



ORGANIZATIONAL FORMS AND PERFORMANCE IN TRUCKING SERVICE

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ABSTRACT

In general, firms are either owned by investors or members (Chaddad and Cook, 2004). Member owned firms are commonly referred to as cooperatives, which we henceforth adopt. Several studies have been devoted to comparing these two types of organizational forms using different theoretical perspectives: Institutional theory (Emilianoff, 1948, 1995; Craig, 1993), Neo-classical theory (LeVay, 1983; Tennbakk, 1996), Transaction cost theory (Staatz, 1984; Ollila, 1989; Schrader, 1989), Game theory (Sexton, 1986; Staatz, 1987), Property rights theory (Fulton, 1995), Agency theory ((Jensen and Meckling, 1979; Bergeron and Lalancette, 1993; Hansmann, 1996). However, when it comes to understanding the competition between them, neo-classical theory and in particular industrial organization is the predominant choice (see some reference).

Previously, most studies on cooperatives focus on an agricultural context (see Sexton, 1986; Porter and Scully, 1987; Staatz, 1987), but cooperatives are also found in banking, stock exchanges, and law firms. However, we found that there exist cooperatives in one overlooked context, the trucking industry. These cooperatives consist of carriers (producers of trucking services), which together coordinate, market, and sell trucking services to customers. These cooperatives compete with commercial owner third-party logistics providers contracting carriers, which typically are investor owned. They also compete with themselves, since carriers have the option of going direct to the end customer.

Typically, when comparing cooperatives with investor owned firms based on efficiency, it is measured on three different aspects (Nilsson, 2001): technical efficiency (ability to maximize output from given inputs), allocative efficiency (ability to choose the cost minimizing method of producing a given output), and scale efficiency (ability to choose the correct level of output). Porter and Scully (1987) argue that the incentive problems associated with a cooperative reduces its ability to maximize out from given inputs, while others claim that cooperatives have improved information flows (Staatz, 1984) and less problems

with moral hazard (Fernandez et al., 1998) leading to increased technical efficiency. When it comes to allocative efficiency, Ferrier and Porter (1991) show that horizon problems associated with cooperatives inhibits rational investments making it difficult to choose the cost minimizing method of production. In context of the trucking industry, investments consist of trucks, terminals, and administrative tools. Since each carrier makes investment decisions in trucks, we explore what organizational form (direct channel, carrier-cooperative, third-party logistics provider) that leads to the most economical efficient decision from an economical point of view. Investments in terminals and administrative tools are on the other hand a decision for the entity facing the shipper, which could be the carrier using a direct channel or the carrier-cooperative/TPL. This decision becomes indifferent if the carrier-cooperative allows tradable residual claims (Bonin et al., 1993; Harris et al., 1996; Cook and Iliopoulos, 1999), which means that we can disregard it. Studies on cooperatives pertaining to scale efficiency (see Porter and Scully, 1987) argue that they typically lack of sufficient members in order to choose a correct level of output. They claim that this has to do with increasing cost of control as members increase and sometimes even legal restrictions on business volume. On the other hand, Fernandez et al. (1998) refer to cooperatives and IOFs as quasi-integrated enabling them to reach economies of scales and density to the same extent than vertically integrated firms, since they completely manage the coordination of the carriers. Hence, we focus on exploring the truck investment decision for different organizational forms in the trucking industry. The methodology draw on industrial organization and game theory using a two-stage supply chain model under deterministic demand, which we express as a Cournot competition model.