Managing network coopetition

Evidence from the banking industry

Abstract

Majority of researches on coopetition management focuses on dyadic relationships and little research are made at a network level. Our research, based on an in-depth case study in the banking industry, determines the principles of management of coopetition at a network level and what tools can be implemented. We observe how actors rely on management accounting tools to manage coopetitive tensions within the network. We propose a concrete characterization of network coopetition and our study suggests the existence of specific coopetitive tensions at the network level.

Key-words: coopetition, management, network, banking industry

1. Introduction

Coopetition literature recognized coopetition as a complex and paradoxical relationship (Bengtsson and Kock, 2014). Firms involved in coopetition relationships expect to benefit simultaneously from both the cooperation and the competition (Gnyawali and Park, 2011; Ritala, 2012). However, because of its paradoxical nature, coopetition can turn into a win-lose relationship (Fernandez et al., 2017). Thus, recent research on coopetition highlighted key role of management to turn coopetition into a successful relationship (Le Roy and Czakon, 2016). Because of its critical importance, coopetition management became a pervasive research question. Most of previous researches remained focused on discussing efficient management principles (Fernandez et al., 2014; Le Roy and Fernandez, 2015). However, we have little knowledge about how these principles can be used and implemented.

Moreover, most of previous researches on coopetition management remained focused on the analysis of dyadic relationships (Fernandez et al., 2014; Le Roy and Fernandez, 2015; Pellegrin-Boucher et al., 2017). Little attention has been paid to the management of coopetition at other lower levels such as the individual level (Raza-Ullah et al., 2014) or to upper levels such as the network level (Czakon and Czernek, 2016; Czakon et al., 2014).

It seems crucial to understand how coopetition relationships involving more than two actors i.e. network coopetition can be managed. Our research aims to fill this gap by answering the following research question: What principle and tools can be used to manage network coopetition? To do so, we conducted of a qualitative case study of a network coopetition in the French banking industry. We in-depth study the international banking network constituted by *Caisse d'Epargne* (CE) and *Banque Populaire (BP)*. Our findings present several interests. First, we illustrate coopetition relationships at the network level in the French banking industry. We provide details about the simultaneous competitive and the cooperative activities of the network's members. Thus, our study proposes a concrete characterization of network coopetition. Second, our study highlighted three major coopetitive tensions at the network level: tensions due to IT systems, tensions due to risk management activities and tensions due to the governance of the network. Our findings suggest the existence of specific coopetitive tensions at the network level. Finally, we provided insights into the operational management by these coopetitive tensions. Focusing on management control systems, we showed that the efficient management of coopetition at the network level relied on the interactive use of four levers of control. We explained how these levers can be combined which led us to identify a new management principle for coopetition at the network level: the interaction principle. Our findings various insights and contributions to the existing literature on coopetition and on management accounting.

1. Literature review

1.1. Network coopetition

Brandenburger and Nalebuff (1996), the first authors to introduce coopetition in strategic management literature, define coopetition broadly as the interplay situated in a "value net" between a focal firm, its customers, its suppliers and its complementors. Because this approach does not provide a relevant understanding of coopetition and its implications, Gnyawali and Park (2011) recommend a narrower definition of coopetition. Thus, coopetition can be defined as "*a paradoxical relationship between two or more actors simultaneously involved in cooperative and competitive interactions, regardless of whether their relationship is horizontal or vertical*" (Bengtsson and Kock, 2014).

One key feature of coopetition resides in the paradoxical combination of cooperative behaviors to create a common value and competitive behaviors to capture the value jointly created (Bengtsson and Kock, 2014; Ritala and Tidström, 2014). In order to capture this paradoxical value creation and value appropriation, we follow Fernandez and colleagues (2017) who define coopetition as "*a paradoxical relationship in which economic actors jointly create value through cooperative interactions, while simultaneously competing to capture part of that value*".

This relational view of coopetition invites to consider coopetition relationships at different levels: inter-individual, intra-organizational or inter-organizational.

Inter-individual coopetitive relationships appear within an organization at different hierarchical and functional levels (Ingram and Roberts, 2000; Oliver, 2004; Tidström, 2009). Internal coopetition fosters organizational learning and impacts positively the performance of the organization (Luo et al., 2006). A project-team or the individual represent relevant units to analyze inter-individual coopetition (Bengtsson and Raza-Ullah, 2016). To explore coopetition at this level, insights from sociology and psychology might be combined with existing literature on coopetition (Raza-Ullah et al., 2014).

