this sector as the statistical office made use of a new agricultural survey, and re-estimated the sales of cattle from the traditional sectors after consulting purchaser's records. The traditional agriculture contributed about 70 percent of the value added in the agricultural sector in

1968/69. Consultation of the new data sources led the statistical office to conclude that the output of traditional agriculture was seriously underestimated in the previous accounts. For 1971/72, the number of farmers was increased by 10 percent, in addition the total sales of cattle was considered to be 1/3 higher than reported in the previous accounts, and finally the mark-up for under-coverage used in 1971/72 was raised with 1.5 percent. With the traditional sector accounting for 70 percent of the agricultural output this would amount to an statistical increase of almost 40 percent in the total value added for agriculture that year. For the purpose of creating the 1971/72 series the changes in methodology were corrected for, and as a matter of judgement the estimates for 1967/68 and 1968/69 were adjusted upwards. This backwards re-adjustment was not done with regards to 1965 and 1966, and this 40 percent ad hoc increase in the 1971/72 series explains in part why the agricultural sector output in 1973/74 is larger than total GDP in 1965. The rest of the explanation of how reported GDP grew 70 percent from 1971/72 to 1973/74 will be presented soon, but first the other sources of growth up to 1971/72 will be considered.

While the increase in agriculture only accounted for 15 percent of the increase in value added until 1971/72, the bulk of the remaining growth is explained by the mining sector. 33 percent of the increase in total value added is explained directly by this sector. In addition construction activities undertaken by mining companies and by the government were transferred to the Construction sector. Holding companies and management consulting of the mines was transferred to Finance and Business. Together these three sectors account for almost 60 percent of the increase in GDP. The Orapa diamond mine started operation in 1971, and the Shashe mining project was still under development. Another sector that increases between these estimates is trading. In this sector, as a result of a pilot survey, a new inclusion was made for small-scale traders. One third of the growth in this sector is explained by this inclusion. In addition a large contribution to value added was accrued to larger scale traders. Both data for small and large traders were considered to be of bad quality. A further 13 percent share of the increase in GDP was accounted for by the manufacturing sector. This increase is as a whole accounted for by an increased throughput of cattle at the new abattoir of the Botswana Meat Commission.

The rapid increase in GDP between 1971/72 and 1973/74 is accounted for mainly by statistical growth and very favourable climatic conditions. The rainfall in 1973/74 was 74 percent above the norm, and resulted in an even sharper increase in output (CSO, 1973/74). In contrast, 1965 was a very poor year due to climatic conditions (CSO, 1968/69). These climatic conditions mean that a comparison from independence to 1973/74 is severely constrained for an agriculture-based economy as Botswana. That 1973/74 was an exceptional year for agricultural output is born out by the 1974/75 series where 1973/74 was a peak year, and for the rest of the series agricultural output stagnates with an average negative growth of 3 percent. Even so, it was considered as '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 the 1971/72 level was considered an underestimate.

Measured at current prices the GDP increased 80 percent, while according to the constant price series reported here, the increase was about 50 percent between 1971/72 and 1973/74. In current terms 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 constant terms. Statistical growth was particularly strong in the Trade sector, where it was again felt that the 1971/72 results was a serious understatement. If the structural contribution in 1973/74 is compared with 1971/72 the only two sectors that increase in relative share are agriculture and trade. As documented in chapter 3, it was warned that growth rates that may be derived from the figures 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 leaves the economic performance between 1965 and 1973/74 clouded in uncertainty. There is no doubt that while there were productive gains, at least one third of the measured growth rates resulted from cumulative extension of coverage in the baseline estimates. In addition the growth is considerably overstated because there was a drought in 1965 and extraordinarily good climatic conditions in 1973/74. This meant an rapid increase in output, but overstated the extent of the underlying economic expansion. Simultaneously, there was strong statistical growth in the sector as the coverage in the agricultural estimates was extended. While the measurement of the tertiary sectors and agriculture are subject to exogenous shocks, changes in methodology and rainfall, there was some undisputed economic expansion. The major contributor was the development and opening of one mining complex, and the continued development of another. The mining sector's contribution is understated in these early accounts, as directly related activities in mining are accounted for in other sectors. Apart from mines, weather and statistics there is also a growth effect from the expansion of the meat processing measured in the manufacturing sector. With virtually no manufacturing capacity the sector grew from a very low base, and still remained at only 5 percent of the economy in 1973/74.

For the period between 1973/74 to 1978/79 total GDP at constant 1974/75 prices by sector was reported without any gap in the series. The average growth for this five-year period is impressive at 11 percent. The averaged growth rate hides the episodic nature of growth. The increase in output largely happens between 1974/75 and 1975/76 and between 1977/78 and 1978/79. The GDP growth in these years was 20 and 27 percent, together accounting for more than 9 of the 11 percent of average growth over five years. Put differently; of the total increase in value added from 1973/74 to 1978/79, 87 percent of the increase happened in these two years. The increase in value added in these years was caused by increased mining output, and an increase in

mining-related activities. More than 90 percent of the recorded growth takes place in the Mining, Trading, Finance and Government sectors. Output in the mining sector increased more than five times over the period, and the doubling of value added in the Trade and Finance sector is probably mainly caused by diamond trading, sorting, management and holding accounted for in these sectors. The government was directly involved in the management and ownership of the mines, and increasingly relied on mining for revenues. While in 1971/72, only 5 percent of the government revenue originated from this sector, the mining share in government revenues had increased to 36 percent in 1979/80 (Harvey and Lewis, 1990: 110). As previously noted, the Construction sector includes mining development. Activity in this sector went down, as the construction of mines at Orapa and Letlhakane was finalized. The timing of the mining sector output corresponds to the doubling diamond capacity at Orapa at 1975, and the start of production in 1977 at Letlhakane. In addition to the mentioned sectors, there is also a part of the Electricity and Water sector that is accounted for under mining operations.

The non-mining growth came from agriculture and manufacturing. The agricultural sector stagnated over the period, and actually shrank due to drought conditions in 1978/79. The good climatic conditions in the peak year 1973/74 was repeated in 1974/75. As documented in chapter 3 however, growth was lower that year, because 'subsistence' farmers reduced planting activities, and relied on consumption from last years record output. The drought in 1978/79 meant absolute failure of crop output, while cattle owners wanted to slaughter their animals because of the lack of water. As a result the Botswana Meat Commission saw record output that year, indicated in the growth in the manufacturing sector of which BMC is still the major operator. Some of the growth between 1973/74 and 1975/76 is accounted for by the start up of textile manufacturing. Later, in 1979, the Kgalagadi Breweries were set up.

There was less statistical growth during the period. There was some additions in the agricultural sector, but not with large implications for the aggregate growth rate. Further statistical growth was noted in both Trade and Construction. However, the fluctuation and the massive increase in GDP is largely explained by the expansion in mining. Agriculture and therefore also manufacturing with a dominant component of primary product processing fluctuates according to climate. The reports presenting the constant price data warn that the underlying price data quality for the deflation is very weak. While the data should not be interpreted at face value, the importance of the mining sector is inescapable and understated in the accounts as much of the directly and indirectly related activities are accounted for in different sectors. If Botswana had relied on manufacturing and agriculture alone the economic performance would have much less impressing. The combined value added of these two sectors grew with an average 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

Table 31: Botswana Gross Domestic Product, Base Year: 1979/80 (Pula Million)

	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
Agriculture, Hunting, Forestry and Fishing	100.2	101.5	105.8	105.3	98.3	100.3	90.5	92.3	80.8	70	68.3	75.7	70.2
Mining and Quarrying	53.2	87.5	92.1	171.4	169.1	239.7	321.4	380.9	557.4	645.8	666.5	687.2	742.8
Manufacturing	24.5	31.4	34.6	32.4	43.6	28.3	35.4	44.2	40.6	42.2	33.6	43.7	51.5
Electricity and Water	8.8	13.3	11.1	12.2	15.6	15.0	15.3	15.9	15.7	19.5	23.5	31.4	34.8
Construction	47.7	48.3	41.6	56.7	52.1	58.1	57.6	41.4	33.8	52	53.5	47.5	55.1
Wholesale and Retail Trade and Restaurants and Hotels	66.2	73.7	81.4	91.2	123.4	147.7	138.5	131.1	121.6	125	149.9	166.7	177.6
Transport, Storage and Communications	9.0	10.5	10.3	11	10.7	17.1	17.6	19.1	21.4	24.8	31.6	41.3	40.8
Finance, Insurance, Real Estate and Business Services	24.2	26.2	29.2	28.3	40.1	58.7	47.7	53.3	56.2	61.7	78.3	95.4	95.7
Public Administration and Other Services	75.5	97.2	103.3	105.6	118.7	121.5	139.8	153	171.1	185.4	215.4	235.0	256.6
Imputed Bank Service Charges	-2.8	-4.2	-7.9	-7.7	-11.2	-14.8	-16.7	-17.0	-19.9	-22.4	-22.3	-33.0	-36.4
Gross Domestic Product	406.5	485.4	501.5	606.4	660.4	771.6	847.1	914.2	1078.7	1204.0	1298.3	1390.9	1488.7

Agriculture Growth 1974/75 - 1986/87: -3%
 Mining Growth 1974/75 - 1986/87: 27%
 Manufacturing Growth 1974/75 - 1986/87: 9%
 Total GDP Growth 1974/75 - 1986/87: 12%

Agriculture Growth 1979/80 - 1986/87: -4%
 Mining Growth 1979/80 - 1986/87: 21%
 Manufacturing Growth 1979/80 - 1986/87: 5%
 Total GDP Growth 1979/80 - 1986/87: 11%

pace with the population growth.

The 1979/80 growth series covered 13 years of growth by sector from 1974/75 to 1986/87. The new series overlap with the 1974/75 series. The change in methodology and base year for prices did have some growth effects. For the five year period 1974/75 – 1978/79 these changes can be compared. The major change between the series, is that while in the old series construction value added was recorded as declining (by 50 percent), in the new series there is a slight increase in value added for the same period. This sector also has a higher relative share in GDP, together with mining, and government. All other sectors see their relative share in GDP declining, agriculture significantly so. The average aggregate growth rate is not affected by these changes, one of the reasons for this being a significant revaluation of mining output in the 1974/75, so that growth in the first year is less rapid. The timing of growth changes, as most of the increase in value added in mining happens in 1977/78 in the new series, while it took place in 1978/79 in the old series.

An important change in methodology occurred within this accounting period. The GDP by sector and growth rates presented above is based on the full series published in the 1986/87 report. The series published in the 1985/86 report, however, does look significantly different. Contrary to common practice in 1986/87 the whole series was revised backwards. A new household income and expenditure survey was incorporated. The effect if these new data is that the output of Agriculture, Trade and Finance sectors was revised upwards. The output in agriculture was raised upwards because of increased coverage and additions made for 'own consumption'. In the trade sector informal retailing was added, and for the Finance sector there was an addition in the real estate sub-sector as improved data on renting of property was added. In effect there was positive statistical growth in all these sectors. These new data are added by smoothening the series backwards.

The direct effect of the statistical growth in Trade and Finance is hard to pick out in the new series because of another concurrent important change in the data of the 1986/87 report. In this report the mineral trade is taken out of the Finance and Trade sector and transferred to the Mining instead. The gradual approach of revising is taken here as well, with an increasing amount transferred between the two sectors, starting in 1977/78 and 1979/80 in Finance and Trading respectively. Because this transfer goes on simultaneously as there is statistical growth from the Household Income and Expenditure Survey flowing into these sectors, the end result is confusing. There was also a further statistical increase in GDP as 'construction output was increased in line with the demand'. Exactly what this 'demand' refers to is hard to interpret, but probably the increase is made in order to harmonize with the new data on rural dwellings. The effect is certain enough though. The statisticians were retrospectively adding growth to the GDP.

Table 32: Botswana Statistical Growth: Differences in GDP per sector, before and after 1986/87 revision compared. Base Year: 1979/80 (Pula Million)

	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
Gross Domestic Product	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 Produce represents the total statistical value added from this revision.

One of the basic conditions for the comparison through time is violated with this gradual addition of new data. According to the series published in the 1985/86 report, total value added in agriculture was halved during the period. In the new revised series value added decreases by 30 percent instead. The increased value added in construction overestimates the growth in GDP, particularly in the early period. In the previous series it was observed the value added in this sector fell in the late 1970s, while the rest of GDP was increasing. This made sense considering 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 to assume the sector grew in accordance with the rest of the GDP.

The sum of GDP in the table on the previous page is a measure of how much value added has been added to the baseline estimate. The increase in the baseline estimates is largest in the middle of the period. In 1981/82 the increase is 21 percent relative to the 1985/86 baseline estimate. The effect of the revision is the largest for the period between 1974/75 to 1981/82. According to the 1985/86 data the annual average growth was 13 percent, with the output in the agricultural sector declining with an annual average of 3 percent. The revised 1986/87 data records an annual growth of 18 percent, and the growth in the agricultural sector is now -1 percent. Note that this is a matter between reliability and validity. The 1986/87 revision of the data was done to improve the 1986/87 estimate of total GDP. The inclusion of new statistical data makes that estimate more valid. Therefore, if one is interested in quoting the best estimate of GDP per capita the new estimate is preferable. However, if one is concerned with economic change over time, the newly included data makes the derived rate of growth unreliable, and the series in 1985/86 is therefore more reliable because the measurement is more consistent in that series. When compiling data for the use of databases, however, the most recent estimates are as a rule preferred, and in this case the most recent series has a significant element of statistical growth.

This element of statistical growth does not effect the average growth in total GDP for 1974/75 -1985/86 period. It does affect the timing of growth. Because of the large increase in the baseline estimate in 1981/82 the GDP was estimated to grow by 8 percent this year, as compared to a decline of 2 percent in the old series. The effect on the average growth rate is cancelled 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 annual average of 4 percent as compared to a annual average decline of 2 percent in the new series. Mining growth is marginally higher on the average for the period. The effect on the timing of the timing of the growth is parallel to that of the to the total GDP growth: a marked revision upwards of the growth rates up to 1981/82, and a revision downwards 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 activities

are still measured in other sectors, notably construction.

Bearing in mind this revision, judging by the aggregate growth rate, the economic performance in Botswana was excellent during the period with an aggregate growth rate of above 10 percent. Concentrating on the period after 1979/80, which has not previously been discussed, and using the 1986/87 series, total GDP almost doubled from 1979/80 to 1986/87. The mining sector alone accounted for 70 percent of this increase in output. Government expenditures accounts for almost 20 percent of the increase, with more than 50 percent of government revenues deriving from mining directly in 1985/86 (Harvey and Lewis 1990:110). It has been duly noted that some of the increase in some sectors was statistical. In agriculture the difference in value added in 1985/86 between the two estimates which is the growth effect of the inclusion of new statistical data amounts to 3 percent of the total value added of the period. The other inclusions were made in Trade and Finance, 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 sector accounts for 6 percent of the value added in the period. The expansion of total output over this seven year period happened in mining and government expenditure. The remainder of the increase can be attributed to changes in measurement.

Even with this statistical growth in the agricultural sector there was a negative trend in agricultural growth for the whole period. Manufacturing performed slightly better. While the sector became more diversified, its major driver was still the cattle industry. The expansion in industry was constrained by the lack of growth in the agricultural sector. The cumulative effect of manufacturing and agriculture was neutral. According to the old series, where agricultural growth is not overestimated, the total output of the two sectors declined over the period. To introducing a far-sweeping change in methodology without changing the base year is unusual, and would not have been detected without a careful consultation of each annual report. By contrast, the introduction of a new base series in the 1987/88 report at 1985/86 prices did not correspond with any changes in methodology. The new series covered the same period back to 1974/75 and it is specifically noted that care was taken to leave growth rates unchanged when changing the base year. Indeed, there is hardly any difference between the series either in terms of growth rates or structural distribution in any given year. This coherence will not be documented here. Instead the investigation of Botswana's economic performance will be concluded by reviewing its growth record 1974/75 – 1994/95 at 1993/94 prices.

Table 33: Botswana Gross Domestic Product, Base Year: 1993/94 (Pula Million)

	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	1311.7	1554.6	2274.9	2635.7
Manufacturing	124.7	159.8	176.1	164.9	221.9	144.0	180.2	225	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	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
	131.5	139.1	172.8	219.4	299.8	384.0	409.0	367.2	397.2	450.7
Gross Domestic Product	1760.4	2073.5	2150.6	2600.6	2829.6	3278.5	3592.5	3840.5	4483	5015

	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	2720.2	2804.7	3031.6	3116.6	3710.0	3587.5	3919.2	3900.9	3719.9	3921.5	3870.9
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	1087.5
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	1023.3	1106.1	1201.9
Public Administration and Other Services	814.2	886.4	1027.8	1266.3	1570.8	1651.7	1778.4	2028.7	2112.6	2177.0	2267.7
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
	413.5	375.6	448.0	503.8	576.0	625.0	812.3	1077.3	1067.2	795.5	678.2
Gross Domestic Product	5347.2	5734	6209.3	7082.3	8690.4	9170.1	9964.1	10566.1	10525.4	10972.2	11354.7

During this twenty-year period total output in Botswana increased more than six times. This growth in output was overwhelmingly driven by expansion in mining. The total value added in this sector contributed 12 percent to total GDP at beginning of the period compared to 34 percent in 1994/95. The mining sector value added in this year was larger than total GDP in 1981/82. The value added in the mining sector rose 18 times over the period. The growth was fastest during the first decade, and from 1988/89 to 1994/95 the average growth rate fell significantly. The average growth in the sector for the whole period was 18 percent, while in this latter period it was 3 percent. Despite this stagnation in the mining sector there was still some growth in the economy. 70 percent of the total increase in value added period in this latter period took place in the Trade, Finance and Government sector.

During the whole period there is no significant increase in agricultural output, and allowing for statistical growth from increased coverage it was probably negative.²⁴³ This twenty-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. Besides this year there was no growth in agriculture and the total output was lower than in 1987/88 for the remainder of the period. Reflecting its dependency on cattle, manufacturing growth was sporadic. There was record output in 1978/79 when there was a very high take-off from the cattle herds. This level of output was not reached again until 1985/86. From this year onward there is rapid growth in the sector and the total manufacturing output increases almost three times. Note that the total output of the manufacturing and agricultural sector was higher in 1974/75 than in 1985/86, and the 1986/87 output was only marginally higher than at the outset of the period. Had Botswana relied on manufacturing and agriculture sector it would not have sustained the increase in GDP for most of the period. The reason why Botswana's economic performance was favourable relative to other African economies was a substantial increase in mining activities. This increase was felt directly in other sectors such as construction, and electricity provision. Tertiary sectors, such as Trade and Finance, combined with Government also benefited directly and indirectly from the economic activity in the mining sector. Even with a late agricultural revival and the beginning of manufacturing growth in the late 1980s that lasted through the 1990s these two sectors contribute less than 10 percent of total GDP in 1994/95. The mining sector directly accounted for 35 percent of total output at the end of the period, a ratio that grossly underestimates its indirect effect of the economy.

²⁴³ As was reviewed earlier an ad hoc addition to output was made following the inclusion of new statistical data. This addition was smoothed backwards, with an addition of 22.5 million in 1985/86 compared to 12.5 million in 1974/75 in 1979/80 prices. Total output in the Agricultural sector was 321.9 million in 1985/86 at 1993/94 prices compared to 75.7 in 1979/80 prices. The price ratio between the two series in agricultural product was 4.25. The statistical increase then could roughly be estimated to be 22.5 million: 12.5 million multiplied by 4.25. This would amount to 53 million, while the measured increase in agricultural output was 40 million over the period.

Two related, though not interchangeable concepts, that are both relevant to the evaluation of economic development in Botswana is the 'resource curse' and the 'Dutch Disease' thesis. The first predicts that countries with a rich resource base may have a perverse institutional development because the availability of mineral rents in particular may create incentives for unproductive activities (i.e. rent-seeking behaviour) or extreme corruption and mismanagement. Botswana has avoided the resource curse, largely because of the nature of the resource itself. The mines were deep pipe deposits that were not yet developed at independence, rather than alluvial. This meant that to exploit the deposits Botswana leadership had to rely on foreign partners, in this case DeBeers, and when they were developed the mines are easier to control (as compared to mines in West Africa). Acemoglu et al (2003: 113) argues that the diamond revenues was so profitable when extraction was orderly that it increased the opportunity cost of rent-seeking and thereby reducing the incentive for such activity.

