

Towards a typology of collusive industrial networks

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TOWARDS A TYPOLOGY OF COLLUSIVE INDUSTRIAL NETWORKS: DARK AND SHADOW NETWORKS

Abstract

The prevailing understanding of collusive B2B networks is primarily based on the theories of industrial economists and organizational criminologists. ‘Successful’ collusive industrial networks (such as price-fixing cartels) have been seen to endure due to formal managerial structures of coordination and control. In this paper, we seek to transcend and challenge the understanding of these illegal forms of co-opetition by drawing on evidence from an in-depth examination of four price-fixing cartels that were facilitated chiefly by marketers. Our contribution introduces the notion of ‘shadow networks’ (networks where although attempts are made to ensure secrecy, multilateral modes of network structure dominate akin to ‘normal’ managerial endeavours such as joint ventures) and ‘dark networks’ (networks which appear more opaque and secretive through the adoption of bilateral modes of network structure and limited bureaucracy) to illustrate the types of collusive network forms that may exist. In addition, this allows us to build a deeper understanding of collusive network forms and related inter-firm interaction for an industrial marketing audience. We provide implications for marketing practice, theory, and policy. Specifically, we outline how organizations and the marketing function can perform self-administered antitrust audits in order to help avoid breaches of antitrust. Further, we consider the importance of the two forms of collusive inter-firm networks uncovered where marketers have attempted to render these secret from antitrust agencies, introducing a relatively new line of inquiry to the industrial marketing literature.

Key words: Collusive Networks; Network Structure; Cartels; Dark Networks; Shadow Networks.

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Introduction

Samsung Electronics Co. Ltd and Samsung Semiconductor Inc (US) agrees to plead guilty and pay fines of \$300 million by US Department of Justice (DoJ), for an international price-fixing conspiracy in the dynamic random access memory market (DRAM) in 2005.

In 2004, German memory chip maker Infineon Technologies is fined \$160 million by US DoJ for breaching US antitrust law by secretly engaging in price-fixing in its DRAM chip market through colluding with other manufacturers in the industry.

B2B price-fixing cartel networks have been documented to operate across diverse markets, effecting inter-firm relationships and interaction in a broad range of industries (Conner, 2008; Levenstein and Suslow, 2006). Past regulatory investigations have documented illegal price-fixing cartels in metals, vitamins, chemicals, air transportation, textiles, graphite electrodes (used in the manufacture of steel), synthetic rubber and semiconductor industries, among others. Since 1990 there have been approximately 495 formal investigations of suspected cartels by antitrust agencies around the world, implicating some of the largest industrial corporations (Connor, 2008). At least 373 individual and named executives were penalised – hundreds more were found guilty but received immunity, while thousands more were found guilty but not prosecuted. Cartels have been thought to have affected sales globally by \$16.6 trillion.

Previously, B2B marketing research has predominantly focused on vertical relationships between supplier and customer (e.g. Ford *et al.* 2003), while horizontal relationships between competitors have received considerably less research attention. Nevertheless, collaborative endeavours between competitors such as joint ventures, alliances, shared technology and R&D investment, and joint distribution and marketing efforts (such as cobranding), have considerable lineage as research topics. In addition, the phenomenon of co-opetition (simultaneous co-operation and competition between firms) has received increasing research attention

(Brandenburger and Nalebuff, 1996; Bengtsson and Kock, 2000; Luo, 2004; Walley, 2007; Rusko, 2011; Ritala, 2011). The significance of collusive horizontal business relationships, such as illicit price-fixing in B2B networks, however, has been largely overlooked by marketing scholarship. This is somewhat surprising owing to the demonstrable economic significance and prevalence of collusion (Conner, 2008), and its relevance to understanding all forms of relationships between firms, not just legitimate ones.

This understanding, it seems, has not just theoretical relevance to industrial marketing but also practical importance, particularly as “...antitrust decisions can affect future marketing practices and alternative strategies” (Shocker, 2007: 95). As a consequence, there is a need to gain a greater comprehension of all forms of criminal behaviour that marketing personnel may be party to in order to help educate practitioners. If marketing scholars fail to engage with issues of antitrust and horizontal collusion in a substantive manner “...which arguably it does not at present” then we can speculate “that we have not heard the last of collusive interfirm relationships” (Tadajewski, 2010). This could be costly to our disciplinary standing and understanding of all aspects of industrial marketing phenomena. We can identify strong theoretical linkages between collusive B2B practices and B2B marketing. For one, we maintain that ‘successful’ collusive B2B practices, such as cartels, tend to require long-term collaboration and trust between competitors. This combination of relationship longevity and mutual trust has been a central theme in industrial marketing research (e.g. Håkansson, 1982; Axelsson and Easton, 1992; Ford *et al.* 2003). Second, activities concerning pricing have been traditionally recognized as a core component of the marketing mix (Borden, 1964), and we will highlight the role of marketing managers in price-fixing in our findings and discussion sections. Third, price-fixing cartels are a collusive attempt to influence (and undermine) vertical buyer-seller relationships and the nature of exchange between cartel members and their customers. Price-fixing cartels hence seek to systematically shape the characteristics of industrial networks, which

is another central area of interest in industrial marketing research (e.g. Axelsson and Easton, 1992; Ford *et al.* 2003). Overall, this indicates that collusive B2B practices, such as the price-fixing cartels, have a considerable theoretical overlap with the research domain of B2B marketing.

Yet industrial marketing research has made only tentative steps in addressing the ‘dark’ (or illicit) side of marketing management. This lack of realism can be seen as an inherent bias in our contemporary knowledge of industrial marketing. To provide an accurate description of our subject matter, we need to recognize the more problematic social realities faced by real-life marketing managers and their organizations, even if this concerns prevailing social taboos and even criminality. Failure to address these issues would not be “...an accurate memory of our discipline” (Keen, 1992). This implies a need for an open-minded exploration and analysis of the ‘dark side’ of real life marketing practices (Tonks, 2002). In addition, there are powerful methodological reasons for the lack price-fixing studies in B2B marketing research; as most contemporary B2B cartels are illegal conspiracies, it can be exceedingly difficult for researchers to obtain information about cartels, as is frequently the case with instances of corporate misconduct (Vaughan, 2011), where information given to researchers may incriminate managers and companies in question. Also, such elusive, illegal, and secretive conduct renders B2B cartels largely invisible to most company employees, customers, and regulatory authorities (and also researchers). Consequently, standard industrial marketing research methods (such as surveys and interviews) are by-and-large ineffective in investigating price fixing cartels. More importantly, while the study of vertical relationships is well established in the literature (see, for example, Håkansson, 1982; Håkansson, and Ford, 2002; Ford *et al.* 2003), based on the research in the present study examining secretive horizontal relationships, however, these same theories and explanations do not hold and lack theoretical adequacy in explaining such phenomena. Similarly, the co-opetition literature has overlooked many crucial questions related to our theoretical

understanding of horizontal relationships, including *how* relationships between competitors are maintained, *where* they exist at different points in the supply chain and the various *types* of co-opetition – whether these are legal or illegal modes of co-opetition.

In this paper, we can thus explain how such horizontal relationships collude in terms of their structure and related mechanisms of control (which expands on previous attempts to do so by industrial economists, corporate criminologists, and sociologists – such as Levenstein and Suslow, 2006; Baker and Faulkner, 1993; Geis, 1967), and why B2B cartels have eluded industrial marketing researchers, despite what must amount to many millions of hours researchers collectively spend in the investigation of B2B marketing. In sum, we wish to expand upon and contribute to our current theoretical understanding of not just horizontal relationships conducted in a spirit of co-opetition, but also the illegal and secretive ones as well; thus also affording us the opportunity to forward theory for subsequent testing.

The broad aim of this paper therefore is to establishing B2B cartels as a new line of inquiry in industrial marketing management research. We seek to accomplish this by using key tenets of industrial marketing theory to illuminate our investigation of cartel collusion. More specifically our research objective is to uncover and contrast different types of horizontal collusion between competing firms. In addition, we seek to provide a rich qualitative description of how some types of cartels may be more *effective* in the protection of B2B cartel conspiracies. By doing so we introduce the concepts of ‘dark’ and ‘shadow’ networks – a form of analogical comparison employed to illustrate two broad types of structuring in horizontal price-fixing networks, and a useful device that promotes theory building (*cf.* Vaughan, 2011). This contribution helps facilitate our broader understanding of industrial relationships and networks.

The paper is structured the following way. We first consider the literature related to co-opetition, as such studies attempt to explain horizontal relationships between competitors. Next, we examine the literature related to collusion in industrial markets. After this we outline the

methodology underpinning our investigation of industrial cartels. The remainder of the study examines the practices and structure of the four industrial cartels studied. We conclude by providing implications for marketing theory and practice.

Literature Review

Co-opetition in business networks

There is a considerable amount of research describing collaborative endeavours between competitors such as joint distribution and marketing efforts (such as cobranding), joint ventures, alliances, and shared technology and R&D investment. The concept of co-opetition, however, was introduced to highlight the *simultaneous* co-operation and competition between firms popularised by Raymond Noorda (see Luo, 2007) and Brandenburger and Nalebuff (1996) – where mutually dependent inter-firm relationships are preferred between competitors in some supply chain activities, while competition is favoured in others – and is a response to the blurring of traditional roles between competitors (Hamel *et al.* 1989; Sheth and Parvatiyar, 1992). Hence the co-opetition concept recognises the concurrent ‘co-operate-compete’ relationship inherent between the traditional paradigms of competition and co-operation (Padula and Dagnino, 2007). The nascent literature on co-opetition has attracted studies on several topics including:

- i. ‘*Why*’ co-opetition: Attempts to expand markets through joint value creation initiatives such as new product development, new market entry, or technology transfer (Luo, 2004; Walley, 2007; Brandenburger and Nalebuff, 1996);
- ii. ‘*Where*’ co-opetition: Competitors co-operate predominantly in upstream activities at a distance to the customer (input activities such as product development) while competing in downstream activities (output activities such as distribution) (Walley, 2007; Bengtsson and Kock, 2000), although co-operation and competition may occur

in upstream, midstream, and downstream activities in the supply chain (Rusko, 2011);
and

- iii. ‘*What*’ co-opetition: Or, what factors (external forces) influence co-opetition within an industry. For example, Rusko (2011) found that the ‘centre of gravity’ in co-opetition – the decision to co-operate or compete, can be motivated by industry traditions, regulators and government interventions, and market forces.

Although a valuable concept in helping to explain the rationale for many forms of horizontal industrial relationships (*cf.* Bengtsson and Kock, 2000), the foregoing concept of co-opetition has some noticeable shortcomings. Firstly, one aspect that has received limited attention is the ‘*how*’ of co-opetition, or, put another way, how are horizontal relationships between traditional competitors maintained within a framework of co-opetition? The majority of the industrial marketing literature has focused on vertical relationships (or classic ‘buyer-supplier’ dyad), which are relatively visible and dispersed along the supply chain depending on competencies and resources. In contrast, horizontal relationships are often different to vertical relationships in many ways (such as visibility and formality) and can take many forms (Bengtsson and Kock, 2000), spanning legal forms, such as alliances for joint product development, to illegal forms, such as collusive practices to fix prices.

