

THE DEMAND FOR A SINGLE VARIABLE PRODUCTIVE SERVICE AND THE ADAPTABILITY OF CAPITAL

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Abstract

It is the purpose of this paper to show that neoclassical distribution theory — grounded as it is in neoclassical production theory — cannot be regarded as possessing the degree of determinacy that is generally imparted to it. The problem becomes apparent in even the simplest of cases; the case in which a perfect competitor produces a product by means of the continuous substitution of two (imperfectly substitutable) inputs, one variable and one “fixed”.

It is shown that when the implications of the perfect adaptability assumption are made explicit, a given value of marginal product curve cannot be regarded as the demand curve for the variable productive service. In effect, the perfect adaptability of the “fixed” input results in a change in the physical — and, hence, technical — properties of the capital input. This, in turn, implies a change in the underlying production function; a phenomenon not accounted for in the orthodox treatment of the single variable input case.

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For the case of a single variable productive service, it has become a convention in the literature to regard the value of marginal product [hereafter, VMP] curve as the demand curve for the variable service involved.¹ Thus, when the firm is viewed as renting a variable service, say x_1 , in a perfectly competitive input market, the profit maximizing rate of use of x_1 is secured by equating the VMP of x_1 with its equilibrium, market determined rental rate. Given a change in its rental rate, the new profit maximizing rate of use of x_1 is determined by sliding up or down the original VMP curve drawn for a given product price and rate of use of the “fixed factor” or factors.

It is the purpose of this paper to demonstrate that the internal logic of the standard analysis — grounded as it is in the production-theoretic framework of the short-run — is such that the VMP curve

¹ See, for example, Ferguson [3, pp. 395-399]. This is on the presumption, of course, that the firm is a perfect competitor in the product market. Hence $VMP = P^0 \cdot MP_{x_1}$, where P^0 is product price fixed at the level P^0 , the market determined price, and MP_{x_1} is the marginal product of the service flow x_1 .