In a different manner the 'Dutch Disease' thesis predicts that a resource boom can have a negative effect on an economy. Essentially it can take places through two domestic channels and one related to the external economy. In the domestic economy an economic boom can increase the cost levels in the whole economy, and therefore reduce competitiveness of other sectors. This was not relevant for the only important non-diamond exports. As we will return to later, cattle exports were guaranteed in price and quantity through the Lome agreement. When it comes to costs of other inputs it can be argued that most inputs were imported, except non trade-ables and labour. The demand for labour has rather been argued to be insufficient, then a negative effect on the economy. In addition, Botswana has a lot of expatriate mining labour in South Africa on which it could repatriate and therefore rely on to fill domestic demand. Generally, Botswana has suffered from high urban unemployment. The export boom could have created opportunity for the Botswana government to engage in excessive spending, but the consensus is that this has not occurred, although as we will see in Chapter 6 there are some increases in transfers over the budget in the late 1990s. The third channel through which an export boom can hurt the economy is the through an overvaluation of its currency. Botswana Pula, introduced in 1976 (before South African Rand was used) was initially pegged against South African Rand until 1980, its main trading partner, and it did not engage in significant exports apart from cattle and diamonds for which an export market was guaranteed. During the 1980s the foreign exchange rate was managed relatively successfully with the objective to avoid revaluation (Harvey and Lewis 1989: 221). It is therefore not likely that the diamond mining growth had significant negative effects on agriculture and manufacture while it certainly stimulated growth in other sectors. Manufacturing growth (in other activities than the cattle abattoirs) first picks up in the 1980s when Botswana actively supports manufacturing growth, a point which we return to in chapter 6.

Kenya

This is an account of the economic performance of Kenya 1965-95 according to the official growth evidence. The post-colonial growth record of Kenya is covered by four different constant price series. The first decade can be evaluated according to a growth series based in 1964 prices. This series is continued to 1974. There are two official series covering the 1970s: one based in 1972 prices and another based in 1976 prices. The 1972 series was only continued until 1978, while the 1976 series covered a decade of economic growth, 1974-1983. The evaluation of economic growth in the 1980s until 1995 relies on an official series based in 1982 prices. There is little overlap in the series of official evidence for Kenya. The performance in the 1970s can be approached by two different series, while for the 1960s, 1980s and 1990s one relies on one time series. The advantage here is that this results in less inaccuracy between the different international data sources, though some discrepancies have been noted. A further advantage as compared to Botswana is that there is a consistent reporting, and no gaps in the series. As noted in the chapter on national accounting methodologies it is unclear to what extent accounting methods changed during the period.

The Kenyan national accounts report the monetary account and the non-monetary account separately. In contrast to the Tanzanian accounts, it does not supply the regular table with all activity included. In order to get a comparable figure for the agricultural sector, the non-monetary value added activity in agriculture, forestry and fishing needs to be added to agriculture, forestry and fishing in the monetary account. For comparison the data will here be given in all-inclusive totals in the same aggregate as for the other countries in keeping with the ISIC format. In the 1972 series the tables are still not in the ISIC format, but the change is here that, in accordance with the rules set out in 1977 handbook, all agricultural goods are now considered monetary. So that in the 1964 series for the year 1974 the non-monetary sector was considered 21 percent of the total GDP, while in the new series this has changed to 11 percent.

During the first decade growth was stable, balanced and modest. The exception was 1965 when drought led to a marked decrease in the agricultural output, and resulting in a stagnant total GDP. The adverse climatic conditions were reversed in 1966 when the rains were “extremely good” (CSO, 1967). In 1971 there was again a drought, and a decrease in agricultural growth can be observed. *Economic Survey 1972* reported that this drought caused a negative growth in agricultural output, but the data reported here according to the *Statistical Abstract 1975* do not agree.

Agricultural output revived with better rain in 1972. The agricultural growth averaged 5 percent during the period, which was just a slight one percentage point lower than total GDP growth. The structural change reflects this relative lagging behind as the sector’s contribution to GDP fell from 39 to 34 percent.

Table 34: Kenya Gross Domestic Product, Base Year: 1964 (K£ Million)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
Agriculture, Hunting, Forestry and Fishing	130.16	117.68	143.88	147.27	155.1	166.68	173.68	175.97	189.39	199.44	201.58
Mining and Quarrying	1.46	1.41	1.38	1.37	1.44	2.01	2.6	2.72	2.5	3.6	3.42
Manufacturing	33.74	35.56	37.76	39.21	42.11	48.59	52.49	59.29	63.61	70.78	76.11
Electricity and Water	6.93	7	7.04	7.68	7.9	9.09	9.81	10.56	11.64	11.93	12.53
Construction	12.63	13.01	14.95	16.19	16.81	18.64	18.98	20.22	23.05	23.78	22.68
Wholesale and Retail Trade and Restaurants and Hotels	32.98	34.54	38.37	38.42	42.63	41.27	43.31	44.6	42.64	45.49	47.01
Transport, Storage and Communications	25.14	28.79	32.47	36.11	38.66	38.57	41.18	43.12	42.43	45.21	48.05
Finance, Insurance, Real Estate and Business Services	42.37	45.16	46.68	50.63	55.29	58.04	65.34	70.39	76.21	82.94	88.52
Public Administration and Other Services	45.94	49.91	56.11	59.18	64.21	71.65	77.3	85.6	96.01	102.75	107.25
Gross Domestic Product	331.35	333.06	378.64	396.06	424.15	454.54	484.69	512.47	547.48	585.92	607.15

Average Annual Growth:

Agriculture	5%
Manufacture	9%
GDP	6%

Table 35: Kenya Gross Domestic Product, Base Year: 1972(K£ Million)

	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	148.4
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	-14.1	-14.68	-15.36	-18.27	-20.03
Gross Domestic Product	675.43	718.29	737.02	753.7	795.59	864.04	913.82

Average Annual Growth:

Agriculture	3%
Manufacture	12%
GDP	5%

Table 36: Kenya Gross Domestic Product, Base Year: 1976 (K£ Million)

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Agriculture, Hunting, Forestry and Fishing	442.78	475.38	484.44	532.86	553.38	549.9	543.76	577.44	607.22	628.87
Mining and Quarrying	2.74	3.11	3.41	4.05	4.14	4.52	4.05	3.32	3.32	3.32
Manufacturing	144.9	145.77	144.18	167.1	188.16	201.56	212.95	225.64	225.64	235.88
Electricity and Water	20.22	21.55	23.1	25.83	27.38	29.41	31	32.9	34.08	35.27
Construction	69.83	68.4	67.08	72.05	78.58	84.29	88.68	94.11	86.85	85.03
Wholesale and Retail Trade and Restaurants and Hotels	141.53	136.21	132.54	143.59	155.92	154.36	171.15	171.09	167.96	172.73
Transport, Storage and Communications	64.52	62.59	69.15	73.74	81.4	87.26	93.46	94.86	99.22	106.51
Finance, Insurance, Real Estate and Business Services	165.84	174	182.45	191.74	202.4	212.02	237.69	260.87	284.75	297
Public Administration and Other Services	170.11	185.19	195.64	206.09	220.34	236.6	252.76	266.74	277.43	289.64
Imputed Bank Service Charges	-23.15	-24.09	-23.88	-26.79	-36.29	-44.18	-45.11	-46.39	-50.11	-53.49
Gross Domestic Product	1199.32	1248.11	1278.11	1390.26	1475.41	1515.74	1590.39	1680.58	1736.36	1800.76

Average Annual Growth:

Agriculture	4%
Manufacture	6%
GDP	5%

The manufacturing sector (including repairs) grew faster than the rest of the economy at a relatively steady 9 percent yearly growth. It contributed 15 percent of the total increase of value added during the period, and increased its share in GDP from 10 to 13 percent. Finance and Government was the only two sectors in the economy that grew faster than manufacturing. Together these 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 with agriculture causing the only disruption from that steady growth trend. The growth was quite evenly shared in GDP with the four sectors agriculture, manufacturing, finance and government, which together made up three quarters of GDP in 1964, accounting for 80 percent of the total output growth between 1964 and 1974.

The short series between 1972 and 1978 indicates a slight slow-down in growth as the average GDP growth fell from 6 percent in the previous period to 5 percent. The whole economy grows slower in this period apart from the manufacturing sector where growth picked up to an average growth rate of 12 percent per year as compared to 9 percent in the previous period. Agricultural output grew at only 3 percent annual average, and the growth would have been lower had it not been for strong agricultural growth in 1977. This 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. The following year prices fell in the world market, and so marketed output stagnated. According to *Economic Survey* 1979, the volume of marketed output of coffee fell almost 15 percent in 1978. The effect of the falling unit value of the output is not apparent in a constant prices series, but according to the same *Survey* the fall in prices resulted in a reduction in coffee earnings from KSH192.9 million to KSH115.6 million, a decline of more than 40 percent. Before the fall in prices, the rise in earnings stimulated manufacturing growth, both in terms of demand, and the supply of capital goods for new projects. The rise in export earnings from coffee and tea had also resulted in a relaxation of import control that stimulated growth in trade and wholesaling.

While agriculture contributed a modest 13 percent of the total increase in output over the period, rapid growth in manufacture compensated and GDP growth rate was kept stable. Manufacturing accounted for 30 percent of the total output increase. As in the previous period, the government and finance sectors grew steadily and accounted for 40 percent of the total increase. The aforementioned relaxation of import restrictions and boom in export prices caused a rapid growth in the trade sector (in particular from 1975 to 1978 when it grew at an average of 10 percent a year) and this sector contributed 8 percent of the total increase in value added with other sectors only contributing marginally.

Together the 1972 and 1976 series allow a comparison of parts of the same period at different prices, as the 1974-1978 period overlaps. There were, as has been noted, significant

changes in world market prices that were transmitted to the domestic economy during this period. In the 1976 series, as expected, agriculture has a larger share of the economy (37 percent as compared to 34 percent in 1974, and 38 percent compared to 31 percent in 1978). As a result the manufacturing sector has a lower relative share in the 1976 series though this difference is smaller (3 percent at the highest in 1978). In terms of growth rates, the 1972 series gives a one percent annual average growth in GDP from 1974 to 1978, compared to 5 percent in the year 1972. The 1976 series is significantly more optimistic about agricultural growth which averages 4 percent as 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. This effect is largely cancelled out, but because the 1976 series gives a higher weight to agriculture the economy appears to grow slightly slower in aggregate.

The aggregate growth during 1974-1983 was again stable and apart from the coffee and tea boom year of 1977 it was never far from the annual average of 5 percent. Output in agriculture appears to have been stimulated by favourable price conditions in the world market up to 1978, but stagnated thereafter with a recorded negative growth in 1979 and 1980. Output recovers 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 with an average growth of 6 percent. This growth rate, it should be noted, should not be taken at face value. The difference between the 1972 and 1976 series was observed in the previous paragraph, and in terms of the annual growth rate there are some surprising discrepancies. The most conspicuous is that in 1976, at 1976 prices the manufacturing sector records a negative one percent growth. At 1972 prices however, a growth of 19 percent is recorded. It is unclear what this difference derives from. Even so, the growth in manufacture 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 over the period and did not increase its relative share in GDP between 1974 and 1983. The finance and government sectors grew fastest, contributing to 42 percent of the total value added from 1974 to 1983.

In the 1979-1995 period as measured by the 1982 series there was a slow-down in aggregate growth as compared to earlier periods. GDP growth averages only 4 percent per year in this period. Two periods of particular stagnation in growth can be identified. During the first 6 years 1979-1984 growth averaged three percent. From 1985 to 1990 growth improves averaging 6 percent annually, while during the first half of the 1990s it averaged only 2 percent per year. This growth trend is paralleled in manufacturing and agriculture. Both growth in manufacture and agriculture slowed

Table 37: Kenya Gross Domestic Product, Base Year: 1982 (K£ Million)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Agriculture, Hunting, Forestry and Fishing	857.01	866.26	917.53	960.81	1004.11	969.31	1039.94	1091	1137.26	1237.02	1237.96	1280.94	1271.84	1229.54	1188.81	1220.73	1284.67
Mining and Quarrying	7.95	8.75	5.45	6.61	7.21	8.16	8.11	8.4	9.12	10.15	10.62	11.25	11.97	11.01	11.23	11.41	11.72
Manufacturing	333.97	351.47	364.13	372.32	389.07	405.84	424.07	448.67	474.34	502.8	532.47	560.47	581.63	588.61	599.21	610.59	634.4
Electricity and Water	58.51	57.97	64.3	66.27	69.03	71.55	49.69	52.35	55.33	59.03	62.97	67.83	70.84	70.44	71.03	73.05	75.43
Construction	163.66	174.66	184.75	169.54	160.54	154.43	178.67	177.39	184.33	189.92	199.75	207.23	203.69	197.65	187.98	194.39	204.33
Wholesale and Retail Trade and Restaurants and Hotels	303.33	318.38	322.52	299.4	307.78	320.06	355.22	389.98	412.53	436.27	455.47	465.95	472.05	478.94	479.56	509.05	549.34
Transport, Storage and Communications	140.87	148.95	151.71	161.93	168.85	169.7	206.54	215.42	224.9	234.02	241.06	249.74	259.1	263.6	265.71	273.68	285.58
Finance, Insurance, Real Estate and Business Services	405.42	417.45	487.24	483.88	521.75	546.28	616.6	648.12	581.22	716.08	758.01	798.14	831.59	864.66	900.66	936.56	993.94
Public Administration and Other Services	406.45	432.17	455.87	474.11	494.77	510.29	537.41	572.29	702.84	595.16	681.03	716.24	747.38	770.69	794.4	804.97	834.48
Imputed Bank Service Charges	-81.14	-78.41	-93.36	-84.19	-111.17	-116.42	-102.97	-105.43	-113.43	-121.81	-129.12	-134.03	-138.59	-142.03	-156.3	-169.17	-180.16
Gross Domestic Product	2596.03	2697.65	2860.14	2910.68	3011.94	3039.2	3313.28	3498.19	3668.44	3858.64	4050.22	4223.76	4311.5	4333.11	4342.29	4465.26	4693.73

Average Annual Growth:

Agriculture	3%
Manufacture	4%
GDP	4%

to an annual average of 4 and 3 percent respectively. Between 1979 and 1984 growth in both sectors averaged 3 percent. Agricultural and manufacturing output revived somewhat in the later 1980s and for this six-year period the annual average growth was 5 and 6 percent. The decline in agricultural growth starts somewhat earlier. Between 1987 and 1995 total output only increased by 4 percent, leaving the average growth rate for this seven year period somewhere between zero and one. Manufacturing output grows at an annual growth rate of 3 percent during 1990-1995.

The 1979 -1995 series is presented as a continuous series, but is put together using the data from *Statistical Abstracts* published in 1985, 1990 and 1996, where national accounts data was published in constant prices for the years 1979-1984, 1983-1989 and 1989-1995 respectively. The series in the table makes use of the data from the 1990 Abstract from 1985 onwards. At this point there is a problem of comparability of the series. According to the series in the table there is considerable growth between 1984 and 1985 (7 percent). Part of this growth is statistical as can be disclosed by comparing the 1983 and 1984 estimates according to the 1990 data and the 1985 data.

Agricultural output for the year 1984 was revised upwards in the 1990 data by 30.89 million K£. Since the earlier data were used until 1984, the agricultural growth from 1984 to 1985 is in part statistical.²⁴⁴ The data for the building and construction were revised upwards by 8.66 million K£ and 9.24 million K£ in 1983 and 1984 respectively. For the Water and Electricity sector the revision, perhaps surprisingly, goes the other way. According to the 1990 data the sector is 23.05 and 25.03 million K£ smaller in 1983 and 1984 respectively. The sectors recording value added in Transport and Trades was also revised upwards. In transport the increase was about 7 and 12 K£ million in 1983 and 1984 respectively, while in Trade it was almost 33 K£ million in both years. The total GDP upwards revision in the 1990 abstract is 112.99 and 112.47 K£ million. Since there was no revision of the value added in Manufacturing, the remaining half of this upward revision corresponding to almost 4 percent of total value added is mainly in the Finance, Real Estate, Government and other services. Ownership of Dwellings in particular is revalued significantly. The total effect of the upwards revision is about 4 percent of total GDP in 1984. This means that the average growth in GDP and agriculture is slightly overstated in the series.

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 manufactures, as reviewed growth in this sector was modest over the period, and its share in GDP increased marginally from 13 to 14 percent. The 'productive' sector's share in the economy was reduced from accounting from almost half the GDP in 1979 to one third in 1995. The most rapidly growing sector in the Kenyan economy between 1979 and 1995 was Finance followed by the Government growing at an annual growth rate

²⁴⁴ We have in two sets of data for 1983 too. For 1983 the difference between the two Abstracts is 29.53 million K£. The statistical growth is approximately 3 percent in this sector.

of 9 and 7 percent respectively. These two sectors accounted for almost half of the increase in total value added during the whole period. In the process the sectors contributed their shares in the economy to about one fifth of GDP each.

The economic performance of Kenya 1965-1995 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 lack of consistent reporting on the methodology it is harder to reach a firm conclusion on the importance of statistical growth. It is hard to tell to what extent the agricultural sector was well accounted for in the early period, and whether there was a significant increase in coverage as time proceeded. Non-monetary agriculture accounted for 54 percent of total agricultural output in 1964, and was estimated to grow more slowly than commercial agriculture through that period. In 1974 its share had fallen to 52 percent. From the 1972 report onwards the estimates for non-monetary and monetary agriculture are not disaggregated, and since it is first and foremost in this sector that one would expect statistical growth it is hard to detect. Taking the relative statistical resources at disposal in Kenya, it is likely that there was less statistical growth in this country than in the other countries in the early periods. When the agricultural sector is reported as one aggregated sector, its share in GDP increases somewhat. At 1972 prices the agricultural share in GDP was one percentage point higher in the three years the series coincide with the 1964 series (1972, 1973 and 1974) and agricultural growth slows down. However it is not clear whether this is due to changes in statistical methods. Changes in base years coincides with very irregular reporting in *PWT* and *WDI*. In these sources, growth in 1971 and 1972 is reported to be 22 and 17 percent and 28 and 17 percent respectively, while official growth rates for these years are 6 and 7 percent respectively.

While growth in the productive sectors slowed down in the latter part of the period, the aggregate was slowing down to a lesser extent. In particular the finance and the government sector grew rapidly. While it would not be expected that the government data was subject to statistical growth, some has been noted in finance, in particular relating to the evaluation of real estate. There is higher growth in the 'supportive' sectors than in the 'productive' sectors in the Kenyan economy. This acknowledgment might make Kenya look less favourable compared to other economies if performance is measured across agriculture and manufacturing, rather than 'supportive' sectors in which the data, as has been reviewed, is more likely to be a matter of estimation than actual measurement.

Tanzania

This is an account of the economic performance of Tanzania 1965-95 according to the official growth evidence. The post-colonial growth record of Tanzania is covered by four different constant price series. Unlike with the other countries these series run over long periods of time. For instance, the first series in 1964 prices was continued until 1982. This means that we are presented with evidence for almost the whole period within the first series. Simple averages over this period miss important changes in economic performance during the period. The second series, based in 1976 series, covers the second part of the period from 1976 to 1993. The third series is based in 1985 prices, and provides a second view of the whole period as it includes all years from 1964 to 1995. The fourth series gives the chance to review the latter half of the period. Based in 1992 prices it covers the years from 1987 to 1995.

As reviewed in the previous chapter on national accounting methodologies, the first, second series and fourth series all coincided with some revision of the accounting methodologies. In particular the revisions in the fourth series was so far reaching that *WDI* declined to undertake a harmonization of the series and only report data based on this fourth series. *PWT* does however report a full series, with resulting erroneous growth rates in the late 1980s. These discrepancies within the official growth evidence make a careful consideration of the different versions necessary. Derived growth rates for comparison purposes differ widely depending on which year is chosen, and over which years the comparison is done.

