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How does competition structure affect industry merger waves? A network analysis perspective

Rui Hou [a,*], Jianmei Yang [b], Canzhong Yao [c], Bill McKelvey [d]

[a] Guangdong University of Technology, School of Management, 161 Yinglong Road, Tianhe District, Guangzhou, 510520, PR China

[b] South China University of Technology, School of Business Administration, 381 Wushan Road, Tianhe District, Guangzhou, 510641, PR China

[c] South China University of Technology, School of Economics and Commerce, Guangzhou Higher Education Mega Center, Guangzhou, 510006, PR China

[d] KEDGE Business School, Marseille, France

HIGHLIGHTS

- A new industry merger wave model is presented from a network analysis perspective.
- We explain why and how merger waves happen driven by competition diffusion.
- Competitive structure among rivals has a strong effect on industry merger wave.
- The effect is different between single and multi-market competition environment.
- Firms involved in merger waves can learn and find useful competition strategies.

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ABSTRACT

By taking China's beer industry as an example, this paper establishes a series of industrial competition–pressure networks and examines the correlation between competition structure and merger actions. We present a cascade dynamic-merger agent-based computational model driven by competition pressure diffusion to describe the forming process of industry merger wave. The empirical analyses and agent-based computational simulation results show that the competition structure among rivals has a strong effect on the scale, the duration time, and the stability of industry merger wave. We also give explanations on why there are different simulation results between in single market competition environment and in multi-market competition environment, as well as discuss the management implications for the industry-merger policy makers and the merger-tactics decision makers that are involved in merger wave.

1. Introduction

Mergers and acquisitions have been found to usually occur in waves rather than in random isolation [1,2], which means that an outbreak of large mergers is always followed by an appearance of some number of smaller ones, which is just like the tide [3,4]. Though there are still some arguments against the merger-wave hypothesis, more and more empirical studies

* Corresponding author. Tel.: +86 20 8708 2783; fax: +86 20 87083565.
E-mail addresses: hour@gdut.edu.cn (R. Hou), fbajyang@scut.edu.cn (J. Yang), yaocanzhong@scut.edu.cn (C. Yao), mckelveybill1@gmail.com (B. McKelvey).

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show that merger waves do exist in one industry or several industries [5–9]. During the past ten years, some developing economies, such as China and India, have experienced a new round of merger waves, given their rapid economic growth and industry-restructuring policies. Take China for example: Large-scale merger activities emerged in almost all industries including traffic, home electrical appliances, tobacco, wine, energy, food, finance, software, and services, etc. Statistical data show that, in China, there were 4251 merger cases and more than $200 billion of announced transaction volume in the year of 2010; merger waves have become a remarkable economic phenomenon in the last twenty years in China.

An industry merger wave is characterized as a larger number of horizontal merger activities taking place during some period of time, while from a micro view, it is the result of how these competitive firms compete and take over each other within an industry. In general, the aim of horizontal mergers is to eliminate rivals, control supply and price, and finally to get strong market power so as to occupy the best competitive position and consequently gain strategic advantages. Obviously, if one horizontal merger happens, the competitive structure of this industry will be changed, which may consequently do harm to the strategic benefits of those firms that were not involved in that merger activity. What should they do? Maybe the best reaction tactics are to launch counterattacks – also by mergers – to overcome these disadvantages. Thus, the phenomena of merger cascades, also called dynamic mergers [10], which will lead to an industry merger wave takes place, just like the diffusion of infectious diseases.

If so, key questions need to be answered: (1) How to describe the formation process of an industry merger wave? (2) What are the differences among merger waves triggered by firms with different competitive structure in an industry? (3) What are the differences of the results between single market and multi-markets? (4) And finally, for firm's decision-makers, what and how can they do, when or before an industry merger wave happens?

To answer these questions, we introduce a network analysis method to describe the competition relationship among all rivals within China's beer industry, establish a new industry merger wave model, and then simulate the forming process of China's beer industry merger wave. Moreover, the baseline test shows that our simulation results match well with the real industry competition networks. There are three primary contributions of this study: First, we present a novel network-based industry-merger wave model to describe the merger-wave phenomenon and second, the network-analysis method used in this paper provides a new basis for discussing the questions of multi-rivals competing with each other in multi-market contact environments. Third, this paper reproduces the forming process of China's beer-industry merger wave and discusses the impact of competitive structure on industry merger waves in depth, which can help decision-makers find the best merger strategies to get a favorable competitive position.

2. Literature review

Industry merger waves are usually regarded as the result of a series of sequential rational decisions pertaining to dynamic mergers. For example, Gowrisankaran [11] sets up a dynamic model of endogenous horizontal mergers and Morellec and Zhdanov [12] also present a dynamic model of takeovers based on the stock-market valuations of merging firms. Nilssen et al. [1] establish a two-stage dynamic-merger-game model and find that if one or more previous mergers bring benefits to later ones, a merger wave will happen. Fauli-Oller [13] presents a model about two lower-cost firms bidding for one higher-cost target firm and find that if this bidding process triggers a merger wave, it is always beneficial to the first bidding firm. Qiu and Zhou [14] introduce a multi-round negotiation game model of dynamic mergers and also draw a similar conclusion. Kao and Menezes [15] also present a strategic-interaction dynamic-merger model that describes the competition settings of two rivals competing in two markets. Their studies show that firms have motivations to trigger dynamic mergers but they fail to describe the actual forming process of an industry merger wave.

In the strategic-management research field, Toxvaerd [16] presents a musical-chair strategic merger theory that explains merger waves in which all bidders compete with each other to preempt the target firms, which are regarded as scarce resources to be taken advantage of. Eventually competitive equilibrium prevails after the relevant target firms are merged. More and more research shows that mergers occur because other mergers have already occurred, suggesting the interdependent nature of firms' behavior in merger waves. Therefore, merger and acquisition (M&A) waves are an important context in which to study strategic interdependence among firms. In this respect, network analysis looks like a promising tool. In a recent contribution, Ahern and Harford [17] take a network view to show the importance of industry links in merger waves and argue that stronger product-market connections lead to a greater incidence of cross-industry mergers. Lee [18] uses a simple network model to illustrate how mergers can increase systemic risk by reducing the degree of separation among firms. Hou et al. [19] conceptualize a new industry merger-wave model based on industrial competition-relationship network method [20] and competitive-dynamics theory [21], in which merger actions may be regarded as a series of attacks and counterattacks among rivals. Especially in multimarket competition environments, merger waves can be seen as a series of mergers that are taken as attacks or counterattacks against rivals positioned in different submarkets. Haleblian et al. [22] study the large-scale strategic-merger behaviors from a competitive dynamics perspective and find that some characteristic firm-level factors, such strategic orientation, may influence the timing of firms' entry into a merger wave.

Of course, there is some recent research, such as Spiegel and Tookes [23], that focuses on dynamic competition and merger activities, but most of their competition environments are defined to relate to oligopolistic multi-industry markets. Studies of merger waves, whether in the fields of industrial organization or strategic management have, to date, never tried to pursue research that studies firm-level single-company merger decision-making within the context of industry-level collective-competition environments. To observe both individual and collective competition structures, we need to