A second limitation of the co-opetition concept relates to the ‘*where*’ of co-opetition, in that downstream forms of co-opetition (i.e. co-operation close to the customer) have received limited attention (*cf.* Rusko, 2011; Bengtsson and Kock, 2000). This is a weakness in the current thinking on co-opetition in that it occurs chiefly in upstream activities, while competition occurs mainly in downstream activities (*cf.* Walley, 2007; Bengtsson and Kock, 2000). Indeed, rival firms may choose to co-operate at any point in upstream (input) or downstream (output) supply

chain activities, from raw material acquisition to cobranding and distribution initiatives (Rusko, 2011), rather than simply ‘at a distance from the customer.’

A third omission (and linked to the previous point) is the coverage of ‘types’ of co-operation, or, the nature of co-operative endeavours between competitors. Some forms of horizontal relationships (typically upstream activities) are well understood – such as inter-firm alliances (Ring and Van de Ven, 1992; Gomes-Casseres, 1994; Cauley de la Sierra, 1995; Yoshino and Rangan, 1995; Sheth and Parvatiyar, 1992), as well as alliances within the context of co-opetition (e.g. Rusko, 2011; Bengtsson and Kock, 2000) – yet others, including downstream (or output) activities, are little understood.

A fourth and final criticism of co-opetition is related to ‘visibility’. Under the precepts of co-opetition theory, “if both the elements of cooperation and competition are visible, the relationship between the competitors is named coopetition” (Bengtsson and Kock, 2000; 1996). Other than for reasons of legality (*cf.* Rusko, 2011) the underlying logic for visibility as a prerequisite for co-opetition is unclear. The rationale for visibility would seem tenuous (to whom and of what?). In some cases visibility would seem of little importance (such as co-operative raw material purchasing agreements), while in other instances concealment of activities would seem important. Rival organizations co-operating on the development of new products or joint technology initiatives would probably wish to keep such endeavours as secret as possible; while competitors engaged in price-fixing activities would likewise wish to keep such practices covert. Both practices, however, could well occur within the context of co-opetition: the simultaneous act of co-operation and competition.

Indeed, on the latter point, one form of downstream co-operation – price-fixing agreements – are seen to fall outside of the conventional co-opetition framework on the dual criteria that they do not lead to mutual benefit for both producer and customer (Walley, 2007), and as they are regarded as chiefly a downstream activity (Rusko, 2011). Hence the current somewhat narrow

definition of co-opetition excludes collusive relationships as part of the co-opetition framework (as a downstream activity), but also negates the fact that firms in collusive relationships who fix prices (co-operate) often simultaneously compete in other areas such as brand strength or quality (Rusko, 2011). Further, price-fixing activities are not exclusively downstream activities, they can occur at any point in the supply chain, and not just between a supplier and final customer.

A somewhat obvious (but neglected) point is the platform (and temptation) that co-opetition affords particularly dominant firms' to engage in collusive practices such as price-fixing cartels (Sharma, 2002). For example, in times of economic adversity the temptation for executives to extend legitimate collaborative relationships "to embrace a short-term fix to raise prices and allocate markets is almost irresistible" (Klawiter, 2008: 2). Under these circumstances co-opetition can become collusion – a practice that would seem more common than was previously thought (Connor 2008; The *Economist* 2008; WTO 1997).

To reject an understanding of certain types of co-opetition (such as collusive relationships) would also seem to risk an incomplete understanding of co-opetition and horizontal industrial relationships. In this study we undertake an exploratory investigation of this type of co-opetition by examining collusive horizontal relationships between competitors. In the following section we consider related theories of collusive practices in industrial markets.

Theories of collusive practices in industrial markets

Many forms of horizontal relationships are well understood in the industrial marketing literature (such as joint ventures, strategic alliances, and joint distribution and marketing activities) (*cf.* Bengtsson and Kock, 2000). Less well understood are illegal horizontal relationships such as bid-rigging agreements, or price-fixing cartels. In this study we focus on price-fixing cartels – a practice that refers to agreements between two or more independent firms who collude to control the terms of business in a particular market (Dick, 1996). Despite the theoretical connectedness

of B2B cartels and industrial marketing management, collusive practices such as price-fixing networks between organizations have received limited attention by industrial marketers. This can be contrasted with the fields of organizational criminology and industrial economics where some studies of industrial collusion and price-fixing cartels have been undertaken. These contributions are now briefly summarized.

Worthy of special mention are two studies of price-fixing cartels. The first is a meta-study by industrial economists Levenstein and Suslow (2006). Based on twenty-one data sets of cross-sectional studies of cartels spanning 1880-1997, they found that (i.) the more members in a cartel, the shorter its duration, (ii.) successful cartels create mechanisms to share information, decision-making, and incentives “through self-imposed carrots and sticks” (Levenstein and Suslow, 2006: 86), (iii.) concentration aids cartel stability (i.e. ‘successful’ cartels are conceived and maintained by a small number of dominant actors), and (iv.) cartel co-ordination among multiple actors is inherently complex. In the second study, sociologists Baker and Faulkner (1993) draw on a typology of two types of communication networks: centralized and decentralized. By definition, in centralized cartel networks a single actor (or a small number of actors) acts as a ‘hub’ in a hierarchical fashion. Decentralized cartel networks in contrast are defined as networks where no central actor dominates and all actors may be more or less all linked. Based on an examination of illegal networks in the Heavy Electrical Equipment (HEE) industry in the US in the 1950s, the authors conclude that due to a need for concealment actors will form networks that are centralized and led by a small number of actors in a hierarchical manner. Based on these contributions it has been argued that successful and stable cartels involve a small number of firms seeking to create mechanisms to control the cartel and its information processing, organized in a hierarchical and highly centralized fashion.

In their analysis of the HEE industry, Baker and Faulkner (1993: 849) illustrate five different types of cartel network structures. As mentioned above, the key distinction in their

analysis is the difference between centralized and decentralized networks. In a centralized network one network member has a more prominent role than others in connecting network members together, hence becoming the central network member. What this taxonomy does not explain, however, is *how* cartels actually *function*. For example, even if we are cognisant of the linkages between cartel members, this does not explain how information is shared between cartel members. For example, do all cartel members share the same information, or are there material differences in cartel members' knowledge regarding the nature of a criminal conspiracy? Also, this taxonomy does not explain when information is shared. For example, in Baker and Faulkner's (1993) study of cartel structures, one cannot distinguish the difference between (i.) joint cartel meetings where all cartel members simultaneously meet to plan and manage cartel activities, and (ii.) loosely connected cartel networks where different cartel members might make occasional phone calls to each other or else meet in small groups or dyads on a periodic basis. In the taxonomy used by Baker and Faulkner (1993: 849) both of these network structures would be labelled as "complete decentralized communication structures" despite their fundamentally different communication principles and modus operandi. In the present study, however, these significant operational differences are penetrated in considerable detail.

In addition, industrial economists assert that cartels are more likely to be formed in industries with few sellers (often by ten or fewer firms), and in those with intermediate or high industry concentration (most sales are accounted for by a small number of sellers), due to the "low costs of planning and enforcing a conspiracy and the smaller likelihood of being caught" (Hay and Kelley, 1974: 24). Co-ordination is thought to increase exponentially as the number of conspirators increases owing to greater communication flows between participants (Scherer, 1980). Hence large numbers of firms with low industry concentration are considered as "natural barriers to coordination" (Hay and Kelley, 1974: 25).

Although collusive practices such as price-fixing have been extensively studied by industrial economists “the internal social organization of conspiracies is treated as a ‘black box’” (Baker and Faulkner, 1993: 841). Scherer (1980: 225) elaborates further, concluding that “the relationship between an industry’s informal and formal social structure and its ability to coordinate pricing behaviour ... lies beyond the reach of conventional economic analysis.” In support, Hay and Kelley (1974: 25) note that the social structure of price-fixing cartels “cannot be quantified.” Studies that do not confirm to these ‘principles’ of cartel formation (for example, Sonnenfeld and Lawrence, 1978; Posner, 1970) have been categorized as “puzzling anomalies” by industrial economists and have compelled them “to make assumptions that oversimplify the social organization of price-fixing conspiracies” (Baker and Faulkner, 1993: 842).

The organizational crime literature recognises that such crimes are committed by individuals for the benefit of the organization rather than the individual (although they may hope to benefit through pay rises, promotion and so on), whether in the form of bribery, pollution, antitrust violations, or other criminal activities (Shapiro, 1976: 14). Both organizational criminologists and industrial economists have attempted to understand the illegal practices of firms through macro-level forces (such as industry structure, state of the economy, business cycle), where declining firm performance and market share have (rather unsurprisingly) been observed as common catalysts for corporate wrongdoings (Shapiro, 1980; Clinard and Yeager, 1980; Staw and Sz wajkowski, 1975). Organizational criminologists accept that social structures and mechanisms support antitrust practices (Simpson, 1986), but also oversimplifies the social organization of collusion, where small numbers of actors working closely together are regarded as the archetype of collusion (see, for example, Siegel, 1989; Malz and Pollack, 1980). Participants in collusive networks seek to maximize their concealment to form ‘secret societies’ (Simmel, 1950) by limiting face-to-face meetings and channels of communication or the introduction of ‘buffers’ (Goffman, 1970) between senior and middle and lower level managers.

In summary, Shapiro (1980: 29) maintains that “the study of crime and deviant behaviour has been negligent ... in its lack of attention to the form and social organization of criminal activity. We know a great deal about criminals ... but very little about the activity itself.” In the intervening period, little research appears to have been undertaken to assuage Shapiro’s (1980) criticisms. Indeed, Clinard and Yeager (2006: 279) note that “The complex structural relationships in large corporations make it difficult, if not impossible, to disentangle delegated authority, managerial discretion, and ultimate responsibility.”

Though not without their merit, our understanding of collusive industrial practices and their structure would appear to be limited to a handful of cross-sectional positivistic studies of cartels operating in the 1990s and earlier. Against the foregoing we can raise a number of pertinent research questions. Initially, how are horizontal collusive relationships between competitors structured and maintained by marketing managers? What mechanisms or structures are used to more effectively monitor and controls cartel activities? And how do marketing managers achieve greater levels of cartel secrecy and reducing the risk of a cartel being detected?

The remainder of the study evaluates these questions and critically examines the assumptions of the foregoing studies. This is illustrated by drawing on four major contemporary industrial cartels operating in diverse industries.

Research Method and Data Collection

Background and context: archival analysis

The secretive and illicit nature of B2B price-fixing cartels provides a considerable challenge to empirical academic research. It is often difficult, if not impossible, for researchers to obtain reliable information from firms regarding their illegal cartel activities. Common research methods, such as questionnaires, interviews, and ethnographic observations are potentially unreliable sources of information in cartel research, and generally unobtainable. To overcome

these difficulties, we employed archival research methods; a rare but not uncommon method deployed in industrial marketing studies (Gupta *et al.* 2010), and one that has been employed to considerable effect in the field of management studies¹.