Coopetitive relationships could also appear within the organization, between the subsidiaries of a multinational company (Luo, 2004), or between the different strategic business units (Luo, 2005; Luo et al., 2006; Tsai, 2002; Walley, 2007). Tsai (2002) presents the multidivisional firm of Chandler as a social structure for coopetition. The divisions are partners to achieve daily work and share internal knowledge. Simultaneously, these divisions are competing to access internal resources and external markets (Séran et al., 2016; Walley, 2007). This phenomenon is called intra-organizational coopetition (Walley, 2007), inter-units coopetition (Luo, 2004) or internal coopetition (Séran et al., 2016).

Inter-individual and intra-organizational coopetition are less investigated than inter-organizational coopetition. The inter-organizational level is the main focus adopted by previous scholars (Czakon et al., 2014; Dorn et al., 2016; Gast et al., 2015). A few researchers analyzed coopetitive relationships between firms and governments (Chaudhri and Samson, 2000; Luo, 2004) or even between governments. At the inter-organizational level, a key dimension is the number of actors involved in coopetitive relationships (Padula and Dagnino, 2007). Most of previous studies focused their attention on dyadic coopetition i.e. coopetition involving two actors (Chiambaretto and Fernandez, 2016; Gnyawali and Park, 2011; Yami and Nemeh, 2014) but coopetition relationships can also involve several different partners and calls for specific attention (Czakon et al., 2014; Rusko, 2014; Wilhelm, 2011). This latest form of coopetition is called network coopetition (Czakon and Czernek, 2016; Peng and Bourne, 2009; Sanou et al., 2016). Dyadic coopetition and network coopetition differ in terms of number of actors involved, from two to several, but also in terms of type of partners involved. While dyadic coopetition concerns direct or indirect competitors (Fernandez et al., 2014; Gnyawali and Park, 2011), network coopetition involve a larger range of stakeholders: clients, suppliers, substitutes etc. Thus, specific attention is required to address the complexity of the phenomenon (Czakon and Czernek, 2016; Sanou et al., 2016). This is the purpose of this research.

1.2. Network coopetitive tensions

Coopetition relationships combine simultaneously the advantages of collaboration and thus appear as win-win strategies (Quintana-Garcia and Benavides-Velasco, 2004). Coopetition is especially beneficial for innovation (Bouncken et al., 2015, 2017; Ritala, 2012). However, because coopetition is by nature paradoxical, it creates tensions at different levels (Fernandez and Chiambaretto, 2016; Fernandez et al., 2014; Tidström, 2014).

Given that coopetitive tensions may come from several sources, Fernandez and colleagues (2014) develop a multi-level conceptual framework to understand key drivers of tension in coopetition and key approaches to managing that tension.

At the individual level, partners face continual pressures to manage cooperative and competitive tensions that emerge from collaboration with competitors. Explicit and implicit strategic priorities may lead to different mindsets and behaviors with respect to managers (Fernandez et al., 2014), and hence, belonging to opposing firms is a source of cognitive dissonance and psycho-cognitive stress for managers (Dekker, 2016; Séran et al., 2016).

At the intra-organizational level, units cooperate to simultaneously develop synergies and scale effects, while also competing for internal limited technological human and financial resources (Luo et al., 2006; Séran et al., 2016).

At the inter-organizational level, the first tension arises due to the confrontation between common value creation and private value appropriation (Gnyawali et al., 2012). A partner which increases its resources and competences so that they exceed those of its coopetitor will gain a competitive advantage in future competition. As a consequence, tensions may then appear when each partner attempts to capture the previously created value (Cassiman et al., 2009). The second conflict is due to the risks of transfer of confidential information and the risks of technological imitation. Partners join strategic resources to achieve their goals (Gnyawali and Park, 2009). However, at the same time, they must protect their core competencies from their competitors. Sharing information with their competitors, in subtle ways over time, may introduce

homogeneity into their products and reduce the distinctiveness of each firm (Grafton and Mundy, 2016). In some cases, regulatory risk could also be source of tension, and when such tension appears, it is a particularly salient concern (Anderson et al., 2014). Indeed, any exchange of information between competitors exposes them to the risk of perceived or real collusion, and hence, potentially could result in their being subject to anti-competition legislation (Grafton and Mundy, 2016).

