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The Interplay of Competition and Cooperation[†]

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Submitted to the Strategic Management Journal

First version: March 22, 2018

Revised: May 18, 2018

Accepted: May 20, 2018

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Short Title: Competition and Cooperation

Keywords: Competition, Cooperation, Coopetition, Alliance, Rivalry

[†] The authors are listed alphabetically. We appreciate the feedback received from Joel Baum, Ming-Jer Chen, Alfonso Gambardella, and Marvin Lieberman, and thank the SMJ Special Issue Advising Editors Sendil Ethiraj and Connie Helfat for their guidance. We acknowledge the support received from LUISS Business School and WU Vienna University of Economics and Business for the Special Issue Conference held in Rome in 2016. Dovev Lavie acknowledges fellowship with ICRIOS (Invernizzi Center for Innovation, Organization, Strategy and Entrepreneurship).

The Interplay of Competition and Cooperation

ABSTRACT

Research streams on competition and cooperation are central to the field of strategic management but have evolved independently. The emerging literature on cooperation has brought attention to the phenomenon of simultaneous competition and cooperation, yet the interplay between the two has remained under-researched. We offer a roadmap for studying this interplay, which identifies some of its antecedents and consequences, highlights debates concerning the nature of competition and cooperation and the association between the two, and directs attention to the tension between competition and cooperation and the alternative approaches for managing this tension. We discuss the broader implications of the interplay, note some intriguing open questions, offer directions for future research, and present an organizing framework for the interplay of competition and cooperation.

The Interplay of Competition and Cooperation

INTRODUCTION

The research streams on competition and cooperation have different origins and have evolved independently from one another. Traditionally, strategy research has focused on the study of interfirm competition. Competition can be defined as the pursuit of a market position by firms that offer comparable products to a targeted set of customers. Following industrial organization economics, strategy research has related profitability to industry structure and to firms' positions in product markets (Porter, 1980). Subsequently, the resource-based view has emphasized firms' idiosyncratic resource configurations and competition in factor markets (Barney, 1991; Wernerfelt, 1984). Research on competitive dynamics has elaborated on the implications of the frequency, aggressiveness, complexity, and diversity of firms' competitive actions for the behavior of their competitors (Chen, 1996; Smith, Ferrier, and Ndofor, 2001). Finally, research on multimarket competition has suggested that market overlap creates mutual deterrence that restricts competitive interaction, thereby fostering cooperation in the form of tacit collusion (Gimeno and Woo, 1996; Yu and Cannella, 2013). Hence, research that has assumed the competitive logic implies that competitive interactions among firms shape their performance, while implicitly or explicitly considering interfirm cooperation as a form of collusion that mitigates competition and can restrict economic welfare (e.g., Tirole, 1988). Cooperation has thus been largely viewed unfavorably by this tradition (e.g., Tong and Reuer, 2010).

In parallel, research on cooperation has alluded to firms pursuing common or at least compatible goals while sharing and exchanging resources and engaging in joint activities. Cooperative interfirm relations, including strategic alliances, joint ventures, and research consortia, have gained prominence and drawn increasing attention from scholars. Early work has been mostly phenomenon-driven in studying international joint ventures and applying a

transaction-cost economics perspective (Hennart, 1988; Kogut, 1988), with later work incorporating also resource-based and relational views (Dyer and Singh, 1998). Scholars have investigated the motivations for forming cooperative relations as well as topics related to partner selection, alliance management and governance, and the performance implications of alliances (Wassmer, 2010). This stream of research has suggested that alliances and networks of cooperative relations directly contribute to firm performance rather than merely constrain rivalry (Gulati, 1998; Shipilov, Li, and Greve, 2011). Nevertheless, this emerging literature on cooperation has evolved almost independently of the literature on competition. Early research on cooperation has contrasted cooperative relations with competition and considered cooperative agreements as a hybrid form of governance that economizes on transaction costs while serving as a vehicle for implementing corporate growth strategies. Scholars have since begun to acknowledge that cooperation can create value and enhance firm performance. Implicit in this research has been the assumption that firms engage in cooperation in order to access their partners' knowledge, resources, and capabilities. Accordingly, competitive tension with alliance partners has been considered hazardous since it could undermine cooperation, restrict resource exchange, and destabilize alliances (Das and Teng, 2000). Hence, until recently, scholars studying competition or cooperation have followed distinct logics, portraying the other form of interaction unfavorably and making little theoretical or empirical effort to bring together these two streams of research.

Competition and cooperation have traditionally been considered separate modes of interaction among firms, but scholars have begun to acknowledge that firms simultaneously engage in competition and cooperation with each other. For instance, when studying the antecedents of alliance formation, scholars have noted that competitive tension can facilitate alliance formation (e.g., Ang, 2008). Additionally, scholars investigating the competitive behaviors of partners in alliances have observed that opportunistic behavior and attention to

private benefits can influence cooperation in alliances (e.g., Kale, Singh, and Perlmutter, 2000; Khanna, Gulati, and Nohria, 1998). Others have examined how partners seek to not only create but also capture value in alliances by competing for their share of the proceeds (Lavie, 2007; Ozmel *et al.*, 2017). In horizontal alliances between competitors, some scholars have observed that learning races can evolve which result in knowledge leakage that alters the competitive position of a firm vis-à-vis its partner (Hamel, 1991; Khanna *et al.*, 1998). Finally, scholars have acknowledged that alliances formed by a firm's rivals impose competitive pressure, in part due to foreclosed partnering opportunities, which in turn encourage the firm to form countervailing alliances with reputable rivals (Silverman and Baum, 2000, Gimeno, 2004). To describe the dynamics that arise in collaborations with competitors, scholars have alluded to the notion of 'coopetition' (Brandenburger and Nalebuff, 1996).

The emerging literature on coopetition has evolved as another distinct stream of research, focusing on the simultaneous cooperation and competition between firms. Whereas some scholars have defined coopetition at the dyad level (e.g., Bengtsson and Kock, 2000), others have studied it in industry networks (e.g., Gnyawali, He, and Madhavan, 2006). Research on coopetition has focused on its antecedents and consequences. Although some studies identify unique motivations for cooperating with competitors, such as convergence of technologies that loosens sector boundaries (Dagnino and Padula, 2002; Gnyawali and Park, 2009), most studies identify antecedents such as risk reduction and cost sharing, which echo earlier research on alliance formation. Similarly, research on the implications of coopetition for innovation and performance underscores the merits of cooperation, echoing the literature on value creation in alliances, with only a few studies acknowledging some boundary conditions. Even though research on coopetition has made some strides in juxtaposing competition and cooperation, this fragmented literature has been struggling to reach

consensus concerning the definition and characteristics of this phenomenon (Bengtsson and Raza-Ullah, 2016; Bouncken *et al.*, 2015; Dorn, Schweiger, and Albers, 2016).

With the aforementioned exceptions, most of the accumulated research on cooperation has not been sufficiently integrated with literature on competition, and the interplay of competition and cooperation has remained under-researched. The notion of interplay refers both to how competition and cooperation interrelate and to their interaction in driving outcomes such as corporate behavior and performance. A tighter integration between these two research streams can enhance our understanding of the complex dynamics that characterize firms' interactions in markets (Chen and Miller, 2015). Such integration may reveal how cooperative interactions shape value creation and appropriation among firms. In fact, the interplay of competition and cooperation has implications that go beyond the distribution of value. For instance, scholars may study how competition drives cooperation and vice versa, look at how competition and cooperation jointly drive organizational outcomes such as innovation and firm performance, or identify tradeoffs and tensions that prevail between competition and cooperation at the firm and industry levels.

The integration of research streams on competition and cooperation departs in important ways from the Special Issue on Strategic Networks (Gulati, Nohria, and Zaheer, 2000). Despite the thriving literature on alliance networks that followed the aforementioned special issue, scholars have so far devoted more attention to the cooperative context of interfirm collaboration and made less progress in crossing the apparent divide between the separate research streams on cooperation and competition. Although subsequent special issues have shed light on some other aspects of alliance networks by advancing social network theories (Parkhe, Wasserman, and Ralston, 2006), studying the evolution and dynamics of social networks (Ahuja, Soda, and Zaheer, 2012), or acknowledging relational pluralism and the multiplexity of network ties (Shipilov *et al.*, 2014), these advancements

have not attempted to integrate research streams on competition and cooperation. Such an agenda is important for bringing together two of the most central bodies of research in the field of strategic management.

