

Abstract

Prucha and Nadiri (1982, 1986, 1988) introduced a methodology to estimate systems of dynamic factor demand that allows for considerable flexibility in both the choice of the functional form of the technology and the expectation formation process. This paper applies this methodology to estimate the production structure, and the demand for labor, materials, capital and R&D by the U.S. Bell System. The paper provides estimates for short-, intermediate- and long-run price and output elasticities of the inputs, as well as estimates on the rate of return on capital and R&D. The paper also discusses the issue of the measurement of technical change if the firm is in temporary rather than long-run equilibrium and the technology is not assumed to be linear homogeneous. The paper provides estimates for input and output based technical change as well as for returns to scale. Furthermore, the paper gives a decomposition of the traditional measure of total factor productivity growth.