The 1966 series stretches over a period in which there was a marked shift in economic performance. The whole economy expanded until the late 1970s, after which total GDP declines in the early 1980s. Average annual GDP growth from 1964 to 1982 was 4 percent. Between 1978 and 1982 total GDP barely expanded and growth in output was negative in 1981 and 1982. If these latter years of stagnation are excluded, and an average total GDP rate calculated between 1964 and 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 which were all drought years. This points to the relative importance of agriculture in Tanzania. The sector accounted for almost half of total output in 1964, but according to this series the share in total output had fallen to a third in 1982.

Agricultural output was growing during the first part of the period, despite periodic setbacks. Average annual growth between 1964 and 1977 was 4 percent, even though output growth was negative or close to zero in six out of these 15 years. Between 1974 and 1979, when agricultural output recovered from the 1972-1974 drought, and export crops were stimulated by

Table 38: Tanzania Gross Domestic Product, Base Year: 1966 (TSH 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	2623	2575	2952	2954	3062	3080	3205	3166	3425	3458	3315	3596	3772	4104	4326	4257	4560	4184	3819
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	1063	1152	1104	1244	1048	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	1039	1068	1074	1092	1181	1127	1170	1166	1107	989
Transport, Storage and Communications	387	400	482	536	618	644	729	814	869	905	958	997	1033	1170	1287	1187	1284	1317	1350
Finance, Insurance, Real Estate and Business Services	575	618	618	707	709	745	763	800	831	867	929	941	957	997	1034	1070	1111	1148	1194
Public Administration and Other Services	620	658	689	741	764	771	866	952	1071	1157	1362	1581	1790	1986	2013	2107	2313	2673	2907
Imputed Bank Service Charges	-32	-48	-49	-98	-80	-85	-99	-115	-124	-137	-140	-143	-134	-146	-153	-158	-168	-174	-183
Gross Domestic Product	5619	5773	6518	6825	7174	7338	7680	8001	8539	8800	9020	9553	10163	11053	11323	11557	12014	11812	11427

Average Annual Growth Rates

	1964-1982	1964-1977	1979-1982
Agriculture	2%	4%	-3%
Manufacture	3%	7%	-14%
GDP	4%	5%	0%

high prices in the world market, growth in value added averaged 7 percent per year. When the coffee and tea prices collapsed in 1979 agriculture went into decline with the rest of the economy. During 1979-1982 growth in agriculture averaged negative 3 percent. It should be emphasised that agriculture was the slowest growing sector in the economy over this period. Together with the trade sector, the only sector that did not increase its relative share in GDP from 1964 to 1982. That the trade sector grew less than proportionally to GDP is unique for Tanzania in this sample of countries, and indicates that the decrease in value added from 1979 onwards was a marketing collapse, and not a production collapse. It was previously noted that the constant price data for sectoral distribution is particularly misleading in the case of Tanzania, and that the increase of the government sector's share in GDP from 11 percent to 25 percent is a statistical artefact derived from using public wages as a deflator for this sector.

There is a rapid growth in manufacturing during the early period. The sector grows at an average of 7 percent annually between 1964 and 1977. In 1979 manufacturing output reached its peak, more than three times higher than in 1964. Output growth in this sector was faster in Tanzania than in Kenya between 1964 and 1974. The crucial point which makes Tanzania's growth experience different is the negative growth in output from 1979 onwards. From 1979 to 1982 the manufacturing output almost halved and the 1982 total output was smaller than the output of this sector in 1967, and only 44 percent higher than output in 1964. In conclusion, economic growth in Tanzania was respectable until 1979, with a particularly rapid growth in manufacturing, while agricultural output fluctuated due to climatic conditions. From 1979 onwards the economy contracted as manufacturing output declined rapidly, and officially marketed output (as measured in both agriculture and trade) also decreased. Over the whole period, the only important structural change was a decline of agricultural output's share in GDP. However this finding is partly caused by the government share in output at constant prices being grossly overstated.

There are data on the size of the non-monetary sector between 1964 and 1980. The non-monetary sector accounted for 33 percent of total GDP in 1964. This share decreased somewhat over the whole period and the share in GDP was 31 percent in 1980. This share was however lower in the mid 1970s when it was about 27 percent. This confirms one prediction made on the basis of accounting methods, namely that a large 'subsistence' sector slows down measured economic change. The monetary economy grew faster between 1964 and 1979 at 6 percent average. Between 1975 and 1980 the non-monetary economy grew faster than the monetary economy, presumably because the government was prioritizing expansion in maize production following the drought and food shortage. Furthermore, it was probably a result of production taking place within the newly-established Ujamaa villages. In 1964 the non-monetary share in agricultural output was estimated to

Table 39: Tanzania Gross Domestic Product, Base Year: 1985 (TSH Million)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Agriculture, Hunting, Forestry and Fishing	29753	29192	33467	33486	34714	34917	36334	35890	38829	39202	37581	40765	42730	43222	42504	42825
Mining and Quarrying	607	702	827	789	489	637	417	655	513	392	379	314	410	442	362	383
Manufacturing	4899	5544	6528	7263	7796	8545	8902	9750	10570	11041	11192	11229	13241	12440	12859	13288
Electricity and Water	176	183	213	227	249	283	317	332	366	393	438	478	466	519	608	676
Construction	2145	2237	2508	3381	3560	3312	3693	4295	4543	4722	4667	4428	4061	4203	3597	4038
Wholesale and Retail Trade and Restaurants and Hotels	7911	8383	9741	10073	11217	11490	11617	11476	11689	12266	12607	12679	12893	12634	12702	12893
Transport, Storage and Communications	2963	3034	3658	4067	4686	4886	5528	6170	6589	6864	7268	7562	7841	7687	7906	7604
Finance, Insurance, Real Estate and Business Services	2437	2618	2618	2996	3004	3157	3233	3390	3521	3674	3973	3986	4050	4156	4392	4651
Public Administration and Other Services	2411	2559	2681	2883	2972	2999	3367	3702	4166	4501	5279	6149	6954	7414	8898	9664
Imputed Bank Service Charges	-229	-344	-351	-702	-573	-610	-709	-823	-888	-981	-1002	-1024	-961	-1047	-1099	-1135
Gross Domestic Product	53073	54108	61890	64463	68114	69616	72699	74837	79898	82074	82382	86566	91685	91670	92729	94887
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Agriculture, Hunting, Forestry and Fishing	44487	44927	45531	46830	46830	51634	54770	56502	59380	61425	66084	72120	75245	81965	83638	89466
Mining and Quarrying	362	369	369	333	356	333	298	302	265	274	428	659	941	1182	1360	1441
Manufacturing	12638	11220	10853	9906	10170	9772	9752	11010	11183	11935	12038	12075	11074	11144	10593	10487
Electricity and Water	850	886	892	878	933	980	1253	1164	1356	1152	1196	1439	1396	1492	1708	1783
Construction	4281	4088	4272	2522	3031	2761	3218	5338	7320	5754	8483	7200	8416	5643	5792	4584
Wholesale and Retail Trade and Restaurants and Hotels	12893	12375	12116	11362	11989	14195	14521	15330	15988	16083	17105	18663	19099	20417	21046	22237
Transport, Storage and Communications	8460	7687	7883	6854	6896	7021	7274	7702	8038	8056	7732	7858	8266	8154	8796	9613
Finance, Insurance, Real Estate and Business Services	4939	5031	5375	5604	5936	6059	6445	6589	6776	7490	7684	7945	8334	8957	9750	10530
Public Administration and Other Services	9466	10543	10558	10531	10537	10735	12855	12871	13282	13899	14237	14649	15202	15044	15932	15859
Imputed Bank Service Charges	-1203	-1244	-1511	-1622	-1711	-1806	-1998	-2033	-2087	-2142	-2174	-2224	-2304	-2600	-2854	-2997
Gross Domestic Product	97173	95882	96338	93198	94967	101684	108388	114775	121501	123926	132813	140384	145669	151398	155761	163003

be about 53 percent, a share that was relatively stable for the following decade. From 1974 to 1980 this share increased to 66 percent.

It would perhaps have been natural to continue this account of economic performance considering the next published series, the 1976 series. However, since the 1985 series covers much of the same ground the second view on the early period is reviewed first. Over three decades the GDP annual average growth was modest at 3 percent as total GDP increased more than three times from 1965 to 1995 measured at 1985 prices. As seen in the table below this average covered marked differences in performance in sectors, and over time.

Table 40: Average Annual Growth rates, Tanzania 1965-1995

	1965-1995	1965-1976	1977-1984	1985-1995
Agriculture	4%	3%	1%	6%
Manufacture	3%	9%	-3%	0%
GDP	3%	5%	0%	5%

Growth was episodic. Manufacturing growth was rapid during the first decade, declined during 1977-1984 and stagnated in the latter period. GDP growth and agricultural growth did revive from 1985 onwards, but this improved performance in total GDP was not matched by continued growth in manufacturing. Two other sectors visibly stagnating between 1977 and 1984 were trade and transport. In both growth picked up in the mid-1980s, and in trade markedly so. The share of agriculture in total GDP was 56 percent in 1964 and 54 percent in 1995, indicating no structural shift across the period. In 1979, the agriculture share in GDP was 45 percent. This structural shift coincided with the development in the manufacturing sector. This sector also shows no indication of structural change between 1964 and 1995, with a 9 and 6 percent share in GDP in the respective years. In the late 1970s however, the share of manufacturing in GDP was almost 15 percent.

While the 1985 series shows a marked deterioration in economic performance in the late 1970s and the early 1980s, the percentage decline in manufacture and agriculture is understated in this series compared to the 1966 series. In latter, in the four years 1979 – 1982, agricultural growth averaged minus 3 percent, and manufacturing growth minus 14 percent. The 1985 reports 1 percent growth in agriculture and -4 percent in manufacture on average. Contrary to expectation the 1985 series reports an average of minus one percentage annual growth in the total GDP growth for the period. 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 quarter of a percent). The structural shares accounts for this difference. In 1979 according to the 1966 series the ‘productive’ sectors accounted for 48 percent, compared to 56 percent in 1979 in the 1985 series. This difference is again rooted in the deflation measures. It seems that in Tanzania, relatively weak deflators are

Table 41: Tanzania Gross Domestic Product, Base Year: 1976 (TSH Million)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Agriculture, Hunting, Forestry and Fishing	10014	10038	10179	10297	10606	10854	11140	11259	11546	10931	11557	12066	12606	13183	14055	15397	15929	16839
Mining and Quarrying	214	231	189	200	189	193	193	181	185	174	154	149	138	139	170	317	366	296
Manufacturing	2811	2984	3127	2809	2288	1804	1482	1351	1171	2073	1991	2081	2228	2399	2338	2607	2668	2719
Electricity and Water	219	256	292	324	352	365	427	420	446	461	544	584	575	406	513	583	560	562
Construction	884	975	783	879	932	890	930	626	587	601	705	1052	1177	951	1615	1387	1518	1362
Wholesale and Retail Trade and Restaurants and Hotels	2839	2945	2984	2884	2734	2595	2478	2467	2453	2662	2958	3112	3236	3549	3577	3365	3465	3627
Transport, Storage and Communications	1685	1652	1699	1633	1818	1652	1693	1475	1643	1509	1504	1588	1643	1832	1789	1807	1902	2103
Finance, Insurance, Real Estate and Business Services	2036	2101	2217	2343	2489	2529	2666	2767	2831	3046	3318	3332	3433	3554	3630	3662	3771	4015
Public Administration and Other Services	2342	2672	2948	3361	3555	3830	4133	4538	4832	3616	3225	3243	3343	3475	3572	3645	3706	3626
Imputed Bank Service Charges	-424	-462	-485	-501	-531	-549	-667	-716	-722	-797	-886	-862	-920	-950	-1338	-1147	-1153	-1224
Gross Domestic Product	24596	25369	25911	26208	26412	26144	26457	26351	24972	24276	25070	26345	27459	28538	29921	31623	32732	33925

Average Annual Growth Rates

1976-1993

Agriculture	3%
Manufacture	2%
GDP	2%

Table 42: Tanzania Gross Domestic Product, Base Year: 1992 (TSH Million)

	1987	1988	1989	1990	1991	1992	1993	1994	1995
Agriculture, Hunting, Forestry and Fishing	521725	533184	553805	584070	604921	612402	631422	644718	682338
Mining and Quarrying	8465	8529	9634	11226	12436	13503	14608	16803	18768
Manufacturing	94781	97730	102814	107008	109002	104589	105244	105042	106750
Electricity and Water	14005	15312	16707	18029	20026	19766	19937	20329	21578
Construction	50660	62368	53660	70016	65064	68860	58955	59783	50983
Wholesale and Retail Trade and Restaurants and Hotels	176220	181040	184896	198611	203575	202207	201370	203684	210813
Transport, Storage and Communications	53225	54938	56153	56453	57963	66191	66256	66875	70833
Finance, Insurance, Real Estate and Business Services	103324	109249	119494	121567	123300	127971	134103	137727	138510
Public Administration and Other Services	90225	99034	102805	105895	111176	117419	112879	112787	109763
Imputed Bank Service Charges	-41270	-42365	-52223	-53639	-54431	-56992	-63767	-68805	-65090
Gross Domestic Product	1071360	1119019	1147745	1219236	1253032	1275916	1281007	1298943	1345246

Average Annual Growth Rates

1987-1995

Agriculture	3%
Manufacture	2%
GDP	3%

used for the 'supportive' sectors, compared to relatively strong deflators in the 'productive' sectors. Over time growth and the relative share of manufacturing and agriculture is underestimated compared to the non-productive sectors of the economy. The lesson to take from this is that economic performance is best evaluated using up-to-date base years. Therefore we proceed to consider the late 1970s and 1980s according to the 1976 series. These data can be compared with the 1985 series. For the late 1980s and early 1990s there are three series. According to the 1976 series average GDP growth from 1976 to 1993 was 2 percent, a slightly more moderate estimate than the 1985 series. There is agreement regarding the timing of the growth. According to the 1976 series, the total value added in Tanzania was less in 1985 than in 1976, indicating an aggregate zero growth in this decade. This corresponds with a near stagnant output in agriculture, and marked decline in manufacturing output. (Though, manufacturing output rose 77 percent in 1985, probably as a result of a long-standing foreign exchange shortage that was relieved). Between 1985 and 1993 agricultural output improved, and grew at an average of 6 percent. According to this series manufacturing GDP also grows, at an average of almost 4 percent, resulting in an average total GDP growth of 4 percent for this latter period.

In the period of stagnation in total GDP, 1976-1985, there was a slight growth in agricultural output, while manufacturing, trade, transport and construction all declined. A more marked fall in total output was avoided by growth in Finance and Government where measured output increased more the 50 percent. These sectors together accounted for almost 30 percent of the economy in 1985 compared to 18 percent in 1976. This structural shift was reversed in the period of relative growth, 1985-1995. The government sector barely expanded in this period, while the expansion in the finance sector slowed down compared to GDP growth. Consequently their shares in total GDP were fell. Agriculture accounted for 60 percent of the increase in output between 1985-1993 and reversed the trend of a falling agricultural share in GDP. Construction, trade and transport also grew in this period.

The 1992 series only covers the period of renewed growth, 1987-1995. However in this series growth is much understated as compared to the 1985 and 1976 series. The average GDP growth between 1987 and 1995 is measured at 3 percent. For the period 1987-1993 there are data from three series. According to the 1976 series GDP grew at an annual average of 4 and a half percent, according to 1985 prices at 5 percent, while the 1992 series reports growth at an average of less than 4 percent. This difference is more pronounced in the agricultural sector, where the 1985 series has the most optimistic estimate with almost 7 percent, the 1976 follows at 6 percent average growth, while the same derived rate from the 1992 series reports agricultural output growing at an average of 3 percent a year between 1987 and 1993.

The difference in growth between the series are larger than the differences in GDP by sector. For 1987, the share in GDP for agriculture is 46 percent according to 1976 prices, and 49 percent in both the 1992 and 1985 series. The major difference in the series is that in 1987 the government sector was estimated at 12 percent in the 1976 series, 11 percent according to the 1985 version, while only 8 percent in the 1992 series. The finance sector was only 6 percent in the 1985 series, while it was a full 13 percent in the 1985 series and 10 percent in the 1992 series. The most important difference is that the trade sector was evaluated at 16 percent of total GDP in the 1992 series, compared to 13 and 12 percent in the 1985 and 1976 series respectively. This change took place as the 1992 series made a better inclusion of what had previously been considered informal marketing activities. The differences by sector do not directly indicate the cause 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 on economic performance from the late 1970s decline in Tanzania. It has been shown that there are different estimates of how large the extent of the decline was, in both marketing output and trading. The difference between these estimates probably derives from different ways of taking account of agricultural output that is marketed outside the official marketing channels. Conversely, the difference in estimates of the late 1980s early 1990s revival in growth will depend on how sensitive the estimates are at recording 'new' output versus 'old' output in formal marketing channels. If a 1985 estimate that recorded output as the output that went through the 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 growth will be overestimated. An overestimation of growth also applies when officially marketed and therefore recorded output increases as a reaction to better prices in the official channels, while unrecorded marketing decreases. In conclusion, the conservative 1992 estimates are likely to be a better approximation to growth. To what extent the decline in output was overestimated in the early 1980s is hard to tell on the basis of these estimates.

The growth performance in Tanzania was marked by rapid expansion in manufacturing GDP and a not-so-rapid expansion in agriculture during the first half of the period. Between the late 1970s and the mid 1980s recorded output fell in most sectors. There was a slight revival in the 1990s but not as rapid as some of the earlier estimates indicate. Older estimates probably overestimate both the decline and the revival, but while there are newer data that measured the revival more conservatively and probably more accurately, the extent of the decline is a matter of judgement. If one is interested in GDP growth to measure the growth of physical production most data between 1978-1985 are probably too poor. But if one is interested in the GDP figures as a measure of the Tanzanian state's ability to procure agricultural output the data are probably more accurate.

Zambia

This is an account of the economic performance of Zambia 1965-95 according to the official growth evidence. The post-colonial growth record of Zambia is covered by four different constant price series. It was noted in the earlier chapter on national accounting in Zambia that there was a shortfall in growth reporting in the middle of the period. This was rectified by a retrospective publication of series covering the period from 1965 to 1995. This period was covered by three non-overlapping series based in 1965, 1970 and 1977 prices. Later, GDP was estimated at 1994 prices and extrapolated back to 1990. The immediate availability of an official publication with series covering the whole independence period, and the lack of overlapping years in the different series, probably partly account for the observed relatively higher accuracy in international reporting of Zambian growth rates.

The first series covered 1965-1971. Annual aggregate growth for this five-year period was modest, averaging 3 percent. Growth in agriculture was slower on average, at only 2 percent annually. There was almost no growth during the first four years (one percent on average). During the three last years growth in agriculture picked up to an annual average of 4 percent. The mining sector was in decline during the period with total output decreasing at an average of 6 percent per year. This trend was apparent in all years except 1969 when output increased. During the last two years total output in the sector fell by one quarter. The mining output accounted for 40 percent of value added in 1965 and therefore 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.

The manufacturing growth was rapid, particularly in the early years, and averaged 10 percent a year over the six years. Total value added increased only 16 percent over the whole period, because of the large decline in the mining sector. Mining excluded, total output increased 50 percent from 1965 to 1971. Manufacturing accounted for 18 percent of the growth. With 7 percent of the increase accounted for by agriculture, 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 the government (34 percent), which increased its share in total GDP from 9 to 16 percent. All other sectors contributed evenly to growth, except the finance sector, where value added doubled during the period.