We seek to foster research on the interplay of competition and cooperation by laying the foundations for an integrative framework that underscores the multifaceted nature of competition and cooperation. Both can be explicit or implicit and conceptualized as discrete choices or continuous activities. They can transpire in horizontal, vertical, or complementary value chain activities, and scholars can treat them as orthogonal types of interfirm relations or acknowledge the inherent tradeoffs and interdependencies between them. We proceed by discussing the environmental, organizational, and managerial antecedents of competition and cooperation. We then focus on several aspects of their interplay such as how firms manage to find the right balance in pursuing both competition and cooperation. We discuss the simultaneous pursuit of these activities versus a sequential transition between them. We also elaborate on the possibility of constraining versus reinforcing associations, whereby competition drives out cooperation or rather leads to cooperation between firms. We then explain the notions of bilateral versus multilateral competition and direct versus indirect competition and cooperation at different levels of analysis. We identify several types of tensions that prevail between competition and cooperation, relating to knowledge leakage, opportunistic behavior, lack of commitment, and instability of interfirm relations. These tensions shape value creation and appropriation and determine the distribution of common and private benefits to firms taking part in such relations. The broader implications relate to firms' financial performance, innovation, survival, growth strategies, market entry, and strategic positioning. Finally, we discuss how firms can cope with these tensions by means of contextual integration or via organizational, temporal, or domain separation between competition and cooperation. These approaches offer alternative means to engage in both

competition and cooperation while mitigating the tension between these activities. We use the resulting roadmap to classify the articles in this special issue and highlight important areas for research on the interplay of competition and cooperation.

TOWARD AN INTEGRATIVE RESEARCH AGENDA

Our review of the literature reveals five specific areas where further research is needed. One such area concerns the *antecedents, processes, and consequences of cooperating with competitors*. Scholars here might ask questions such as: How do organizational, environmental, and managerial factors such as cognitive biases drive cooperation? How do industry conditions and firms' resource configurations shape cooperation? One interesting aspect of this theme relates to the means by which firms are able to simultaneously maintain and manage competitive and cooperative relations: Should they simultaneously cooperate and compete or should they specialize by separating their partners from their competitors? How can firms mitigate the risks of their partners' opportunistic behavior when these partners are also their competitors? How do interfirm trust, joint governance, and routines emerge in cooperative relations? These questions call for process-oriented research based on case studies that can support grounded theory development. A final set of questions in this area concerns the implications of the simultaneous pursuit of competition and cooperation. Here, scholars might explore questions such as: What are the various facets of cooperation and their respective performance implications? How does cooperation affect firms' competitive positions?

A second area for development concerns *value creation and appropriation*. Whereas cooperation has been traditionally related to the former and competition to the latter, further scrutiny may reveal an interdependence between common benefits that partners develop and share in their cooperation and private benefits that they independently extract from their alliances with competitors (Khanna *et al.*, 1998). Some important questions in this area that

deserve scholarly attention are: How do firms simultaneously manage value creation and appropriation in their cooperative relations? What are the tradeoffs and challenges they encounter due to simultaneous competition and cooperation? Alliance managers may, for instance, find it challenging to share knowledge while cooperating with partners, knowing that such exchange might be exploited by their counterparts. Current research falls short of offering sufficient insights into how to strike a balance between knowledge sharing and knowledge protection in alliances with competitors.

Whereas the above questions underscore causal associations and managerial perspectives, a third area of research highlights a *temporal dimension* relating to the dynamic interplay between competition and cooperation. Relevant questions in this regard include: How do competition and cooperation coevolve at the firm, dyad, network, and industry levels? How does competition elicit cooperation? How and why do alliance partners begin to compete? Although scholars have already demonstrated that the intensity of competition in an industry can affect the likelihood of cooperation (e.g., Ang, 2008) and have associated multimarket competition with alliance formation and partner selection (Amir, Lavie, and Hashai, forthcoming; Ryu, Brush, and Reuer, 2015), there is no consensus about the valence of these effects, thus creating a need to identify boundary conditions and examine how various aspects of competition shape alliance formation and partner selection. It is also interesting to study how alliances between competitors (competition precedes cooperation) differ from alliances that experience knowledge spillovers and the subsequent entry of one partner into the other's domain (cooperation precedes competition). The implications for the competitive positions of the partners and the dynamics of their cooperation may vary in these two cases as well.

A fourth area of research concerns firms' *capabilities and organization for supporting cooperation*. Whereas research on alliances has offered some insights into alliance

management capabilities and the role of a dedicated organizational function in coordinating alliance activities (e.g., Kale, Dyer, and Singh, 2002), we know little about the unique capabilities required for managing the interplay of competition and cooperation. What are the elements of a cooperation capability? How do they differ from those of an alliance management capability? How is a cooperation capability developed and institutionalized? How does the alignment of the cooperation capabilities of the firm and its partner shape the performance of their collaboration? These are some of the questions that future research might explore. An additional set of questions concerns the means by which firms cope with the inherent tension between competition and cooperation.

Finally, scholars may *apply methods* that have served for analyzing one type of relation to study the other. Most promising here is the use of network analysis, which is often applied for studying social networks (e.g., Ahuja, 2000) but can also serve for studying competition networks that are composed of competitive relations between firms. Scholars have begun to apply this method to study network properties such as structural holes in competition networks (Yamanoi, 2011) but the underlying assumption has been that the mechanisms that drive behavior in competition networks are similar to those applicable in social networks (Tsai, Su, and Chen, 2011). Future research could challenge this assumption and develop a theory for the evolution and performance implications of competition networks. The next step would then be to raise questions such as: How do competition networks drive the evolution of cooperation networks and vice versa? How does the interplay of competition networks and cooperation networks, which results in cooperation networks, shape firm performance and drive industry entry and exit? How do competitors of a firm's partners or partners of a firm's competitors influence its strategy and performance? Such questions call for a look beyond immediate dyadic relations. While some scholars have already begun to consider how alliances formed by competitors affect firm value (Oxley,

Sampson, and Silverman, 2009), and how firms respond to such alliances by forming countervailing alliances (Gimeno, 2004), further work is needed to advance this promising line of inquiry. Other methodologies, including experiments and simulations, may offer further opportunities to advance our understanding of this interplay. It is evident that these promising avenues for research on the interplay of competition and cooperation go beyond current research on coopetition. We hope that our special issue will pave the way for this emerging research agenda and stimulate research that can address these important research questions.

A PRELIMINARY ROADMAP FOR STUDYING THE INTERPLAY

Now that we have identified several areas for developing research on the interplay of competition and cooperation, we will begin to outline a roadmap for such research. The purpose of this roadmap is to point to some important aspects of the phenomenon and offer guidance for answering some of the most essential research questions raised in the previous section.

The nature and interplay of competition and cooperation

Research on coopetition consistently alludes to simultaneous competition and cooperation, yet treats these activities ambivalently. One stream of research maintains that competition and cooperation are contradictory activities (Bengtsson and Kock, 2000), while another underscores their complementary nature (Brandenburger and Nalebuff, 1996). Although both perspectives describe a valid possibility, the interplay of competition and cooperation holds various other possibilities. Rather than merely juxtaposing the two, we allude to their multifaceted nature and consider their interdependencies in a more nuanced manner.