The archival assessment builds on previous analyses of antitrust cases (such as price-fixing) in the UK and US. Much of the UK literature considering these types of cases (e.g. Weir 1992, 1993; Davies *et al.* 1999) has questioned why certain judgements have been made through comparison of final report outcomes. Many of the US studies assessing competition judgements from the Department of Justice have extended this analysis and quantify the frequency of salient characteristics of antitrust cases over time (e.g. Connor 2004; Ghosal and Gallo 2001; Gallo *et al.* 2000; Lin *et al.* 2000; Wood and Anderson 1993; Posner 1970). Although few in number, other archival assessments of illegal corporate behaviour have developed in the marketing literature, considering individual cases (Ashton and Pressey 2004), cases over a time period (Ashton and Pressey 2008), case studies (Bush and Gelb 2005; Tadjewski 2010), and the remit of competition law to practices such as relationship marketing (Fontenot and Hyman 2004).

This study draws on these approaches to case analysis and undertakes an assessment of competition reports published by the European Union concerning price-fixing cartels. Our evidence consisted of the detailed reports and documentation provided by the European Union's investigations of the firms participating in the cartels examined. This approach afforded triangulation through the numerous data sources drawn on and reduces the possible bias inherent in personal accounts. The EU competition reports constitute a rich source of data as (possibly given the legal ramifications of its judgements) it endeavours to undertake thorough investigations (each taking an average of three to five years to complete) of corporate wrongdoings on a Pan-European basis. Hence the data (which are employed in this study) is

¹ See, for example, Diane Vaughan's (1996a, b, 1990) impressive study of the *Challenger* spaceship tragedy in 1986, and Karl Weick's (1993) examination of the Mann Gulch fire which claimed the lives of thirteen men in 1949.

triangulated through multiple sources of evidence, via: (i.) interviews with executives involved in the price-fixing agreements, (ii.) documentation related to price-fixing meetings (such as agendas, internal notes and reports), and (iii.) interviews and input from diverse stakeholder groups including suppliers, customers, competitors, consumer groups, and the general public. Hence the findings of the investigations are afforded a high degree of validity and reliability.

The European Union also serves as a useful context in which to examine collusive practices such as price-fixing. In addition to being a major and attractive market to investors, its antitrust authority and competition systems have become increasingly stringent. Indeed “... for large enterprises ‘antitrust risk’ – the risk of violating some competition law provision – is substantially higher in the European Union than anywhere else” (Hylton and Deng, 2007: 314-315). In addition, the European Union is regarded as the biggest antitrust prosecutor and has been viewed as such for over a decade (Connor, 2008).

Inductive Research Design

An inductive case study design was employed. According to Pierce, “[while] deduction proves something must be; Induction shows that something actually is operative...” (reported in Hanson, 1958: 85). An iterative approach of ‘theory-data-theory’ was adopted following Bonoma’s guidance to inductive case research (1985: 204-206), the purpose of which Bonoma notes is “...not quantification or even enumeration [but] in a word, the goal is understanding” (206) – a technique ideally suited to the present study. In practice, the inductive case study analysis followed the detailed cyclical method of ‘Systematic Combining’ outlined by Dubois and Gadde (2002); a ‘back and forth’ process of data analysis, questioning findings, and data analysis, in order to produce the key research findings presented in the study. During this ‘back and forth’ process of data analysis, we tried to remain inductively open to new lines of enquiry, despite our past knowledge of cartels

literature, chiefly in the areas of industrial economics and organizational criminology.

As a starting point of our enquiry, our sample of cases was drawn from cartel investigations issued by the EU for the period 1990-2010 ($n=433$), of which there comprised 94 collusive networks in total (comprising 22% of all antitrust cases). These cases are investigated following a reference under Articles 81 and 82 of EU competition law². Preliminary analysis of these cartels allowed us to identify key linkages between industrial marketing management theories and how illicit cartels are managed. In addition, this broad exposure to different types of cartels sensitized us key questions regarding cartel management.

At this point of our investigation, we uncovered the significance of *bilateral* and *multilateral* cartel structures (explained in more detail below), which became a central theme in the subsequent investigation. To allow for more in-depth investigation of multilateral and bilateral B2B cartels a theoretical sample (*cf.* Yin, 2003) of four major price-fixing cartel cases were chosen (Vitamins, Butadiene Rubber, Choline Chloride and Flat Glass). As a theoretical sample, our selected cases were not intended to be statistically representative of all cartels. Accordingly, our research objective is to make theoretical generalizations rather than statistical generalizations (*ibid*). In addition, the final sample of case studies chosen was well-suited to illustrate the exploratory purposes of this study and the two ‘types’ of cartel organization uncovered, as Siggelkow (2007: 21-22) observes: “[An additional] valuable use of cases in the context of making a conceptual contribution is to employ them as illustration.” The four cases were also selected based on the illustrative powers of each and what might be learnt from them individually (more detail in this regard is provided in the discussion section):

- i. *Flat Glass*: This case demonstrates how the managerial structure of multilateral cartels that allows cartels to operate effectively, can also undermine cartels long-term

² Article 81 prohibits agreements between two or more firms which restrict competition, while Article 82 ensures dominant firms do not abuse their position. Articles 81 and 82 are effectively the European legal equivalent of the US Sherman Act.

survival. This includes the way successful multi-lateral price-coordination resulted in suspicious price patterns, resulting in the cartel being detected by authorities. In addition, managerial culture of the cartel relied upon on bureaucratic practices and related managerial artefacts which were later used as evidence against the cartel participants;

- ii. *Choline Chloride*: This case depicts how a ‘boardroom style’ multilateral structure was used to enforce cartel discipline and to mitigate against ill-feeling and mistrust between cartel participants;
- iii. *Butadiene Rubber*: This case provides an example of a cartel that operated purely along bilateral and highly secretive lines from its inception, which made the cartel more difficult to detect and unravel by authorities. Yet, from the managerial perspective, this emphasis on secrecy facilitated the managerial efficiency and clandestine nature of the cartel; and
- iv. *Vitamins*: This case illustrates both multilateral and bilateral forms of cartel structure which operated along the life span of a collusive network. The documented events demonstrate how a switch from multilateral to bilateral structure can be used to aid cartel secrecy.

The chosen theoretical sample also produced further relevant insights – the witnessing of marketing managers occupying central roles in cartel formation and maintenance, thereby strengthening the significance of these cartels to the field of industrial marketing management. Further, all four cartels selected on the basis of theoretical sampling (these cartels and their salient characteristics are presented and discussed in subsequent sections) were undertaken by major organizations in significant markets, involving both firms from the European Union and also outside of its borders.

Final coding schema

A final coding schema was developed for each of the cases, which captured (i.) *cartel structure* (bilateral versus multilateral), (ii.) *cartel demographics* (markets affected, participants in the cartel, duration of cartel, fine levied, and agreements between the parties), and (iii.) *cartel organization* (face-to-face meetings held, written agreements/memos, emails, telephone conversations, and notes). As a key distinction to be drawn was the structure of the cartel, the classification of cartel structure was based on establishing the *connections* between the firms involved in each cartel. A cartel was defined as a *bilateral* cartel if cartel members communicated with each other only on a one-to-one basis. In addition, we identified that there may exist stronger forms of ‘bilateralism’ whereby cartel members lack awareness of activities and agreement between other cartel members (i.e. *incomplete* contact between all parties). In contrast, we defined *multilateral* cartels as cartels which use multilateral cartel meetings to collectively plan, manage, or control cartel activities (i.e. *complete* contact between all parties). In addition, we identified that stronger forms of ‘multilateralism’ exist whereby cartels establish formal processes for joint record keeping and adopt joint bureaucratic structures to facilitate cartel management.

In the following findings section we illustrate (with the exception of one case) the network structure of each cartel. These cartel ‘maps’ are illustrated based on the detailed evidence by the EU investigations of each cartel. A line connecting companies indicates meetings were held between parties and price-fixing agreements were made. The absence of a line denotes that these companies had no contact between parties that the EU investigation could identify. These contacts were frequently supported by email and telephone contact, although we find greater evidence of contact as well as other evidence (such as minutes of meetings, memos, notes) for multilateral cartels than for bilaterally organized cartels.

Case Studies: Illicit Co-opetition in Four Industries

In this section we examine the four major price-fixing networks. We initially report two price-fixing networks that operated *multilaterally* (Glass, Choline Chloride), followed by a price-fixing networks that operated along *bilateral* lines (Butadiene Rubber). The final cartel (Vitamins) has a unique feature of being transformed from *multilateral* to a *bilateral* cartel structure. The basic characteristics of these cases are presented in Table I. By presenting the bilateral cases first this provides a contrast between the more highly secretive networks followed by the more visible and detectable multilateral cases. In addition, the cases expose differences in cartel structure, trust versus monitoring and control, and managerial and criminal social ordering, that we consider in greater depth in the discussion section, along with subsequent ramifications these differences have on our current understanding of business-to-business network thinking.

Table I about here

Multilateral Collusive Co-opetition

Flat Glass

The 2003-2005 Flat Glass cartel provides a good starting point to investigate the managerial organization of multilateral collusive arrangements. In particular, this case reveals how multilateral cartel structures can allow for an effective means to control prices based on bureaucratic managerial principles. Yet, due to this efficiency, suspicious price patterns were generated that were detectable by customers and authorities. Furthermore, the presence of managerial artefacts, such as memos and receipts, in addition to electronic footprints, provided authorities with the required incriminating evidence to prosecute this cartel.

Flat glass manufacturing (chiefly used by the construction industry) is highly capital intensive, and the industry has a history of commercial relationships including cross-supply agreements and joint ventures between manufacturers. The four organizations participating in the cartel from Japan (Asahi), the U.S. (Guardian), the UK (Pilkington), and France (Saint-Gobain), claimed to be responding to steadily declining prices in the European market for glass, a market estimated to be worth 8000 million Euros per annum at the time of the cartel.

In this case, the European Commission undertook a series of major unannounced inspections of Pilkington's pan-European premises (including its offices in the UK, France, Germany and Sweden), Saint-Gobain (at its offices in France and Sweden), as well as Guardian's European premises in Germany and Luxemburg— prompted by complaints by customers of parallel price increases – and found evidence of agreements to create and maintain a price-fixing cartel. It was hence the objective of homogeneous price and synchronized price increases, which led to the detection of this cartel. The documentary evidence obtained painted a picture of a highly co-ordinated Pan-European cartel controlled through a series of multilateral meetings (with a small number of bilateral meetings) held in hotels and restaurants across Europe as well as on the fringes of meetings of the European association for flat glass manufacturers (the 'GEPVP'), whose HQ in Brussels was also subject to an unannounced inspection.