At the network level, competition intensifies as the life cycle advances toward maturity (Baum and Korn, 1996; Bettis and Hitt, 1995; Korn and Baum, 1999). Tensions are specific and more intense during this process given that members' interests may become more conflicted if the industry shrinks (Luo, 2007). The resources and power of each competitor structure the network and significantly influence coopetition (Ketchen et al., 2004). Further specific research is necessary to better understand the specificities of coopetitive tensions at the network level.

1.3. Network coopetition management

According to Le Roy and Czakon (2016), the performance of coopetition relies on an efficient management. If coopetitive tensions are not managed, they can bring conflicts and turn coopetition into a win-lose strategy. The management is critical for coopetition success. Considering the first importance of management, scholars paid great attention to this question and the management of coopetition became a pervasive research topic. Previous studies on coopetition management have identified three principles for managing coopetition successfully (Fernandez and Chiambaretto, 2016; Fernandez et al., 2014, 2017; Le Roy and Fernandez, 2015; Séran et al., 2016; Tidström, 2014).

First, at the inter-individual level, an integration principle is encouraged. This principle invites individuals to transcend paradoxes (Chen, 2008; Farjoun, 2010; Luo et al., 2006; Oliver, 2004). Managers involved in coopetition must develop a coopetitive mindset both to internalize the paradoxical nature of coopetition and to efficiently manage the related tensions (Chen, 2008; Gnyawali and Park, 2011; Luo et al., 2006; Raza-Ullah et al., 2014). Second, at the

organizational level, the co-management principle states that firms can implement specific project structures in which they replicate managerial positions to manage potential tensions between the partners (Le Roy and Fernandez, 2015). Depending on the nature of the innovation project, coopetitors can design separated project-teams – SPT – or coopetitive project-teams – CPT – (Fernandez et al., 2017). Fernandez and Chiambaretto (2016) have shown that firms rely on informal control mechanisms to deal with information sharing and protecting at the project team level. Finally, at the dyadic level, a separation principle recommends a functional, temporal or spatial separation of the management of competition and the management of collaboration (Bengtsson and Kock, 2000; Herzog, 2010; Poole and Van de Ven, 1989). External actors named third-parties can be entrusted to manage one dimension of the relationship i.e. the cooperation or the competition (Mariani, 2016). Information sharing and protecting is also critical at the dyadic level. Fernandez and Chiambaretto (2016) explained that this tension can be managed by firms with formal control mechanisms.

The three principles identified in the literature should be combined to provide an efficient management of coopetition (Fernandez and Chiambaretto, 2016; Le Roy and Fernandez, 2015; Séran et al., 2016). However, we have little insights about the principles and the tools required to manage coopetition at the upper level. As presented in this literature review, most of previous studies on coopetition management focused on dyadic coopetition (Fernandez et al., 2014; Pellegrin-Boucher et al., 2017) or on the organizational level (Fernandez and Chiambaretto, 2016; Fernandez et al., 2017; Le Roy and Fernandez, 2015). As shown in Table 1, we have very little knowledge about the management of coopetition at the network level. Thus, we can wonder how coopetition is managed at the network level? What principle is used to manage coopetition at the network level? Do firms rely on separation, on co-management, on integration or on another principle? Does the management of coopetition at the network level rely on a specific principle? What are the corresponding managerial tools used to manage coopetition at the network level? Are these tools specific to the network level of analysis? This research aims to

provide insights into these questions and to fill the gap about the management of coopetition at the network level.

Table 1. Management of coopetition at the network level

Level of analysis	Individual	Organization	Dyad	Network
Major source of coopetitive tension	Identity Culture	Resource allocation Creation and appropriation of business unit value	Knowledge sharing and protecting Value creation and value appropriation	Resources and power structure of the firm
Management principle	Integration	Co-management	Separation	**?**
Management tools	Coopetitive mindset and capabilities	Project organizational designs Co-governance Informal control mechanisms	Third-parties Formal control mechanisms	**?**

2. Theoretical framework

2.1. Management control mechanisms to efficiently manage network coopetition

In order to analyze the principles, the tools and the mechanisms that contribute to network coopetition success we build on management control theory. Management control literature provides interesting insights into how to manage risks and tensions in inter-organizational networks (van der Meer-Kooistra and Scapens, 2008; Mouritsen and Thrane, 2006; Peng and Bourne, 2009).