One consideration is whether competition and cooperation are *explicit* or *implicit*. Research on coopetition often assumes that both competition and cooperation are explicit, i.e., that firms operate in each other's product markets and cooperate via interfirm alliances

(Bengtsson and Kock, 2000). Nevertheless, competition can take many forms besides overlap in product markets, such as similarity between firms' resource bases and perceived rivalry (Chen, 1996). Resource similarity does not necessarily entail explicit competition, yet offers straightforward opportunities to initiate it in the (near) future (Barney, 1991). Perceived rivalry might entail no overlap in the product market or resource market, yet implicit competition of this kind can drive managers' decisions to initiate competitive actions and is thus consequential (Porac and Thomas, 1990). The notion of implicit competition suggests that competition can be subjective and socially constructed. The distinction between implicit and explicit interaction also applies to cooperation. Research on cooperation acknowledges various forms of collaboration, some of which involve a formal agreement and joint organizational structure, whereas others remain informal or even implicit. A joint venture is an explicit form of collaboration with a standalone organizational hierarchy, governance structure, and formal commitments by the partners. In turn, price fixing and other forms of collusion between competitors or coordination among members of an industry association or technological platform represent implicit cooperation that can be just as consequential as explicit cooperation via formal alliances (Bertrand and Lumineau, 2016; Kapoor and McGrath, 2014). Hence, when studying the interplay of competition and cooperation, one should consider the distinctive implications of different – explicit or implicit – configurations of competition and cooperation.

The nature of the relationships among firms is also defined by the configuration of their value chain activities. Competition and cooperation can take place in the horizontal dimension among firms that operate in the same industry sector. They can also occur in the vertical dimension of the supply chain between buyers and suppliers that simultaneously collaborate while competing for margins or more directly by means of tapered integration (Gulati, Lawrence, and Puranam, 2005). Competition and cooperation can emerge among

firms with complementary businesses that cooperate and compete as part of an ecosystem (Ansari, Garud, and Kumaraswamy, 2016; Kapoor and Lee, 2013). At a higher resolution, competition and cooperation can play out in product markets via price competition or price setting, advertising, and promotion as well as in resource markets when firms cooperate or compete for employees, technical knowledge, or government support. They also can play out in market entry decisions as firms welcome or resist each other's market reconfiguration attempts as a function of their prior social ties (Han, Shipilov, and Greve, 2017).

Another assumption in the study of competition and cooperation concerns the valence of their association. According to one tradition, which is anchored in game theory, firms can decide how much to compete or cooperate with each other (Brandenburger and Nalebuff, 1996). This *choice* assumes that competition and cooperation are *discrete alternatives* that invoke inconsistent corporate behaviors. This tradition is also evident in some research on markets for ideas and technologies (e.g., Gans and Stern, 2003). One critique of this overarching approach is that a firm may have no choice once its alliance partner decides to enter its market. It is thus worth considering the implications of being the firm that initiates versus the firm that reacts to such a unilateral decision. Furthermore, because firms may simultaneously compete and cooperate with each other, the decision relates to the extent of their *continuous* cooperation and competition. Firms can maintain weak or strong cooperative ties as well as different levels of market overlap. Although this latter perspective recognizes the continuous natures of competition and cooperation, it treats them as *orthogonal*. Hence, it does not acknowledge the *inherent tradeoffs* between their respective corporate behaviors, which would suggest a negative association between them. Even when scholars acknowledge that competition can undermine cooperation, the issue of the appropriate balance between competition and cooperation remains. A certain market overlap between alliance partners can facilitate innovation (e.g., Ritala and Hurmelinna-Laukkanen, 2013) but excessive overlap

could destabilize the alliance between the parties (e.g., Bouncken and Friedrich, 2012).

Hence, scholars should study the environmental and organizational conditions that influence the desirable *balance* point between competition and cooperation as well as the processes that enable firms to strive for such balance as opposed to *specializing* in a dominant activity, be it competition or cooperation. Thus, competition and cooperation should not be treated as discrete choices, and the tradeoffs between them should be taken into account.

Furthermore, the literature on cooptation underscores simultaneous competition and cooperation, thus overlooking an important *temporal* dimension. Even if simultaneous competition and cooperation is assumed, a distinction can be made between alliance partners that enter each other's product markets and begin to compete and long-time rivals that initiate a joint alliance. In the case of the former, competition "pollutes" cooperation, while in the latter, cooperation "pollutes" a competitive relation. Scholars may study the implications of the distinctive scenarios by which cooptation emerges. For instance, trust building in alliances between long-time rivals (Gnyawali and Park, 2011) may be more challenging than instituting safeguards against opportunistic behavior of long-time partners (Kale *et al.*, 2000). Also of interest is the transition from competition to cooperation and vice versa. Such *sequential cooptation* entails a lack of simultaneous competition and cooperation. Instead, competitors may decide over time to become suppliers of general purpose technologies and collaborate with their former competitors by means of division of labor in the market (Conti, Gambardella, and Novelli, forthcoming). Likewise, a partner may opt to discontinue its alliance with the firm before introducing a competing product line (Das and Teng, 2000). Scholars may compare the scenario whereby competition precedes cooperation to that of cooperation preceding competition. The transition between competition and cooperation could also be driven by the dynamics of industry evolution rather than by considerations at the dyad level. Overall, the temporal dimension has so far not received much attention in

extant research.

Thus far we have assumed that there are inherent tradeoffs between competition and cooperation. This suggests a *constraining* association whereby competition drives out cooperation and vice versa. An alternative approach suggests that the association between competition and cooperation can be *reinforcing*. In a learning alliance, for example, cooperation can result in knowledge leakage that enables a firm to build independent capabilities and enter into competition with its former partner in a subsequent period (Hamel, 1991). Similarly, intense competition between rivals may encourage them to favor cooperation as a superior alternative (Ang, 2008; Eisenhardt and Schoonhoven, 1996). In responding to competitive pressure, firms may decide to form alliances not only with their immediate rivals but also with the partners of their rivals or with other prospective partners that can counterbalance the competitive pressure imposed by their competitors (Gimeno, 2004; Silverman and Baum, 2002). These observations suggest that while competition attenuates cooperation at a given point in time, their association can be reinforcing over time, i.e., competition would prompt cooperation, which in turn may foster competition.

These observations also hint at another aspect of competition and cooperation, whose interplay can take place at different levels. Whereas most prior research has focused on competition at the *dyad level*, some scholars have studied it in a *firm-centric* alliance portfolio (e.g., Lavie, 2007), in a *multi-party alliance* (e.g., Lavie, Lechner, and Singh, 2007), in *ecosystems* (e.g., Henderson and Gawer 2007), or at the *industry* level (e.g., Gambardella and McGahan, 2010; Gnyawali and Park, 2011). While these can all be considered instances of network competition (Dagnino and Padula, 2002), their underlying dynamics are distinct. In an alliance portfolio, for instance, the focal firm can attempt to manage competitive tension by selecting partners and assigning different roles to competing partners (Lavie and Singh, 2012). However, in a multi-party alliance, such decisions must be reached in agreement with

other members of the alliance (Lavie *et al.*, 2007). In ecosystems, the firm depends on the independent decisions of other members that serve the same technological platform (Henderson and Gawer, 2007). A case in point is the cooperation between Google and Samsung on the Android platform, which does not preclude competition between these firms in the handset market. Interestingly, the interplay of competition and cooperation can transpire not only within such platforms but also across platforms.

Nonetheless, a distinction can be made between bilateral and multilateral interplay. A *bilateral interplay* involves only two firms that simultaneously compete and cooperate with each other. A *multilateral interplay* involves third parties. For instance, a firm may cooperate with multiple alliance partners that compete with each other rather than with the focal firm (e.g., Lavie, 2007). It may also compete indirectly with another firm by virtue of their independent cooperation with the same alliance partners (Gimeno, 2004; Ryu, McCann, and Reuer, forthcoming). Accordingly, scholars should study the distinction between the *direct* and *indirect* interplay of competition and cooperation at multiple levels of analysis. All in all, the nature of this interplay is richer and more complex than has been previously assumed and thus merits further investigation.