Referred to as "*Marketing meeting[s]*" in the handwritten notes of a Pilkington representative, the manufacturers held seven multilateral meetings across Europe in Paris, Belgium, Germany, and Luxembourg. The notes obtained from the meetings depict a highly organized and concerted effort to "*fix the status quo*" on competition across Europe and ensure that "*prices should be kept absolutely stable.*" The group meetings were convened, according to copies of emails found between the participants, to "*get to know [names removed] better and exploit areas of mutual interest*", to "*see how it [the cartel] was done in the past*" under different

agreements by predecessors, and to ensure succession between managers participating in the cartel on behalf of their firms. These meetings were convened in order to:

- i. Implement collective price increases and price freezes, and agree non-compete clauses;
- ii. Decide on their timing; and
- iii. Determine which company would lead with price increases for specific countries and customers.

It was agreed that Germany was generally the lead market for price increases, and, if successful, would be extended to other markets beginning with Belgium, the Netherlands, Luxemburg, France, and Italy (normally in that sequence), and then extended to other countries across Europe without any regular sequence. These price increases were announced by letter to customers. Handwritten notes from group meetings highlight the instructions agreed between the participants at the meetings: *“Price increase agreed. No aggression ... No attack”* From the onset of the cartel, however, efforts to control the market for glass in Europe were fraught with difficulties owing to price disparities between markets and customers requirements, as manufacturers’ emails and notes from the meetings attest:

“Price increase next steps...Agreement of 1st level of customers! Payment TERMS is a mega challenge. Agreed we go ahead!”

“A Saga becomes Reality”; and

“The free market is more hard-fought!”

Despite the manufacturers emphasising among themselves that the *“secrecy of the meetings needed to be preserved”*, documentary evidence was seized in corporate raids of the participants’ offices, including copies of internal and external email exchanges, written-up minutes of cartel meetings, travel expenses to cartel meetings, as well as handwritten notes and personal notebook

entries made by participants at the meetings. In summing up the cartel, The Commission described highly organized practices between the manufacturers, with “...notes [that] are detailed, structured (sometimes with tables, bullets or numbered items) with a relatively high level of precision.”

The manufacturers were collectively fined EUR 486.9 million³ for their participation in the cartel. Based on the documentary evidence obtained the network structure of the flat glass cartel is illustrated in Figure I (see below).

Figure I about here

Choline Chloride

The *multilateral* network structure of the 1992-1994 Choline Chloride⁴ cartel reveals additional in-depth characteristics of multilateral cartels. In particular, this case provides reveals additional evidence regarding the ways in which the training and the experience of professional marketing managers can undermine the survival of cartel conspiracies. This concerned common managerial systems that were used to maintain sales discipline, establish clearly defined processes, and to monitor and control distributors. All of this led to a wide-spread reliance on documentation (such as note-taking), which was used as evidence against the cartel participants. In addition, it was the mutual mistrust of other cartel participants that led to the need to monitor other participants. It was routine managerial structures and the ways in which corporations are commonly inclined manage business relationships that ultimately led to the detection and unraveling of the cartel.

³The fines for the Flat Glass cartel were as follows: Asahi (Euro 65 million), Guardian (Euro 148 million), Pilkington (Euro 140 million), and Saint-Gobain (Euro 133.9 million).

⁴ Choline Chloride is chiefly used in the animal feed industry as a feed additive, as well as for the preparation of vitamins, infant formulae and nutrient supplements.

Accordingly, we can identify institutionalized knowledge structures of marketing managers, related corporate routines and beliefs, as well as mistrust between actors as underlying causes of multilateral cartel failures.

The cartel operated between six firms from the Netherlands, Belgium, Germany, US, and Canada at two closely related levels (European and Global) for two years. The global cartel lasted between 1992 and 1994, with the objective of “*setting and increasing...worldwide price...the allocation of worldwide markets [and] the control of distributors*” “*by establishing exclusive corporate ties over them*”, in the face of previously stiff price competition and over-supply in the market. A major facet of the cartel agreement was that the North American producers (Bioproducts, Chinook and DuCoa) should withdraw from competing, in Europe, while the European manufacturers (BASF, Akzo Nobel and UCB) should refrain from competing in the North American markets, at a time when there was considerable antagonism and tension between manufacturers from both continents:

“They [North American producers] expressed their disappointment that [BASF in particular was] planning to ship material to the US; that it would be very disruptive to the market [and] could lead to retaliatory action from either BioProducts or Chinook against [DuCoa] and BASF and possibly even stepping up shipments to Europe.”

The first meeting between all firms took place in Mexico City in 1992, and, together with subsequent meetings, constituted a “*clear anti-competitive agreement*”, where the cartel was carefully designed to improve the profitability of the industry and “*to bring discipline to the worldwide pricing of Choline chloride.*” As notes from the meetings attest, the purpose of the meetings was to establish “[the] *general rules...that all producers should follow*” as part of the cartel and to attempt to “*to work out a mutually beneficial plan.*” Although the Mexico meeting between the European manufacturers and their North American counterparts served essentially as a ‘summit’ meeting, it failed to reach a common agreement to the group’s aim of market

stabilization, were parties did not have “...any resolution to anyone’s satisfaction”, but “agreed to look at alternatives to try to work out a mutually beneficial plan to keep this from happening.”

The ill feeling between manufacturers, however, abated as the perceived mutual benefits of ‘sharing’ the European and North American markets were made explicit. Although no agreement was reached, the Mexico summit meeting provided competitors the opportunity to discuss worldwide prices and market shares, market withdrawal, price-fixing, and a feasible timescale in which to deploy any agreements (restricted by each company’s commitments to their distributors). As one participant from DuCoa observed:

“[A]t that meeting we discussed, among other things, firming up prices. We discussed what everybody’s market share was in each region of the world. We discussed North American producers not shipping choline to Europe and European producers not shipping to North America.”

The turning point for the global cartel was the next meeting held in Ludwigshafen (Germany) in 1992, and the conclusion of the so-called ‘Ludwigshafen agreement’. A set of “General Rules” were agreed by the manufacturers; this took the form of a report outlining the schedule for withdrawal for each of the manufacturers from specific foreign markets and outlined an agreement on the world-wide prices of Choline. This report was recovered by the EU investigation.

A series of follow-up meetings were held approximately “every six months to monitor, discuss and correct any problems.” These multilateral meetings, typically attended by all cartel members (with very few exceptions), were held in various locations including Atlanta, Amsterdam, Toronto, and Bruges (Belgium), and lasted approximately from one day to one week in duration, signifying a high level of operational planning and co-ordination. Nine global meetings were convened in total, and on only two occasions representatives from three firms (Akzo Nobel, UCB, and Chinook) were unable to attend. The joint assembly of organizations at

both global and European levels provided the opportunity to negotiate the terms of the agreements:

“...we continued to try to increase prices where we could on a worldwide basis. We looked at ways to reduce or balance out shipments to various parts of the world. We had these types of discussions...at the end there [would be] an agreement to meet again”, “we would talk about prices; we would talk about regions...we would talk about what we knew about market size, and we had discussions over who had what by country.”

Tensions and mistrust ensued at the follow-up meetings, particularly towards those transgressors *“who had not implemented the price increases.”* Increasingly, agreements could not be reached at the global meetings, and, over time, the ‘boardroom ‘style’ cartel’ meetings became increasingly unwieldy and difficult to police, as one communication between two actors illustrates: *“Aggressive behaviour puts pressure on prices...for everybody.”* The last global meeting was held in Johor Bahru (Malaysia) in 1994. Chinook hosted the meeting and provided a slide show *“...comparing the group’s objectives at the time of the Ludwigshafen agreement with the current situation. The evaluation was not very positive.”* The ensuing disagreement was attributed to companies not adhering to the agreements on volumes and prices (particularly the European manufacturers); as the representative for DuCoa noted: *“...there was just a total inability to agree on anything.”* Mistrust between actors at the meeting was endemic. At the end of the meeting Chinook announced that they would be withdrawing their participation in the cartel effective immediately. BASF adopted a similar line, while *“The others in attendance at the meeting appeared to agree.”* The global cartel for Choline Chloride was at an end.

The failure of the global cartel for Chlorine gave rise to one operated by the European manufacturers (BASF, Akzo Nobel and UCB), who decided to continue their multilateral price-fixing and customer/market sharing agreement at a European level between 1994 and 1998. Fifteen multilateral meetings (held every three months approximately) were conducted over the life of the cartel in Belgium, The Netherlands and Germany. All participants in the cartel attended all meetings with the exception of one occasion where a representative from BASF was

unable to attend. The European cartel came to end voluntarily by the participants in 1998 after they became aware of the DOJ investigation into the North American producers of Choline Chloride for a suspected price-fixing cartel. The European manufacturers were subsequently found guilty by the EU regulator of antitrust violations and were collectively fined EURO 66.34 million⁵.

Various cartel ‘artefacts’ were found on dawn raids of corporate offices for both the global and European cartels including: minutes of meetings, client and price lists, and reports outlining the agreements reached and proposed, and slide presentations illustrating the group’s objectives with the current situation. These documents articulate the complex mechanisms of the cartel and indicate low levels of trust between actors: comprising a detailed cartel ‘constitution’ outlining the agreements reached by the European and North American manufacturers drawn up in report format, stipulating the markets that were to be stabilized and the manufacturer who was to withdraw from which market, as well as the anticipated benefits that the agreement would provide for the participants (the ability to invest in plant modernization and expansion). Based on these artefacts, we have illustrated the network structures for the Choline Chloride cartels in Figures II and III (see below).

Figure II about here

Figure III about here

Bilateral Collusive Co-opetition

⁵The European manufacturers were fined the following amounts: Akzo Nobel (20.99 million Euros), BASF (34.97 million Euros), and UCB (10.38 million Euros). Bioproducts, Chinook and DuCoa were not fined due to their cessation of price-fixing activities in 1994. The North American producers were, however, fined by the DOJ in the US and by the Federal Court of Canada for price-fixing in the market for Choline Chloride.

Butadiene Rubber

The bilateral Butadiene Rubber⁶ cartel provides us with an important contrast to the multilateral cartel structures investigated in the previous two cases. Based on this contrast, we discovered how and why the bilateral cartel structures made it difficult for the EU investigators to detect and unravel these cartel operations. Also, for this same reason, it can be exceedingly difficult to find in-depth data regarding the inner functioning of bilateral cartels, increasing the research value of the case despite its limitations. In addition, this case provides additional evidence regarding the importance of mutual trust in horizontal collusion. Indeed, one of the primary motives for the observed inter-firm communication was the monitoring of other cartel parties adherence to the cartel agreement. Finally, in this case, the authorities eventually investigated the cartel after one of its members gave evidence against the cartel (as was case with the Vitamin cartel), again signaling the central importance of trust in B2B cartels.

From its inception, the Butadiene Rubber cartel was structured and operated purely as a “*series of bilateral contacts.*” The cartel involved six manufacturers from Europe and the US and existed between 1996 and 2002, and although The Commission held the view that the cartel probably existed prior to 1996, no evidence was available to confirm this. The purpose of the cartel was to attempt to eliminate competition in Europe in a market worth EUR 550 million through agreements to fix-prices, share customers via non-aggression agreements, and exchange of commercially sensitive information related to sales – all ultimately to stabilize prices in the face of weakening demand. As mentioned above, rather than being detected by regulatory authorities, this cartel was exposed when Bayer approached The Commission and informed them of their participation in the cartel, thus breaching (and thereby emphasizing the importance) of trust, a key foundation for success in successful horizontal collusion.