Between 1970 and 1976 GDP growth again averaged 3 percent a year. During this period growth in agriculture picked up, averaging 4 percent a year. Apart from a drop in output in 1973 this growth was stable. On average manufacturing growth slowed. This average hides that rapid manufacturing growth continued until 1974, averaging 9 percent a year, before it fell markedly in 1975 with the decline continuing into 1976. At constant 1970 prices the mining sector

Table 43: Zambia Gross Domestic Product, Base Year: 1965 (Kwacha Million)

	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	254.9	223.8	195.1
Manufacturing	48	57.5	66.8	72.7	74.2	81	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	57.2	61.6	61
Public Administration and Other Services	64	68.9	80	86	82.8	124.5	134
Import Duties	14.5	18	21.5	23.1	21.5	25.1	23
Imputed Bank Service Charges						6.1	6.4
Gross Domestic Product	711.1	682.3	716.7	735.2	758.5	827.8	821.4

Average Annual Growth

1965-1970

Agriculture	2%
Mining	-6%
Manufacture	10%
GDP	3%

Table 44: Zambia Gross Domestic Product, Base Year: 1970 (Kwacha Million)

	1970	1971	1972	1973	1974	1975	1976
Agriculture, Hunting, Forestry and Fishing	132	139.4	145.6	143.9	150.5	157	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	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	58.8	54.6	51.7	54.6	57.6	67
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	13.7	13.6	13.1
Gross Domestic Product	1290.7	1304.5	1415.3	1405.8	1501.3	1465.3	1526.3

Average Annual Growth

1970-1976

Agriculture	4%
Mining	2%
Manufacture	3%
GDP	3%

did not have an overall negative impact on the economy as the sector's output grew by an average of 2 percent (with large fluctuations) over the period.

There was fairly even growth in the economy, with the productive sectors accounting for 43 percent of the increase in GDP between 1970 and 1976. The percentage shares of GDP by sector is almost identical in 1970 and 1976. The two discrepancies here were a very rapid growth in the construction sector, and an actual decrease in the trade sector. The decline in the value added of the sector is particularly strong at the end of the period. This is concomitant with an increase in physical output in the mining and agricultural sector, though manufacturing also declined during these years. The growth in the government's relative share of the total output stops during this period.

The third official series runs from 1977 in 1977 prices. As earlier mentioned, this means there is no official estimate of the growth of the economy between 1976 and 1977 at constant prices. In 1976, at 1970 prices, the mining sector was measured as 33 percent of total GDP. From 1970 to 1976, according to the 1970 prices series, output fluctuated but was on a growth trend. The 1977 estimate tells a different story. In 1977 prices mining output was only 11 and a half percent of total GDP. This meant that while the volume of mining output grew on an average of two percent a year, the value of this output was falling rapidly, probably more than 50 percent. Measured in 1970 prices the 1976 mining output was worth 503 million Kwacha. In 1977 prices, the 1977 output was worth 234 million Kwacha, less than half of the value at 1970 prices. For the rest of the economy most sectors are doubled in value when expressed in 1977 prices instead of 1970 prices. In conclusion, while according to the constant growth series it seems that the economy was growing modestly during the 1970s, the fact of the matter is that the most important sector and export commodity was falling drastically in value. For this period the concept of 'real' growth as measured in constant prices is misleading.

The collapse of the mining sector and therefore 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 years. Total GDP was at its highest in 1988 in which year there was a massive increase in both manufacturing and agricultural output. These sectors grew at 18 and 19 percent respectively, while total GDP increased 6 percent year. After that year, total output is in decline with the exception of 1994, and total output was recorded as lower in 1995 than it was in 1981.

This stagnation in GDP growth between 1977 and 1995 was not mainly because of manufacturing and agriculture. Growth in both these sectors averaged 3 percent a year over the period. The sectors increased their share in GDP from 16 and 17 to 20 and 24 percent for agriculture and manufacturing respectively. There was not much growth in the agricultural sector in the early years, with a total fall in output as compared between the initial output in 1977 and 1982.

Table 45: Zambia Gross Domestic Product, Base Year: 1977 (Kwacha Million)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990 ²⁴⁵	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	185.8	176.6	184.2	160.4	175.8	162.7	148	166.9	152.3	127.4	117.5
Manufacturing	353	370.5	392.9	383.5	430.2	415.1	384.5	389.3	421.6	425.3	462.9	547	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	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
Construction	113.7	104.1	89	102.8	78.9	84	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	221.2	228	234.1	233	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	211.3	218.3	226.5	234.5	242	239.6	235.4	240	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	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	40.6	37.1	42.3	36.4	27.7	18.5	18	19.9	22.5	23.1	16.7	17						
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	2031.4	2035.4	1978.2	2033.4	2155.3	2096.9	2055.8	2046.5	2078.1	2091	2142.5	2280.3	2254.1	2212.5	2210.8	2174.5	2071.8	2233.7	2151.1

Average Annual Growth

1977-1995

Agriculture	3%
Mining	-3%
Manufacture	3%
GDP	0%

²⁴⁵ From 1990 onwards the data on import duties and Bank Service Charges were incorrectly reported in the *National Accounts Bulletin* and it is therefore excluded here. This has no effect for the growth of the sectors, but affects the total GDP. The growth rate from 1989 to 1990 might be slightly inaccurate with one percentage +/-.

Table 46: Zambia Gross Domestic Product, Base Year: 1994 (Kwacha Million)

	1990	1991	1992	1993	1994	1995
Agriculture, Hunting, Forestry and Fishing	314.9	331.2	221.6	372.6	302.2	403
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	411.56	401.8	393	429	368.2	335
Transport, Storage and Communications	139.1	133.3	136.2	139.5	133.8	125
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	-125.3
Gross Domestic Product	2208.56	2172.9	2042.9	2198.8	1951.1	1923.4

Average Annual Growth

1990-1995

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

From 1984 output was higher, and good growth rates were achieved in the late 1980s. From 1989 to 1992 the experience of Zambia showed how momentary and fragile productive gains in agriculture can be as total output declined by 40 percent. At the end of the period, in 1995 the sector's output was 33 percent higher than in 1977, but the equivalent of the 1988 output. Manufacturing growth halted in 1981, after which the sector was either declining or stagnating before growth revived from 1986 onwards. Growth was rapid in the sector until 1992, when the peak in output was reached, and the sector declined towards 1995. Between 1986 and 1992 growth averaged 7 percent a year, while between 1992 and 1995 the sector shrank 7 percent a year on average.

The other sectors of the economy were generally disappointing. Mining output in 1994 was only half what it was in 1977. There was growth in value added in the electricity and water sector from 1977 to 1982, followed by stagnation until 1986 when it started declining. In 1989 the total value added in the sector was the same as in 1977. This sudden drop in such important infrastructure is uncharacteristic of an economy's normal trajectory. A similar and more dramatic decrease is seen in the construction sector. Here total value added in 1995 was almost only one fourth of its value in 1977. Similarly, there was a fall, albeit less dramatic, in the value added in the transport sector, while the trade sector stagnated. In other words, while manufacture and agriculture is reported as having an overall expansion trend, the sectors that keep the economy together, the upkeep of infrastructure of all kinds, were either in stagnation or dramatic decline. The public and the finance sectors saw some growth in value added over the period as a whole, though neither case was a straightforward story of stable slow growth. In 1993 the provision of public services halved in value, but this decline was reversed the following year, indicating a one-off stop in service provision, as in a general strike.²⁴⁶ The finance sector grew gradually until 1984, after which the sector stagnated until the very end of the period when there was a sudden improvement from 1993 to 1995.

The 1994 series allows a second view on the first half of the 1990s. The first difference to remark regards the sectoral shares. At 1994 prices the mining sector's share of GDP is appreciated. In 1977 prices it only constituted a 5 percent share of GDP in 1995. In the new series the mining share in GDP is estimated to be 22 percent in 1990 and 14 percent in 1995. The mining sector has negative growth from 1990 to 1995 in both series, averaging minus 6 percent at 1976 prices compared to minus 10 percent at 1994 prices. Since its share in GDP was more than three times larger at 1994 prices this sector has a larger negative impact on GDP growth in this series. If the

²⁴⁶ After an alleged plot to overthrow was unveiled President Chiluba declared 'state of emergency' in 1993. Public sector workers were on strike for longer periods (Ihonybere 1996: 191). Interestingly, in the 1994 series no such decline in Government Services is recorded, thereby 'removing' this period of political turbulence from the economic growth record.

series would be extrapolated backwards at these prices, the negative growth impact on the 1970s and 1980s would also be larger. At 1977 prices the GDP growth averaged negative half a percent between 1990 and 1995 while according to the new series growth averaged minus 3 percent. In most years the two series agree on the direction of change. In 1994 however a 8 percent increase in GDP reported in the 1977 series is changed to a 11 percent decrease. In the old series the impact of the negative growth in the mining sector was much smaller. This explains some of the difference between them, while the agricultural sector also had an increase in output in the new series which was not recorded in the earlier series.

The public sector is much smaller in the new series, with only an 8 to 9 percent share in GDP compared to 17 to 19 percent in the old series. This difference was probably a function of using an outdated base year. As mentioned, in the older series there was a large decline in 1993, while such a fall does not occur in the 1994 series. The dismal growth in transport, electricity and water and construction is parallel in the 1994 series. In the sector recording trade there are big differences. Its share in GDP was measured to be unchanged at 11 percent in the previous series. In the 1994 series Trade takes up a 19 percent share in GDP in 1990, while output was stable in the previous series, this sector experiences a significant drop in value added according to the new series. While manufacturing changes in performance is almost identical in the two series, its share in GDP is half in 1994 prices compared to 1977 prices.

Zambian growth performance is largely dictated by the copper sector. The decline of the sector has large implications for the economy. The importance of price changes of copper exports makes the constant prices vulnerable to base year changes, and the GDP growth rate is not usefully interpreted without a view to the copper sector and its price developments. Growth was positive in agriculture with large fluctuations in some years throughout the period. Manufacturing growth was rapid in the early years, continued until the early 1980s before there were some years of decline. The decline in the mining sector affected the Zambian economy heavily, and its impact can be seen from the decline in all sectors encompassing infrastructure and trade in the 1970s and 1980s. This happened as there was less goods to move, fewer mines to construct and to build roads, electricity and water lines to, and finally the governments revenue to start such activities in other sectors in the economy was severely limited.

COMPARISON

On the basis of the average GDP growth rates over three decades it can only be considered by how much the difference was between the countries. On that basis, it was straightforward that Botswana had a high average GDP growth rate, Zambia a low one, while Kenya and Tanzania were in between. Considering the inaccuracy in growth reporting, however, it was not straightforward whether the average growth rate in Tanzania was significantly larger than the average growth rate in Kenya. The data inconsistencies also meant that it would not be possible to tell exactly by how much growth differed between the countries. Again, the average of the GDP growth rate over three decades does not tell us anything about the timing or causes of growth. Further, it has been documented above that when growth is considered over five-year periods, it can at time be absolutely impossible to tell whether one country's growth differed from another and that such conclusions often depended on which source of data was used. In the preceding four sections the different official growth evidence has been carefully examined. This evidence will be used in this section to compare when and how the four economies grew.

Table 47: Annual Average Economic Growth Rates in Botswana, Kenya, Tanzania and Zambia 1965-1995

Botswana					
Series	Range	GDP	Agriculture	Mining	Manufacturing
1971/1972	1968/1969	17	14	0	47
1974/1975	1966-1968/69	13	-	-	-
1974/1975	1974/75-1978/79	11	-3	47	23
1979/1980	1975/76-1986/87	12	-3	27	9
1993/1994	1975/76-1994/95	10	2	18	10
Kenya					
Series	Range	GDP	Agriculture	Mining	Manufacturing
1964	1965-1974	7	5	-	8
1972	1973-1978	5	3	-	12
1976	1975-1983	5	4	-	6
1982	1980-1995	4	3	-	4
Tanzania					
Series	Range	GDP	Agriculture	Mining	Manufacturing
1966	1965-1982	4	2	-	3
1976	1977-1993	2	3	-	2
1985	1965-1995	4	4	-	3
1992	1988-1995	3	3	-	2
Zambia					
Series	Range	GDP	Agriculture	Mining	Manufacturing
1965	1966-1970	3	2	-6	10
1970	1971-1976	3	4	2	3
1977	1978-1995	0	3	-3	2
1994	1991-1995	-2	11	-10	-2

The most testing constraint on comparison purposes is insufficiency of constant growth data for Botswana. Unlike the other three countries there is no series based in the 1960s. When constant GDP figures were prepared for Botswana it was not done for consecutive years in a regular fashion until after 1974/75. In 1971/72 prices, the estimates for 1967/68 and 1968/69 can be compared and a growth rate derived. That observation is not a basis for comparison between countries, and is reported here in the table for the sake of completeness. The 1974/1975 series covered 1965-1968/69 so that there were three years of growth in constant prices that is reported. This data can be used for comparison with the other countries with some caveats. The first is that no disaggregation of GDP was made for Botswana in constant prices. So a comparison can only be made in total GDP. The second caveat is that the Botswana accounts run from 1st of July one year to 30th of June another, and in this comparison it has been consistently assumed that, for example, 1968/1969 is the equivalent of 1968 in the other countries. The third, as the inconsistent reporting indicates, is that the early GDP estimates of Botswana was relatively less consistent in measurement. The GDP estimates was continually improved upon, and the growth estimates carries a lot of statistical growth until the latter half of the 1970s. Keeping those caveats in mind the average GDP growth over three years, from 1966 to 1968 can be compared.

Table 48: Average Annual GDP growth in 1966, 1967 and 1968

Botswana	13 percent
Kenya	9 percent
Tanzania	8 percent
Zambia	1 percent

The ranking of the countries according to average GDP rates is partly confirmed here. The gap between Kenya, Tanzania and Botswana is surprisingly small. Taking into account the measurement alterations and climatic conditions noted in the chapter on performance in Botswana, this difference is probably negligible. At current prices two thirds of the growth in Botswana (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 performance in these three economies. Zambia, on the other hand, clearly lagged behind in aggregate growth terms. The mining sector (40 percent of GDP) declined at an average 9 percent a year for this period, while manufacturing growth averaged 15 percent. The decline in the mining sector is felt across other sectors such as construction, trade and transport so that non-mining GDP in Zambia was growing 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. Based on the 1964 series in Kenya, the 1966 in Tanzania, and the 1965 and 1970 series in Zambia, the comparison can be made between 1966 and 1974.

Table 49: Average Annual Growth 1966-1974 (%)

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

The ranking of the countries are confirmed in total GDP, but reversed in manufacturing growth. Kenya had faster agricultural growth, but in the case of Tanzania, the disappointing performance was partly caused by agricultural growth averaging minus two percent in the drought years of 1973 and 1974. The negative growth in mining (- 4 percent annual average) held the aggregate growth back in Zambia once again. If the growth rates in the 'productive' sectors, manufacturing and agriculture, are combined it is apparent that part of the growth differential in Kenya compared to Tanzania and Zambia, takes place in other sectors.

The years 1974 to 1978 are covered by Botswana accounts as well, so for this period it can for the first time be compared across all sectors for a five time year period. This time the problem of coverage applies to Zambia. Here, two series are knit together (1970 and 1977), while the year 1977 is treated as void.

Table 50: Average Annual Growth 1974-1978 (%)

	GDP	Agriculture	Manufacture
Botswana	13	-3	23
Kenya	5	3	11
Tanzania	5	5	5
Zambia	2	4	-1

For this five-year period the situation of agricultural performance of Tanzania and Zambia as compared to Kenya has reversed. Now, the agricultural growth was stronger in the two first countries. In Botswana the agricultural sector was in decline. Manufacturing was strong in Kenya, and particularly strong in Botswana. Despite the growth differential in manufactures the GDP growth of Kenya and Tanzania is equal. Total GDP growth in Botswana was rapid, and was fed by the mining sector where growth averaged 47 percent annually during this period.

The next natural period to compare the four economies for is from 1978 to 1983; six years of growth during which 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.

Table 51: Average Growth 1978-1983 (%)

	GDP	Agriculture	Manufacture
Botswana	12	-6	8
Kenya	4	3	6
Tanzania	1	2	-12
Zambia	0	0	2

Botswana's rapid growth in GDP 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, with GDP growth lagging as the mining sector decreased 2 percent each year on average. The difference in performance between Botswana and the other three countries was repeated over this period, but also in this period the rapid growth was accompanied with a continued decrease in agricultural output. The difference between Kenya and Tanzania is due to the rapid decline of Tanzania's manufacturing sector during these years.

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

From 1984 onwards, growth in Botswana is covered by a 1993/94 series,²⁴⁷ the Kenyan economy is reported at 1982 prices, a 1985 series covers the Tanzanian economy, while the base year for the Zambian accounts is 1977 and is increasingly outdated. It should also be noted that for this period the growth estimates for Tanzania and Zambia are probably particularly 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.

Table 52: Average Growth 1984-1994 (%)

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

In this period, with the given evidence, 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 the consistently lagging mining sector (this period the growth averaged minus 4 percent). The

²⁴⁷ For Botswana a series based in 1985/86 was also published. Growth and sectoral estimates were identical with the 1993/94 series.

agricultural growth in Botswana was not a change towards a consistent trend of increasing output. The high average is due to a single-year increase of 66 percent (1987/88). The growth rate in Tanzania and Zambia is probably an overestimate. It should be noted that this overestimate would be equal to the extent of underestimate of growth in the previous period. Another difference is that while manufacturing growth is improved in Botswana and Zambia, it showed no sign of revival in Tanzania, and was slower than in previous years in Kenya.

Comparing the four countries across the whole period it makes sense to point out similarities and differences. 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 not so visible because of the persistently strong performance in mining. In the case of Zambia conversely, the slowdown is not so apparent because of the persistent negative growth in the mining sector. Agricultural growth is fairly similar across the economies, except in Botswana which is exceptional with a very little growth in this sector. Keeping the low quality of the data in mind 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.

In manufacturing growth all economies had rapid growth in the early period – its growth rates probably depending as much on the size of the industrial base at independence as its industrial policy. All economies experienced a slowdown in the mid 1970s. In the case of Tanzania it was an outright decline, while Zambia and Botswana seems to have performed worse than Kenya. Botswana is exceptional with a push for industrialisation in the 1980s. The industrialisation 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.

Chapter 6: Episodes of Growth and Policy Compared

In this chapter episodes of growth at country level are compared. A major aim of this thesis is to use the case studies to evaluate propositions available in the empirical growth literature. The recently published *The Political Economy of Economic Growth in Africa 1960-2000* follows a very similar structure (Ndulu et. al 2008ab). In its first volume, different approaches and findings of the aggregate literature are discussed, while the second volume complements the existing growth literature with a range case studies. In part, that publication and this thesis has a shared motivation. Both want to use the opportunity of the case study approach to explore episodic growth and variation in economic performance at country level. A difference is that this thesis evaluates the coherence of the propositions from the regression literature, while the recent publication explicitly seek “complimentarity” (Ndulu et al 2008a: 5). The hypothesis that one or more of the 26 case studies does not cohere, or directly contradicts the aggregate findings, is not entertained. In Ndulu et al (2008ab) cross-country evidence is used to locate the individual countries in a global distribution of growth. This evidence is meant to “discipline the search for leading themes at the country level” and finally the country-level evidence found in this manner would “feed-back” into the aggregate account of growth (ibid). The justification given for this tight discipline is that the cross-country evidence can be used for the purpose of weighing the importance of different factors against each other. In a case study there is the inherent problem of endogeneity. Any factor can conceivably be perceived as important for growth, but there is no strict method to distinguish its importance, or whether a factor is a cause or an effect.²⁴⁸ In the 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 reform is the implicit counterfactual to those that did reform, and those countries without overvalued currencies are the counterfactual of those with overvalued currencies. It is acknowledged that this assumption is “heroic” (ibid).

As in the quest for the African dummy “the central task [remains] to explain persistent and widespread economic stagnation”. It is observed that while this stagnation is true on average between 1960 and 2000 this “conceal[s] a wide diversity of experience at country level” (Ibid: 8). The timing of the African dummy is indirectly commented on: “Africa’s shortfall is sharpest during the twenty year period from roughly 1974 to 1994” (Ibid: 17). This might be seen as an admission, though it still assumed that the economic policies were at fault and therefore the overarching research question is why policies that are poor for growth were adopted.

²⁴⁸ Though perhaps not a strict method, a case study approach makes use of certain categories to assert cause and effect, most importantly: time. A cause must precede an effect.

