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Strategic alliances as Stackelberg cartels – concept and equilibrium alliance structure

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Abstract

This paper analyzes incentives of oligopolistic firms to form strategic alliances and the effects of the endogenously derived alliance structure on product market competition. A three-stage-game is considered: in the first stage firms decide about forming strategic alliances, in the second stage each alliance designs a strategic contract, and in the third stage alliance members and outsiders compete in the product market. It is shown how contractual terms about transfer prices and profit sharing in a production joint venture for an intermediate product may serve as an appropriate commitment device. Profits of alliance members and outsiders under different alliance structures are then determined. Based on this profit structure, the alliance formation process is analyzed. In a linear Cournot oligopoly with at most five firms only one alliance forms and industry output is reduced. With more than five firms an alliance structure with at least two alliances results (if an equilibrium of the alliance formation game exists) and in this case competition is enhanced. © 2000 Elsevier Science B.V. All rights reserved.

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1. Introduction

So called 'strategic alliances' are becoming increasingly common in oligopolistic markets. While the management literature discusses almost all forms and aspects of strategic alliances,[1] most of the economics literature concentrates on R&D cooperation.[2] Following Porter and Fuller (1986) a strategic alliance can be defined as a coalition, where partners remain independent firms which coordinate some of their activities while being competitors in other areas. But what is 'strategic' about strategic alliances? In industrial economics the term 'strategic' is used if firms take some action in stage 1 in order to influence the behavior in stage 2 – the period 1's actions form a commitment for period 2. It is possible to distinguish between commitment through investment and commitment through contracting. Based on this idea, a 'strategic alliance' may be defined as the cooperation of at least two actual or potential competitors in an oligopolistic market with perceived interdependence, where strategic investments (e.g. R&D investments) are coordinated and/or the alliance contract is used as a strategic device to change the incentives in the following stages (see Welzel, 1995 for a similar concept).

The first aspect, coordinating strategic investments in order to internalize technological and competitive spillovers, has been discussed extensively in the literature on R&D cooperation.[3] The present paper concentrates on the second aspect, which has not been analyzed yet: A strategic alliance aims to influence the behavior in product market competition by means of a strategic contract between alliance members.[4] To be concrete, I consider an intermediate good production joint venture and show that the contractual terms about transfer prices and profit sharing may be used for this purpose. If fixed appropriately, the alliance members behave together as a 'Stackelberg cartel' relative to the rest of the industry. In contrast to traditional cartels in Cournot markets, strategic alliances which comprise only a small part of all firms in an industry expand output in comparison with the Cournot quantities.[5]

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[1] See for example the papers in Contractor and Lorange (1988).

[2] Notable exceptions are Reynolds and Snapp (1986) and Kwoka (1992) which both analyze production joint ventures.

[3] Most of this literature is based on the seminal contribution of D'Aspremont and Jaquemin (1988); see the introduction of Kamien et al. (1992) for an overview.

[4] In reality firms which are forming strategic alliances are usually concerned with both aspects (see Morasch, 1994, Sections 3.2., 4.1 and 5.2 for an analysis). In the sequel the term 'strategic alliance' will refer to a coalition which uses a strategic contract to change the incentives of their members.

[5] The idea that a group of Cournot firms could have an incentive to expand output relative to the Cournot equilibrium is due to Gaudet and Salant (1991). Shaffer (1995) analyzes the formation of a Stackelberg cartel in a variant of the leadership model of D'Aspremont et al. (1983). In this context only one cartel which reduces output results in equilibrium. The relation of Shaffer's paper to my work will be discussed in detail at the end of Section 3.