⁶ Butadiene rubber is a synthetic rubber used chiefly in the manufacture of tyre production.

Marketing Executives of each firm had a central role in the planning and co-ordination of cartel practices. These executives met bilaterally to discuss the cartel which operated “*on the fringes*” of co-operative meetings of the European Synthetic Rubber Association (ESRA) approximately four times a year. Based on the testimony of some of the participants, discussions were held in cities across Europe (including Milan, Düsseldorf, Vienna, Amsterdam, Richmond-on-Thames, Frankfurt, Brussels, Prague, and Hamburg), usually in social settings over dinner or on the way to dinner, in bars, hotel rooms, in telephone conversations, and via email.

With the exception of some handwritten notes, very little documentary evidence of the cartel was detected. Regular bilateral meetings (and very occasional trilateral meetings) were held between the manufacturers leading to “*the conclusion of bilateral agreements*” in order to preserve the “*status quo*” in the market. The Commission noted:

“Bilateral telephone contacts between the competitors...played an important role in assuring the efficient running of the cartel [and] were particularly important in assuring that cartel agreements were being complied with”; and

“An important element in ... cartel meetings were discussions to assure that cartel agreements were complied with.”

This implies that the lack of trust between actors increased the amount of communication and mutual monitoring between cartel members. These additional communication linkages make the cartel easier to detect and investigate by authorities. Nevertheless, due to the bilateral cartel structure, The Commission acknowledged the difficulties it faced in unravelling the cartel:

“Concerning the proof of bilateral contacts ... it should be added that although, by their very nature, direct corroboration of one party’s allegation could only occur through admission by the other party of the same contacts. On that basis it can be concluded that the existence of such patterns of communications is sufficiently established.”

The Commission further notes that given the penalties that anti-competitive agreements attract:

“...it is normal for the activities which those practices and those agreements entail to take place in a clandestine fashion, for meetings to be held in secret, most frequently in a non-member country, and for the associated documentation to be reduced to a minimum.”

Despite the difficulties faced by the Commission in establishing the precise details of the cartel (a number of discrepancies were also noted between the information supplied to the Commission in testimony by some of the manufacturers for a number of the finer points of the cartel including prices, customers, and plant utilisation figures), sufficient proof was established that the manufacturers had colluded to fix prices, and a fine of EURO 519.05 million was awarded⁷. In contrast to the other cartels studied, given the frequent (and often undocumented) bilateral agreements formed between the manufacturers an illustrative network structure is not possible for the Butadiene Rubber cartel.

Vitamins

Our in-depth analysis of the Vitamin cartel allowed us to discover and to explain a key tension between two central cartel objectives, namely to (i.) establish robust inter-firm managerial structures between cartel members to control industry prices, and (ii.) allow cartels to remain hidden from all external parties. Based on our observations multilateral cartels are more suited to effectively coordinating and monitoring collusive practices, whereas bilateral cartel structure are more difficult to detect by outsiders.

The rationale for co-operation in the Vitamin cartel was in the face of aggressive price cutting in the late 1980s and early 1990s in the face of competition from Chinese and Russian manufacturers. Against this, the purpose of the cartel was to fix-prices for the worldwide sale of vitamins, allocate sales quotas, and implement price increases in a market worth EUR 3.25 billion. This was achieved through the creation of ‘cartel machinery’ designed to monitor and

⁷The fines received for each firm were the following: Dow (EUR 64.575 million), Eni (EUR 272.25 million), Shell (EUR 160.875 million), Kaucuk (EUR 17.55 million), Trade-Stomil (EUR 3.8 million); Bayer received full immunity under the EU corporate leniency programme.

enforce adherence to the collusive agreements, and ultimately to stabilize the global vitamins market. At the same time that the collusive agreement was being enforced, the cartel participants were simultaneously competing on brand strength in markets which were not part of the price-fixing agreement.

The Vitamins cartel was particularly complex involving thirteen firms from five countries operating eight distinct but overlapping cartels between 1989 and 1999. Across the life of the Vitamin cartel it could be seen to operate in two distinct phases; initially this was along multilateral lines, but as we shall see, this structure was modified in response to external forces.

For the first nine years of the existence of the cartel it operated at four levels. Each level convened from two to four times per year involving marketing managers at different levels to discuss different products and prices:

- i. 'Top level' (attended by most senior corporate officers and occasionally heads of marketing);
- ii. Heads of marketing (who managed cartel operations);
- iii. Regional product marketing; and
- iv. Global product marketing.

At each of these four levels of horizontal collusion (often referred to as "*summit meetings*") senior marketing managers played a central role, coordinating cartel activities. Initially, this "*complex structure of regular meetings evolved*", as described by the Commission's report, was designed with the specific purpose of facilitating "*relationships of trust.*" These multilateral face-to-face meetings took place in hotels, restaurants and public places in a number of European cities including Basel, Zurich, Geneva, Paris, and Frankfurt, with each firm taking turns to act as host. Meetings during this period were mainly multilateral in nature, although manufacturers participated to different degrees in the various cartel agreements. Senior managers were present to offer "*high-level support [to] define [the] overall strategy*" and to ensure each party was

committed to “*the agreement*”, while heads of marketing attended to facilitate the “*practical operation of the agreement*”, and to “*monitor the implementation*” of the agreements. In addition, regional marketing managers met to discuss and implement pricing for individual customers.

During the first phase of the cartel regional collusive meetings were often combined with global meetings. In order to better control and monitor the illegal agreements the cartel was likened to operating as a single entity:

“The cartel’s operation centred on the preparation and implementation of the annual budget ... [employing] mechanisms closely modelled on the internal financial management and controls of ‘a single undertaking’.”

Despite the desire of actors to reach consensus based on mutual trust, the cartel become subject to creeping bureaucracy. During group meetings the mechanisms to monitor and control agreements were created: (i.) worldwide sales quotas agreed by all parties at each meeting, (ii.) penalties for non-adherence of the agreements and compensation for the injured party (an agreement that cartel members who were “*ahead*” at an annual review meeting to purchase the ‘shortfall’ from an order from the ‘losing’ party at the end of the financial year), (iii.) creation of artefacts to support the management of the cartel (worksheets and related support documents, annual budgets, charts comparing sales figures, yearly/monthly plans, and a computerized database to store information), (iv.) and agreements to destroy all sensitive documents as soon as the relevant parties had studied them. The dominant organization for the agreements was Roche; they “*organised, orchestrated and policed*” the cartel, and along with BASF and Rhone-Poulenc, the three organizations “*determine[d] overall strategy*” and “*met frequently to concretise their agreements.*” Drawing upon documentary evidence we have conceptualized the primary network structure of this cartel in Figure IV.

Figure IV about here

Thus phase one of the cartel operated along multilateral lines: frequent summit meetings attended by managers at all levels who endeavoured to create a single management control and financial system. Further, despite efforts to create ‘relationships of trust’, the wealth of artefacts created to manage the cartel belied its secrecy. Interestingly, however, in 1997 the Vitamin cartel dramatically changed its structure. This was in response to an announcement by the US Department of Justice (DoJ) that it was to conduct an investigation of the vitamins industry in the US due to allegations of a price-fixing conspiracy operating. As The Commission notes in its investigation:

“The participants in the [cartel] meetings had already become aware of the interest of the antitrust authorities in their secret arrangements and sought to minimize the number and frequency of their contacts. The last trilateral meeting was held in Basel in November 1997, when it was decided that in future meetings would only occur on a bilateral basis”; and

“Even then, [after the DoJ announcement] rather than put an end to the cartel, they took the decision to meet less frequently and with greater circumspection ... Thereafter there were no multilateral meetings.”

For the cartel “*complete security*” was now paramount as was the necessity “*to continue the cooperation in a modified form and on a ‘more discreet basis’.*” In the attempt to avoid drawing attention to the cartel (but not wishing to cease its activities) the multilateral structure was duly disbanded with “*no further group meetings [taking place] but only one-on-one contacts as necessary*” and was replaced with a bilateral structure whereby Roche acted as the ‘hub’ and line of communication for participants, with only very occasional meetings between Roche, BASF and Rhône-Poulenc, often at private residencies. These measures were also extended to cartel bureaucracy; personal agreements (and trust between actors) were favoured over the creation of artefacts.

The newly adopted bilateral mode of co-ordination hence allowed the cartel to continue operating in a more discreet manner, although lacking some of the earlier observed means of effective mutual co-ordination and communication; contact was reduced to a small number of senior managers in each firm (e.g. heads of marketing and commercial directors) (see Figure V).

Figure V about here

The existence of the cartel came to light on 12th May 1999, when Rhône-Poulenc informed the Commission of its involvement in a cartel as well as other manufacturers involved in the cartel through a written summary of activities. In addition, Roche and BASF were charged with price-fixing and allocating sales in the US and elsewhere under Section 1 of the Sherman Act (1890) on 20th May 1999, while Roche, BASF, Rhône-Poulenc, Daiichi and Eisai pleaded guilty in the Federal Court of Canada (Trial Division) to indictments charging conspiracy to prevent competition in violation of Section 45 of the Competition Act (1985). Five manufacturers received leniency in return for their co-operation. The final fine levied by the Commission amounted to EUR 855.23 million; commensurate with the strength and centrality of each firm's role in the cartel⁸.

Discussion: Industrial Organizations and Collusive Network Forms

In our findings we identified how and why bilateral/multilateral network interaction, mutual trust, and managerial predisposition influenced both the success and failure of cartels. Next we will engage in more in-depth analysis of these dimensions, and their interdependencies, by

⁸ The final fines were set at the following levels: Roche (EUR 462 million), BASF (EUR 296.16 million), Aventis (EUR 5.04 million), Takeda (EUR 37.06 million), Solvay (EUR 9.1 million), Merck (EUR 9.24 million), Daiichi (EUR 23.4 million), and Eisai (EUR 13.23 million).

introducing the metaphoric concepts of ‘shadow networks’ and ‘dark networks.’ Shadows (depending on the strength and relative position of a light-source to an object) will, to varying degrees, represent the image that casts the shadow. In some circumstances it may be utterly impossible to identify an object from its shadow; nevertheless, a shadow may still be observed however weak or poorly representative of the source object it may be. In contrast, in conditions of total darkness (such as a full eclipse, or a room with no windows or light source), will render all objects effectively invisible. Similarly, there are dark and shadow qualities found in cartels, which influence network interaction and managerial ability to control cartels.

We will argue that price-fixing cartels are faced with a fundamental trade-off between secrecy and managerial efficiency. Accordingly, *shadow networks* seek to maintain secrecy without materially sacrificing managerial efficiency. In contrast secrecy is the most important consideration in designing a *dark network*, which significantly restricts the possible set of activities. In addition, these concepts allow us to make tentative theoretical generalizations to other types of hidden or secretive arrangements in B2B networks, beyond the immediate context of price-fixing cartels. We will begin our analysis by discussing shadow and dark networks across three key dimensions: (i.) managerial and criminal social ordering, (ii.) cartel structure and (iii.) trust versus monitoring and control (Table II). We conclude the section with a brief reflection on the co-opetition literature.

