

Economic effects of trade patterns on productivity: Evidence from the Korean automobile industry

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Abstract

Among inter-firm trade patterns, the cooperative trade system has proved to be superior to arms-length or market-oriented trade in the long run. Within the cooperative trade system, the transition from dedicated (single supplier) trade to network trade is proving a remarkable phenomenon. In our theoretical model, we compare the relative economic efficiencies between dedicated and network trade systems. Then in empirical analysis, we examine the relationship between alternative trade patterns and the productivity of the automobile industry. The main results of the theoretical model show that network trade results in a higher profit level than dedicated trade as a rule, although network trade is less stable than dedicated trade. Empirical study reveals that increasing network trade leads to higher productivity.

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1. Introduction

Today's world economy is rapidly being globalized. Some examples of this are the development of information technology, reduced tariff and non-tariff barriers, an increasing number of free trade agreements, and deregulation. These trends have strengthened competition in all industries, and as a result, the importance of the networks that firms have formed to procure competencies that they do not themselves possess is increasing. Moreover, global outsourcing through the delegation of non-core operations or jobs from internal production within a business to an external entity that specializes in that operation is increasing. Facing an intensely competitive environment, the firm's choice of trading pattern is one of the most important strategies for enhancing its competitiveness. That is because the trade pattern in firms located above or below the value-chain affects the price and quality of finished goods. In addition, the trade pattern affects the efficiency of the whole economy as well as the competitiveness and productivity of firms.

Trade patterns have two divisions: arm's length trade and long-term cooperative trade. Long-term cooperative trade also has two divisions: dedicated trade, in which firms have few trade partners; and network trade, in which firms have many trade partners. A dedicated trade is a closed trade, and has the advantages of stability of trade, ease of information transmission, and rapid communication between partners. A network trade takes a middle position between arm's length trade and long-term cooperative trade, so it has both competitive and cooperative elements.

In recent years, numerous studies have found that Japanese long-term cooperative supplier relationships played a key role in automobile manufacturers' performances early in the 1970s and 1980s. Contracts between purchaser and supplier were based on trust in long-term cooperative relationships. If the supplier had a problem with cost or quality, the manufacturer would help to work things out before considering changing to another supplier. In this relationship, relation-specific assets accumulated between the supplier and the manufacturer, and contributed to cost reduction and quality improvements in final goods (Kawasaki and McMillan, 1987; Womack et al., 1990; Sako, 1992; Nishiguchi, 1994). By contrast, arm's length relationships were dominant in the U.S. (Helper, 1990). If there was a problem caused by a supplier, the manufacturer switched

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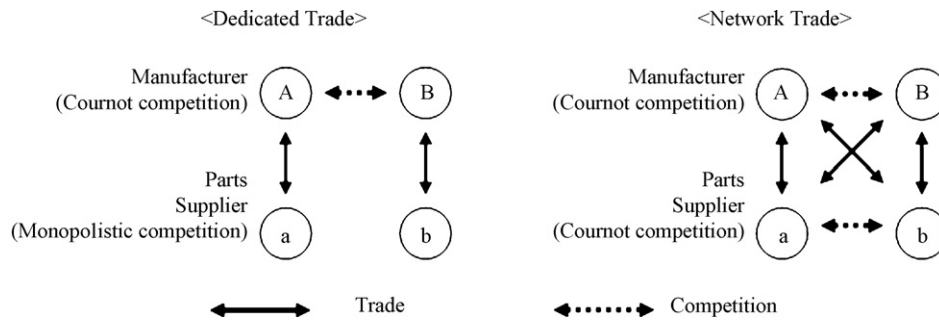


Fig. 1. Dedicated trade vs. network trade.

to another supplier immediately. However, over the last decade, U.S. car manufacturers have been adopting more long-term cooperative relationships as the superiority of long-term contracts has become known from car manufacturers in Japan. The effort to adopt long-term cooperative relationships has also been increasing in Korea, and has helped to ensure that its firms have successfully caught up with foreign advanced firms (Amsden, 1989).

As the economic environment proved more suitable for network trade, the trade pattern in Korea switched from dedicated to network trade. This is because knowledge creation capacity rather than knowledge adoption is the core competency under tough competitive circumstances. More precisely, core technology acquisition is more important in parts markets than assembly markets, so the advantages of network trade in which firms can induce innovation through competition are greater than those of dedicated trade, in which competition between firms is limited. The diffusion of online trading by advanced information technology has facilitated the adoption of network trading. Online trading makes it possible to communicate with partners rapidly and to reduce cost and management efforts. Besides, the fact that the creation and diffusion of new knowledge through the interaction among different parts of knowledge are keys to the acquisition of competitiveness for the long run, also promotes the spread of network trade.

In this paper, considering this phenomenon, we focus on the relationship between trade patterns and productivity through both a theoretical model and empirical analysis. Firstly, in Section 2 we view the theoretical background in the literature, and in Section 3 we use the duopolistic competition model to compare the economic efficiency of alternative trading patterns. In Section 4, we analyze the effects of network trade on productivity using automobile industry data. Lastly, we conclude in Section 5.

2. Dedicated trade and network trade

2.1. Theoretical reviews

The debate on trade strategy can be viewed by examining the decisions made by firms on whether to acquire the resources necessary for business internally or externally, and if they decided to acquire them externally, what trade pattern they

selected. When supplying all necessary parts internally, the company is referred to as vertically integrated. However, when supplying them externally, the trade pattern is divided between arm's length relations and long-term cooperative relations. In arm's length relations, a firm chooses a partner from the market with short-term and temporal relationships, and its main concern is cost reduction and product quality improvement. Although arm's length relations can be repeated, their continuity may not be guaranteed. In contrast, long-term cooperative relations are repeated relationships for the long run; and firms maintain long-term relations for encouraging investment, transferring technology, and maintaining business confidentiality. The two types of relations have different economic efficiencies, and each has its own theoretical background.

Long-term cooperative relations are also comprised of two trade patterns, dedicated and network trading relations, depending on the number of partners. Even though dedicated trade is close to vertical integration, and network trade is close to market mode, they have in common that they are neither perfect vertical integration nor perfect market mode, but are intermediary forms. That is, while dedicated and network trades strictly belong to the external (market) mode, they belong to an in-between area where advantages of both types of trade are available. The long-term cooperative trade relationship between manufacturers and parts suppliers has theoretically and empirically shown its efficiency through many studies, especially in the experience of the Japanese automobile industry. Many researchers have emphasized that a key part of the Japanese manufacturers' success in that industry comes from the long-term, highly interdependent relationships between automobile manufacturers and their suppliers in the 1970s and 1980s.¹ Therefore, the debate here focuses on whether the pattern is one of dedicated or network trade within long-term cooperative trade.

Although recently, there has been the perception that network trade rather than dedicated trade guarantees more extensive economic efficiency because globalization, standardization, networking of overall industry, and technological change have increased; there are still many different points of view as to which one is superior.

¹ Williamson (1985) conceptualized it as a relational contracting form that is neither the firm nor the market.

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