The first chapter of this thesis concluded that observed correlations based on a subtraction approach is a potentially useful starting point but insufficient as a conclusion. In the following there is a chance to consider whether the empirical growth literature with a global sample have been a useful guide to design case studies. A second conclusion in the first chapter was that the averaged aggregate story was misleading and that both episodes of decline and growth needed examination at country level. In the part on measurement it was noted that data quality issues was likely to compromise such studies, and in particular comparisons across countries, if proper care is not taken with the evidence. The two volumes do not give much consideration of the quality of the growth evidence. This chapter provides an opportunity to evaluate the merits of a cautionary approach to the growth evidence with one that takes GDP data at face value.

The unique feature in Ndulu et al (2008), as compared to the regression literature is that it considers changes in the incentive structures and the effect on growth. It was suggested in the first chapter that at face value 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 towards liberalisation was associated with a slowdown in aggregate growth. This observation can be studied at country level. The orthodox interpretation associates economic control and distortion of prices with slow growth, and would predict a positive growth effect from liberalisation of economic controls.

In a comparative study a complicating issue is the balance in the secondary literature. There is no tradition of comparing all of these four economies explicitly, partly because in African studies priority has been given to monographic research that emphasise local specificity (Austin 2007a:11; Manning 2003). There is an imbalance in terms of how much research focusing on economic performance has been devoted to the countries chosen here, with Kenya and Tanzania having been intensively studied, Botswana and Zambia less so.²⁴⁹ A further complicating feature is that when these countries have been studied in relative isolation, specific issues in each of the countries have received more attention as they have arisen, become part of each country's historiography, and thus formed the impetus for new research. What makes the respective country special has understandably attracted more attention. Thus studies on the economic history of Zambia have focussed on the development of the Copperbelt, the uniquely early high urbanisation rates that resulted and issues relating to urban-rural migration.²⁵⁰ Botswana has gained an international reputation as democratic state, and emphasis in the literature has been on investigating the traditional origins of this rule, the Setswana; the role of cattle and the transition into a modern diamond dependent economy (Parsons et. al. 1995; Peters 1994). Despite a potential fertile ground

²⁴⁹ According to Freund (1984: 333) "no African state is so well studied as Tanzania".

²⁵⁰ On Zambian historiography see for example the interchange between Ferguson and MacMillan in *Journal of Southern African Studies* (1990- 1993 various issues).

for a comparison between Zambia and Botswana, this has not manifested itself in a rich literature contrasting these two countries' experience.²⁵¹

The literature on post-colonial Kenya and Tanzania, by contrast has produced such comparative studies (Barkan 1984; 1994; Lofchie 1989),²⁵² while the two countries also figure as diametrical opposite cases in some of the synthesis literature, with Kenya as the typical case of African capitalism and Tanzania as the example of African socialism (Iliffe 1983).²⁵³ A central aspect in the early literature, dominated by dependency scholars, was the prospective viability of these countries' divergent development paths. The 'Kenya Debate' centred around the viability capitalist development in a post-colonial (or neo-colonial) 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: 143-163).²⁵⁴ A debate with similar ideological foundations, but from a different perspective in Tanzania, concerned whether the country was successfully embarking on a path towards socialism and self-reliance despite its dependence on foreign capital, and problems of class formation deriving from the state being the agent of socialism or from the country being largely peasant based (e.g. Saul 1973; Shivji 1976).²⁵⁵ Both debates subsided and changed somewhat as both Kenya and Tanzania converged in terms of both performance and policies with the onset of economic decline and the subsequent Structural Adjustment.²⁵⁶

Though guided by certain historiographical questions, this literature is still instructive and can usefully be 'read together' to inform these case studies. While the 'left' in the scholarship has been focused on the general feasibility of development in the post-colonial periphery, the 'right' has focussed on state interventions in the marketplace and its consequences (with a negative emphasis) for economic growth. Initially set up as crude opposition of urban vs. 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. Kenya was at the heart of the further sophistication of this argument, and provided "reason to reject the implicit opposition of

²⁵¹ Du Plessis (2006:4) claims to make the first such comparison.

²⁵² 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).

²⁵³ Tanzania is referred to as the 'model of African socialism' after Nkrumah's fall in Ghana (Iliffe 1983: 78). Meanwhile Kenya is labelled the typical example of 'nurture capitalism' in East and South Africa (p. 82). Zambia does not fit aptly in a category, but is commented on specifically 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).

²⁵⁴ The list of contributors to this debate is long,. Suffice it to mention that the debate was initially stimulated by Leys (1975; 1978), continued in an edited volume by Fransman (1982), complemented by Swainson (1980), and revised by Kitching (1985).

²⁵⁵ For a review on the debate on class formation and dependence in Tanzania, see Freund (1981) and Nurse-Bray (1980).

²⁵⁶ According to Chege (1998: 210) the 'Kenya Debate' "rebounded with 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.

town versus country” (Bates 1991: 119). Proof was found of “Kenya[n] exceptionalism... .. marked by its commitment to economic growth, particularly in export agriculture” (Bates 1989: 148). Though this literature has been successfully linked with, and its impact induced by, the African economic decline, its strength is in explaining the choice of particular policies, while its explanatory potential for the aggregate growth rates are less straightforward.²⁵⁷ Bates asserted that in Kenyatta’s Kenya and 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, determines whether the agricultural sector would be a priority in the country, this chapter will examine how this is reflected in the aggregate growth pattern.

The agricultural sectors have been subject to specific investigation, though not always linked to comparative economic performance evaluation. Part of the reason for this is that while policy bias has been easier to detect, the response to policy, for food crops in particular, is harder to establish.²⁵⁸ Berry (1984: 60) in an article addressing the food production crisis claimed that “the data are simply not good enough to warrant clear or firm conclusions about national (let alone continental) trends in agricultural output”. The literature is similarly eschewed here with Tanzania being far more intensively studied than others (e.g. Bryceson 1993; Hyden 1980) sometimes in direct comparison with Kenya (Lofchie 1989; Stein 1979) and Zambia (Lundahl 1990). The three countries feature side by side in country chapters in a few edited volumes.²⁵⁹ Apart from appearing in a volume comparing all four economies (Fair 2001), Botswana is less studied; particularly with respect to food crops (Jones 1981), though cattle have received ample attention (Hubbard 1987), and so has the recurrent droughts (Hinchey 1979). Droughts aside, the literature reflect that, while crop production in Botswana was poor, beef exports were relatively successful. In Zambia, agricultural production was geared towards self-sufficiency, while export promotion was initially, and for seemingly good reasons, neglected.²⁶⁰ Retrospectively, Jansen (1988) has shown the forsaken agricultural output and income opportunities through the overvaluation of the local currency.²⁶¹ Similarly in the case of Tanzania, the overvalued currency has been highlighted as a cause for stagnation in agricultural exports, and inefficiencies in the internal marketing of food

²⁵⁷ For several criticisms of Bates arguments, see Leys (1996: 89), and for a critique of a price-based approach to the production problem, see Platteau (1995: 463-469).

²⁵⁸ 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.

²⁵⁹ 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).

²⁶⁰ The receipts from copper exports were sufficient to cover the import bill in 1964, while infrastructure for further exports was a real bottleneck.

²⁶¹ Jansen analyses rates of implicit taxation on agricultural production deriving from an overvalued Kwacha, and with the help of supply elasticities she estimates the agricultural output in the counterfactual case of the currency not being overvalued.

crops have been established (Lofchie 1988). Kenya has been shown to be relatively more geared towards agricultural exports, though internal marketing inefficiencies and discrimination of small-scale farmers have been pointed out (Peterson 1986). With Moi, the power base of the elites changed, which resulted in a reorientation from favouring export crop production, towards grain producing areas (Bates 1987: 91-92). A weakness of the literature for the purpose of this thesis is that while it is very informative on its specific topics, is that it speaks less clearly to the implications for aggregate performance. The literature clearly displays development policy as a choice in for instance between focus on exports versus food sufficiency, or on equity in distribution versus focus on large-scale farms. The growth data on food production and peasant production are particularly poor, and this might be part of the reason why ‘good policies’ are rather loosely associated with ‘good performance’ in the literature. This thesis investigates the robustness of these associations for the four countries in question.

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; Riddel 1990), together with surveys of the merits of variations of the import-substitution industrialisation across Africa (e.g. Mytelka 1989). Initial high growth rates eventually gave way to economic decline. It is a division in the literature on whether this was because the industrialisation strategy was flawed to begin with. In practical terms the discussion reached its conclusion with the introduction of World Bank and IMF’s Structural Adjustment programmes in the 1980s. The manufacturing sectors then had a drastic change in its policy environment, and a deindustrialisation has taken place since the opening up in the adjustment years (Mkandawire and Soludo 1999:61), which again has stimulated further debate on the merits of the structural adjustment policies (Lall 1995). The decision to initiate and implement reform is hard to account for using the dominant paradigm of the power of interest groups. Concluding a volume on structural adjustment reforms, Bates and Krueger found it “surprising” that “interest groups fail to account for the initiation, or lack of initiation of reform” (1993: 455), and further that “variations in the patter of interest group presentation failed to account for variation in the success of different governments to implement economic policy reforms” (ibid: 461).

The organizing theme in this thesis is that these economies, despite their differences, have in common that they have an economy that has been measured, and that these resulting economic growth rates have formed the basis for implicit or explicit comparisons of economic performance deriving from natural endowments, external fortunes, economic development policies and institutional frameworks. This perspective is not always in the foreground in the secondary literature on these countries, and therefore the second volume of *The Political Economy of Economic Growth in Africa 1960-2000* is particularly useful. It contains 26 case studies and among

the countries that get specific treatment in specific chapters are Botswana, Kenya, Tanzania and Zambia.²⁶² These chapters provides a convenient reference point for this growth interpretation, since they remain with similar methodology, and ask the same type of questions. The authors have generally identified episodes of growth and associated them with periods of policy change. The obvious target for examination is the coherence of the association of growth and policy. As mentioned, not much attention has been given data quality issues in these two volumes. It will be shown that this weakens the robustness of the explanations.

Botswana

For the economic history of Botswana, Maipose and Matsheka (2008) suggest three periods. These are loosely identified on basis of the evolution of economic policy making, and not on the basis of changes in economic growth. The first period between 1960 and 1975 is described as “a period of initial base-creating” where “development policy involved experimenting with or emphasis (sic) on state-led development in a mixed liberal economy. The institutional base lines were largely similar to those of many African countries at independence.”²⁶³ The following period, from 1975 to 1989, is denoted as a period of “consolidation of both the market-based state-led development strategy and continuity with the multi-party system of government”. Maipose and Matsheka distinguish Botswana from other African countries in this period, not specifically by its economic policy but because the “wave of one-party or military regimes and forms of socialist/communist ideologies cutting across the African continent” was avoided. The third period is characterised as a move towards private-sector led development and lasts from 1990 to the present (2008: 512:513).

The aggregate growth story is considered quite straightforward. Botswana experienced one of the fastest GDP per capita growth rates in the world between 1960 and 2000. Maipose and Matsheka do not offer any qualifications to this interpretation and as such agree with the other authoritative works on Botswana (Leith 2005; Harvey and Lewis 1990). The above-mentioned turn towards liberalisation in the 1990s was not directly associated with trends in economic growth, though it is later mentioned that the 1990s marked “an end of the economic boom” and that this end was associated with government expenditures “growing at a considerably faster rate than revenues” (Maipose and Matsheka 2008:536). This is explained by the ruling party’s need to spend to secure popularity in the 1999 and 2004 elections.

²⁶² G. S. Maipose and T. C. Matsheka, ‘The indigenous developmental state and growth in Botswana’, Ch. 15 pp. 511-547; F. M. Mwega and N. S. Ndung’u, ‘Explaining economic growth performance: the case of Kenya’, Ch 10 pp. 325-369; N. Mwase and B. J. Ndulu, ‘Tanzania: explaining four decades of episodic growth’, Ch 13 pp. 426-47; Mwanawina and J. Mulungushi, ‘Zambia’, App. Ch 27 (CD-ROM only).

²⁶³ This matches with 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, found important in Easterly and Levine (1997) will be returned to later.

The interpretation of the 1990s contrasts with that of the earlier periods where the multiparty democracy is what makes the case of Botswana unique, and by implication it is democracy that secured economic growth in Botswana. It is not directly explained how this occurred. It is implicitly suggested that democracy was good for growth because it helped Botswana secure considerable aid inflows (ibid: 520). A second hint that democracy was more important symbolically than operationally is found in the concluding remark on the Botswana political economy. “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” (ibid). Apparently, this worked well as long as the economy was booming, and the opposition did not tempt the ruling party to increase expenditures too much, as was the case in the late 1990s

In Maipose and Matsheka it is accepted as a fact that the secure political elite “pursued growth promoting policies” (2008: 511). This favourable and general statement of approval is echoed in most explanations of Botswana’s economic success. It was summed up by Acemoglou et. al. (2003: 83) as: “There is almost complete consensus that Botswana achieved rapid growth because it managed to adopt good policies.” In that work and other interpretations these good policies are not defined positively. The emphasis is on the negative as in: “the national fortune has not been mismanaged” (Maipose and Matsheka 2008:535).

The short version of Botswana’s success is that it had large diamond deposits, and that the proceeds from these funds were not pocketed by a kleptocratic regime. ‘Good management’ is defined as lack of bad management. This has again been explained by either homogenous ethnicity and/or democratic rule. Leith (2005: 29-30) notes that this assumed homogenous ethnicity is open to interpretation:

In the Protectorate as a whole, including the freehold lands and towns, Tswana living in their own territories comprised 48 percent of the total, with some 16 percent consisting Tswana living outside their home territories and 36 percent consisting of non-Tswana. Does this ethnic composition represent ethnic homogeneity? The answer depends crucially on how the Tswana living outside their home territories are classified. If all Tswana are treated as one, then the index of ethno-linguistic fractionalization (ELF) employed by Mauro (1995) and Easterly and Levine (1997) is in the low fifties. This is similar to that for Switzerland, the United States and Zimbabwe. If, however, Tswana living outside their home territory are treated as different from those living in their home territory, then the ELF index for 1946 was ninety three, which is similar to that for Tanzania, Uganda and Zaire.

Meanwhile, it is undisputed that there was democratic rule in the sense of a multiparty rule with regular elections. The ultimate test for a democracy is whether control has peacefully been given over following an election defeat. Botswana has not been put to that test since the Botswana Democratic Party has been dominant ever since independence. Kenneth Good (1994, 1996) has been the most vocal critic of the Botswana rule, and has pointed out increased trends towards authoritarianism and corruption as well as increasing inequality. Good was deported from Botswana in 2005, on an order from the Botswana president (BBC: 2005). Whether or not this action served to confirm the authoritarian character of rule in Botswana, it certainly seemed to show that the elite were uncomfortable with criticism.

Acemoglou et. al. (2001) argue that the source of the differences in contemporary income levels can partly explained by colonial legacy. That specific explanatory framework distinguishes between extractive and productive institutions. Extractive institutions are considered bad for growth while productive institutions are considered good for growth. In the econometric model the existence of one or the other of kind institutions are explained by the settler mortality.²⁶⁴ The reasoning behind this argument is that if settler mortality was high there would be fewer settlers, and therefore there would be less effort of instituting a generally well-functioning rule of law because these institutions are costly.²⁶⁵ Most African economies would in this framework have ended up with extractive institutions. Botswana was not included in the sample when empirically testing this model (Acemoglou et. al. 2001). However it was subject of individual treatment in a separate paper by the same authors (Acemoglou et. al. 2003). Botswana provides a special case because it received relatively few settlers. It is argued that in the specific case of Botswana the non-introduction of productive institutions did not cause a low income level today. Instead it is argued that in Botswana there was “only limited effect of British colonization on these pre-colonial institutions because of the peripheral nature of Botswana to the British Empire” (2003:113). This meant that pre-colonial structures were left intact, and it is argued that this turned out to be good for growth in a slightly transformed hypothesis where lack of colonialism explains growth.

With some variation in the argument, a recurrent topic in the explanation of the Botswana growth miracle is stability and homogeneity. It has been shown that it is open to interpretation whether democracy was beyond scrutiny, whether it had something to do with it, and whether the ethnic homogeneity might also have been overplayed. Peters (1994: 218) documented that also before independence the Bechuanaland protectorate was ruled indirectly through the Tswana elite so that this stability in rule preceded independence: “the pre-colonial Morafe is embedded in the modern state” and argues that this is an important part of the reason for Botswana’s democratic

²⁶⁴ Settler mortality is used as an instrumental variable.

²⁶⁵ Therefore settler mortality can be instrumental in explaining divergence in income levels today.

character.²⁶⁶ Peters further warns that there are problems with this democratic character, as minorities are excluded through the reliance on consensual decision making (1994:223), Peters stresses that rule in Botswana is not an unchanged tradition, but a result of the elites adapting to new and changing conditions, and that viewing the Bechuana Protectorate as a “totally neglected backwater of the empire” obscures the agency of both colonialists and the Tswana elite. There is however, little doubt that the Botswana elite were largely homogenous, and that this elite was allowed to rule relatively uncontested. This ruling elite were drawn from the traditional leaders whose wealth originated in land holding and cattle.

It has therefore been ventured that Botswana, together with Kenya, Cote d’Ivoire and Malawi provides an exception to the African case of rural neglect (Bates 1991; Rodrik 1998). In coherence with the orthodox interpretation, Maipose and Matsheka (2008: 519) states that this lack of urban bias underpinned their economic success. This is the closest one gets to a testable proposition to explain growth regarding Botswana in Maipose and Matsheka in their chapter on Botswana. There is no question that the elite had interests in cattle. However, there are important unaddressed questions before this observation can automatically be linked with economic growth. As seen in the case of Kenya, Cote d’Ivoire and Malawi the rationale of the existence of a rural bias does not automatically transmit to rapid and sustained economic growth. How important was cattle for economic growth? How important was the existence of the rural bias for growth in cattle? Did the bias benefit all producers, or just the elite? What was the role of other crop production? A bias benefiting large-scale land-owning cattle owners is not immediately equal to growth and fortune for all.

First, it has been made clear in the previous comparison of growth episodes that the agricultural growth was not an important determinant of aggregate growth nor was it very fast. The case of Botswana is exceptional in that GDP growth was rapid despite low growth in the agricultural sector. Averaged agricultural growth in Botswana was the slowest in this sample of countries. Crop production was very volatile as it depended on rainfall, and consequently there was no detectable positive trend of growth in output. A manifestation of the importance of rainfall in Botswana is that the name of the local currency Pula means ‘let it rain’. Cooke (1979: 8) claims: “On adequate rainfall everything else ultimately depends”. Meanwhile, the currency had its direct effects on crop production. Jones notes “the exchange rate is unfavourable to agricultural production. For arable crop farmers, the Pula is overvalued” (1981:33).

In 1974 FAO sent a mission to Botswana who prepared a report, largely because until that date Botswana was one of the largest recipients of World Food Programme aid. The problem highlighted in that report was that too many small farmers lacked access to cattle. It was reasoned

²⁶⁶ The Morafe is title of the Tswana Chiefs.

that this caused crop production to fail.²⁶⁷ Jones (1979: 235) supports this contention, and suggested that the government should intervene by subsidising contract ploughing, because “the provision of draught power... ..is a constant problem”. The FAO report identified a trend towards unequal distribution of incomes in agriculture (FAO: 1974). The 1993 report in the agricultural census observed that in 1966 agricultural activity comprised some 40 percent of GDP. In 1993 its share in GDP had decreased to less than 5 percent. This decline was due to the monetary dominance of the mineral sector in total GDP. Meanwhile in 1993 around 70 percent of the population still depended on agricultural activities for their livelihood. Livestock alone accounted for 3 percent of GDP. According to the same census there was over 100 000 traditional farms and only 500 commercial farms. In 1993 the commercial farms sold 50 000 cattle while the traditional farms sold 100 000 cattle and the commercial farms received higher prices for their cattle (Botswana: 1993). Peters (1994: 218) compared the 1990s to a decade earlier, and noted a worsening in the distribution of cattle.

