

Unproductive Production Function: Cobb-Douglas Production Function Revisited

Pulak Chandra Majumdar and Amitava Chatterjee

Some major problems associated with production function analysis of survey data are reviewed in this paper in the hope that it will offer impetus to research work. Problems arise in the treatment of capital, aggregation of inputs and outputs, aggregation of functional relationship, specification of the function and statistical estimation. These problems hitherto have not been resolved and doubts remain regarding the validity of farm-level-production function analysis.

I Introduction

Farm-level production function generally estimates the optimal rates of inputs and outputs in order to: (a) guide the future allocations of resources (Biddle 2010, Lindbeck and Weibull 1988, Massel and Johnson 1968); (b) investigate the economic rationality of farmers (Vieth and Suppapanya 1996, Hopper 1966); and, (c) drive formative supply function (Biddle 2012, Idachaba 1973). In addition, such analyses are used to investigate returns to scale (Griliches and Ringstad 1971, Hoch 1976) and where time series data are available to investigate the technology change (Hájková and Hurník 2007, Miller 2008, Binswanga 1974 and Becker and Koester 1975). Each of these applications mentioned above raises its own special concept problems which are best discussed after consideration of the more general problems of (a) treatment of capital and time, (b) aggregation, and (c) estimation and identification.

Literature on the problems of aggregation of production functions is extensive. Felipe and Fisher (2003) discussed the conditions under which aggregate production function can be derived from micro production function. The conditions turn out to be very stringent. Aggregate production functions thus do not have a sound theoretical foundation. For example, while generating GDP as the sum of the components or aggregate demand is correct, defining it as a well-defined neo-classical function of aggregate capital and labour seems to be incorrect. Still, there exists frequent use of aggregate production functions in the applied work but without putting forward a valid argument to such functions. Felipe and Adams (2005) have accepted Samuelson's invitation to verify his claim that all the regressions of the Cobb-Douglas (1928) production function

Pulak Chandra Majumdar, Guest Faculty, Presidency University, Kolkata 700073, west Bengal,
Email: majumdarpulakchandra@gmail.com
Amitava Chatterjee, Former Head, Department of Economics, Presidency University, Kolkata
700073, West Bengal.