Management accounting literature focuses on the mechanisms implemented by firms to solve value appropriation, collaboration and coordination issues (Caglio and Ditillo, 2008) but also on the conditions for inter-organizational collaborations (Dekker, 2004). Accordingly, complex interactions between various network's members need to be properly coordinated to ensure strategic and operational cohesion and to reduce or eliminate uncertainty.

Management control mechanisms includes a control system design based primarily on an information system used to share information and governance. Additionally, it encompasses performance measurement systems, such as goal setting, incentive systems, and performance

monitoring, and involves behavioral social and informal controls. It seems interesting to understand how these control mechanisms can be used in a network of complex cooperative and competitive relationships.

In their study of horizontal networks, Mouritsen and Thrane (2006) find that controls create durability and predictability and can be conceptualized as an actor helping to mediate, shape and construct inter-organizational relations through self-regulating and orchestration mechanisms. Van der Meer-Kooistra and Scapens (2008) assume that lateral relationships between firms require mechanisms and tools which promote cooperation as well as encouraging a certain level of competition. Table 2 provides on overview of management control mechanisms and tools.

Table 2 - Overview of Management Control Mechanism and Tools

Management control mechanisms	Tools
Inter-organizational management controls systems design	Design of tasks, information sharing, information technology
Performance measurement systems	Goal setting, incentive systems, performances monitoring and executive rewards
Process controls	Rules, regulations, structure, job descriptions, reporting structures
Behavioral control, social control, informal control	Trust, socialization process, values

Scholars call to extend management accounting and control studies of inter-firm relationships beyond buyer-supplier exchanges "*there are fewer contributions on horizontal relationships, either with complementors or competitors*" (Caglio and Ditillo, 2008). However, coopetitive alliances remain under-examined in management accounting literature (Grafton and Mundy, 2016).

Management control mechanisms include firstly a control system design mainly based on an Information System to share information and governance. Secondly, management control mechanisms encompass performance measurement systems (goal setting, incentives systems, performances monitoring etc.). Finally, management control mechanisms involve process or behavioral control, social control and informal control. These control mechanisms need to be

clarified in the network configurations in which complex cooperative and competitive relationships occur simultaneously i.e. coopetition networks. Dekker (2016) highlights the opportunity for further developing emerging literature on the boundaries between intrafirm and inter-firm management accounting. However, to our knowledge, there is no research investigating the role of control mechanisms and tools in coopetition networks. In order to fill this gap, we build on the management accounting framework elaborated by Simons (1995). This framework has been dedicated to intra-organizational relationships but we question its relevancy for network relationships.

2.2. The Simon's levers of control framework to manage coopetitive tensions

As Mundy (2010) explains, "*management control systems (MCS) are used to exert control over the attainment of organizational goals, and also to enable employees to search for opportunities and solve problems*". Management control systems must be balanced in order to manage competing tensions (Kruis et al., 2016) that involve both competition and complementarity (English, 2001).

Literature on management control is diverse and wide. In this article, we decided to build on Simons' research because he perceived the organization as a system filled with tensions. This approach is particularly consistent with our research purpose to understand how coopetitive tensions are managed at the network level.

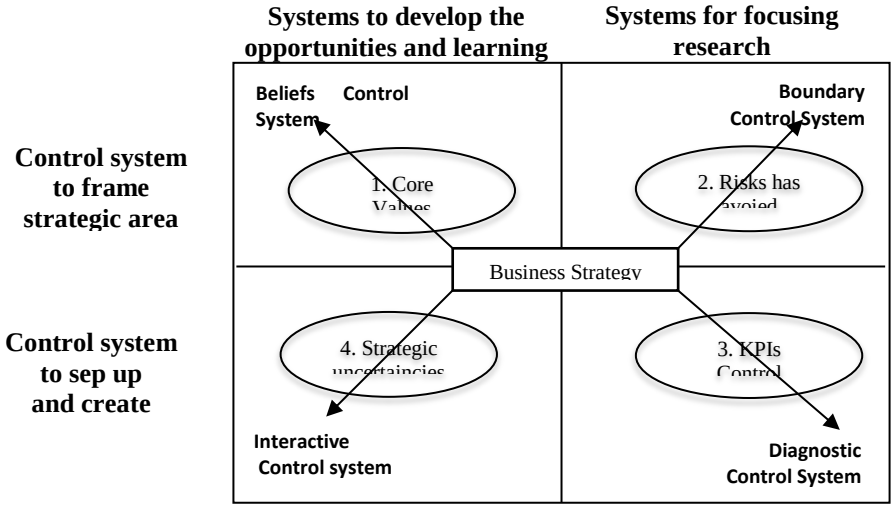
Simons (1995) developed a theoretical framework which aims to frame strategic area, to set up and create strategy. His framework links business strategy (including alliance strategy) and the system control management set up to balance the corresponding tensions.