Antecedents and consequences of interplay

Research on competition explains firms' motivations for entering alliances with their direct competitors despite the expected competitive tension. These motivational antecedents are tied to environmental conditions such as the emergence or convergence of technologies, shortened product life cycles, and reduced costs and risks, which are typical of knowledge-intensive industries (Gnyawali and Park, 2011; Raza-Ullah, Bengtsson, and Kock, 2014). Another condition includes the decline or maturity of an industry, which intensifies competitive pressure and in turn induces cooperation (Luo, 2007). Organizational antecedents include the relative (small) size of a firm, which calls for it to improve its competitive position (Gnyawali

and Park, 2009) or asymmetries in firms' assets, markets, and business foci, which attenuate the competitive tension between prospective partners (Raza-Ullah *et al.*, 2014). Asymmetries in firms' assets may, for instance, drive their resource interdependence and thus guide their motivation to compete versus cooperate with each other. Scholars have also underscored various other motivations for engaging in coopetition besides mitigating competitive pressure. These include, for example, learning and accessing required resources, entering new markets, and reducing uncertainty (Gnyawali, He, and Madhavan, 2008; Gnyawali and Park, 2009; Luo, 2007). However, most of these motivations have been previously ascribed to the formation of horizontal alliances on a broader level and thus fall short of revealing unique nuances relating to the interplay of competition and cooperation. Scholars are therefore advised to identify factors that shape the balance between competition and cooperation at the firm, dyad, and network levels (Bengtsson and Kock, 2014). It might also be interesting to investigate the roots of competitive and cooperative behaviors by studying managers' cultural differences, personality traits, and values (e.g., egoism versus altruism), which may also drive their firms' tendencies to compete versus to cooperate. Social ties between managers can also influence their competitive behaviors. For instance, friendships among Australian hotel executives have been shown to have a material effect on their hotel yields (Ingram and Roberts, 2000), while marriages between the families who own chaebols in Korea have affected their market entry and exit decisions (Han, Shipilov, and Greve, 2017).

Research on the consequences of coopetition tends to echo the motivations for coopetition by identifying potential outcomes such as resource access and pooling, cost sharing, and reduced risk (Bouncken *et al.*, 2015). These benefits can create value that ultimately enhances firm performance (Afuah, 2000; Ritala and Hurmelinna-Laukkanen, 2009). Coopetition can also contribute to various types of innovation, including incremental and radical innovation, as well as to the diversity of technologies (e.g., Ritala and

Hurmelinna-Laukkanen, 2013; Ritala and Sainio, 2014). However, empirical research has produced inconsistent findings, with some studies uncovering negative performance implications (e.g., Afuah, 2000). This hints to possible boundary conditions associated with the partner firms' abilities to manage the tension between competition and cooperation. For instance, coopetition may foster innovation only when the partners maintain interdependence and trust (Bouncken and Fredrich, 2012). It may also inhibit technological or market discontinuity that entails greater novelty (Bouncken and Kraus, 2013) or facilitate aggressive competitive behavior in certain network structures (Gnyawali et al., 2006). In fact, some studies underscore the challenges of managing the tension between competition and cooperation (e.g., knowledge leakage, opportunistic behavior, or lack of commitment), which can undermine the stability of the alliance and lead to its dissolution (e.g., Gnyawali and Park, 2009). Since the interplay of competition and cooperation has the potential both to create or destroy value, it is essential to identify boundary conditions that foster favorable consequences for the firms involved. Future research might also consider additional consequences besides innovation, financial performance, and the survival of alliances and the partner firms. It would be worthwhile, for instance, to consider how the interplay of competition and cooperation facilitates growth strategies such as diversification and vertical integration as well as market entry and strategic positioning via differentiation. Another interesting avenue for future research would be to test the performance implications of different forms of balance between competition and cooperation.

Value creation and appropriation is likewise a recurrent theme in research on the interplay of competition and cooperation. It has been argued that firms cooperate to create value and then compete to capture a share of the joint value created (Brandenburger and Nalebuff, 1996). For instance, a software firm may leverage the financial and marketing resources of its alliance partners to create value and then bargain for its share of that value

(Lavie, 2007). Similarly, automobile manufacturers may compete fiercely, yet cooperate with component suppliers in their respective value chains as part of their keiretsu (Dyer and Nobeoka, 2000). Hence, value creation has been typically tied to cooperation, whereas value appropriation has been ascribed to competition. But this need not be always the case. In a keiretsu, for example, the automobile manufacturers and their component suppliers may compete for their share of value created. Interfirm competition can in turn create value by motivating rival firms to invest in technology development, enhanced efficiency, or an improved value proposition to customers (Chen and Miller, 2015). However, once the required investment exceeds the expected value, “Red Queen” competition emerges whereby firms fail to create more value by matching their competitors’ investments (Derfus *et al.*, 2008). In such a case, the created value may be fully captured by customers, suppliers, or complementors. Similarly, value appropriation may be tied to cooperation rather than to competition. For instance, firms that pool their purchasing orders can enjoy economies of scale and capture more value when bargaining with a common supplier. Collusion is another form of tacit cooperation that enables firms to coordinate prices and avoid competitive pressure, which in turn enable them to capture more value at the expense of their customers (Tirole, 1988). These instances illustrate how both competition and cooperation can either increase or decrease the value created and appropriated by firms. The valence of that value often depends on the nature of the interplay and the relationship between the firms involved. Recent research suggests that factors which contribute to value creation in alliances, such as complementarities and symmetric governance, also encourage firms to compete more fiercely in an effort to capture value from those alliances (Panico, 2017). We encourage scholars to sidestep the conventional wisdom in studying the implications of competition and cooperation for value creation and appropriation.

A related theme distinguishes private benefits from common benefits. Common

benefits cannot be produced independently and are thus jointly created by the firm and its partner in the course of their alliance. In turn, the firm and its partner independently accrue private benefits from their collaboration, possibly at the expense of the other party (Khanna *et al.*, 1998). In other words, firms can create and capture both private and common benefits but these benefits are interrelated. For instance, when a firm seeks private benefits by leveraging its partner's knowledge beyond the scope of their alliance, the partner may restrict knowledge exchange and thus reduce the common benefits shared with the firm (Lavie, 2006). Scholars should carefully study how competitive and cooperative behaviors influence the configuration of common and private benefits in alliances, and how the two types of benefits are interrelated. The disparity between common and private benefits illustrates a fundamental tradeoff between competition and cooperation. Firms often face the challenge of reconciling the conflicting behaviors associated with them.

Managing the tension between competition and cooperation

The tension between competition and cooperation arises because of the inherent tradeoffs between these activities. These tradeoffs emerge because competition and cooperation call for conflicting corporate behaviors. In particular, cooperation entails sharing and exchanging resources with a partner, whereas competition calls for protecting such assets and restricting undesirable knowledge leakage that can benefit a competitor (Kale *et al.*, 2000). Cooperation facilitates alignment of objectives and coordination of activities, whereas competition encourages firms to pursue their private agendas and can elicit free riding and opportunistic behavior (Khanna *et al.*, 1998). Indeed, research on cooperation suggests that competitive dynamics restrict partners' commitments in alliances and lead to unstable relationships that may be terminated prematurely (Gnyawali and Park, 2009). Reconciling these conflicting motivations and managing their inherent contradictions is far from trivial. A paradox emerges because competition and cooperation are contradictory, yet firms often engage in both types

of interactions in order to achieve desirable outcomes. A resolution involves relaxing this tension by buffering competition from cooperation (Poole and Van de Ven, 1989) so that a firm can restrict its concurrent engagement in competition and cooperation or pursue the two in separate domains or via separate organizational units. Alternatively, the firm may seek to develop capabilities and routines that support concurrent competition and cooperation with the same counterparts.

One approach to managing the tension between competition and cooperation involves the *organizational separation* of the corresponding activities. Such separation is straightforward in a multidivisional firm: one organizational unit cooperates with a partner firm while another competes with it. Although this separation can attenuate the tension, it requires coordination across units to align corporate objectives and prevent exploitation of the cooperating unit by the partner. Organizational separation is also possible within the same organizational unit as long as the firm assigns different managers to the cooperative and competitive engagements, installs organizational buffers such as computer firewalls, and establishes clear procedures for maintaining separation between the engagements (Lavie and Singh, 2012). This approach requires either a high level of trust between the firm and the partner or a social sanction mechanism as well as a delicate organizational design.

A second approach to coping with this tension is *temporal separation*, whereby the firm oscillates between competition and cooperation over time, with the aim of restricting the time periods during which it competes and cooperates simultaneously with the same partner. The shorter the overlap periods and the longer the periods of pure competition or cooperation, the weaker the expected tension. However, the frequency of transitions may leave room for strategic behavior, whereby the partner leverages the collaboration to learn and improve its competitive position in anticipation of the period of competition. This approach is not free from organizational challenges, given the need to manage the transitions and frequently

modify strategic behavior while overcoming path dependencies and inertial routines.