There were distributional problems in agriculture that had consequences for crop production and sustained livelihoods for many small-scale farmers. Aggregate cattle population was stagnant and in fewer hands. The export success of the cattle industry through the BMC (which was a state monopoly marketing board) was already secured through an external agreement. Due to the Lome Convention, Botswana gained access to the EEC export market for beef, at prices above the world market. Access to western markets was therefore not a problem for Botswana and the beef exporters (Hubbard 1986:158-166).²⁶⁸

The main export and the engine of growth was diamonds. It has been pointed out that the favourable judgment on economic management in Botswana has been made on the basis that it did not ruin this national fortune. It should be emphasised that there was no such opportunity. The diamond selling was from the start handled by the Central Selling Organisation, a producer market cartel run by De Beers. De Beers made sure that diamonds were sold at high prices throughout the period. It is considered the most successful commodity buffer stock arrangement in the world (Maipose and Matsheka 2008: 530). It further deserves mention that while in other newly-independent countries mining operations were often nationalised, there was no such option in Botswana. There was no mineral extraction activity at the time of independence, and Botswana had to rely on De Beers to develop and exploit the diamond fields. Later the revenue sharing has been

²⁶⁷ Lack of access to draught animals by small-scale peasants created difficulties in preparing land for planting in the short window after the arrivals of rain. When rain was particularly scarce this window was narrower, so the lack of access to draught animals intensified food shortages in drought years.

²⁶⁸ According to Jones (1981: 34) “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 per cent of the levy normally charged on third country exports. Over the life of the first Lome 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.”

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).

A useful natural counterfactual comes from the mining of other minerals. Botswana did not only mine diamonds, one of its biggest operations was the Shashe Project. These mines held copper and nickel, for which prices were low through the period. Planned and undertaken by the government from 1968 it had a “record of disaster” (Harvey and Lewis 1990:138). Budgeted development costs significantly over-ran and there were many technical and managerial problems. How successful was Botswana when the commodity was copper and it was managing the project alone? Harvey and Lewis uses Murphy’s law (‘Everything that can go wrong will go wrong’) and its corollary (‘Murphy was an optimist’) to describe Botswana’s copper and nickel project (ibid).

Membership in the Southern African Rand Monetary Area is another of the voluntarily imposed agents of self-restraint that is often quoted as important for the growth performance (Rodrik 1998, Maipose and Matsheka 2008:518). Exactly how important this was for growth is not pinned down. Beef and diamond exports were catered for in separate agreements and therefore the external competitiveness of these commodities were not dependent on the exchange rate. Monetary independence took place with the introduction of the Pula in 1976. Maipose and Matsheka speculate “retrospectively” 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 lack of a expansive strategy for industrialisation meant that until 1975 manufacturing growth was mainly limited to the cattle industry (Botswana Meat Company accounted for almost 80 percent of manufacturing value added in 1971/72). After 1975 there was growth in other sectors, and “import substitution was significant as a source for quite a wide range of sub-sectors of manufacturing” (Harvey and Lewis 1990:166-167). In 1980s Botswana, while import substitution industrialisation policies were dismantled in most other African countries, industrial policy was designed to encourage domestic manufacturing.

It is the timing of these policies that makes Botswana an African exception. Botswana Development Corporation a parastatal founded in 1970, increased its activities during the 1980s, while it “neglected industrial investment” in the 1970s (Tsie 1995:127). In 1982 a Financial Assistance Policy was introduced to secure subsidised financing, automatic tax holidays and development grants. There was a willingness to implement trade protection provided the firms met some employment and foreign exchange saving requirements (Harvey and Lewis 1990: 176-177), and according to Tsie post-1980 “witnessed and even more rapid growth of BDC” with an increasing share of investment going “into directly productive manufacturing activities” (1995: 124).

The bottom line is that what really mattered for economic growth in Botswana was diamond extraction. A further special characteristic was that diamond extraction was non-existent at independence. Botswana's main export was handled by the world's most effective commodity buffer stock: the Central Selling Organisation. The destiny of diamond exports cannot be more contrasted than to the main exports of the other three countries coffee, sisal and copper. The importance of price and expert management is illustrated by the case of the Shashe development. The other major commodity was cattle, which dominated both manufacturing and agriculture. The export markets were secured through an agreement with the EEC. This deal, particularly advantageous for the large cattle owners, was secured as the cattle owners controlled the state. Meanwhile crop production suffered where the single most important determinant of agricultural growth was rainfall and access to cattle for small-scale farmers. In the first decade the manufacturing sector equalled the Botswana Meat Company, the Government Printer and indigenous brewing. In the 1980s new industrial policies meant that while manufacturing growth was failing or slowing down in other African economies there was renewed manufacturing growth in Botswana. The unique feature of Botswana was that the country was did not hit rock bottom 1979-1981; to a large extent this was because it could rely on mining revenues.

Kenya

In Ndulu et. al (2008b) Kenya is treated by Mwega and Ndung'u. The authors observe that Kenya has experienced growth, but that since the late 1970s the economy has failed to fulfil its potential. It is asserted that Kenya outperformed SSA on a whole until the 1970s (2008:326). This conclusion is at odds with the interpretation of the growth evidence presented in this thesis. It has been observed that Kenya's early growth was rapid, but roughly in line with the other SSA economies and that the uniqueness of Kenya's growth performance is rather that it does not experience a rapid decline after the late 1970s. Relative to its own past Kenya did indeed decline but not compared to other African economies.

Four growth episodes are identified by Mwega and Ndung'u: rapid growth 1960-74, with poor performance 1975-84, a slight recovery 1985-1989 and a slow-down in growth in the 1990s. These patterns correspond roughly with the episodes of growth highlighted earlier in this thesis. These growth episodes are related to the political economy, and in particular the change between the Kenyatta and Moi era (Mwega and Ndung'u 2008: 327). The basic argument is that the change from the Kenyatta to the Moi political regime was bad for growth. The common hypothesis is that Kenyatta represented the Kikuyu and since the Kikuyu had economic interests in cash crops exports

the Kenyatta government implemented policies that favoured agricultural exports. These are the policies that are good for growth according to the orthodoxy. With the change of power to Moi in 1978, the power no longer was with the Kikuyu. Moi represented groups that had been disadvantaged during the previous years, and according to Mwega and Ndung'u the Moi era was associated with a redistribution of resources. Bates (1989: 149) could be taken to support this conclusion, and in an earlier work Bates (1987: 91-92) describes policy response to food crisis in 1979-80 and in 1984-85, and argues that these subsistence crises was used by Moi to stabilise his rule. While the Kenyatta presidency rested on the urban industrial base and export agriculture (tea and coffee) and was partly antagonistic towards the maize-growing centres, Moi's power base lay in the grain-growing areas, and thus the crisis provided Moi with a chance to channel financial funds to those areas and bolster his support.

A common way of accommodating the Kenyan growth experience is that economic policies were not perfect, but that it was still better than in other places. "Under Moi", however, Bates notes that "Kenya has come more closely to resemble her African neighbours" (1989:149). Himbara makes little distinction between to two regimes and notes in a discussion on 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 fraction, 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 difficulties arising in industrial development arising from the change in 'political pacts' (1988:38).

A more contestable claim is that this change in the political economy is the main determinant of aggregate growth. The Kenyatta era coincides with rapid growth (with the exception of the late 1970s slow-down) and the Moi era with slow growth (with the exception of the late 1980s growth improvement). The introduction of multiparty politics in 1991 is associated with a marked slow-down in growth, as political competition resulted in adverse policies and spending. That intensification of competitive politics can be bad for growth is echoed in the chapter on Botswana in the same volume. The difference is that in Kenya the accent is on dissatisfied ethnic groups that had earlier been disadvantaged whereas in Botswana it was economic groups that needed appeasing.

It is true that there is some coincidence of economic and political change. However to follow this line of causation strictly one has to disregard the fact that the slow-down occurred before the political change, and further ignore the occurrence of growth in 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. First it needs be acknowledged that 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 negative 1 percent during 1978-2000 (WDI: 2007).

Mwega and Ndung'u refer specifically to the "mismanagement" of the 1976-77 coffee boom (2008:329). It should first be noted that this was during the Kenyatta era and then secondly that this 'mismanagement' was not unique. The response to the coffee boom in both Tanzania and Kenya was in both cases to liberalise foreign exchange and import controls. Beyond being a natural response to an improvement in external conditions, another reason for this policy convergence is that it was strongly advised from the World Bank (Bryceson: 1993: 9). Retrospectively, this was an unfortunate choice as the coffee boom soon ended, and foreign exchange turned out to be very scarce in the face of a second oil shock. It is however not entirely correct to ascribe this policy choice to poor management. The second major qualification to be made is that Kenya, like most economies, experienced exogenous shocks. The effects of the 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 shocks, there was drought in the early 1980s. It is therefore hard to pick out which part of the economic decline was shock related, and which part of the decline was policy related. It should also be mentioned that Kenya, to a larger extent than most African economies, relied on exports of manufactured goods to other African countries, in particular to the East African Community (Coughlin 1990: 251). This export-led growth was seriously undermined as the EAC disintegrated when Tanzania declared war on Uganda, after Uganda had attacked and invaded Tanzania in 1979.

The response to the first crisis in 1973 was to extend controls in the economy. These controls were imposed on bank lending and interest rates, foreign exchange licensing and imports quotas and some direct price controls on domestically traded goods. While foreign exchange controls were temporarily relieved in the immediate aftermath of the coffee boom, these controls remain largely intact until reforms in the 1980s. On the contrary the response to second crisis in the 1980s was to liberalise controls. These reforms were largely donor-driven. Under Kenyatta, the response to shock was controls, while under Moi the eventual response was liberalisation. First, this does strictly cohere with the account of policy changes in Mwega and Ndung'u. Second, the crucial determinant of crisis response here was probably not ethnic allegiance but rather a changed external environment of policy advice. The changes in policy cannot be entirely attributed to the internal political economy, but perhaps rather to a change in what was considered sound economic policy at the time (Fahnbulleh 2005). As seen in the table below there are also further complications concerning the performance of manufacturing and agriculture production during the late 1970s? Depending in which series is chosen, the performance of agriculture and manufacturing in the

1970s looks very different. The variance of the available growth evidence of this period leaves the judgements on economic performance in doubt.

Table 53: Kenya Economic Growth Rates 1975- 1978

	1975	1976	1977	1978	Average
Gross Domestic Product					
1972 Series	2%	6%	9%	6%	6%
1976 Series	4%	2%	9%	6%	5%
Agriculture					
1972 Series	3%	-1%	9%	2%	3%
1976 Series	7%	2%	10%	4%	6%
Manufacture					
1972 Series	0%	19%	16%	14%	12%
1976 Series	1%	-1%	16%	13%	7%

The rapid manufacturing growth in the early period was a direct result of state intervention. “Helped by high import-protection, import substitution was initially successful.” (Mwega and Ndung’u 2008: 340). In the late 1970s and early 1980s three factors combined to slow this growth down. The break-down of the East African Community depressed export demand, domestic demand was repressed when the coffee boom ended and access to foreign exchange was severely constrained causing import shortages. The observed slow-down in manufacturing may also partly be caused by the difficulties of moving beyond the first stage of import substitution. The ISI strategy cannot be considered a complete failure. In the adverse conditions in the 1980s growth continued, albeit more slowly, but relative to the absolute decline experienced elsewhere this points to that some of the manufacturing growth was indeed sustainable. Sharpley and Lewis (1990: 239-40), contended that while the manufacturing sector was in a “serious mess” after liberalisation, there remained “experience with exports from a number of subsectors” and that there were “considerable opportunities” in manufacturing.

Between 1980 and 1985 import restrictions were rolled back and tariffs reduced. 48 percent of all imports were free of restrictions in 1985, and overall tariffs on the other goods were reduced 8 percent (Mwega and Ndung’u 2008: 343). In 1988 liberalisation was taken further, and in 1991 trade was free. In the same period domestic price controls was almost totally abandoned. The last markets to be liberalised were petroleum and maize in 1995 after strong pressure from donors. These price controls were, as mentioned above, implemented in the 1970s, and the liberalisation started already in 1983.

Mwega and Ndung’u (2008: 359) states that exchange rates were “relatively well managed” and compared favourably with other Anglophone African economies. According to them black

market premiums never exceeded 20 percent significantly except in 1972-73 (the Asian exodus) and in 1982. Vandemoortele points out that during the period 1974-1983 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, liberalisation was extensively implemented leaving the economy more liberalised than before the economic shocks. The correlation of liberalisation and growth is not unequivocally positive. There are reasons to question whether too much has been made of the growth difference between Moi and Kenyatta. There were clearly different political agendas and favoured groups, but as regards the direct growth effect of policies this thesis cautions against an exclusive causal claim between economic policy and growth.

This caution is grounded in three reasons. 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 positive relative performance to other African economies in the same period means that the growth differential needs rethinking. 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 political shift. Third, the Moi era is further associated with ‘good’ policies as regards coherence with current orthodox policy advice,²⁶⁹ but this liberalisation did not have a discernible positive growth effect. There was little growth to be reaped from liberalisation of agricultural trading and the exchange rates. The abandonment of the ISI strategy at a point when Kenya was losing access to the East African Market was also important. As a result manufacturing growth slowed down, while agricultural growth suffered from some drought years. The whole economy suffered from a large debt overhang inherited from the 1970s and 1980s shocks, and instability caused by donor negotiations. This lack of policy freedom and fiscal means meant that Kenya had to dismantle their ambitions in industrialisation at the very time as Botswana was expanding support for their infant industries.

Tanzania

In Ndulu et. al (2008b) Tanzania is treated by Mwase and Ndulu under the heading of four decades of episodic growth. The authors find that there was early success during the first ten years of independence while “Tanzania’s growth experience during the control regime period was low,

²⁶⁹ The changes in the development paradigm correspond closely to the changes in development policy in Kenya.

largely on account of economic mismanagement” (2008:427). This ‘strong control regime’ is referred to as existing between 1970 and 1985. There was a shift towards liberalization “accompanied by a strong revival in growth” during the last decade and a half. While this summary neatly matches a story of liberalization causing growth, and controls causing slow growth, the coherence with the growth evidence can be questioned.

First there is an element of confusion, if not gerrymandering, in the identification of the periods of the ‘control regime’ and the associated growth episodes. Mwase and Ndulu’s introduction referred to a ten-year period of growth following independence (i.e. 1961-1971). When average growth rates are calculated for the control regime it is meant to mean 1970 to 1985. Later in the text ‘early growth’ is referred to the period from 1961 to 1967, while the period of strong control is taken to mean 1967 to 1985. In other words the coincidence of slow growth and strong control is not consistent. Second, while there was a revival of growth after 1985, it was not strong and it was not associated with the whole 15-year period. There was a revival in growth as compared to a prolonged period of negative growth, but it did not compare favourably to the period between the Arusha declaration and the first oil shock, 1967-1973, as shown here in the previous chapter. There is also uncertainty as regards the direction of causation. There was an increase in economic controls in response to the economic shocks. These exogenous shocks constrained growth directly. The ‘strong control regime’ coincided with the period of adverse economic shocks. Mwase and Ndulu notes that domestically-initiated reforms were implemented as early as 1982. The authors, however, first see a decisive move towards a market-based economy in 1985 with the change of power from Nyerere to Mwinyi and the introduction of donor supported reforms. This account of the events is contested, it has been pointed out that the Tanzanian leadership emphasised that liberalisation predated the IMF reforms of 1985 and further argued that the presence of Nyerere during the reform process was “crucial” (Campbell and Stein 1992: 81).²⁷⁰ “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). The success of the reforms was certainly mixed and it is also questionable to what the extent rents were appropriated in 1985. It is more likely that no actors were benefiting from the economic situation between 1980 to 1985 and that therefore reforms were easier to embrace. There was a weakened commitment to reform in the early 1990s, but with the change of rule to Mkapa reforms were again back on track (ibid).

In Mwase and Ndulu’s treatment of Tanzania there are two notable changes from the practices of the previous growth literature. First, they noticed that in 1988 there is a mistake in the

²⁷⁰ Nyerere resigned from the presidency in 1985, but remained Chairman of the ruling party, Chama Cha Mapinduzi (CCM) until 1990.

PWT data for Tanzania. So that in a footnote in Figure 1.1 (Ndulu and O’Connell 2008: 7) it is noted 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 et. al. where this statistical error is treated as one of top ten output shocks (2005:574). On the other hand, treating 1988 simply as void is not satisfactory, and it does not solve the problems of the PWT series. Why would one leave 1988 as void and accept the rest of the series? If one examines the data there are good reasons to discard the whole PWT series as unreliable. To keep 1988 as void and keep the rest of the series of makes reliability worse. The resulting evidence misleadingly strengthen the support of the hypothesis of a sharp recovery in growth in the reform period.

Table 54: Tanzania 1985-1995 - Sharp Recovery in GDP Growth?

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Average
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
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

In 1987 there is a massive erroneous upward adjustment which is kept. There is a further massive, probably erroneous adjustment in 1992 and 1993. This leaves the revised PWT series seriously overestimating post-adjustment growth in Tanzania. Before leaving the year 1988 void, the growth between 1985 and 1995 was measured as averaging almost 2 percent. This was probably an underestimate. However treating the year 1988 as void the average is 5.4 percent. For the year 1987 PWT has 20 percent growth. For 1988 Maddison reports 5 percent, similar to the official data.

A change in the narrative which is an undisputed improvement is that it is recognized that in a comparative perspective Tanzania is characterized by political stability and ethnic cohesion built around the common language Swahili, and that this is because of a sustained effort of Nyerere’s rule to foster unity (Mwase and Ndulu 1998:430). This stands in contrast with the erroneous impression created by using the index of ethno-linguistic fractionalization to explain economic growth as was done by Easterly and Levine (1997:1237). On that index Tanzania was measured as the most fragmented country in the world, and this fragmentation could according to Easterly and Levine explain the whole growth differential between Japan and Tanzania in the 1970s and 1980s. It was further assumed that this fragmentation could explain the high black market premiums

observed in Tanzania. That kind of explanations can safely be disregarded. The growth differential and the black market premiums had other causes.

Mwase and Ndulu explain the early growth (1961-1967) in terms of continuity of the colonial period's policies, and sees the 1967 Arusha Declaration as the decisive move towards socialism and growth-retarding policies, which would not be reversed before the above-mentioned reforms associated with the Mwinyi administration in 1985.²⁷¹ The period from 1967 to 1985 is characterized as the strong control regime, however when its effect on growth is measured growth rate per capita is averaged only from 1970 to 1985, for which it is estimated to be 1 percent (Mwase and Ndulu 2008:433). The direct growth effect of the controls is in reality harder to measure than than one would think from the impression given in 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 against Uganda in 1979 contributed significantly to the decline in growth in the 1980s. It is argued that it was the policy reaction in the face of shocks that that was decisive. A "sharp recovery" in income growth per capita is observed between 1985-89. A period of low growth followed as "adherence to the reform process" diminished between 1990 and 1995. As seen in the table above the support in the growth evidence for this interpretation is far from unambiguous. The PWT data are too weak to be the basis of any conclusion. According to Maddison there is no discernible difference between these two periods. The problems of measurement of performance of both the period of decline and the period of relative improvement was discussed in the previous section. While 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 poor to evaluate the direct growth effect from the reforms.

One of the undoubtedly strong achievements of Nyerere's rule was the unification of Tanzania, and the avoidance of major disruption from strife regarding distribution of economic gains. Equality comes at a premium, and the state intervention in maize marketing was aimed at equalization of development across Tanzania. Pan-territorial pricing was introduced, with the trading companies suffering the transport and trading costs associated with distant locations. In addition prices were set to secure acceptable consumer prices. The loss making of the parastatal trading companies is a well cited fact (Mwase and Ndulu 2008:445), but had its justification. The other main feature of the agricultural policy and major topic in the literature, is the Ujamaa or Villagization Programme. This was basically an effort to create a co-operative structure, replacing and complementing small-scale peasant production. This programme had similar ideals as the pan-territorial pricing. In particular equal access to public services such as health and education was an

²⁷¹ It is not beyond dispute that 1967 was such a decisive break either. In terms of agricultural policy Coulson (1981) sees a continuity of strong and misguided state intervention from the 'Groundnut Scheme' of 1945-55 through 'Villagization' of 1969-1976.

important justification for this policy. It is a controversial point as to whether the food crisis in 1974-75 was caused by the drought or whether it was linked to the collectivization policy. Hyden argues 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 were maybe not 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 succumbed like some of her neighbours to inter-ethnic squabbles leading to political and/or civil instability” (Mwase and Ndulu 2008:449). Barkan confirms this, and compares it directly to the situation 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, the economic externalities of the counterfactual market-led development are not accounted for when lamenting the inefficiencies in the state marketing system. Furthermore, it was shown in the previous chapter that the growth differential in agriculture was negligible. Calculations of export growth rates indicate that Kenya’s exports grew at annual rate of 7.4 percent, compared to 6 percent in Tanzania between 1959 and 1971 (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 also that the output of sisal decreased sharply in Tanzania partly because of the predicted decline of the trade (Green et. al. 1980:83).²⁷² This does not contradict the view that political motivations were different in Kenya and Tanzania, but supports the claim that growth differentials were not that evident in the period.