Dimensions of shadow and dark networks

Managerial and Criminal Social Ordering. In our case studies we discovered that marketing managers often struggled to take effective precautions to protect their cartel conspiracies from detection. We observed marketing managers maintaining criminal cartel conspiracies similarly to how they were organizing and managing their legitimate marketing enterprises (as evidenced by the two multilateral cartels operating in the Flat Glass and Choline Chloride

industries, and, initially, in the Vitamins cartel) (Table II). In this regard, the marketing managers' education and past experience, and organizations' standard operating practices were a considerable liability. Indeed, marketing managers may not even be entirely aware of how their embodied knowledge structures (or habitus) conditions their management of illicit network interaction. This is in marked contrast to the more secretive bilateral networks where the illegal nature of such endeavours seemed foremost in the minds of managers when constituting these network forms (Butadiene Rubber, and, latterly, in the Vitamins cartel) (Table II).

Table II about here

Accordingly, we can compare the studied 'shadow-network' qualities of such relatively easily detectable multilaterally structured 'managerial cartels' with criminal conspiracies, which are genuinely designed to operate as secretive 'dark networks', and which correspondingly adopt bilateral modes of organization illustrated in Figure VI (see below).

Figure VI about here

This comparison reveals the inadequacies of the managerial modus operandi. We read and hear about these 'dark networks' almost on a daily basis due to their ubiquity in the media, but do not readily see their link to industrial marketing management or other business practices. For example, although terrorist acts by Al Qaeda are regularly reported in the media, we do not currently have a particularly definitive understanding of their organization.

Although there is some form of centralization in terms of leadership, attacks perpetrated by Al Qaeda are undertaken in a highly decentralized way by operating units that have considerable autonomy and often act bilaterally to conceal the identities of members (Raab and Milward, 2003). We are familiar with these structures in other terrorist organizations as well in the illegal trade of drugs such as in heroin and arms trafficking. These networks typically have bilateral structures which render the network relatively opaque and subsequently difficult to detect and unravel, as Brzezinski (2002: 26) observes:

“...the narcotics industry has adapted what might be called the Osama bin Laden approach to management: base your operation in remote safe havens, the more war-torn and chaotic the better; stay small and shifty, use specialized subcontractors or freelancers on a need-to-know basis; vary your routes and routines whenever possible; and most important, always insulate yourself with plenty of expendable intermediaries in case someone gets caught and talks.”

Griffith (1997) makes similar observations in Caribbean drug smuggling gangs, which have little vertical integration or hierarchical forms of control so as to evade detection and operate through kinship links and friendship networks (Figure VI). The same network structures are evident in the market for heroin exported from Southeast Asia and South America to countries in North America and Europe. These networks, “...must be covert, and consolidation and vertical integration are extremely risky because one broken link can destroy a tightly coupled network as police roll up the network by moving from one link to the next” (Raab and Milward, 2003: 421). Hence we are left with a picture of highly concealed networks where decisions and channels of communication are bilateral, power is dispersed among actors, networks are decentralized and heterogeneous, and actors are loosely coupled; indeed, bilateral structures which are in marked contrast to the multilateral and highly centralized industrial collusion for price-fixing described in the cartel literature.

Based on this understanding, it is appropriate to pose critical questions regarding the current academic understanding of industrial cartels, which reflects the managerial ethos (*cf.* Levenstein and Suslow, 2006; Baker and Faulkner, 1993). The cartel literature tends to focus on bureaucratic forms of hierarchical control and multilateral structures, even when the need for secrecy in collusive practices is acknowledged (for example, Baker and Faulkner, 1993). In addition, we maintain that managerial training and experience will condition marketing managers to operate managerially, even when running criminal cartels. In such ‘managerial cartels’, bureaucratic structures are created to more effectively manage horizontal collusion between competitors. In describing cartels as an extension of organizational bureaucracy, however, there is a danger of not recognizing that successful criminal conspiracies tend to be structured differently from ordinary corporations. Based on the above discussion, we can now formulate the following propositions:

Proposition 1: Managerial training and experience predisposes marketing managers to establish cartels that are governed as shadow networks, and not as dark networks.

Structure. A key difference between the cartels examined lay principally in their choice of collusive network structure and governance, and these network structures differ markedly. Based on our case study findings, we can tentatively assert that the two ‘forms’ or ‘types’ of cartel interaction - multilateral versus bilateral - may have a significant influence upon cartel detection, conviction and unraveling. In making these observations we defined *multilateral* cartels as cartels which use multilateral cartel meetings to collectively plan, manage, or control cartel activities (Table II). In contrast, a cartel was defined as a *bilateral* cartel if cartel members communicated with each other only on a one-to-one basis. (Figure VI). We propose that it is more difficult to detect and prosecute bilateral cartels in comparison to multilateral cartels. For example, as we discovered, the Vitamin cartel switched their operations to a bilateral structure to

avoid detection by the authorities⁹. This argument is also in part supported by Levenstein and Suslow (2006), who found a negative relationship between the number of cartel members and its duration. For example, a reduction in the number of cartel members tends to also reduce complexity in inter-organizational communication and co-ordination, with an extreme form of such simplicity being a bilateral cartel network, comprised of only two organizations.

In addition, due to the complexity of inter-organizational interaction, the observed multilateral cartels (Flat Glass and Choline Chloride) created large amounts of artefacts, such as paperwork and documentation outlining the ‘rules’ or ‘constitution’ of the cartel (Table II). In contrast, the bilateral cartels studied (Vitamins and Butadiene Rubber) were designed to be secretive, thus rendering these cartels relatively opaque, enduring, and more difficult to detect and unravel. In both these cases the investigating authority (The Commission) raises doubts as to specific dates and meetings, and, at times, even the actors involved – an investigatory caveat not found in the investigations of the Flat Glass and Choline Chloride cartels. Here it needs to be noted that not all detected cartels lead to convictions. In addition, even if managers running and operating a cartel *are* convicted, this does not necessarily lead to the unraveling of a cartel. Given the foregoing we can assert the following:

Proposition 2a: When the primary motivation of cartel members is secrecy, cartels are more likely to be structured bilaterally than multilaterally.

Proposition 2b: Bilaterally structured cartels have a longer life-span than multilaterally structured cartels.

Trust vs Monitoring and Control. The contemporary cartel literature has largely adopted the position that successful cartels need to establish mutual mechanisms of monitoring and control (Levenstein and Suslow, 2006); this is employed to ensure that all cartel members

⁹ Interestingly, however, we did not see the reverse. That is, a bilateral cartel switching to a multilateral structure.

adhere to the agreed prices and/or output levels (as there may be financial incentives to secretly break cartel rules). In addition, it has been argued that successful cartels have the means to enforce price discipline among its members “*through self-imposed carrots and sticks*” (Levenstein and Suslow, 2006: 86). Problematically, our findings contradict both of these assumptions. What we found in our case studies is that mutual mechanisms of monitoring and control tend to make cartels *more* vulnerable to detection, by generating additional communication linkages, paper trails, and electronic footprints (Figure VI). For example, the Commission’s case against the Flat Glass cartel was based on documentary evidence, including internal and external email exchanges, written-up minutes of meetings, travel expenses, and personal notebook entries (Table II). Further, based on our findings we propose that elaborate mechanisms of monitoring and control will tend to make cartels more multilateral in their network interaction (due to the greater need for joint evaluation and decision-making, and in order to have a simple means of distributing information to all parties). This we have again argued to increase cartels’ detection and unraveling rates. Conversely, bilateral network interaction would seem less conducive to comprehensive monitoring and control arrangements, whereby trust becomes an even more important consideration. It should be noted, however, the complex role that *mistrust* may play in both multilateral and bilateral networks; paradoxically, while mistrust may encourage actors to create extensive bureaucratic mechanisms of monitoring and control in multilateral networks, in the case of bilateral networks mistrust may result in actors’ unwillingness to create excessively formalized means of control. This is because formal means of control present a risk factor, which can potentially be used as evidence against the cartel participants by authorities, such as paper trails being discovered by authorities

The findings above provide an interesting comparison to the related topic of the role of trust in international joint ventures. For example, Groot and Merchant (2000: 580) observe

that “a lack of trust between partners sometimes leads to more complex and, hence, destructively slow decision-making processes.” This has clear parallels with the Choline Chloride case, where trust appeared to be limited and actors could not agree on tenets of the cartel; this resulted in increasing levels of bureaucracy and complexity to their multilateral meetings, and ultimately to the collapse of the cartel. Consequently, mutual trust has a heightened importance in B2B cartels, due to the criminal nature of activities and the need to conceal their activities to outsiders. Clearly cartel agreements cannot be enforced by law, effectively reducing the scope of ‘carrots and sticks’ available to enforce cartel agreements.

A further related issue is what Tomkins (2001: 167) refers to as a “trade-off between trust and control mechanisms”; in the context of alliances between organizations he argues that trust is a key component of information exchange and processing in relationships, but not a simple one. Although early general definitions of trust have been provided in the literature (e.g. Luhmann, 1979), Tomkins provides a more detailed definition of trust between alliance partners, and one that also has an interesting relevancy to the current context:

“The adoption of a belief by one party in a relationship that the other party will not act against his or her interests, where this belief is held without undue doubt or suspicion and in the absence of detailed information about the actions of that other party” (Tomkins, 2001: 165).

In the case of the four cartels studied it can with no certainty be assumed that any one party would not act selfishly or against the interests of another party in the cartel (i.e. basic game theory, or prisoner’s dilemma), particularly (or especially) when there is a high degree of transparency due to documentary evidence. This is directly at odds with some scholars who posit an inverse relationship between detailed information and trust (Wicks *et al.* 1999). Tomkins, however, offers an alternative:

“...firms that are highly economically interdependent could strive to avoid collapse either by building higher levels of trust or by building more extensive control mechanisms with

the associated increase in information” (2001: 167, emphasis in original).

In this sense trust can be a calculative phenomenon, just as it is to a greater extent in price-fixing cartels given their illegal nature. In our cases the need to build trust was paramount – information (particularly physical artefacts) consistently undermined cartel secrecy. Hence trust acts as an *alternative* to information exchange and is a preferable mode of control in bilateral B2B cartels.

Consequently, the potential lack of mutual trust between cartel participants represents a fundamental problem to cartel management, which cannot be entirely rectified by mutual mechanisms of monitoring and control (Figure VI). For example, it is common for cartels to become exposed by one of the cartel participants informing the authorities of the cartels’ existence (in exchange for leniency), just as the Butadiene Rubber cartel was exposed by Bayer – a key protagonist in the cartel. Paradoxically, establishing mutual mechanisms of monitoring and control may indicate (and incite) a lack of trust between cartel members, which we propose to be a fatal flaw of cartel management.

