MODELLING ECONOMIC DEVELOPMENT POLICY: ECONOMETRIC, GENERAL EQUILIBRIUM, AND AGENT-BASED PERSPECTIVES

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BRETT W. PARRIS

BSc, BTh (Hons), MA (Development Studies)
GradDipEcSt, PostgradDipEc

DEPARTMENT OF ECONOMETRICS AND BUSINESS STATISTICS

MONASH UNIVERSITY

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ABSTRACT

Global poverty and the complexities of economic development pose significant challenges for the discipline of economics. This thesis explores the extent to which different types of economic models are capable of meeting those challenges. It begins with an historical overview of development, arguing that only by understanding its critical processes can we begin to gauge what should be included in development policy models today. The recognition that economies are complex evolutionary systems has also prompted a range of methodological questions which are discussed in the next chapter. It is argued that the assumptions underlying economic models matter, and that we should not choose a modelling framework or levels of aggregation before we have understood the nature of the complex system we are trying to model. Starting with a closed-form analytic mathematical framework immediately constrains what questions can be addressed.

Trade and industrial policy and aid effectiveness are discussed more explicitly in the next three chapters. Cross-country regressions confirm that there does seem to be a statistical correlation between countries' export and output concentrations and their economic vulnerability. Cross-country regressions are also criticised however, when they are pushed beyond their sensible limits, as in recent controversies over the benefits of 'openness' and aid effectiveness. A discussion of some of the most important roles for aid suggests that many important considerations for modelling aid effectiveness are difficult or impossible to incorporate with current analytic approaches. An econometric analysis of multiple computable general equilibrium (CGE) simulations using a standard neoclassical framework in the next chapter moreover also suggests that not all countries benefit from liberalisation. These results reinforce the need for a dynamic evolutionary framework in which the possible trade-offs between allocative-efficiency and stability-efficiency can be examined.

One of the open secrets in economics is just how strongly so much of the economic theory used for policy analysis has been criticised from within the profession. A number of these criticisms are drawn together to try to infer their cumulative implications for CGE modelling. In my view, they suggest that CGE models are

likely to be of limited value in modelling medium- to long-term economic development policies. Another approach is called for.

One approach has emerged in recent years that offers the potential to simultaneously address many of the limitations of standard general equilibrium modelling. Agent-based models adopt an evolutionary computational framework in which discrete agents decide their actions independently, based on their attributes, behaviours, learning capacities and interactions with each other and their environment. Agent-based modelling offers the potential to revolutionise economic modelling, drawing strongly on econometric and statistical analysis, and permitting full integration with the political, social, institutional, geographic and environmental dimensions of development. It is ideal, for example for analysing the interactions between economic growth and ethnic tension, the circumstances under which industrial policies could work, and the bargaining processes by which value is enumerated and wealth is distributed. Some foundations for an agent-based model of Tanzania are developed in the final chapter, to illustrate some of the possibilities, before concluding.