A third approach to managing the tension involves a *domain separation* in which the firms engage in simultaneous competition and cooperation yet these activities take place in different domains (e.g., product lines, geographical markets, or value chain activities). For instance, firms may cooperate in preliminary R&D yet compete in product development and the marketing of their competing products (e.g., Sakakibara, 2002). Such separation can reduce the tension as long as the interdependence between domains is minimal. However, to the extent that products are complementary, intangible, or foster economies of scope, the separation may be partial and thus leave room for strategic behavior, for instance, when a firm favors product components developed internally over those furnished by its partner. Given the above, it would therefore seem that each solution which entails separation only transforms the tension between competition and cooperation, while still requiring some integration or coordination across boundaries.

A final approach to managing the tension between competition and cooperation involves maintaining contextual integration by embracing the paradoxical nature of these contradictory activities and developing appropriate mechanisms and organizational routines to manage them simultaneously within the same organizational unit. This often involves the synthesis of competition and cooperation by means of differentiation and integration by unit managers (Schad *et al.*, 2016). This approach is however likely to be cognitively and administratively taxing. It requires careful delineation of the knowledge that a firm is willing to share with a partner under certain circumstances as well as the devising of isolating mechanisms and particular means for protecting its remaining proprietary knowledge (Kale *et al.*, 2000). Firms that follow this approach might hire employees who can cope with the uncertainty and complexity of these ambivalent relationships while nurturing the mutual trust, commitment, and conflict resolution mechanisms that are required to manage the unavoidable

tension in the firms' relations. Indeed, scholars have indicated that such an approach entails the adopting of a cooperative mindset or integrative framing and leveraging of relevant managerial experience, while ensuring availability of complementary assets that generate potential benefits which can offset the risks of competition (Gnyawali and Park, 2011; Stadler and Van Wassenhove, 2016).

Despite some preliminary qualitative research (e.g., Gnyawali and Park, 2011) and efforts to reconceptualize the paradoxical relationship between competition and cooperation (Chen, 2008; Chen and Miller, 2015), little is known about firms' approaches to managing the tension between competition and cooperation. The tradeoffs between these activities can be transformed and managed, but not eliminated, unless competition and cooperation are viewed as interdependent. Scholars should therefore delve more into the aforementioned approaches and assess their effectiveness. When would a firm opt for one approach over the other? Which approach is most effective, and under what circumstances? How can firms implement each approach, and what are the implications for alliance management and governance? What are the consequences of having partner firms pursue distinct approaches in their joint relationship? How can firms combine different approaches such as contextual integration and temporal separation? These are just some of the open questions concerning the management of the interplay of competition and cooperation.

Our roadmap setting out this research agenda is summarized in Figure 1. Table 1 lists some of the promising questions for future research. In the next section, we will discuss the articles included in this special issue. These articles make some strides in addressing the questions that we raise yet leave promising research opportunities for future scholarship. Our hope is that these ideas and the contributions of the articles in this special issue will advance this important discussion on the ways in which scholars can bring together these two pillars of research in strategic management.

****Insert Figure 1 and Table 1 about here****

OVERVIEW OF THE ARTICLES IN THE SPECIAL ISSUE

This special issue includes nine thought-inspiring articles, two of which are theoretical and seven of which are empirical. Of the latter, two draw on qualitative and five rely on quantitative research methods. This diversity indicates that the interplay of competition and cooperation can be studied using different lenses and analytical approaches, each providing a unique perspective on this interesting phenomenon. Although the articles in this special issue can be assigned to multiple categories in our proposed Roadmap for the Interplay of Competition and Cooperation (Figure 1), the following overview maps each of these studies to the most salient category. Together, these articles cover certain aspects of the themes in this special issue, including the antecedents of the interplay, the nature of the interplay, the management of the tension and its consequences, as well as the broader implications of the interplay of competition and cooperation. Nevertheless, they also leave room for future research, as they only partially address the themes that are evident in the roadmap.

Antecedents of the interplay

Two of the studies described in the articles underscore the antecedents of the interplay between cooperation and competition, revealing new insights into the rationale or motivation of firms to cooperate with competitors. The theoretical article, “Discontinuities, Competition, and Cooperation: Coopetitive Dynamics between Incumbents and Entrants” by Cozzolino and Rothaermel examines environmental and organizational antecedents of coopetition between new entrants and incumbent firms in the form of complementary asset discontinuities. These are technological changes that do not devalue incumbents’ upstream core knowledge but rather their downstream complementary assets in manufacturing and distribution. The authors examine how different types of technological discontinuities affect competition and collaboration in an industry when the discontinuity induces cooperation

between incumbents and new entrants. They also theorize on why firms actually compete and cooperate following a discontinuity. Cozzolino and Rothaermel posit that the strength of the appropriability regime determines the form of incumbent-new entrant interaction: when the appropriability regime is weak, incumbents are likely to acquire new entrants, whereas when the regime is strong, incumbents ally with new entrants. Furthermore, following complementary-asset discontinuities, incumbents are expected to cooperate amongst themselves as well as with new entrants that bring new complementary assets. Organizational characteristics also play an important role: high status incumbents are more likely to work with one another, while low status incumbents are more likely to partner with the high-status new entrants. The article also considers how coopetition between firms changes over time, especially how it moves from dyadic interactions to the development of platforms and ecosystems through the changes in the firms' identities.

In their empirical article, "An Identity Perspective on Coopetition in the Craft Beer Industry," Blake, Frid, Galloway, and Huyghe use an inductive field study to examine the organizational antecedents of coopetition. The authors use the notion of organizational identity as a mechanism that makes the firm determine the appropriate balance between cooperation and competition. Identity can be considered an organizational antecedent of coopetition, while collective norms, another mechanism in their study, represents a motivational antecedent to coopetition. The unit of analysis is the firm, but the insights can be aggregated to the level of a category that loosely resembles a strategic group in an industry. Cooperation between incumbents and new entrants is favored over competition when members of one category, e.g. craft breweries, develop an oppositional identity to members of another category, e.g. industrial breweries, and when there is a shared belief that the rising tide lifts all boats and that advice should be paid forward among the category members. Under these conditions, tensions between competition and cooperation within the category

are reduced. For example, collaborating partners exchange knowledge, reduce their probability of opportunistic behavior, increase their commitment to the others, and build more stable relationships. This leads to a higher probability that the collaborating firms will survive and a more stable emergence of a craft brewery category. Hence, this study informs us not only about the antecedents of the interplay but also about the means by which firms can mitigate the tensions between competition and cooperation.

The nature of competition and cooperation

One of the articles in this special issue sheds new light on the nature of competition and cooperation and its implications for their interplay. In “Attacking Your Partners: Strategic Alliances and Competition between Partners in Product Markets”, Yang, Cui, and Vertinsky look at the explicit nature of this interplay. They integrate alliance learning and social network perspectives to examine how the nature of a firm’s alliances affects its propensity to compete with its partners. The authors focus on relative exploration, defined as the proportion of exploratory alliances in the collaborative portfolio between a firm and its partner. In a dataset from the U.S. pharmaceutical industry collected over 20 years, the authors find an inverted U-shaped relationship between relative exploration in a dyad and competition between its members. This is because initial increases in the relative exploration incentivize both firms to behave opportunistically due to the temptations to exploit private benefits. As the relative exploration in a dyad increases beyond a certain point, the space for new discovery increases, and the interests of dyad members become more aligned. Hence, their propensity for competition declines. Alternative governance mechanisms in the form of relational and structural embeddedness reduce dyad members’ propensity to convert increases in their relative exploration into competition, while the power imbalance in a dyad increases this propensity. In other words, the impact of relative exploration on competition is dampened by the strength of the partners’ ties and by the presence of common partners but

augmented by differences in the firms' degree centrality. The study highlights the continuous nature of cooptation as firms continuously experience a tradeoff between relative exploration in their alliances and the intensity of competition, which is in turn moderated by the nature of their embeddedness (Gulati and Gargiulo, 1999).