Proposition 3a: When there is a strong managerial motivation to monitor and control other cartel members, cartels are more likely to be structured multilaterally than bilaterally.

Proposition 3b: When cartel members have low levels of mutual trust, they are more likely to manage cartels as shadow networks than as dark networks.

Proposition 3c: Cartels which operate based on trust-relationship have a longer life-span, in comparison to cartels which lack trust and require mutual monitoring and controlling by cartel participants.

Proposition 3d: Cartels that are managed as dark networks have longer life-span in comparison to cartels that are managed as shadow networks.

Reflections on the co-opetition literature

In addition to shedding light on collusive network forms, our findings provide implications for the literature on illegal forms of co-opetition. It is hoped that this explication will also broaden

the nascent literature and debate on the topic and expand this line of enquiry in business-to-business research. We noted a number of shortcomings within the co-opetition literature that we now briefly expand on.

Initially, we extend the traditional thinking on co-opetition, by recognizing that in contrast to accepted thinking (Bengtsson and Kock, 2000; 1996), co-opetition practices may not always advance competition but actually stifle it in the form of price-fixing practices that may lack visibility to the marketplace. Further, we note that the ‘*what*’ factors that influence illegal co-opetition include the threat of new market entrants, and a decline in price and margins – external forces that in other circumstances may actually encourage partners to collaborate with competitors in legal projects (Rusko, 2011). In addition, given that almost 500 cartels have been detected since 1990, involving thousands of companies, such forms of co-opetition are far from isolated and merit inclusion as a type of (albeit illegal) co-opetition (*cf.* Walley, 2007; Rusko, 2011).

Next, we note that the ‘*where*’ of co-opetition did in our cases occur in upstream markets – confirming previous research on co-opetition (e.g. Walley, 2007; Bengtsson and Kock, 2000) – suggesting that future research examining illegal forms of co-opetition in downstream (output) markets would merit study. We can, however, extend the ‘*where*’ of co-opetition further by noting that illegal forms of co-opetition – due to the need to remain secret – physically take place away from corporate offices including in hotels, restaurants, and on the fringes of industry trade fairs and associations. Finally, in terms of the ‘*how*’ of co-opetition (i.e. the structure of illegal forms of co-opetition), the findings in the preceding section point to two network structures designed to maintain secrecy (‘*dark*’ and ‘*shadow*’ networks).

Collectively, these findings suggest the merit in broadening the scope of co-opetition analyses to encompass both legal and even *illegal* forms of co-opetition or else risk artificially narrowing the scope of co-opetition research and rendering it incomplete.

Conclusion and Implications

Historically, collusive relationships between competitors have remained largely invisible to industrial marketing investigations and researchers. This is in-part due to the criminal nature of price-fixing cartels whereby managers have had a strong incentive to hide these illicit arrangements from the marketplace, regulators and academic investigators. In this research, however, archival research methods enabled an in-depth analysis of B2B interaction of past cartel conspiracies. Accordingly, this research seeks to take tentative steps towards establishing price-fixing cartels as a significant new line of enquiry of in the field of industrial marketing. In so doing, we have advanced knowledge by examining a form of co-opetition that helps us to understand horizontal collusive relationships in more detail, which complements (and extends) our detailed understanding of vertical relationships in industrial marketing. In our investigation, we have considered questions related to the ‘*what*’ (factors influencing collusion amongst competitors), ‘*how*’ (different ways of maintaining collusive relationships), and ‘*why*’ (motives for establishing particular forms of collusive relationships) of these largely ignored forms of co-opetition (*cf.* Rusko, 2011; Bengtsson and Kock, 2000).

Our investigation uncovered two broad types of collusive practices, which we described by the umbrella terms ‘shadow’ and ‘dark’ networks. Both shadow and dark networks concern secretive forms of network interaction, largely invisible to outsiders. However, the former are designed to function with considerable managerial efficiency, whereby some compromises are made to aid secrecy. In contrast, dark networks are designed for total secrecy, which result in less manageable interaction between firms. Overall, the ordering rationale of shadow networks was more related to typical managerial projects, whereas dark networks had characteristics akin to criminal/terrorist organizations. Network interaction of shadow networks was to a large extent multilateral, such as the use of multi-party cartel meetings to plan, organize and control cartels.

In contrast, dark networks relied exclusively upon bilateral network interaction to ensure a higher level of secrecy. In addition, shadow networks use bureaucratic means of ordering, which are not a characteristic of dark networks. Finally, shadow networks seek to establish mechanisms to monitor the activities of their members to ensure adherence to cartel agreements. In contrast, dark networks need to rely upon mutual trust in the absence of effective monitoring mechanisms.

Managerial implications

The framing of practical implications in a paper of this nature (in part, a critical marketing perspective) is challenging, given that we hesitate in providing an exposition of ‘improved’ cartel management. We can, however, suggest practical measures for cartel avoidance and why marketing managers may find themselves party to collusive agreements of this kind.

Our findings reveal new type of risks to marketing managers, which should be seen as a warning against participation in illegal price-fixing cartels. Our evidence suggests that the experience and training of marketing managers is more conducive to establishing and running cartels as “shadow networks”. This is because “shadow network” share many of the characteristics of ‘ordinary’ types of other inter-organizational relationships, in comparison to more secretive “dark networks”. Also, “shadow networks” can better achieve the managerial objective of efficient cartel organizations, including systematic monitoring and control of other cartel participants. Yet, “shadow networks” are vulnerable to being detected by customers and authorities, which can result in criminal convictions against marketing managers. These findings cast doubt on many earlier studies and assumptions concerning collusive B2B interaction (e.g. Levenstein and Suslow, 2006; Baker and Faulkner, 1993). It has previously been assumed that successful cartels have “self-imposed carrots and sticks” (Levenstein and Suslow, 2006: 86) to maintain cartel discipline. This characterization is, in part, consistent with our description of shadow networks. Problematically, we have argued that the lack of secrecy in shadow networks

critically reduces their long-term survival, particularly as managers in highly bureaucratic organizations (or highly mistrusting networks) may find themselves in cartels that leave considerable paper trails. This heightened need to monitor and control implies a low level of trust between cartel members, which can be seen as fatal flaw in any criminal conspiracy. In highly scrutinized regulatory environments it is hence not entirely wrong to characterize shadow networks as born to fail arrangements. Consequently, the extant cartel literature has inadvertently propagated assumptions about cartels which are more likely to be detected by regulators. In contrast, by sacrificing managerial efficiency, dark networks are more likely to remain hidden over long periods of time. Organizations can, however, deploy measures to ensure that neither type of price-fixing networks are created in practice, as we will now consider.

Marketing managers may (as part of a collusive network) be pulled unwillingly into a cartel by the relationships they hold. For example, our findings also revealed how the boundary spanning role of marketing managers between different organizations made them vulnerable to illicit collusive practices (Wilkie and Moore, 1999: 200). For example, it has been recognized that this position provides marketing managers with “ample opportunity to engage in guideline-relevant offences such as price fixing, bribery, fraud and discrimination” (LeClair *et al.* 1997: 29). Indeed, if a marketer is uninformed they may unwittingly and unknowingly fall foul of such laws. In addition to not being cognisant of antitrust laws, some marketers may even eschew policy matters on the premise that this is an issue for lawyers and as legal considerations may not be an important aspect of marketing planning and strategy (LeClair, 2000); yet antitrust agencies are pursuing individuals as well as companies. As a result, marketers and their organizations need to be cognisant of policy issues, such as antitrust laws, in a number of jurisdictions when framing their marketing objectives (Yoffie and Kwak, 2001; Ashton and Pressey, 2008). Given this thinking, an awareness of government policies and laws in areas such as antitrust needs to be seen as a key business task. When operating in international markets the potential for

undertaking anticompetitive actions is likely to be higher due to the greater scope of such laws and variation in antitrust laws between countries. Consequently, marketing objectives should take into consideration the rules for competitive behaviour (LeClair, 2000: 207) to both reduce risks for individuals and risks within the marketing planning process. As marketers may be central protagonists to anticompetitive practices – which the four cases studies of collusive cartels studied demonstrate – such practices should be thoroughly understood by both marketing managers and their organizations.

Cartels are being investigated and discovered at a faster rate than has ever previously been the case, with anti-cartel enforcement now constituting the main priority of antitrust agencies such as the DOJ (Connor, 2008: 4-6). It is estimated that a major company admits an antitrust violation every ten days, and that most organizations' antitrust programmes are thought not fit for purpose (Hobbs, 2004). It is, therefore, essential – even in a period of corporate cost-cutting – that attention to corporate antitrust programmes does not diminish; failure to do so is to risk exposing the organization to potentially costly antitrust breaches. More specifically, given that “[m]arketing and antitrust are strongly interrelated” (Shocker, 2007: 95), and a potential cause of corporate antitrust breaches – as the findings to the present study attest – self-regulation would seem particularly relevant to the marketing function.

Previous studies have outlined guidance on self-auditing business-to-business interactions and relationships (see, for example, Fontenot and Hyman, 2004 and Yoffie and Kwak, 2001). In addition to training marketing and sales personnel (through professional education as well as a feature of degree programmes at universities and colleges), other (less conventional) measures could include: disclosure of meetings with competitors by all personnel (or else to discourage such meetings unless part of a legitimate form of co-operation - such as a joint venture); limit membership of trade associations and monitor events; periodic email audits (and also travel expenses); monitoring price trends and changes; and ensure that all price-setting decisions are

scrutinized by cross-organizational groups. Such measures may well assist in the detection of shadow networks with their generally large paper-trails and often transparent multilateral network structure; in the case of detecting dark networks, however, regulators may have to rely more extensively on whistleblowers and vigilant customers.

Limitations and directions for future research

No study is without its limitations and this study is no exception. As this study concerns criminal conspiracies, it is important to acknowledge the inherent difficulties in forming a complete picture of secretive events; as a result some relevant information may have remained hidden from our investigation. Having said this, we have reason to believe that many of the companies in question have fully collaborated with authorities providing relatively comprehensive accounts of the relevant cartel activities. Second, while our initial screening process included a large number of companies, no statistical generalizations can be drawn from our cases. This said we must temper our propositions in light of future studies which may draw different (and possibly contrasting) conclusions. We would thus welcome studies that test our propositions with larger (and more generalizable) samples, even if they provide counter-arguments. What our results do suggest is that when one examines industrial cartels in any depth then our current thinking of them may be transformed.

Our exposition of dark and shadow networks – and the involvement of marketers in such acts – suggests it is worthwhile to track investigations undertaken by the EU regulator (and others) in order to ascertain the future involvement of marketers and, as we outlined in the introduction, so that marketing scholarship can attain a greater comprehension all aspects of our discipline (Shocker, 2007; Tadajewski, 2010).

