Anker, R. and Knowles, C.J., 1983: Population Growth, Employment and Economic-Demographic Interactions in Kenya: Bachue-Kenya. New York: St. Martin's Press, 755 pp., 3 maps, 1 illustration, 131 tables, 10 graphs, 14 appendices, bibliography and index.

The era of complex models is still with us. There are those who argue that in their absence, policy making is based on hidden processes or mental models. Anker and Knowles have produced a work of economic-demographic simulation modelling applied to Kenya. The object of the book is to demonstrate that when partial analyses of aggregate and household level data are supplemented with simulation modelling a more comprehensive understanding of the economic-demographic inter-relationships is reached. In addition long term direct and indirect effects of policy changes on the economy, on population, on employment and on income distribution become possible. The Bachue model series of the type applied to long-run (10-30 year) time perspective and concentrate on employment, income distribution and population related issues. Similar studies have appeared elsewhere as: Bachue Brazil, Bachue Philippines, Bachue Yugoslavia in addition to Bachue International, sponsored by International Labor Office. Bachue-Kenya is to a large extent highly technical work, one has to go through not less than 300 questions and 131 statistical tables. The authors have however tried to simplify it as much as possible. The urgency of the issues raised in this book make it most valuable and timely to policy makers and development planners and to the students of demography and economics. Some of the conclusions it reaches make many of the strategies of development of the last three decades of very little relevance.

The book has 29 chapters organized into five parts. Part I contains two introductory chapters; background to the study and data sources, and a brief description of Kenya, respectively. Part II contains chapters 3 to 8 which deal with partial empirical analyses of the determinants of key demographic and economic variables in Kenya; fertility, mortality, migration, income transfers, female labor force participation and agricultural productivity, respectively. Typically, forms of multiple regression analyses are used both to identify determinants of the above variables and to derive input parameters for key behavioral relationships in the Bachue-Kenya simulation model. Part III of 14 chapters contains background description of the simulation model; Bachue-Kenya, covering its structure, the method of incorporating the input parameters from the partial analyses of Part II and estimating values for the model initial period (1969), and the assumptions built into the model. Part IV of six chapters presents the results of the simulation model illustrating the effects different policies are likely to have on Kenya. These effects are viewed against an initial 'Reference Run' of the model which gives a hypothetical glimpse of the economic and demographic path Kenya is likely to take based on the present trends. Finally Part V composed of chapter 29, concludes by restating the important policy conclusions of the model. It ends with a note on the overall usefulness of large scale economic-demographic models. We are reminded that a model is only as good as the theory and the structure underlying it, the quality of the data; and the accuracy of the relationships which make it. It is on these terms one would then analyze and appraise the book.

In keeping with their goals, the authors have used partial analyses in Part II to contribute some new insights and have at the same time corroborated several existing findings on key economic-demographic relationships in Kenya. They reveal that women labor force participation and the use of contraceptives per se have no significant effect of fertility in Kenya. Income transfers are found to be important sources of income for the rural and urban poor, but as a mechanism of redistributing income in Kenya the process is shown to have far less impact than previous studies have suggested. In addition and contrary to neo-Malthusian positions they find that population growth is not simply an obstacle to economic development, that it actually stimulates agricultural productivity (albeit at diminishing rates of return) and creates conditions for technological change. Their findings also agree with conclusions on the structural basis of income inequality in Kenya, the stage theory process of rural-urban migration, and the peculiar feature of peasant farming where the household combines both the functions of the firm and of the household in production.

Yet throughout, data problems haunt this study making its findings of suspect validity. As often with large scale models, there is a temptation to sweep in all sorts of data without due concern for the implications. In this case the only Input-Output Tables available are for 1967, together with these, population census data for 1969 and then household survey data for 1974 are crammed together. Kenya's latest population census was in 1979, apparently when the study was in progress. One basic assumption of the regression model used throughout this study is that data should pertain to a population with similar characteristics - an assumption that is clearly difficult to sustain for Kenya in the period from 1967 to 1983. The extensive use of multiple regression analysis in this study brings with it the serious methodological problems associated with the technique. These problems in turn affect the nature and accuracy of the relationships investigated in this study. For example, how realistic are the assumptions of additivity, linearity, homoscedasticity and lack of multicollinearity when dealing with the kind of variables and the kind of data used in this study? Unfortunately, the authors chose not to educate the reader on the assumptions and limitations of this technique or to provide the curious reader with a minimum of statistical information to critically evaluate and cross-examine their results and decisions.

In a major study like this, one would have expected the researchers to pay attention to and be guided by the large background of demographic studies available on Kenya, especially in the choice of key variables. However, in this study there is no attempt by the authors to justify at the out set their choice or ommission of variables. One critical variable missing here is nuptuality (age at marriage), which has been found most significant in explaining variations in fertility in Kenya. We are referring to studies by M.K. Kangi: Factors Affecting Urban-Rural Fertility Differentials in Kenya (1982); and Mette Monsted and Parveen Walji: A Demographic Analysis of East Africa (1978); both major local studies incidentally not cited in this work.

