On the optimal production and location of a labor-managed firm

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Abstract. This paper endeavors to introduce space into the theory of the Labor-Managed firm (LMF) and to investigate its optimal production and location decisions. It is shown that the degree of returns to scale plays a key role in the determination of optimal production and location for an LMF, in particular, that the optimal location of an LMF is farther away from (closer to) the market as compared to a profit-maximizing firm (PMF) if the production function is of increasing (decreasing) returns to scale. We also demonstrate that the optimum location of an LMF moves closer towards the market as demand increases, regardless of whether the production function is of increasing or decreasing returns to scale. This finding is in sharp contrast with that in a capitalist economy.

JEL classification: R70, D21

1. Introduction

Since the seminal paper on the subject by Ward (1958), a considerable number of studies have dealt with various aspects of the labor-managed economy (see Domar 1966; Vanek 1970; Meade 1974; Gal-Or et al. 1980; Paroush and Kahana 1980; Hey 1981; Hill and Waterson 1983; Mai and Shih 1984; Mai and Hwang 1989; Kahana 1989; Choi and Feinerman 1991; Zhang 1993; Haruna 1996 and others). Their primary objective has been to examine the differences between labor-managed and capitalist economies. These studies have, more specifically, looked into one of the most fundamental issues in the theory of the labor-managed firm (LMF), that is, the comparison of the output policies of an LMF with those of a profit-maximizing firm (PMF). In particular, it has been shown that an LMF produces less output and employs less labor than a PMF under perfect competition (Ward (1958)) or under monopoly (Gal-Or et al. (1980)).

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In recent years, considerable effort has been devoted to the study of the choice of location for a PMF (see for example, Moses 1958; Sakashita 1967; Khalili et al. 1974; Mathur 1979; Eswaran et al. 1981 and Mai 1981). In contrast, the study of the choice of location for a LMF has been greatly neglected.\(^1\) This is particularly surprising, considering that the analysis of cooperative enterprises has practical relevance. This kind of operational system can be found not only in eastern European countries such as the former Yugoslavia and USSR,\(^2\) but also in some modern enterprises in the west. For example, numerous instances of LMFs have been identified in the US. Two of the more interesting clusters are the plywood cooperatives (Gunn 1984; Craig and Pencavel 1992), and employee stock ownership plans (abbreviated to ESOPs, Blasi 1988). In Europe, one of the largest and best known examples of an LMF is the Spanish Mondragon cooperative complex (Whyte and Whyte 1988), some of whose participating companies are leading Spanish exporters. Thomas and Logan (1982) showed that LMFs attracted 4 times as much investment as PMFs, and that they also accrued much higher profits than PMFs. In Italy, LMFs receive strong state support through tax concessions and public contracts; and its famous cooperative Muratori e Comentisti (CMC) is a major constructor of dams and roads in Africa (Earle 1986). LMFs also exist in France (Sibille 1982), the United Kingdom (Wright et al. 1989) and other countries such as Australia, Canada, Denmark, Sweden and Israel, as well as in the continents of Africa, South America and Asia (Bonin et al. 1993). In addition, many hospitals and law firms operate in such a way as to maximize income per head of physicians or lawyers on the staff. However, one is hard-pressed to find studies comparing the locational choice for an LMF with that of a PMF; nor can one find any formal analysis of the effect a change in market demand has on the locational choice of an LMF. The purpose of this paper is to initiate an investigation into these issues by presenting a formal model leading to comparisons of the production and locational choices of LMFs and PMFs, as well as to provide an appraisal of the relationship between production function and an LMF’s production and location choices.

The paper is organized as follows. In the next section, a basic model is developed, followed in Sect. 3 by a comparison of equilibrium solutions for an LMF with those of a PMF. Section 4 conducts a comparative static analysis to evaluate the impact of an increase in demand on output when the location of the LMF is endogenously determined, and then compares it with the impact produced when the location is exogenously given. The impact of an increase in demand on the LMF’s location is examined in Sect. 5. Some concluding remarks comprise the final section.

2. The basic model

Consider a spatial economy in which the location of a firm is confined to a set of points along a line of length \(s\) between \(I\), the site of the input \(K\) and

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1. Hsu’s work (1983) is an exception, as he considered the location decision of a cooperative firm in a world with price uncertainty. His analysis, however, differs from ours.

2. See the discussions in Ward (1958), Bonin and Fukuta (1986), Dentsch and Kahana (1988) and so on.