The use of the Simons framework has a twofold interest for our research. First, compared to the management literature of coopetition, Simons' framework brings a dynamic vision of the tensions. Second, it adds a positive view on tensions, underlining the positive effects and potential benefits that could result from the coopetitive tension management. Indeed, in the coopetition management literature tensions are usually studied from a static point of view, but in

management control literature, tensions are rather considered as a dynamic phenomenon, inherent to an organization (Lewis, 2000). A tension can evolve, vary and devote contradictory but interrelated elements. The tension is 'dynamic' because there are continual and varied strategic forces acting both internally and externally that disturb the relative emphasis of the different levers (Bruining et al., 2004; Henri, 2006).

Coopetition literature remains mostly focused on the negative sides of tensions. On the contrary, management control literature also considers tensions as positive and beneficial for organizations (De Dreu et al., 1991; Nicotera, 1995). Accordingly, tensions enhance motivation, develop creativity, participate to the construction of innovative capabilities, foster organizational learning, encourage entrepreneurship and improve market orientation lead to complexity and changes in product design (Henri, 2006). For instance, Mundy (2010) explores how organizations balance controlling and enabling uses of management control systems (MCS), in order to contribute to the organization's capabilities such as innovativeness, organizational learning, entrepreneurship, and market orientation that together contribute to organizational performance (Henri, 2006). Consequently, managing tensions to stimulate the right mix between compliant behavior and creative search efforts is critical for the organization's success (Kruis et al., 2016).

Figure 1 - Interrelation levers of control with strategy, opportunity, and attention



Source: Simons, 1995;85

The Simons' framework includes four managerial control levers (1) beliefs, (2) boundary, (3) diagnostic, and (4) interactive. (1) The Beliefs Control System is defined as "*the explicit set of organizational definitions that senior managers communicate formally and reinforce systematically to provide basic values, purpose, and direction for the organization*" (Simons, 1995). This formal communication style provides basic shared values and direction for coopetitive networks. (2) The Boundary Control System is defined as "*the acceptable domain of strategic activity for organizational participants, through communicating, implementing and enforcing codes of business conduct*" (Simons, 1995). It allows to outline the acceptable domain of banking business model, credit risk and security for coopetitive networks. (3) The Diagnostic Control System is designed "*to ensure the implementation of intended strategies and the achievement of planned outcomes, allowing the managers to monitor the activity of employees or partner's organizations through the review of critical performance variables*" (Simons, 1995). It includes budget and reporting and allows feedback of coopetitive networks. The Interactive Control System is based on "*the personal involvement and interest of managers in the critical elements of strategy design and implementation, creating an ongoing dialogue with subordinates and partners, and actively finding of best solutions for the identified problems*" (Simons, 1995) to control coopetition networks as a whole with the use of formal tools in an interactive way "*key point in Simons' reasoning is that the four levers interact and need to be configured in such a way that they support each other*" (Kruis et al., 2016). Interactive Control Systems (ICS) has been operationalized quite differently across studies (Bisbe et al., 2007). Bisbe and colleagues (2007) define ICS as a formative construct and distinguish several dimensions that capture an intensive use by both top and operating managers, a high level of face-to-face discussions, a strong focus on strategic uncertainties, and a non-invasive, inspirational involvement.