The spectacular decline in the 1980s cannot be accounted for solely by the sacrifices for economic equality and political stability. It is noted that for producers close to urban markets there was a temptation to turn to parallel markets for selling of the produce (Mwase and Ndulu 2008: 445). However it is not noted how large these parallel markets were in the 1970s, nor how disruptive they were for economic growth. Crops sold in parallel markets would of course not be part of the official statistics and as such the growth of such markets would have been measured as a direct negative growth effect. The negative growth effect from parallel markets is accounted for, precisely because the trading of these goods are missing in the official statistics. Collier et. al. (1986: 134-135) 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”. Tripp (1997) emphasised the growth of the urban informal economy during the same period while Maliyamkono

²⁷² “However, the expansion of sisal processing has meant that both the value added and the export earnings in the industry have declined less that would be suggested by the output or export price performance” (Green et. al. 1980:83)

and Bagachwa (1990: 133) estimated that in 1990 the unrecorded economy had “reached some 30 per cent of official GDP”. These observations confirm the data collection problems of the 1980s and early 1990s that were noted in the previous chapter. It is likely that the official data overestimate the decline of economic activity in the 1980s, and overestimate the increase in the 1990s after liberalisation measures.

Bevan et. al (1990) offer an opinion on the divergence of Tanzania and Kenya in the late 1970s based on a modelling of the coffee boom in Tanzania and Kenya. The period in question is expanded to cover 1984, and it is argued that the divergence in outcome should be explained by the initial policy environment. Green et. al (1980: 85), on the other hand, would point to the external market constraints for 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.” The International Coffee Agreement subjected Tanzania to a quantitative quota of coffee exports. There was however the option to cheat by exporting to non-ICO members, but since this could have diplomatic repercussions and sales in these oversupplied markets fetched significantly lower prices, it would be hard to argue that the Tanzanian government should have practiced an expansive pricing policy to that end. Clarke (in Helleiner 1968: 170-171) said with reference to the Coffee Agreement that “There is no doubt.... that in Kenya this bargaining has been conducted with great skill.” Clarke further pointed out that there was an element of luck. Immediately preceding independence (1962/63) 70 000 acres were planted in Kenya and without this planting the bargaining position of Kenya 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 is “how to prevent coffee growers from increasing production beyond these quantities.” Mshomba (1993), in an analysis of coffee smuggling to Kenya from Tanzania, supports this view and reports that the “export quotas set for Kenya and Tanzania have normally been lower than these countries’ exportable outputs”. Reflecting the quota restriction the official data from the Marketing Development Bureau reported in Sharpley (1985: 76) show that coffee exports stood at about 50 thousand tonnes throughout the 1970s. This could be reported as ‘stagnant’ or as adhering to actual export quotas. Meanwhile Mshomba (1993) estimated smuggled coffee to increase from 1. 5 thousand tonnes in the early 70s, up to 6 and 5 thousand tonnes in the 75 and 76 before it dipped during the coffee price boom and then increased to above 10 thousand tons in 1984 and 1985.

As documented in the previous chapter, there was a marked industrial decline in the 1980s, and by Mwase and Ndulu note that this decline was direct cause of the “decline in foreign reserves

following the external shocks of the late 1970s” (2008: 446).²⁷³ There was a foreign exchange crisis in 1973 which was handled by some intensification of 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. “In fact, 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 organisations under the Board of Internal Trade; that is, it liberalized imports, allowing importers to purchase goods outside government control” (Tripp 1997:66). However, with the 1979 external shocks this import liberalisation was aborted. It was first in the 1980s that the black market premiums spiralled out of control. The currency had been stable against the dollar in the 1970s, but between 1980 and 1985 the premium increased to over 200 percent according to Mwase and Ndulu (2008:450). Thereafter exchange rates were subject to some realignment and liberalisation and but the black market premium persisted into the 1990s.

Mwase and Ndulu do not offer a strict account of the decline in economic growth, but loosely associate trends of growth and decline with liberal and restrictive policies respectively. It is not clear what the authors think that the Tanzanian leadership should have done differently. From the account presented here it seems plausible to argue that it was the economic shocks that were the drivers of both policy and performance change. It is notable that initially bilateral donors were very supportive of Nyerere’s rule and his version of African socialism. There was a change in the 1980s when multilateral donors demanded policy change as a condition for continued support.²⁷⁴ This a strong indication of the shift in economic development thinking, and a reminder that the ‘rationality’ of economic policies is time contingent. The case for a link between economic control and slow growth, and liberalisation and rapid growth respectively depends on the choice of periods and the growth evidence used. While Mwase and Ndulu here seek to distinguish economic shock effects from policy effects by extending the period of ‘strong control’ backwards to 1967, Ndulu and Mutalemwa has earlier argued that “the first major break in Tanzania’s economic growth occurred in 1978” (2002: 48). Until 1978, and 11 years after the Arusha Declaration, Tanzania’s economic performance was not significantly different from Kenya. Barkan (1984: vii) edited a volume comparing development and policy in Kenya and Tanzania, where these countries were described as “virtually pure examples of the two most significant models of development”, patron-client capitalism and one-party socialism respectively. One of the lessons suggested from the

²⁷³ Wangwe (1988: 76) reports negative industrial growth from 1979 to 1985, and also links the decline to the balance of payment problems. De Valk (1996) documents this continued decline the textile industries after liberalisation measures in 1985.

²⁷⁴ Reflecting as well that there was in part a change in donors, with a move towards multilateral financial aid from bilateral aid.

comparison, was that “slower rates of progress” would “accrue to countries pursuing socialist, as opposed to capitalist, development objectives” (Barkan 1984:35). In 1994 a follow up study was undertaken, where it was recognized that since 1979, stagnation and structural adjustment had meant that economic policy has converged. While it was acknowledged that the downturn in economic performance could partly be explained by external factors, the principal cause of decline in Tanzania was deemed to be “excessive state intervention” (Barkan 1994: 23). It was reasoned further that;

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. (Barkan 1994: 23)

Barkan has evidently made too much of this contrast before 1980, this interpretation is not supported by the growth data presented in the previous chapter. It is the depth of decline after the 1979 shock that distinguishes Tanzania economic performance. While the revival of aggregate growth is a matter of accounting controversy, it is beyond statistical doubt that the manufacturing sector did not recover from the shocks and the subsequent reforms.

Zambia

In Ndulu et. al (2008b) Zambia is treated by Mwanawina and Mulungushi who find a parallel pattern in Zambia as compared to Tanzania. It is proposed that Zambia was characterised by a free-market economy between 1960 and 1968, economic nationalization in 1969 to 1990 and then the familiar u-turn to market-led development in 1991 and onwards. Again, parallel to the account of Tanzania, there is some shifting in periodisation when treating policies and performance respectively. When explicitly dealing with economic growth the early growth period is extended to cover 1972, as it is only after this that growth really slows down markedly. The period between 1960 and 1972 is described as one of moderate growth (Mwanawina and Mulungushi 2008: 275). In the conclusion this period of moderate growth is again extended to cover 1974 (ibid: 304). Later in the chapter 1965 is referred to as a turning point. This was the year of the Unilateral Declaration of Independence by Rhodesia. This event forced a rethink in policies towards self-sufficiency and a focus on new large infrastructural projects. Zambia, a land-locked economy, previously integrated economically and politically in the Federation of Rhodesia and Nyasaland, was now faced with

sanctions imposed by its neighbour. A new economic programme was launched in 1968 (known as the Mulungushi reforms, but just referred to as 'economic nationalisation' in the chapter by Mwanawina and Mulungushi (2008: 284). Zambia faced external economic and political difficulties because of its commitment to Pan-Africanism. This element of external political and economic resistance is not paralleled in the other countries, and the difference between Botswana and Zambia is particularly contrasting in this respect. Botswana managed to secure considerable sums because of its non-confrontational stance to South Africa, and was rewarded with aid and favourable trading contracts.²⁷⁵ Zambia was met with economic sabotage and destruction of infrastructure. It was, for instance, denied loans to finance alternative infrastructural projects to overcome the sanctions imposed by Rhodesia (Mwanawina and Mulungushi 2008:286-287). It should further be noted that Zambia was categorized as a middle income country because of its initial high GDP per capita (the copper mines were already developed before independence). This meant that Zambia was not directly eligible for financial aid and concessionary finance.²⁷⁶

In 1971 a contemporary observer reported robust economic growth despite problems associated with the "reorientation from the south" (Harvey 1971:41). There were some problems as copper production was reduced significantly in 1966-67 because of a UDI-induced fuel shortage. The main constraint seen on development and growth at that time 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" in order to maintain investment and economic growth. In 1971 Harvey summed up the prospects of Zambia thus: "[f]or 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" (ibid: 57).

Mwanawina and Mulungushi refer to a "drastic fall" fall in copper prices in 1975, noting that this led to a serious foreign exchange shortage (2008: 287). The result was that some of the industrial capacities that were built up in the early years were forced to run at very low capacity or even close down as there was no foreign exchange to secure the needed imported inputs (ibid). The problems made Zambia seek recourse to IMF finance "in the false hope that the problem was temporary" (ibid). Temporary measures such as import restrictions, austerity budgets and external financing was implemented. White (1997: 59) gives an quick and accurate summary of the experience up to 1985.

²⁷⁵ Botswana's "historical economic links with white-ruled South Africa" is referred to as "a clear demonstration of a pragmatic approach motivated by self/national interest, while remaining opposed to racist regimes (Maipose and Matsheka 2008: 517-518).

²⁷⁶ Later Zambia faced difficulties to renegotiate its status in order to be eligible for debt cancellations.

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 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 started in 1985. The authors note at several occasions that these reforms were poorly sequenced, and that the “growth payoff to reforms were very limited” (Mwanawina and Mulungushi 2008:306). The Zambia broke with the IMF and the World Bank in 1987 due to public protests. Bates and Collier argue that these reforms were initially economically sustainable, but politically unacceptable (1995: 115). The reforms were reversed and foreign exchange was made cheaper, but with a controlled supply. The manufacturing sector and GDP growth responded positively, while the black market premium again soared. This condition was not sustainable economically, and in 1990 reforms backed by IMF and the World Bank was again implemented.

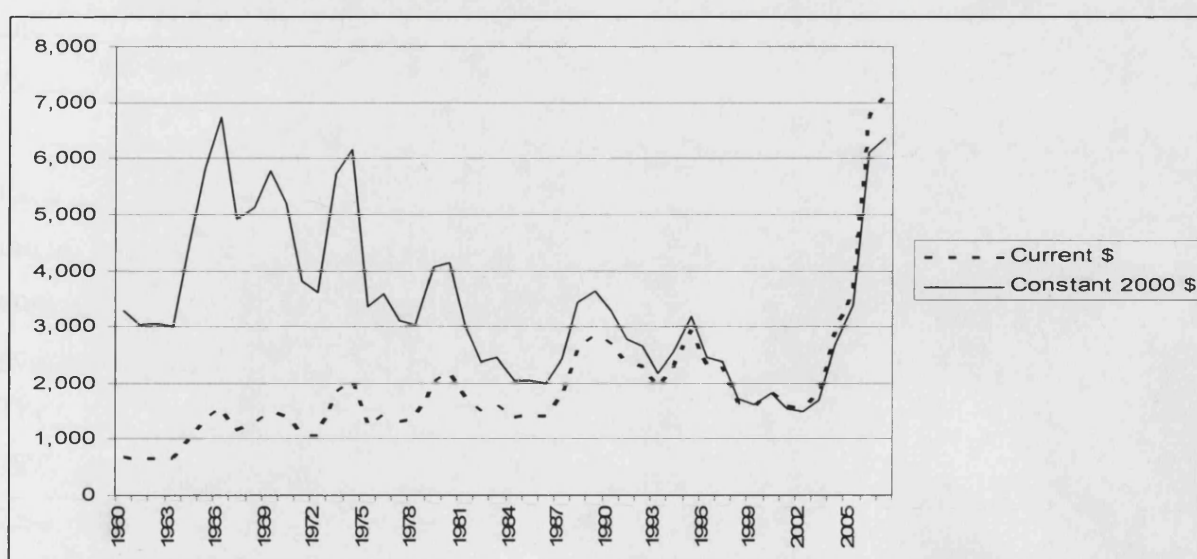
The authors are relatively silent on the direct determinants of growth performance, but associate poor economic growth with economic nationalism as opposed to free market policies. A surprising feature of the conclusion (2008: 304-306) is that it does not refer to the price of copper as a determinant of growth in Zambia, but rather focuses exclusively on the changes in economic policy and the economic reforms. Other works on Zambia tended to focus on the development in the copper prices because “the economy depends so overwhelmingly on copper, its future performance will depend upon the future price of copper” (*Zambia Economic Report* 1975:16). As this statement reflects, Zambia’s export earnings came 95 percent from copper; the mining contributed more than a third of the whole economy and about half of the government revenue. It is therefore not surprising that Kayizzi-Mugerwa (1990) found, using a simple econometric model, that copper prices have strong impacts on the economy and manifested in income, government revenue and the trade balance. It furthermore affects relative prices domestically, and determines the real exchange rate. In this perspective it seems a shortcoming not to emphasise the importance of this determinant commodity.

The relative influence of copper versus institutional quality was the research question for a paper by du Plessis and du Plessis. Zambia was considered “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). Zambia is suggested as one typical example of a country “dependent upon a rich endowment of natural resources and that has nevertheless suffered a disastrous economic decline” (ibid). Contrary to Kayizzi-Mugerva these authors consider that “the relationship between the copper prices, the copper industry in Zambia and ultimately the economy, is more complex” (du Plessis and du Plessis 2006:359). They conclude that the findings of their paper “undermine the hypothesis that Zambia’s decline was due mainly to the dependence on copper” but emphasise the “impact of poor quality institutions on the growth path of Zambia” (ibid: 367).

Their main support for this conclusion is that no link has been established between copper prices and growth, and that therefore other factors are more important. This finding rests on two empirical observations. The first is that looking at nominal copper prices “it is very difficult to identify a plausible trend in the time series of the copper prices” (du Plessis and du Plessis 2006:356). This difficulty, as will be shown here, is not present if one considers real prices. Second, the authors find “no support [for] the hypothesis that copper price fluctuations have dominated the terms of trade for Zambia” on the basis that “it was only from 1985 to 1999 that the copper prices and Zambia’s terms (sic) moved in the same direction” (ibid). Their comparison is only across 1980 to 2003, using five year averages. This means that indeed, the copper prices and terms of trade moved together in all observations except the first observation 1980-84 and the last one 1999-2003. The reason for not including the first decade and a half after independence in their analysis is that ‘regrettably, terms of trade data are sparse for Zambia’ (ibid) and that IMF financial statistics only provide those data from 1980 onwards. In spite of these deficiencies in data availability some kind of consideration of the probable movement of terms of trade could be considered.

Figure 12: Copper Prices (LME, Grade A, Cash), 1960-2007 US\$ per tonne



Source: International Copper Study Group (2007)

As mentioned, in 1974 copper had a 95 percent share in total exports, leaving little doubt about the trend in the export terms of trades when copper prices fell more than 40 percent from 1974 to 1975. At independence copper prices were high, and the prospects for the economy promising. The only constraints were to adjust to the new transport requirements as the traditional routes and suppliers had to be changed. There was no reason to worry about balancing the current account, as noted above; the principal concern was the physical ability to import not the financial ability. The price of copper fell from this initial high at independence in 1967-68 but soon increased again. The copper price began its decrease in the early 1970s. There was temporary relief as the copper prices increased in 1973, a response to the oil price increase that caused a price increase in most raw materials. This delayed the negative effect of the first oil shock in Zambia until 1975 when the economy began its decline. As seen in the figure above, in real terms the price development in copper is unambiguous. This sudden and lasting fall in copper prices was accompanied by the sudden increase in the cost of petroleum imports. The copper mining sector had until then suffered from energy and transport shortages. Adding to the misfortune of the timing of these events in 1973 was the expensive infrastructural investments to enable the shift from reliance on Rhodesian coal. Zambian requirements of petroleum increased substantially in 1973 when the Indeni Oil refinery opened in Ndola. As a result imports in that year almost doubled the 1972 level mainly due the decision to shift from coal to heavy fuels in copper mining operations. This decision had been taken before the dramatic fourfold increase in costs of oil announced by oil producers towards the end of that year. In order to be able to import the required oil a new pipeline to Tanzania was ready in 1968. The planned electricity production expansion was delayed because of transport bottlenecks. In 1975 TAZARA (the railway between Tanzania and Zambia) was still to open, and when transport was further disrupted by the civil war in Angola, machine imports was further delayed, and the government saw itself forced to turn to air freighting of machines (Zambia, *Economic Report* 1975: 50).

The above discussion confirms the extent of how unfortunate external conditions determined the performance of Zambia's economy. The importance of copper to the economy does complicate the interpretation of any movement in the GDP indicator. As Harvey remarks, "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 same cautions were noted when the difference between GDP growth measures at 1970 and 1977 prices was discussed in a previous section here. In retrospect it is reasonable to argue that Zambia should have adjusted to the falling prices of copper earlier. It was impossible, however, to predict a lasting deteriorating trend from the viewpoint of 1975. Moreover, Zambia's opportunity to structurally adjust towards being an exporter of agricultural goods was constrained by

infrastructure. While Botswana was able to escape the usual consequences of being landlocked, this escape was greatly helped by the unique position of trading diamonds. Zambia had the misfortune to be relying on copper. In physical distance to world markets the two economies were similarly disadvantaged²⁷⁷, but there was a marked difference in the political distance to its neighbour countries. Zambia was forced to build new transport routes, and had no guaranteed external markets to rely on.

In what probably aptly represents popular consensus Meredith (2005: 380) summarize Kaunda's 25 year rule as having "a catastrophic record of mismanagement". This section revises that view, and shows that there were severe challenges for the management of Zambia's economy during the period. According to Hill and McPherson writing on Structural Adjustment (2004: 526), "none of the remedies" to Zambia's problems "requires rocket science". These problems were identified as unserviceable foreign debt, sluggish export growth, a demand for imports outstripping foreign exchange earnings, increasing poverty and food insecurity and acute aid dependence. This would be solved by putting an end to Zambia's "long history of start-stop reform" and thereby providing a setting characterised "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 fortunes.

Economic performance, as Mwanawina and Mulungushi noted, was better in the early years, and deteriorated in the 1970s and onwards. There was a marked policy shift, which has been pointed out, from 1968, when the Zambian state decided to intervene firmly in the economy to build infrastructural, industrial and energy self-sufficiency. The marked shift in economic growth is better associated with reduced export receipts to finance this structural transformation. External market conditions were suddenly crucially different. In retrospect the decision to invest heavily in petroleum-fuelled copper mining could not have been worse. The prolonged decision to adjust could be interpreted as a consequence of these sunken investments, the inflexibility of the political leadership or simply a misplaced hope in that market conditions would turn in Zambia's favour.²⁷⁸ When reforms were finally introduced in 1985 the domestic resistance to them were strong. As a result, commitment to reform was openly broken in 1987, only to be resumed in 1990 (Bates and Collier 1995: 115). Growth has improved in Zambia since, not because of economic reforms, but because of a boom in copper prices from 2003.

²⁷⁷ And Diamonds is much cheaper to transport relative to their final market value.

²⁷⁸ A path-dependency, but not of an institutional kind.

