

GROWTH EMPIRICS: A PANEL DATA APPROACH*

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A panel data approach is advocated and implemented for studying growth convergence. The familiar equation for testing convergence is reformulated as a dynamic panel data model, and different panel data estimators are used to estimate it. The main usefulness of the panel approach lies in its ability to allow for differences in the aggregate production function across economies. This leads to results that are significantly different from those obtained from single cross-country regressions. In the process of identifying the individual "country effect," we can also see the point where neoclassical growth empirics meets development economics.

I. INTRODUCTION

In recent years there has been considerable empirical work on cross-country growth. A close two-way relationship has been observed between this work and the corresponding developments in the theory of growth, in particular, the emergence of new (endogenous) growth theories and the ensuing conflict between these on the one hand and the preexisting models of growth in the tradition of Solow [1956], Cass [1965], and Koopmans [1965], on the other. A central focus of this work has been the issue of convergence. While the finding of convergence has been generally thought of as evidence in support of the Solow-Cass-Koopmans model, absence of convergence has been regarded as supportive of endogenous growth theories. The controversy has given rise to the concept of "conditional convergence" meaning convergence after differences in the steady states across countries have been controlled for.

A common feature of existing empirical studies on this issue has been the assumption of identical aggregate production functions for all the countries. Although it has been correctly felt that the production function may actually differ across countries, efforts at allowing for such differences have been limited by the fact that most of these studies have been conducted in the framework of single cross-country regressions. In this framework it is econometri-

*I would like to thank Dale W. Jorgenson, Gary Chamberlain, Guido W. Imbens, Robert M. Solow, James H. Stock, Lawrence F. Katz, Olivier J. Blanchard, and an anonymous referee for their helpful suggestions. I also benefited from the comments of Xocé Garcia, Eduard Sprokholt, and participants of the Harvard Econometrics Lunch. All remaining errors are mine.