Future studies of collusive industrial networks may be weakened by employing the traditional analytical frameworks and tools we have at our disposal in business and

organizational research. This calls for studies that look beyond current management theories and taxonomies. Studying deviant networks (such as for terrorism, arms trafficking, or heroin distribution) may afford us a better understanding of successful deviant industrial networks. This need to rethink the measures adopted to examine cartels should be important as current views offer a rather jaundiced account of cartel structures and practices. As collusive industry networks are perduring and more common than was first thought, there is a need for marketers to understand them better. Complementing this would be studies that attempt to better understand the ‘dark side’ of industrial networks and organizations, where ‘secret societies’ (such as networks that engage in industrial espionage, price-fixing, bribery, employee fraud, and so forth) are rarely acknowledged currently. This would seem intuitively important to marketing discourse, particularly if the boundary-spanning nature of marketing management work finds them draws into certain illegal acts.

Finally, arguably a weakness of the literature examining co-opetition is its narrow definition and rejection of some forms of co-opetition (*cf.* Rusko, 2011). Failure to recognize *all* forms of co-opetition (and the motives driving actors to make strategic choices concerning both *legitimate* and *illegitimate* forms of co-operation) would be to render industrial marketing scholarship the poorer and incomplete.

“The fact that secrets do not remain guarded forever is the weakness of the secret society”
(Georg Simmel, 1950).

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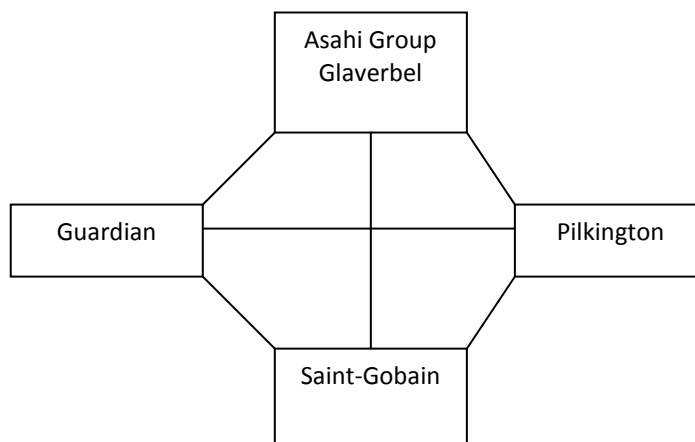
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**TABLE I
CHARACTERISTICS OF FOUR PRICE-FIXING CARTELS**

<i>Market</i>	Vitamins	Butadiene Rubber	Choline Chloride	Flat glass
<i>Concluding year of investigation</i>	2001	2006	2004	2007
<i>Structure</i>	Bilateral	Bilateral	Multilateral	Multilateral
<i>Number of participants in the cartel</i>	Thirteen	Six	Six	Four
<i>Nationality of parent</i>	Switzerland, Germany, France, the Netherlands, Japan	Germany, U.S., Italy, the Netherlands, Czech Republic, Poland	the Netherlands, Germany, Belgium, U.S., Canada	Japan, U.S., UK, France
<i>Duration of cartel</i>	Ten years (1989-99)	Six years (1996-2002)	Six years (1992-98)	Two years (2003-2005)
<i>Markets affected</i>	Global	European Economic Area	Global	European Economic Area
<i>Fine</i>	EUR 855.22 million	EUR 519 million	EUR 66.3 million	EUR 486.9 million



**Figure I
Multilateral Network Structure for the Flat Glass Cartel**

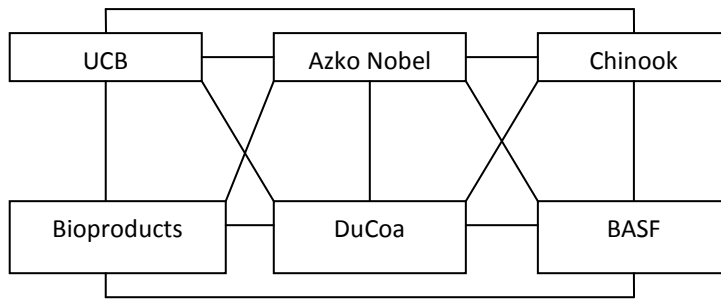


Figure II
Multilateral Network Structure for the Global Choline Chloride Cartel (1992-1994)

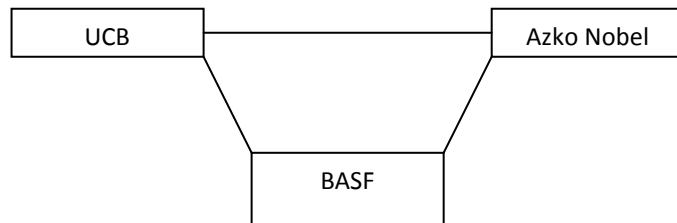


Figure III
Multilateral Network Structure for the European Choline Chloride Cartel (1994-1998)

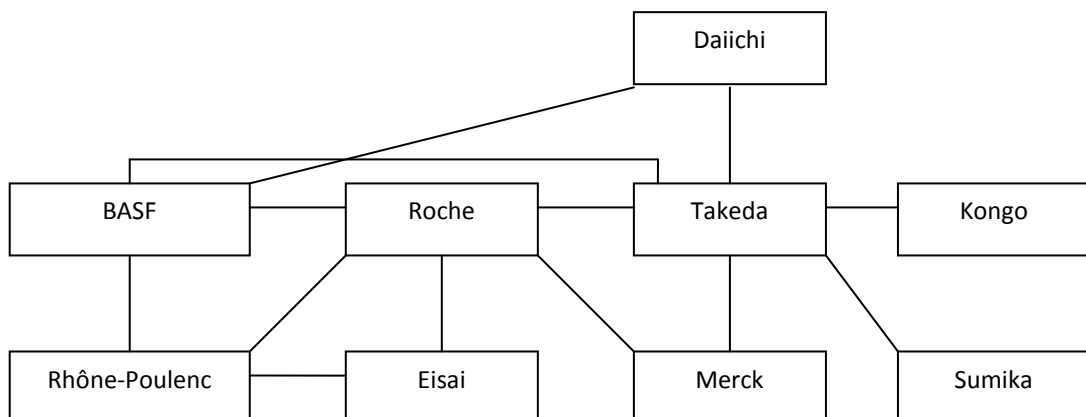


Figure IV
Multilateral Network Structure for the Vitamins Cartel (1989-1997)

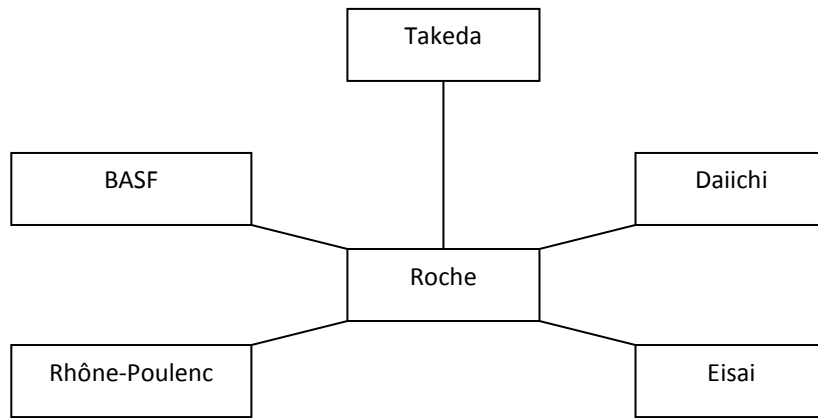
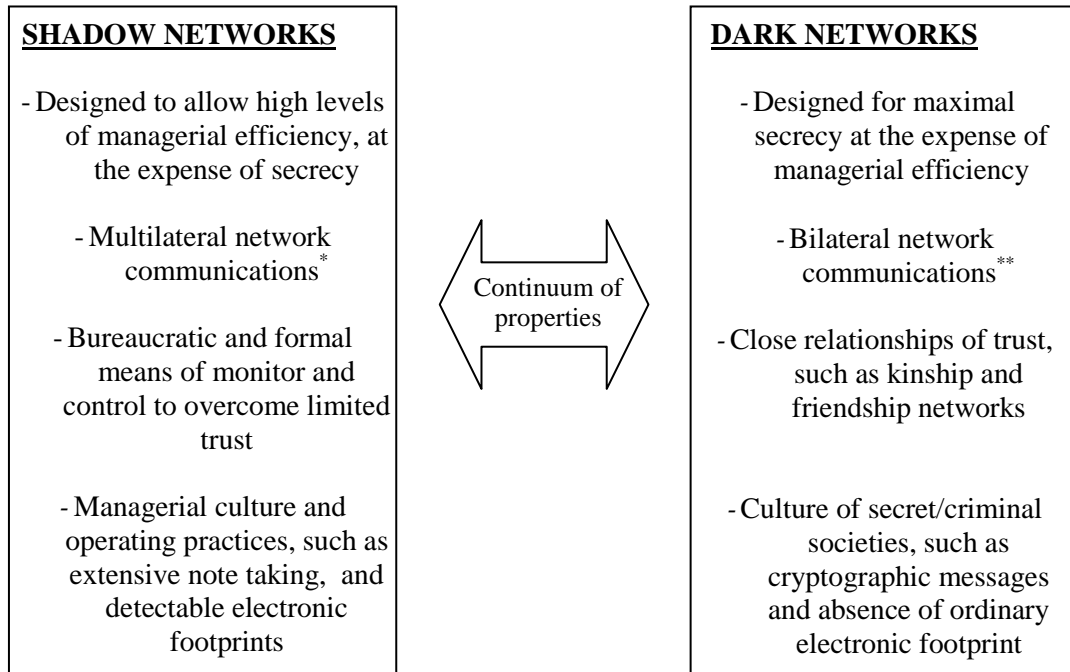


Figure V
Bilateral Network Structure for the Vitamins Cartel (1997-1999)

Figure VI
Shadow vs. Dark Collusive Business Networks



*“*Multilateral network communications*” refers specifically to the use of joint (cartel) meetings to collectively plan, manage, or control (cartel) network activities (i.e. *complete* contact between all parties). In addition, we identified that stronger forms of ‘multilateralism’ exist whereby a (cartels) network establishes formal processes for joint record keeping and adopt joint bureaucratic structures to facilitate (cartel) network management. In this situation a network assumes some characteristics of an organizational hierarchy.

**“*Bilateral network communications*” refers network parties communicating with each other only on a one-to-one basis. In addition, we identified that there may exist stronger forms of ‘bilateralism’ whereby (cartel) network members lack awareness of activities and agreement between other cartel members (i.e. *incomplete* contact between all parties).

TABLE II
The Characteristics of Two Forms of Collusive Business Practices

	Shadow Networks	Dark Networks
	Choline Chloride (2004); Flat glass (2007)	Vitamins (2001); Butadiene Rubber (2006)
<i>Social Ordering</i>	Extension of normal business/managerial practices; highly centralized; tight coupling.	Operation of secretive network; decentralized; loose coupling.
<i>Structure</i>	Collective group ‘board’ meetings; bureaucratic record keeping; numerous artefacts.	Meetings between only two parties at a time, and as necessary; limited record keeping and artefacts.
<i>Trust vs. Monitoring and Control</i>	Limited trust – control through group agreement and recourse to records and artefacts.	Attempts to control operations through mutual trust.

