



Dual market structures and the likelihood of repeated ties – evidence from pharmaceutical biotechnology

Nadine Roijakkers^{a, *}, John Hagedoorn^{b, 1}, Hans van Kranenburg^{b, 1}

^a *ECIS and Department of Organization Science and Marketing, Faculty of Technology Management, Eindhoven University of Technology, P.O. Box 513, 5600 MB Eindhoven, The Netherlands*

^b *MERIT and Department of Organization and Strategy, Faculty of Economics and Business Administration, Maastricht University, P.O. Box 616, 6200 MD Maastricht, The Netherlands*

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Abstract

This paper analyses the role of repeated ties in the high-tech pharmaceutical biotechnology industry, a sector that is characterized by a strong dual market structure. Our most important finding is that previous ties in pairs of large pharmaceutical companies and small biotechnology firms have a negative effect on their subsequent partnering. An explanation for this result is found in the context of understanding the specifics of large-small coalitions in a high-tech dual market structure. Unlike what is known about repeated ties in many other industries, this high-tech dual market structure indicates that R&D partnerships between a small number of very large companies and a large group of dependent, small firms are not characterized by mutual dependence, similarity, or equality.

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1. Introduction

Repeated ties in pairs of cooperating companies play an important role in the current understanding of inter-firm partnership formation (see amongst others, Chung et al., 2000; Ciborra, 1991; Dyer and Singh, 1998;

Gulati, 1995; Hagedoorn, 1993; Lundvall, 1993; Lyles, 1994; Mowery et al., 1998). This research indicates that prior partnerships in specific pairs of companies can influence the likelihood that these pairs will continue to form partnerships. In order to contribute to this body of literature, our study will attempt to deepen the understanding of repeated ties and partnership formation by considering the industrial context of pairs of companies in a high-tech setting.

More specifically, this paper analyzes the role of repeated ties in a high-tech industry with a strong dual market structure, i.e. the international, pharmaceutical

* Corresponding author. Tel.: +31 40 2475 349; fax: +31 40 2468 054.

E-mail addresses: a.h.w.m.roijakkers@tm.tue.nl (N. Roijakkers), j.hagedoorn@os.unimaas.nl (J. Hagedoorn), h.vankranenburg@os.unimaas.nl (H. van Kranenburg).

¹ Tel.: +31 43 3883823; fax: +31 43 3884893.

biotechnology industry. Such a dual market structure is largely determined by on the one hand a group of large, integrated, international, and established companies and on the other hand a group of relatively small, specialized firms. The high-tech dual market structure in the pharmaceutical biotechnology industry is apparent in the role played by a small group of very large pharmaceutical companies and a large group of relatively small biotechnology firms (Powell, 1996; Powell et al., 2005; Saviotti, 1998). Previous research has already established that inter-firm partnering in the pharmaceutical biotechnology industry is rather specific in terms of the concentration of inter-firm R&D partnering within these two groups of companies (Kenney, 1986; Powell, 1996; Rothaermel, 2000). To the best of our knowledge, the current literature on the effect of previous ties on subsequent inter-firm partnering has paid no attention to the specific setting of a dual market structure in a high-tech industry. Early, seminal contributions to the analysis of dual market structures, however, did reveal the impact of such market structures on innovative performance, productivity, earnings, financial issues, labor relations, and marketing practices (see Averitt, 1968; Bowring, 1986; Sutton, 1992, 1998). It is the objective of this paper to investigate whether in this sort of industry the effect of previous ties on subsequent inter-firm partnering might also be different from what is known from many studies on other industries with more evenly distributed populations of companies.

In the following section we discuss our hypothesis, derived from current theory, that stipulates the expected effect of previous ties on subsequent partnering. In order to test our hypothesis, we construct a panel dataset that contains information about the partnering behavior of pairs of companies. In the methodological section we discuss the data, sample, and the specific variables we include in our panel logit models. This is followed by sections that present and discuss the results and the implications of our research.

2. Theory development

Our understanding of the particular industrial structure that is prevalent in the high-tech pharmaceutical biotechnology industry and the possible implications of such a structure for new partnership formation and repeated ties can be clearly placed within the literature

on dual market structures (see amongst others, Averitt, 1968; Bowring, 1986; Sutton, 1992, 1998). These dual market structures refer to highly concentrated industries with, on the one hand, a group of sizeable, center companies and, on the other hand, a group of small, periphery firms holding only a very small market share.

Following this body of literature, high-tech dual market structures are dominated by a relatively small group of diversified companies that are very large in terms of their economic size as measured, for instance, by numbers of employees, total assets, and yearly sales (Averitt, 1968; Bowring, 1986). These large, well-financed center companies with their routinized research laboratories and R&D departments are not necessarily the major source of innovations in high-tech dual market structures. Indeed, large companies often lag behind their smaller competitors when it comes to the introduction of major innovations. However, their superior financial position and their strong capabilities in production, marketing, and distribution enable large, center companies to quickly transform new discoveries into well-established, profitable products (Averitt, 1968; Sutton, 1998). This perception of the role of center companies resonates the classical ‘older’ Schumpeterian understanding of the role of ‘big concerns’ (Schumpeter, 1942).

In the international, high-tech pharmaceutical biotechnology industry, the dominance of large companies, as an important characteristic of dual market structures, is most clearly found in the important role that large, well-funded pharmaceutical companies play in the commercialization process of new pharmaceutical products (see Audretsch, 2003; Arora and Gambardella, 1990; Barley et al., 1992; Pisano, 1991; Powell, 1996; Powell et al., 2005; Shan et al., 1994). This refers to a relatively stable core of fewer than 100 large and very large pharmaceutical companies that possess a significant share of more than 80% of the total worldwide market in pharmaceutical biotechnology (De Rond, 2003; OECD, 1993; OTA, 1988; Senker, 1998; Walsh and Galimberti, 1993). These companies with their strong ability to expand existing portfolios of pharmaceutical products have come to dominate the commercialization process in the international, high-tech pharmaceutical biotechnology industry. Large companies are well known for their vast body of engineering know-how necessary for scaling up from a laboratory setting to the actual production

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