Positive and negative forces are encapsulated in a set of organizational conflicts that impact the capacity of organizations to balance controlling and enabling uses of MCS. One such conflict is apparent in the distinction between the use of MCS for the control over individuals versus their

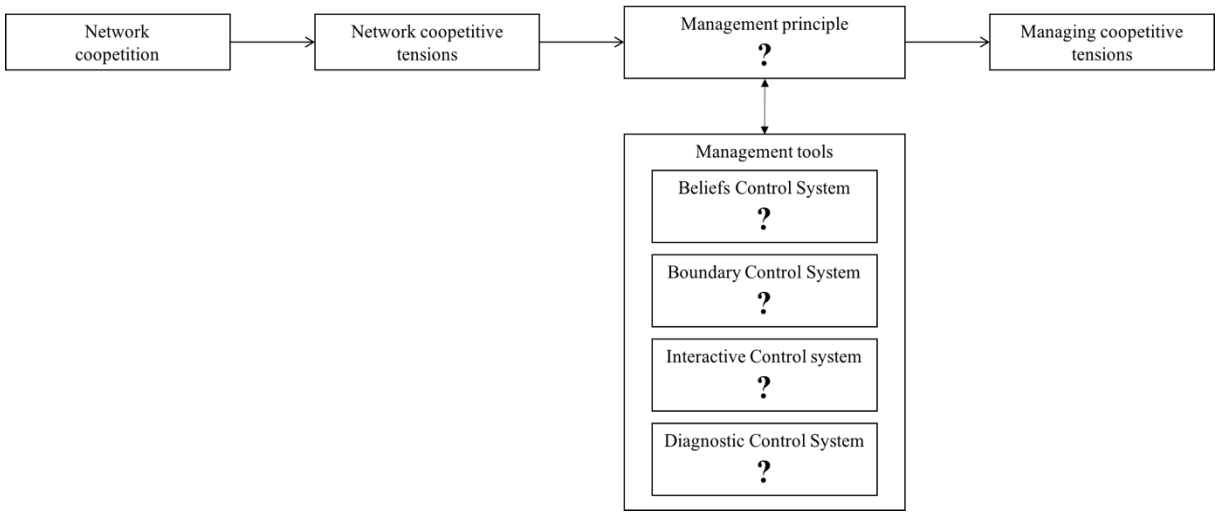
use for identifying problems and reducing uncertainty (Ditillo, 2004; Wouters and Wilderom, 2008). These tensions are managed by what Simons calls positive and negative control systems. Simons (1995) compares the concept of positive and negative controls to the yin and the yang of Chinese philosophy. Positive controls are part of the yang force representing the sun, the warmth and the light. They motivate, reward, guide and promote learning. Negative controls are part of the yin force representing darkness and cold.

The use of both diagnostic control systems and boundary control system coerce, punish, prescribe and focus on errors, negative variations and limitations. They thus represent the negative force of control: the "yin". On the contrary, both interactive systems and belief systems are used to extend the search for opportunity and learning throughout the organization. Considered thus as a positive force, they symbolize the "yang". For instance, interactive control system can be used to involve employees to achieve collective goals and values (Henri, 2006; Naranjo-Gil and Hartmann, 2007). According to Simon's framework, leverages of control are opposing forces, as the Yin and the Yang, that should be used together and simultaneously to manage tensions: "*between freedom and constraint, between empowerment and accountability, between top-down direction and bottom-up creativity, between experimentation and efficiency*" (Simons, 1995, p. 4). These dimensions need to be managed to ensure the organization's success in the long run (Kruis et al., 2016; March, 1991; Raisch and Birkinshaw, 2008). To sum up, incentive control (positive control) and punishment controls (negative control) are opposing forces that need to coexist to create the effective control. While punishment controls are usually badly connoted, Simons (1995), also consider them as positive controls. He illustrates this idea with a metaphor: "*Boundary systems are like brakes on a car: without them, cars (or organizations) cannot operate at high speeds*" (Simons, 1995, p. 41).

To our knowledge, few studies have focused on the diagnostic and interactive use of the entire control system (Kruis et al., 2016) to manage coopetition. However, management control systems contribute to the management of paradoxical tensions. The simultaneous use of various

tools could allow firms to transform negative tensions into dynamic capabilities. Thus, this study aims to deeper investigate how management control systems can be used to efficiently manage network coopetition (figure 2). To assess the relevance of our framework, we conducted a qualitative case study of network coopetition in the banking industry.

Figure 2. Theoretical framework



3. Method

3.1. Research design

This research aims to understand how coopetition is managed at the network level. Because our objective is to describe and understand a new phenomenon (rather than to test propositions), an exploratory research design is appropriate (Eisenhardt, 1989; Miles et al., 2013). In line with the recommendations from Bengtsson and colleagues (2010), we conducted a case study to explore the management of network coopetition (Yin, 2013).