Nature of the interplay and related tensions

Three articles in this special issue concentrate on various aspects of the interplay of competition and cooperation. A theory article "The Relational View Revisited: A Dynamic Perspective on Value Creation and Value Capture" by Hesterly, Dyer, and Singh extends the original formulation of the relational view by Dyer and Singh's (1998). This proposed four determinants of value creation and rents in alliances: complementary resources and capabilities, relation-specific assets, knowledge-sharing routines, and effective governance. The new article examines how cooperation and competition within relationships unfold over time. In this revisited formulation of the relational view, complementary resources provide potential for value creation and represent a state variable, whilst relation-specific assets, knowledge-sharing routines, and effective governance are instrumental in realizing this potential. Interdependence between complementary partner resources influences relationship-specific investments, governance mechanisms, and knowledge sharing. This article advances several propositions that can explain prior inconsistent findings in articles which built on the relational view. For example, when interdependence between the complementary resources of alliance partners is low, relational value creation over time might follow an inverted U-shaped pattern. Low interdependence implies that partners can quickly assemble the alliance to take advantage of the available opportunity and disassemble it once the opportunity is gone. Yet when interdependence between the complementary resources of alliance partners is high, value creation over time might follow an S-shaped pattern because high interdependence alliances are difficult to decompose. Once the initial opportunity for value

creation has been exploited, and the alliance shows signs of strain, the partners will invest in building appropriate governance and knowledge sharing mechanisms to sustain value creation. With respect to private and common benefits, the authors propose that the increase in investments for replicating a partner's knowledge and resources will increase the percentage of the subsequent value that the focal firm can generate in the alliance. Ultimately, this article focuses on the nature of the interplay between competition and cooperation, highlights the resulting tension in the form of learning races or imbalance in making relation-specific investments, examines the consequences of this tension in the form of the split between common and private benefits, and links them to the implications of cooperation for relational rents and value creation.

An inductive field study is also used in the article "How Firms Navigate Cooperation and Competition in Nascent Ecosystems". In this study, Hannah and Eisenhardt identify three strategies for competing in ecosystems: bottleneck, component, and system. Like Hesterly *et al.* (this issue), Hannah and Eisenhardt focus on the nature of the interplay between competition and cooperation. Companies following a component strategy focus their efforts on developing specific components in an ecosystem and cooperate with others to gain access to other components. A system strategy implies that a firm spreads its efforts across multiple components in its ecosystem. Finally, a bottleneck strategy implies that the firm focuses on a critical component of the ecosystem that hinders its growth at a given point in time. When that bottleneck changes as the ecosystem matures, the firm's focus changes as well. While the component strategy implies cooperation as the firm's dominant strategy, and the system strategy suggests competition as the dominant strategy, the firms that follow bottleneck strategy have to find a balance between cooperation and competition. The key finding in this in-depth multiple-case study of the solar industry in the United States is that firms succeed when they address a bottleneck and cooperate to assemble the entire ecosystem. Such firms

must compete with other ecosystem members through the growth of their market power. They must also engage in coopetition even if they address the bottleneck: focusing solely on cooperation or competition is insufficient. Hence, this study demonstrates that in nascent industries competition is a necessary but insufficient condition for superior performance: Firms must instead combine coopetition with a bottleneck strategy to succeed.

Similar to Hannah and Eisenhardt's study, Ranganathan, Ghosh, and Rosenkopf also explore how firms compete in ecosystems in their article "Competition-Cooperation Interplay During Multi-Firm Technology Coordination: The Effect of Firm Heterogeneity on Conflict and Consensus in a Technology Standards Organization". The authors theorize about the firm-level antecedents of competitive tensions within these organizations by examining how competitive tensions and cooperative motivations affect firms' technology coordination activities. In their empirical study of firms' voting patterns in a technology standards-setting organization over a 14-year period, the authors find that when firms end up in competitive markets, they exhibit greater support for the common standards therein. However, when they possess a broad array of complementary products, i.e. experience a lower intensity of competition, their support for specific standards is tempered. Furthermore, Ranganathan *et al.* show that firms with greater multi-party experience are more likely to achieve consensus in standards negotiations. This echoes the finding of Blake *et al.* (this issue) that denser embeddedness within a nascent category increases the firm's propensity to collaborate with others in that category. Ultimately, Ranganathan *et al.* illustrate how multilateral interplay of competition and cooperation affects the tension between commitment and opportunism, which in turn affects the interplay between a firm's value creation and appropriation from setting technological standards.

Consequences and implications of the interplay

Several articles focus on the consequences and implications of the interplay of competition

and cooperation. In “The Interplay of Competitive and Cooperative Behavior and Differential Benefits in Alliances”, Arslan builds on a transaction costs perspective and game theory to offer a systematic study of the tradeoffs between private and common benefits in alliances (Khanna *et al.*, 1998) as the consequences of cooperation. Arslan suggests that opportunistic behavior for private benefit extraction can have detrimental effects on the parties’ ability to realize common benefits. This can result from the underinvestment of resources, the overprotection of proprietary resources, or from retaliation in an alliance. The unit of analysis here is the dyad. This study empirically evaluates differential benefits in alliances that accrue to partners at the time of alliance announcement. It also highlights the fact that the partners’ competitive behaviors inhibit realization of the common benefit potential of their alliance, thus making private benefits extraction conditional upon their competitive behaviors. The variables of interest are the common benefit potential of the alliance, the balance of the distribution of the common benefits, task interdependence of alliance partners, and the dominant operational control. Like Cozzolino and Rothaermel (this issue), Arslan explores the environmental antecedent of cooperation (in the form of alliance industry profitability) as well as the organizational antecedent (in the form of CEO appointments) as an indicator of dominant operational control in an alliance. The key finding is that a partner can obtain high differential benefits from the alliance, operationalized as the abnormal stock market return, when it holds a dominant operational control in a collaboration characterized by either reciprocal or sequential interdependence. This study clearly highlights the tensions between common versus private benefits that are inherent in any cooperative relationship and their implications for the partners’ stock market performance.

In “Performance Feedback as a Cooperation ‘Switch’: A Behavioral Perspective on the Success of Venture Capital Syndicates Among Competitors”, Makarevich examines the organizational antecedents as well as the performance implications of cooperation. The study

described in this article draws on performance feedback theory (e.g. Shipilov, Li, and Greve, 2011) to advance a behavioral perspective on the implications of coopetition in the venture capital syndicates context. Such syndicates represent an example of cooperation among funders who are also rivals in deals through their investments in competing start-ups. The syndicate represents a multi-party level of analysis. The key performance indicator for a venture capital (VC) syndicate is the probability of taking a new venture to an initial public offering (IPO) stage. The higher the competition amongst VCs in a syndicate, the lower the probability of an IPO. When syndicate members underperform their aspirations, they have a better chance of an IPO than in syndicates whose firms outperform their aspirations. This effect is stronger when there is an alignment of syndicate members' motivations, i.e. when the common benefits of collaboration outweigh the private benefits. These insights are derived from the analysis of 33 years of data on the performance, history, and social aspirations of U.S.-based venture capitalists.

Complementing Makarevich's (this issue) study of VC syndicates, Asgari, Tandon, Singh, and Mitchell examine another form of a multilateral association, namely alliance portfolios (Lavie, 2006; Hoffmann, 2007) in their article "Creating and Taming Discord: How Firms Manage Embedded Competition in Alliance Portfolios to Limit Alliance Termination." Their study examines the extent to which competition among a firm's portfolio members leads them to terminate relationships, thus underscoring an implication of coopetition. It also proposes four factors that can mitigate termination risks: alliance governance, social cohesion of the portfolio, number of paths through which firm resources can be transferred in a portfolio, and similarity between the focal firm and its partner. Asgari *et al.*'s analysis of alliances among biopharmaceutical firms between 1990 and 2000 shows support for the main hypothesis—competition between a focal firm's partners does indeed increase the propensity of alliance termination with any one of these partners. However, these

effects are dampened by the similarity between the focal firm and its partner as well as by the number of paths through which resources are transferred within the portfolio. In other words, when the salience of the focal firm as a conduit of resource loss is low, and when it can help its partner to recognize and address collaboration challenges, the latter is less likely to terminate the alliance despite competition within the firm's portfolio.