CONCLUSION: REFLECTIONS ON MEASUREMENT AND PERFORMANCE

This thesis has trodden some new ground to illuminate more familiar issues in the literature. A lot of research has evaluated the economic policies and economic performance of African countries, while there has been considerably less work evaluating the measurement of economic performance.

The central research question has been how issues pertaining to measurement of growth can affect the prevailing conclusions on African growth performance. This question has been examined, refined and approached in different ways in the thesis, and this is the place to synthesise those findings and to suggest what main messages scholars should take away from the thesis. In the attempt to answer the question on measurement and performance, many subsidiary questions have been treated. Some of the answers to those questions have pointed the way forward by raising further questions, while still other answers are findings in themselves; this is the place to give those findings their correct weight. Considering that the sections on measurement cover relatively unfamiliar terrain, it is perhaps particularly important to consider some of those findings, also in relative isolation from how they are relevant for various specific approaches of economic performance. The perspectives offered in this thesis on the GDP metric as evidence are particularly relevant not only for revising past judgements but also for future research on African economic history. Finally, a crucial determinant of the value of this thesis is what it contributes about the post-colonial economic experience of Botswana, Kenya, Tanzania and Zambia.

This final chapter first reviews the main lessons from the case studies. It begins by considering how the findings relate to the existing literature on the individual countries, and then how they cohere with the aggregate literature on African economic performance. Then the findings on measurement are reconsidered, before the contribution of the thesis is summarised with a view to future research African economic history.

Economic Policy and Performance in the Case Study Countries

The comparative study of economic performance in Botswana, Kenya, Tanzania and Zambia yielded some new results, confirmed and thereby strengthened familiar conclusions in the literature, while leaving unaddressed some of the other questions on economic performance of the countries. In particular the thesis has not attempted to re-investigate paths of economic policy, but rather has focussed narrowly on detecting economic change over time. By reaching relatively certain statements on comparative (inter-temporal and inter-spatial) economic growth it has been possible to evaluate the plausibility of familiar claims in the literature. The conventional wisdom of the literature, implicitly or explicitly comparing the four economies over the post-colonial period as

a whole, has been that economic performance has been excellent in Botswana, relatively good in Kenya, but poor in Tanzania and Zambia. This contention has been based on the average GDP growth over the period, and the observation of severe economic problems during the 1980s in Tanzania and Zambia. This pattern in economic performance has been associated with a larger role of economic controls and state intervention in Tanzania and Zambia, while Botswana and Kenya have been characterised as relatively open economies, favourable to exports and restraint in state intervention. The better performance of Botswana as compared to Kenya has been explained by the latter country's heavier leaning towards implementation of policies such as protecting infant industries, policies that were almost non-existent in Botswana before the 1980s. Furthermore, the change from Kenyatta to Moi revealed authoritarian political competition along ethnic lines, which it has been hypothesised, led to unproductive redistributions of economic rents. Conversely, Botswana was ethnically more homogenous with a consistent adherence to multiparty democracy, and thus avoided similar unproductive frictions.

The thesis has sought to reconsider and refine these views, in particular by comparing growth rates disaggregated by time periods and by sectors. Based on the growth evidence the received interpretation of poor economic performance in Tanzania and Zambia needs to be qualified. First, the poor economic performance was not persistent, and at times and for some sectors economic growth compared favourably, even within the era of strict economic controls and heavy state intervention. This brings the direct line of causation into doubt, and suggests that the role of negative economic shocks, particularly in the case of Zambia, has been underplayed in the literature. It turns out that before the economic shocks of the late 1970s Zambian and Tanzanian agricultural and manufacturing growth compared favourably to both Kenya and Botswana.

It is worth emphasising the growth did occur in all of the countries in the early part of the period. This brings support to views that contradict the orthodox interpretation. Contrary to what some of the literature reviewed here say growth occurred during a period which governments pursued by some would be characterised as 'bad' policy. Conversely it is important to emphasise that in particular in the case of Tanzania it has been shown that growth and recovery has been overestimated in the data series used, and consequently overplayed in the literature. Structural adjustment did not bring about manufacturing growth, and the majority of the growth in agriculture was a result of increase in the types of agricultural marketing i.e. private and informal that was now allowed for. As mentioned above it seems plausible to argue that to some extent the orthodox literature (in particular in Ndulu 2008b) has conflated periods of shock and periods of control, and has argued that it was the controls and not the shocks that explains growth without ever disentangling this endogeneity problem. It remains a problem for the orthodox literature to explain that when 'shocks' passed, and orthodox policy advice prevailed, growth failed to recover. Indeed

the only country that experienced significant expansion in manufacturing in the 1980s was Botswana, not subjected to Structural Adjustment.

The comparison of Botswana and Zambia highlights the importance of looking beyond the aggregate growth rate, which in both countries, but with opposite effects, was determined by external fortunes in markets for important mineral exports. For a large part of the post-colonial 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 on paper were more favourable for exports in Botswana, 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. Moreover though agricultural policies might have been encouraging for agricultural exports, it was in effect irrelevant as it could not override unfavourable weather conditions. Thus the 'luck' factor is emphasised in the case of Botswana too.

Kenya and Tanzania have been viewed as diametrically opposite cases in some of the literature, being seen as the typical cases of African capitalism and African socialism, respectively. It has been shown here that on the economic growth record one cannot usefully tell the countries 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 turn to socialism as decisive for Tanzania in terms of economic growth. However, it would reaffirm scholarship that has downplayed the differences between Kenya and Tanzania in terms of actual economic policy.

On the political economy of growth in Kenya, the thesis suggests a surprising finding. The existing literature has emphasised the appropriateness of economic policy under Kenyatta (1963-78), while the policy regime under Moi (1978-2002) has received harsher judgements. Relative to its own past Kenya did indeed experience a decline in economic growth; but not compared to other African economies. In a comparative perspective the 'good' policies of the Kenyatta regime were not manifested in a significantly better growth record, while despite the 'bad' policies of the Moi regime Kenya's economic record in this period compares very favourably to other African economies in that period.

Tanzania and Zambia were unique in the sample in experiencing zero or close to zero growth in GDP from 1978 into the early 1980s. In particular the manufacturing sectors were in decline. The decline made way for Structural Adjustment, where financial support to cover growing balance of payments problems was exchanged for economic liberalisation. In Botswana there was no need for such a policy intervention. Kenya embarked on IMF and World Bank supported Structural Adjustment programmes, though with Kenya's pro-capitalist legacy structural changes were less radical than in Tanzania and Zambia. In Kenya some internal marketing control, and in

particular protection of the manufacturing sector was liberalized. In Tanzania and Zambia the state, through parastatals, was much more dominant, and structural adjustment was more geared towards creating openings for the private sector internally. Price controls, while existing in Kenya as well, were more prevalent in Tanzania and Zambia. Before Structural Adjustment the growth of the unrecorded economy was on the increase in these economies, mostly as a response to the controlled prices being uncompetitive. As reported in the chapter on national accounting methodologies, data on trade and transport in Tanzania was drawn almost exclusively from the parastatal sector.

Measurement and Performance in the Case study Countries

For this period the data on recorded growth are highly uncertain for Tanzania and Zambia, less so for Kenya, while it is unlikely that Botswana data collection systems were affected. Accounting for the period of economic decline and the revival before and after Structural Adjustment brings us towards measurement problems. Collier (2007:9) comments on data collection and measurement of economic decline in *The Bottom Billion*:

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.

The research on data collection methods and the reading of the resulting different versions of the growth evidence presented in this thesis would suggest the opposite interpretation. In the late 1970s and early 1980s data on agriculture, manufacture, distribution, constructions and transport were collected by the state agencies. In the case of Tanzania GDP growth was constructed on the basis of the parastatal companies' accounts. State capacity to purchase, control and move goods and services was seriously impaired by the economic shocks in the 1970s. Consequently the state and the data was capturing a falling proportion of crops produced, sold and transported. The result was a growing underestimation of GDP levels and growth. There was not made any increased allowances for the growth in 'subsistence' production and consumption or for the increase in unrecorded or informal trade and transport.

Economic liberalisation and Structural Adjustment temporarily worsened the accounting and record keeping problem. Liberalisation preceded the change in accounting methods, allowing 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. When these important parts of the economy was included in the estimates it resulted in an *ad hoc* increase in total GDP. As was documented in the previous chapter in the case of Tanzania and

Zambia, if the series connecting the 1980s with the 1990s are not treated as discontinuous it seriously overestimates the economic growth in the late 1980s and early 1990s. The decline is therefore likely to have been overestimated, and the post – Structural Adjustment growth similarly overestimated. However, it remains true that for the purpose of linking economic growth throughout this period, there are no usable growth data that can be interpreted at face value.

Implications for the African Development Literature

So to what extent can these findings on the case studies inform the literature on economic development in Africa? It should be emphasised that the thesis has almost exclusively focused on economic performance as measured by GDP growth. This narrow focus has been prompted by the literature, in that it has taken the average GDP growth as the prominent development indicator. The thesis has not considered how well change in GDP reflects economic development broadly defined, but rather asked whether the quoted GDP figures are likely to reflect actual economic change, and to what extent the GDP estimates are a consistent measure of economic change over time and space. By focusing on what drives measured economic growth in the selected case studies, it has been possible to gauge the plausibility of claims relating specific economic policy or institutions to economic performance. In this way, the thesis has attempted to explain economic growth as an incremental process, instead of focusing on explaining ‘a lack of economic growth’.

It has been emphasised at several points in the thesis that there is reasonable doubt concerning the direct link between economic policy and economic growth, and several examples have been brought forward to support this claim. Less has been said about why this is the case. The thesis has been silent on which economic policy is the most suitable for growth, and much less for economic development. The thesis does not wish to propagate agnosticism about economic policy apathy. It is fairly unproblematic to detect which policies that are likely to better promote certain exports and the literature has already identified why it is more or less likely that such policies are chosen in certain political economy situations. In explaining the record of economic growth the thesis has found that economic policy has not been the primary factor. The aggregate growth rate in these economies has been determined largely by the movement in receipts from exported minerals or crops. These receipts are determined by the prices received in external markets and the productive capacity, which in terms of agricultural products has been dependent on climatic conditions. It has been established with some certainty that economic policy is up to a certain margin, largely irrelevant if exogenous factors are favourable. Conversely, economic policy is relatively powerless in countering unfavourable exogenous conditions. The caveat of this conclusion is that economic policy determines who receives the returns under favourable

conditions, which might have implications for long-term economic growth. It is further relevant to note that intensified economic controls were in part a response to the economic shocks. To engage in counterfactual debate on whether a more liberal response to the external imbalances in the late 1970s would have yielded better results is most probably not fruitful. The prolonged negotiation and halted implementation of Structural Adjustment Programmes was not the best conceivable outcome, but that is not to say that a swift adjustment as envisaged by the IMF and the World Bank would have resulted in sustained economic growth. Post-adjustment manufacturing growth slowed down in Kenya, while the industrialisation efforts in Tanzania and Zambia were aborted. Botswana did not undergo a donor-supported adjustment and provides the exception to the rule here.

With the benefit of hindsight it might be imagined that a more aggressive promotion of agricultural exports pre-adjustment would have made Tanzania and Zambia better equipped to face the adverse external conditions of the 1970s. A relatively more inward looking set of policies were implemented in these economies, though partly as a result of the external conditions in the case of Zambia. That these policies preceded the economic decline should not automatically be taken to say that these policies caused it. Economic growth, it has been established, was as seemingly robust in Tanzania and Zambia as in the other economies in the early independence period, including in agriculture. Even with the benefit of hindsight it is hard to conceive how Zambia, landlocked, exporting copper, importing petroleum and faced with the hostility from previously important economic partners, could have devised a package of economic policies that would have taken the country comfortably through the post-colonial period. That Kenya, despite new and different economic policy problems managed better through the early 1980s does however indicate that Tanzania might have been overly ambitious about its programme of self-sufficiency. Sacrificing efficiency for the sake of distribution may however explain how Tanzania avoided the conflicts of redistribution on ethnic lines which its neighbour later experienced.

That the findings of an approach explaining measured economic change do not immediately cohere with an approach aiming to explain an average growth shortfall is perhaps not that surprising. It has been emphasised and confirmed that the African economic growth failure was not persistent or omnipresent, nor inevitable. The economic failure and decline was an event that took place during the post-colonial period, but it did not coincide with the whole period. The two should not be equated. Dispensing with the average growth outcome perspective and thereby allowing for periods of growth, changes how the post-colonial growth record is both narrated and explained.

In terms of explaining the African economic growth record the thesis offers a reconsideration based on the case studies. Initial conditions such as ethnic fragmentation and measures of social capital does not seem to have an direct role in explaining the failure of economic growth in the late 1970s. The growth failure was a combination of external economic shocks and a

less than perfect policy response, both from international donors and national economic policy makers. Policy typologies such as the distinction ‘closed’ versus ‘open’ or the related ‘bad’ or ‘good’ policies are not found to correlate consistently with the episodes of economic growth. The regression literature on African economic growth has inflated the economic failure to apply to the whole period, and then falsely attributed a economic policy and institutional arrangements that could manifestly co-exist with sustained economic progress as a cause for the economic failure. That this period of economic growth was not sustained did not mean there were no lasting effects. Gains were made in infrastructure development and human capital that have not been fully reversed in the manner of the GDP per capita measure.

The option of averaging economic growth necessarily gets rid of some complexity, and thus provides a simpler answer to the question of what caused economic growth. It has also been shown that behind the aggregate average story, there is precisely that, a more complex story. The 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). The case studies have pointed to some of the diversity of economic growth across time and space on the African continent, with at times different interpretations than the once suggested here. The collection make strong claims about the timing of economic growth, without an explicit concern for data quality issues, and without probing into whether alternative data sources of growth evidence support the interpretations.

Implications from the Measurement Study for the Aggregate Literature

In theory reliable and valid growth evidence assumes full and consistent coverage of all economic activity. For the measure to be comparable across time and space, the growth data has to be expressed in constant price terms, and the coverage needs to be consistent from country to country. In practice there are many shortcomings. Measured growth changes importantly with changes in methodologies, extrapolations and in the change of base years. 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 overlooked deficiency is the difference between recorded and non-recorded growth. In the thesis there has been an attempt to find 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 conveys information, but one needs a ‘historian’s approach’ to disentangle information from ‘statistical’ methods.

The thesis has unravelled a range of issues relating to the measurement of economic growth in African economies. The first is that there is a surprisingly large discrepancy in reporting growth rates from the different international databases, and that this unpredictable error range is so large

that it may very well influence rankings between countries, and form the basis of varying judgement on economic performance from 'poor' to 'good' for episodes of growth. The inaccuracies derive from different methods of linking different constant growth time series with different base years together. There are some crucial lessons from these findings. An observed economic shock, such as a double digit percentage change in GDP, is very likely not an output shock, but a measurement shock. The literature that emphasises 'volatility' in the African economic growth record as a defining characteristic has some errors of commission in this respect. While those erratic changes might occur in the databases, this is often a description of the dataset as such, rather than the economy concerned. It is advisable to consult different sources, and there might be a case for plotting such error ranges in the growth evidence before drawing conclusions from it. There is indeed a sizeable error margin on growth rates in any given year, and a confidence interval should be established for the country that is studied.

A related conflict of aims was described. The national statisticians continually strive towards the most accurate level estimate with the given statistical resources. If possible measurement would be improved and revisions or new measures of economic sectors will be included. The extent of this varies across time and between the countries, and is unpredictable unless the primary sources are consulted. Meanwhile, for growth economists these improvements in level measurements render the growth rates unreliable.

A route to avoid and detect such extrapolation mistakes is to consult the primary material: the national accounts. The source material, and/or a careful consideration of the different published tables does also allow a consideration of the underlying basic statistical data, collection methods, 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 parts that are computed statistics. With a degree of inaccuracy, growth in the export sectors, government and in large-scale agriculture and manufacturing is recorded. The rest of the economy goes by largely unrecorded. In particular this relates to peasant agriculture, which in most countries is the most important economic activity. It further applies to small and medium scale manufacture, most non-government services such as transport, marketing and retailing in particular, and also construction. For these sectors, that often entails more than a half of the economy, different statistical assumptions are made. The assumptions can vary considerably from country to country. This has implications both for level and growth estimates.

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, so that there was less incremental statistical growth. The more detailed regular data reported here also meant that the agricultural baseline estimate was more comprehensive and more likely to register intensive growth. Tanzania is signified by a large

‘traditional’ small-scale agriculture sector that by assumption grew at a lower pace than the total population. Botswana had a rapidly growing mining sector that came to dominate the economy together with a centralized cattle industry. This means that a relatively large share of the economy is well accounted for. The evolution of the national accounting system was characterised by an incremental process of including better statistical data each year. Without proper revising backwards this means that Botswana, more than other countries had a large element of statistical growth, particularly in the 1970s. In Zambia there was a growing lack of basic data to such an extent, coupled with inflationary pressures, that the production method of accounting was abandoned in favour of accounting based almost solely on performance indicators. In the late 1980s and onwards the recorded growth was happening 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 large structural shifts from the late 1970s on when economic activity shifted from being dominated by the state, towards an informal market economy.

The second chapter gave a comprehensive review of the literature on estimation of African national incomes. The first comprehensive estimates started appearing before independence. Reflecting the colonial administrations’ priorities they covered items that also appeared in the balance of payments in addition to the produce of commercial operations. With independence the consumption and subsistence incomes of the ‘traditional’ or ‘subsistence’ economy became politically relevant. It was noted that some scholars, in line with the development optimism prevalent at the time, were doubting the importance of devoting resources to accounting for economic activities which would soon be transformed and integrated into to ‘modern’ or ‘commercial’ economy. Though smitten by the development optimism, the independent African nations’ first national accounts did include such estimates. In the case of Tanzania the estimates, as mentioned, were particularly comprehensive, reflecting not only the economic but also 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 proxies for the years between household budget surveys. In the meantime the dominant view on development has switched to taking a pessimistic view of development in Africa, and also changed focus to the supply response of small-scale farmers, and the dynamism of the ‘informal’ sectors. The measurement problems for these sectors mean that the national accounts data is a poor guide to knowledge of this part of economic development.

Lessons for the Study of Long Term Economic Change in Africa

A recent important tendency in the wider field of development economics is the use of econometric models to explain long-term economic change, as economists have developed models that seek to grapple with explaining centuries of economic and institutional change. African economies are central to these explanations since they include the majority of the countries with a dismal economic performance. This work by economists presents a challenge to an economic historian: to undertake research with the aim of evaluating the significance and relevance of the quantitative evidence from the African past, judging its relevance for the prevailing interpretations.

Tracing the cause of current economic success far back in history runs the risk of neglecting important developments which lie in between time $t=0$ and today. Growth has been episodic in developing countries, and it is a major challenge to distinguish which periods of growth were important and which were perverse or unsustainable. To confront this challenge, there have been some efforts of simply extending existing post-colonial GDP series backwards, by extrapolation or other inventive methods. This approach overestimates the value of current GDP estimates in Africa as evidence, 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 and scholarly assumption about the African continent as persistently economic stagnant. There are therefore some important and intriguing choices to be made for economic historians of Africa, where one might have to make a careful consideration of the historical accuracy of the evidence used. Such demands of the evidence must be weighed against the increasing demand of the current literature of quantifying the African past, and the potential that without any data experiences of African economies will be marginalised in these meta-narratives.

Focusing on the post-colonial period, it has been shown that there has not been persistent economic stagnation in Africa. Findings on the measurement of performance have lead to a reconsideration of some contentions on African economic growth. The thesis underlines the importance of looking beyond the averaged aggregate growth rates, because of, rather than despite, the issues of data quality. The thesis hope to stimulate and pave the way for new research that suggests new evidence and methods to explain long-term economic and social change and by implication the current predicament of African economies.

.Despite policy difference and less than ideal initial conditions, the economies discussed did experience progress and widespread economic growth following independence. For Zambia this growth ended in 1974, when development in prices of petroleum and copper went 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, depending on diamonds, experienced sustained aggregate growth throughout the period. Looking beyond 1995; the *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 (OECD 2008). If it is accepted that growth revived in Africa in the early 1990s, then viewing a decade of decline as representative for African growth characteristics looks untenable, and the history of African economic growth needs to be reconsidered.

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