Parts III and IV dealing with the simulation model are supposed to be the most valuable contributions of this book. Central to both parts are the underlying structural constraints and assumptions built into the simulation model. It is assumed that Kenya's economic growth is supply-constrained, specifically by the availability of foreign exchange. Other factors such as the rate of investment, the supply of labor or the availability of skilled manpower are not allowed to influence the performance of the economy. In addition, the model relies on the assumptions of fixed technological change, and dualism in the economy (modern vs. traditional) and the population (urban vs. rural). A remarkable attribute of this study is that, even within this limiting framework the model is shown to provide an accurate glimpse of the economic and demographic path that Kenya is likely to take in the future based on the present trends. The first 10 year trends simulated by the 'Reference Run' of the model compare remarkably well with Kenya's actual experience for the period 1969-1979. The simulation experiments that form the rest of Part IV show how a set of various policies are likely to alter that path.

The policy experiments consist of: six demographic policy experiments (lowering of total fertility - slowly/rapidly, improving human health - slowly/rapidly, restraining the rate of rural-urban migration and providing a nine year compulsory education); four economic policy experiments (increasing agricultural output, increasing investment in agriculture, stimulating the growth of informal sector and rural industrialization); three labor force policy experiments (creating jobs in the urban modern sector/and urban informal sector, and encouraging female labor force participation); and three income distribution policy experiments (land reform, increasing the wage share in the modern sector, and reducing the variance of modern sector earnings). A recurring feature of the outcomes of these policy experiments is that policies that generate fast economic growth rates also tend to produce adverse labor market and income distribution conditions; and vice versa. The inter-relationship between fertility rates, birth rates and population growth is shown to be more intractable that how difficult it is to translate decrease in fertility into a reduction in birth rates and population growth in Kenya. Furthermore, it is shown that such efforts achieve very little improvement in the economic performance, income distribution or in labor market conditions (wages and employment). The conclusion is that direct policies to lower fertility rates will have little impact on the economic problems facing Kenya in the next 30 years. The options that appear more realistic out of these experiments include policies for reducing the rate of rural-urban migration (e.g. through resettlement), providing increased basic educational opportunities, promoting agricultural productivity and most important of all, land reform.

Needless to say the inability of factors other than foreign exchange to influence the growth of Kenya's economy is a major handicap built into this model. An anomaly that stems from this constraint is that, increased internal consumption (due to improvements in per capita income and better income distribution) appears not to stimulate local agricultural production, instead it has the effect of reducing the exportable surplus, and limiting the supply of foreign exchange hence depressing the rate of economic growth. If this constraint is true of Kenya as the authors suggest (p. 676), then it denotes a serious problem of export - based dependency development. The assumption of fixed technological change is equally unrealistic. Rather contrary to this assumption, historical studies by Ester Boserup have indicated how population growth and density create the conditions for increasing the technological level.

Lastly, in their policy experiment in promoting export-oriented agricultural production, the authors fail to come to grips with the turbulent and depressing effects of world prices of agricultural commodities and the on-going food crisis in Africa. These concerns are seriously reflected in the Lagos Plan of Action (1980) which has emphasized the production of food over export crops in Africa. Some recent researches have compared the prospects for the two development options; the IMF and World Bank sponsored Export-led Growth versus an Agricultural Demand-led Industrialization (ADLI), the latter building on a domestic mass-consumption market and relying on small- and medium-scale farming. Irma Adelman in <u>Beyond Export-led Growth, (1984)</u> has compared the two options using a large scale simulation experiment similar to this study. Her results support the ADLI strategy. Its merits are that it shifts from surplus extraction to surplus creation and lays strong emphasis on building agricultural-industrial linkages and interactions, it is more labor intensive, and is a foreign exchange saving program. Export-led growth is based on the illusion that there are many rooms open for new entrants out there, while international demand for imports is projected to decline in the future. Certainly, single minded agricultural export-oriented policies failed in Latin American countries in the early decades of this century.

The merit of this book is that it undoubtedly raises and examines some of the most pressing questions of our times. Its weakest point is that it uses a model that far from being dynamic, chains the very possibility of finding their solutions. Their model reminds me of the story of Prometheus, who condemned by the gods was chained to a tree trunk and an eagle set upon him to devour his liver out. Over the nights the gods would ensure the liver grew again so that the next morning the eagle would come and start all over again. The question is, how will Prometheus ever deliver himself from bondage. The single most important policy experiment this study would have undertaken is in search of those policies that would provide alternatives to the malignant dependency on foreign exchange by Kenya.

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