

Discussion: Durlauf (2001), "A Manifesto for a Growth Econometrics", Journal of Econometrics

1) What is the author's criticism as regards the connection of the growing body of empirical data on the one hand and theoretical literature on the other hand?

There is hardly a connection. For example, while spillover effects and attendant nonlinearities continue to be hallmarks of the new endogenous growth theory (Romer etc.), empirical practice still largely focuses on linear models whose specification is suggested by the neoclassical exogenous growth model of Solow and whose empirical implementation is often asserted to provide evidence in favor of that model (cf. Barro, 1991). Theory needs to be confronted with data to validate.

2) How are empirical analyses of growth mostly taken out? What is the major methodological issue in these growth analyses? What does the author suggest to address this issue?

Empirical analyses of growth generally follow a common strategy. A cross-section or panel of countries is employed in which per capita output growth rates are assumed to depend over a common time horizon on two sets of variables. One set of variables consists of initial per capita output, savings and population growth rates, variables that are suggested by the Solow growth model. The second set of variables consists of control variables that correspond to whatever additional determinants of growth a researcher wishes to examine.

The major methodological issue is endogeneity of explanatory variables but also instruments (e.g. country area instrument for trade openness...not exogenous wrt military spending which is related to democracy etc.). Because so many factors plausibly matter for growth, it is problematic to identify instruments that simultaneously are correlated with those growth determinants that are included in a regression and uncorrelated with the model's residuals.

This problem does not possess any econometric solution per se. Rather, it requires broad consideration of what theories in economics, sociology and other social sciences have to say about the determinants of possible instruments in order to make a persuasive case for instrument validity. Put differently, econometricians need to reeducate the applied community as to what is really necessary for instrumental variables techniques to be appropriate.

3) Why is the choice of explanatory variables in a growth model so difficult? What does the author suggest to address this issue?

Model openness is associated with another serious issue in empirical growth, one that is more amenable to formal analysis } the choice of variables for a particular growth model. Given the vast number of proposed growth determinants, there is a great need for procedures that can assess the sensitivity of coefficient estimates and standard errors to choices of covariates.

The author sees a potential way forward in Bayesian model averaging techniques.

4) What is 'parameter heterogeneity' and why is it difficult to address in many growth studies?

Parameter heterogeneity: growth is differently affected by, say, investment, in the U.S. than in Ethiopia. Hence the parameter of investment should not be the same. Studies such as Durlauf and Johnson (1995) and Canova(1999) have illustrated, albeit in very different ways, that the constant coefficient linear

model assumptions made in standard growth analyses are not supported by the data. It is difficult to address because it results in a strong loss of degrees of freedom.

5) The author stresses the importance of narrative analyses in economic growth as well as developing measures for the local goodness of models. Please comment.

At a minimum, empirical growth needs far greater considerations of the limits to formal statistical work. Given the large number of plausible competing theories and the likelihood of substantial parameter heterogeneity across countries, there are clear limits to what econometric analyses can do. By implication, historical studies are of special importance in growth analysis; the tendency of economists to treat statistical studies as automatically more informative than narrative studies has no justification in general and is clearly pernicious in contexts such as growth where the data are so poor. In addition, it is important to develop measures for the local goodness of fit of models. It seems sensible that different growth theories will fit different sets of countries relatively well. Empirical growth studies virtually always assume that one theory is equally valid for all countries, whereas it is far more natural to think that a given theory will explain the growth experience of each country more or less well depending on the country's individual characteristics.

6) In summary, where does the author see the key contributions to the growth literature of econometrics?

A key contribution that econometrics can make is to clarify how empirical workers should elucidate data patterns and draw inferences concerning growth (continuing development of model robustness and averaging techniques; development of varying coefficient methods that allow the growth process to depend on a country's state of development; goodness of fit measures which allow one to tell how well a model fits various subsets of the data).

At a minimum, econometrics has a crucial role to play in correcting the overclaiming and unjustified assertions that have become so commonplace in the growth literature.