Conclusion

Taken together, the articles in this special issue make important strides in uncovering some previously unexplored facets of the interplay of competition and cooperation, in line with our proposed roadmap (Figure 1). We believe that this special issue paves the way for further examination of the various ways in which competition and cooperation can interplay. Given the centrality of these concepts to strategic management and the limited integration of the corresponding research streams to date, it also sets an exciting and important research agenda for the field.

REFERENCES

- Afuah A. 2000. How much do your co-opetitors' capabilities matter in the face of technological change? *Strategic Management Journal*, 21(3), 387–404.
- Ahuja G. 2000. Collaboration networks, structural holes, and innovation: A longitudinal study. *Administrative Science Quarterly*, 45: 425–455.
- Ahuja G, Soda G, Zaheer A. 2012. The genesis and dynamics of organizational networks. *Organization science*, 23(2), 434-448.
- Amir Y, Lavie D, Hashai N. Forthcoming. Multimarket Competition and Alliance Formation. *Frontiers of Strategic Alliance Research: Negotiating, Structuring and Governing Partnerships*, in Contractor FJ, Reuer J. (Eds.), Cambridge University Press.
- Ansari S, Garud R, Kumaraswamy A. 2016. The disruptor's dilemma: TiVo and the U.S. television ecosystem. *Strategic Management Journal*, 37, 1829-1853.
- Ang SH. 2008. Competitive intensity and collaboration: Impact on firm growth across technological environments. *Strategic Management Journal*, 29(10), 1057-1075.
- Barney JB. 1991. Firm resources and sustained competitive advantage. *Journal of Management*, 17(1): 99-120.
- Bengtsson M, Kock S. 2000. "Coopetition" in business networks — to cooperate and compete simultaneously. *Industrial Marketing Management*, 29(5), 411–426.

- Bengtsson M, Kock S. 2014. Coopetition. Quo Vadis? Past accomplishments and future challenges. *Industrial Marketing Management*, 43(2), 180-188.
- Bengtsson M, Raza-Ullah T. 2016. A systematic review of research on coopetition: Toward a multilevel understanding. *Industrial Marketing Management*, 57, 23-39.
- Bertrand O, Lumineau F. 2016. Partners in crime: The effects of diversity on the longevity of cartels. *Academy of Management Journal*, 59(3), 983-1008.
- Bouncken RB, Fredrich V. 2012. Coopetition: Performance implications and management antecedents. *International Journal of Innovation Management*, 16(05), 1250028-1-28
- Bouncken RB, Kraus S. 2013. Innovation in knowledge-intensive industries: The double-edged sword of coopetition. *Journal of Business Research*, 66(10), 2060–2070.
- Bouncken RB, Gast J, Kraus S, Bogers M. 2015. Coopetition: a systematic review, synthesis, and future research directions. *Review of Managerial Science*, 9(3), 577-601.
- Brandenburger AM, Nalebuff BJ. 1996. *Co-opetition*. New York: Bantam Doubleday Dell Publishing Group.
- Chen MJ. 1996. Competitor analysis and interfirm rivalry: Toward a theoretical integration. *Academy of management review*, 21(1), 100-134.
- Chen MJ. 2008. Reconceptualizing the competition-cooperation relationship: A transparadox perspective. *Journal of Management Inquiry*, 17(4), 288-304.
- Chen MJ, Mille, D. 2015. Reconceptualizing competitive dynamics: A multidimensional framework. *Strategic Management Journal*, 36(5), 758-775.
- Conti R, Gambardella A, Novelli E. Forthcoming. Specializing in generality: Firm strategies when factor markets work, *Industrial and Corporate Change*
- Dagnino GB, Padula G. 2002. Coopetition strategy – A new kind of interfirm dynamics for value creation, in EURAM – e European Academy of Management Second Annual Conference “Innovative Research in Management”. Stockholm, 9–11 May 2002.
- Das TK, Bing-Sheng T. 2000. Instabilities of Strategic Alliances: An Internal Tensions Perspective. *Organization Science*, 11(1): 77-101.
- Das TK, Teng BS. 2000. Instabilities of strategic alliances: An internal tensions perspective. *Organization Science*, 11(1), 77–101.
- Derfus PJ, Maggitti PG, Grimm CM, Smith KG. 2008. The Red Queen effect: Competitive actions and firm performance. *Academy of Management Journal*, 51(1), 61-80.
- Dorn S, Schweiger B, Albers S. 2016. Levels, phases and themes of coopetition: a systematic literature review and research agenda. *European Management Journal*, 34: 484-500.
- Dyer J, Nobeoka K. 2000. Creating and Managing a high performance knowledge sharing network: The Toyota case. *Strategic Management Journal*, 21, 345-367.

- Dyer J, Singh H. 1998: The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage. "The Academy of Management Review", Vol. 24(4), pp. 660-679.
- Eisenhardt KM, Schoonhoven CB. 1996. Resource-based view of strategic alliance formation – Strategic and social effects in entrepreneurial firms. *Organization Science*, 7(2), 136–150.
- Gambardella A, McGahan A. 2010. Business-model innovation: General purpose technologies and their Implications for industry structure. *Long Range Planning*, 43, 262-271.
- Gans JS, Stern S. 2003 The Product Market and the Market for "Ideas" Commercialization Strategies for Technology Entrepreneurs. *Research Policy*, 32, 333-350.
- Gimeno J. 2004. Competition within and between networks: The contingent effect of competitive embeddedness on alliance formation. *Academy of Management Journal*, 47(6), 820-842.
- Gimeno J, Woo CY. 1996. Hypercompetition in a multimarket environment: The role of strategic similarity and multimarket contact in competitive de-escalation. *Organization Science*, 7(3), 322-341.
- Gnyawali DR, Park BJ. 2009. Co-opetition and technological innovation in small and medium-sized enterprises: A multilevel conceptual model. *Journal of Small Business Management*, 47(3), 308–330.
- Gnyawali DR, Park BJ. 2011. Co-opetition between giants: Collaboration with competitors for technological innovation. *Research Policy*, 40(5), 650–663.
- Gnyawali DR, He JY, Madhavan R. 2006. Impact of co-opetition on firm competitive behavior: An empirical examination. *Journal of Management*, 32(4), 507–530.
- Gnyawali DR, He JY, Madhavan R. 2008. Co-opetition: promises and challenges. *21st century management: A reference handbook*, 386-398.
- Gulati R. 1998. Alliances and networks. *Strategic Management Journal*, 19: 293–317.
- Gulati R, Gargiulo M. 1999. Where do interorganizational networks come from? *American Journal of Sociology*, 104(5): 177-231.
- Gulati R, Lawrence PR, Puranam P. 2005. Adaptation in vertical relationships: Beyond incentive conflict, *Strategic Management Journal*, 26(5): 415-440.
- Gulati R, Nohria N, Zaheer A. 2000. Strategic networks. *Strategic management journal*, 203-215.
- Hamel G. 1991. Competition for competence and interpartner learning within international strategic alliances. *Strategic management journal*, 12(S1), 83-103.
- Han J, Shipilov AV, Greve HR. 2017. Unequal bedfellows: gender role-based deference in multiplex ties between Korean business groups. *Academy of Management Journal*, 60(4): 1531-1553.
- Hennart J-F. 1988. A transaction costs theory of equity joint ventures. *Strategic Management Journal*, 9, 361-374. Gawer A, Henderson R. 2007. Platform owner entry and innovation in

