Output can be thought of as a function of capital labor and technological knowledge. For a single country the latter variable could be approximated by time; we can also consider different countries representing varying technical levels. Decomposition about the changes into these factors had been begun by Tinbergen and Solow. However, they have been constrained, in order to achieve manageable formulas, to use a Cobb-Douglas production function, in which output is linear-logarithmic in capital and labor. This implied that the value shares of the two factors were in constant proportion over time.

I had speculated that the decomposition might be faulty if the wrong production function were used, but I had done little about it. Chenery had been collecting a great deal of data about different countries. In particular, a then graduate student at Stanford, Bagicha Minhas, now a professor at the Indian Statistical Institute in Delhi, had been doing careful cross-country comparisons and held that the share of labor in value added for a given industry was not constant across countries. Specifically they found that value added per worker had a good linear logarithmic fit to the wage rate, but the coefficient for many industries was less than one, where the Cobb-Douglas assumption would imply a coefficient of one. They discussed this problem with me, and after a couple of wasted weeks I realized that their findings could be rationalized by the assumption of a production function with an elasticity of substitution different from one but constant. It turned out that Solow had in fact suggested just such a production function in a theoretical paper.1

It turned out that constant elasticity-of-substitution-in-production-function had implications which were relatively easy to fit, being linear in form. As a result, we were able to test our hypothesis on a wide variety of data and attained some interesting results.

Subsequent work has gone still further, but the impulse to find useable new production functions was released by our paper and resulted in a flood of subsequent work. Our original incentive to confine ourselves to functions giving relatively simple derived forms has probably been made obsolete by the improvements in computer technology, which make fitting complex nonlinear forms much chapter. Our paper now is probably of historical significance in pointing to a more general methodological approach.”

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