- complementary markets: Evidence from Intel. *Journal of Economics & Management Strategy*, 16(1), 1-34.
- Hoffmann WH. 2007. Strategies for managing a portfolio of alliances. *Strategic Management Journal*, 28: 827–856.
- Ingram P, Roberts P. 2000. Friendships among competitors in the Sydney hotel industry. *American Journal of Sociology*, 106(2): 387–423.
- Kale P, Dyer J, Singh H. 2002. Alliance capability, stock market response, and long-term alliance success: The role of the alliance function. *Strategic Management Journal*, 23: 747–767.
- Kale, P, Singh, H, Perlmutter H. 2000. Learning and protection of proprietary assets in strategic alliances: Building relational capital. *Strategic Management Journal*, 21(3), 217–237.
- Kapoor R, Lee JM. 2013. Coordinating and competing in ecosystems: How organizational forms shape new technology investments, *Strategic Management Journal*, 34(3): 274-296.
- Kapoor R, McGrath PJ. 2014. Unmasking the interplay between technology evolution and R&D collaboration: evidence from the global semiconductor manufacturing industry, 1990–2010. *Research Policy*, 43(3), 555-569.
- Khanna T, Gulati R, Nohria N. 1998. The dynamics of learning alliances: Competition, cooperation, and relative scope. *Strategic Management Journal*, 19(3), 193–210.
- Kogut B. 1988. Joint ventures: Theoretical and empirical perspectives. *Strategic management journal*, 9(4), 319-332.
- Lavie D, Singh H. 2012. The evolution of alliance portfolios: the case of Unisys. *Industrial and Corporate Change*, 21(3), 763-809.
- Lavie D. 2006. The competitive advantage of interconnected firms: An extension of the resource-based view. *Academy of management review*, 31(3), 638-658.
- Lavie D. 2007. Alliance portfolios and firm performance: A study of value creation and appropriation in the U.S. software industry. *Strategic Management Journal*, 28: 1187–1212.
- Lavie D, Lechner C, Singh H. 2007. The performance implications of timing of entry and involvement in multipartner alliances. *Academy of Management Journal*, 50(3), 578-604.
- Luo Y 2007. A coopetition perspective of global competition. *Journal of World Business*, 42(2), 129-144.
- Oxley JE, Sampson RC, Silverman BS. (2009). Arms race or détente? How interfirm alliance announcements change the stock market valuation of rivals. *Management Science*, 55(8), 1321-1337.
- Ozmel U, Yavuz D, Reuer J, Zenger T. 2017. Bargaining power, network effects and value appropriation in alliances: Evidence form high-tech R&D alliance contracts. *Organization Science*, 28(5), 947-964

- Panico C. 2017. Strategic interaction in alliances. *Strategic Management Journal*, 38(8), 1646-1667
- Parkhe A, Wasserman S, Ralston DA. 2006. New frontiers in network theory development. *Academy of management Review*, 31(3), 560-568.
- Poole MS, Van de Ven AH. 1989. Using paradox to build management and organization theories. *Academy of management review*, 14(4), 562-578.
- Porac JF, Thomas H. 1990. Taxonomic mental models in competitor definition. *Academy of management Review*, 15(2), 224-240.
- Porter ME. 1980. *Competitive Strategy*. New York, NY: Free Press.
- Raza-Ullah T, Bengtsson M, Kock S. 2014. The coopetition paradox and tension in competition at multiple levels. *Industrial Marketing Management*, 43(2), 189–198.
- Ritala P, Hurmelinna-Laukkanen P. 2009. What's in it for me? Creating and appropriating value in innovation-related coopetition. *Technovation*, 29(12), 819–828.
- Ritala P, Hurmelinna-Laukkanen P. 2013. Incremental and radical innovation in coopetition — the role of absorptive capacity and appropriability. *Journal of Product Innovation Management*, 30(1), 154–169.
- Ritala P, Sainio LM. 2014. Coopetition for radical innovation: Technology, market and business-model perspectives. *Technology Analysis & Strategic Management*, 26(2), 155–169.
- Ryu W, Brush T, Reuer, JJ. 2015. How Multimarket Competition Fosters Collaboration: Mutual Forbearance and Market Power Effects. In *Academy of Management Proceedings* (Vol. 2015, No. 1)
- Ryu W, McCann B, Reuer JJ. Forthcoming. Geographic Co-location of Partners and Rivals: Implications for the Design of R&D Alliances. *Academy of Management Journal*,.
- Sakakibara M. 2002. Formation of R&D consortia: Industry and company effects. *Strategic Management Journal*, 23(11), 1033-1050.
- Schad J, Lewis MW, Raisch S, Smith WK 2016. Paradox research in management science: Looking back to move forward. *Academy of Management Annals*, 10(1), 5-64.
- Shipilov A, Gulati R, Kilduff M, Li S, Tsai W. 2014. Relational pluralism within and between organizations. *Academy of Management Journal*, 57(2), 449-459.
- Shipilov AV, Li SX, Greve HR. 2011. The prince and the pauper: Search and brokerage in the initiation of status-heterophilous ties. *Organization Science*, 22(6), 1418-1434.
- Silverman BS, Baum JAC. 2002. Alliance-based competitive dynamics, *Academy of Management Journal*, 45(4), 791-806.
- Smith KG, Ferrier WJ, Ndofofor H. 2001. Competitive dynamics research. *The Blackwell handbook of strategic management*, 309-354.

- Stadtler L, Van Wassenhove L. 2016. Coopetition as a paradox: Integrative approaches in a multi-company, cross-sector partnership. *Organization Studies*, 37, 655-685.
- Tirole J. 1988. *The theory of industrial organization*. MIT press.
- Tong TW, Reuer JJ. 2010. Competitive consequences of interfirm collaboration: How joint ventures shape industry profitability. *Journal of International Business Studies*, 41 (6), 1056-1073.
- Tsai W, Su K-H, Chen M-J. 2011. Seeing through the eyes of a rival: competitor acumen based on rival-centric perceptions. *Academy of Management Journal*, 54: 761–778.
- Wassmer U. 2010. Alliance portfolios: A review and research agenda. *Journal of Management*, 36(1): 141–171.
- Wernerfelt, B. 1984. A resource- based view of the firm. *Strategic management journal*, 5(2), 171-180.
- Yamanoi J. 2011. Competition networks: the influence of relational and structural embeddedness on competitive activity. *The 31st Annual Conference of the Strategic Management Society*, Miami, FL.
- Yu T, Cannella AA. 2013. A comprehensive review of multimarket competition research. *Journal of Management*, 39(1), 76-109.

Table 1: Promising Themes and Directions for Future Research

<p>Theme 1: Antecedents, processes, and consequences of cooperating with competitors</p> <ul style="list-style-type: none"> - How do organizational, environmental, and managerial factors drive coopeitition? - How do industry conditions and firms' resource configurations shape coopeitition? - Should firms simultaneously cooperate and compete or should they specialize by separating their partners from their competitors? - How can firms mitigate the risks of coopeititors' opportunistic behavior? - How do interfirm trust, joint governance, and routines emerge in coopeititive relations? - What are the various facets of coopeitition and their respective performance implications? - How does cooperation affect firms' competitive positions?
<p>Theme 2: Value creation and appropriation</p> <ul style="list-style-type: none"> - How do firms simultaneously manage value creation and appropriation in their relations? - What are the tradeoffs and challenges that firms encounter due to simultaneous competition and cooperation?
<p>Theme 3: Temporal dimension</p> <ul style="list-style-type: none"> - How do competition and cooperation coevolve at different levels? - How does competition elicit cooperation? - How and why do alliance partners begin to compete? - How do alliances formed between competitors differ from those between partners who subsequently become competitors?
<p>Theme 4: Capabilities and organization for supporting coopeitition</p> <ul style="list-style-type: none"> - What are the elements of a coopeitition capability? - How does a coopeitition capability differ from an alliance management capability? - How is a coopeitition capability developed and institutionalized? - How does the alignment of the coopeitition capabilities of partners shape performance?
<p>Theme 5: Applying methods for studying cooperation and competition networks</p> <ul style="list-style-type: none"> - How do competition networks shape cooperation networks and vice versa? - How does the interplay of competition networks and cooperation networks shape firm performance and drive industry entry and exit? - How do competitors of a firm's partners or partners of a firm's competitors influence its strategy and performance?
<p>Theme 6: Approaches for managing the tension between competition and cooperation</p> <ul style="list-style-type: none"> - What are the approaches for managing the tension between competition and cooperation? - When should a firm opt for one approach over the other? - Which approach is most effective, and under what circumstances? - How can firms implement each approach? - What are the consequences of having partner firms pursue distinct approaches?

Figure 1: A Preliminary Roadmap for the Interplay of Competition and Cooperation