Case-based exploratory methods are appropriate for understanding poorly understood phenomenon (Eisenhardt, 1989) with multiple and complex elements (Dodgson et al., 2008) that evolve over time (Langley, 1999). In-depth studies are the best means of exploring a multi-faceted and paradoxical phenomenon such as the management of coopetition at the network level (Bengtsson et al., 2010; Dowling et al., 1996; Gnyawali and Park, 2011).

3.2. Empirical settings

Cooperative banking, is a segment of the banking industry and represents an exemplar case of network coopetition. It represents a relevant empirical framework to analyze how tensions resulting from this network coopetition are managed.

In Europe, cooperative banking is an important economic sector that offers access to more than 71,000 bank agencies and employs approximately 850,000 people (EACB, 2017). BP-CE[1] is the third important cooperative banking network in France and is classified as one among the 30 first systemic banks in the world by the Financial Stability Board.

In the last few decades, coopetitive activities have become more frequent in the cooperative banking sector for three reasons. The first is linked to the application of the 1984 Finance Act, which ended the privileges of cooperative banks, forcing them to diversify, acquire new skills and make alliances with competitors through internal or external development. As a result, cooperative banks established coopetition within the same bank network or with competitor bank networks.

The second reason for the acceleration of the phenomenon of coopetition in the cooperative banking network is the impact of the international legal environment in the banking sector. To satisfy the criteria of prudential rules following the 2008 crisis, banks must now prove the viability of their business model, demonstrate their credit risk and their low risk of governance, and publish all relevant information (Bonomo et al., 2016).

The third reason is the digitalization of the banking sector, particularly considering that new entrants are major companies in information technology, e-retailing and media "Fintech" (Kawai, 2016). While these Fintech players are not yet competitors of banks, they offer targeted and more convenient services. Hence, corporate and investment banks, as well as retail banks, are now embracing coopetition by taking these Fintech players as news partners in their ecosystems.

[1] Banque Populaire Caisse d'Epargne

In 2009, the Group Central Institution BP-CE founded a common board to manage the coopetitive activities of the two networks, BP and CE. These two networks include regional banks, which are independent banks competing in the areas of sales activities. In these two networks, *Caisse d'Epargne* (CE) and *Banque Populaire (BP)*, competitive activities account for 64.5% of the total net banking income (traditional retail and commercial banking activities) and are conducted by 18 banks in the BP network and 17 in the CE network.

Before presenting the findings of our research, we provide details about the data collection and the data analysis.

3.3. Data collection

Primary and secondary data were collected to enable the use of triangulation techniques (Eisenhardt, 1989; Gibbert et al., 2008; Lincoln and Guba, 1985).

Using the information obtained through documentary research and exploratory observations, we developed an interview guide covering the research objectives related to the application of various management control levers within two complex networks (Cf figure 1), which was applied to collect data from various hierarchical levels.

Primary data come from 30 semi-structured interviewed conducted with top managers and managers lasting between 45 and 90 minutes. Added to these formal interviews informal information was gathered from seven lunch meetings. The interviews were recorded and then transcribed as soon as possible in order to preserve the quality of the data (Gibbert et al., 2008). In line with Gioia and colleagues (2013), we do not use respondents' names in order to preserve their anonymity.

Secondary data were obtained from various sources, including internal documents (e.g., contracts, presentations, meetings and reports) and external documents (e.g., news articles and industry reports). Internal data includes videos and documents such as: banking internal reports, reporting, thesis and working papers for internal use.

External data include published or working papers of banking institutions (European banking group), or from private consulting organizations (Mc Kinsey, KPMG, PWC). We also used data from major research institutions, experts of the banking sector such as data from International Research Center on Cooperative Finance (IRCCF) at HEC Montreal, Canada. Individual and consolidated financial data covering the period 2009-2016 was obtained from two sources: BP and CE websites and IRCCF. We made a cross verification of these two sources and check with Standard & Poor's, Moody's Investors Service, Fitch Ratings' notes. All data used in this research was subject to careful verification for consistency.

The combination of primary and secondary sources allowed us to triangulate the collected information by crosschecking facts and dates to avoid potential interpretation biases. Table 3 summarized the data collection.

Table 3. Data collection

<table>
<tr><th></th><th>Primary data</th><th>Secondary data</th></tr>
<tr><td>Institutional</td><td rowspan="2">Interview (30) with top managers and managers of BP and CE</td><td>Internal documentary (video, internal press and working papers)</td></tr>
<tr><td>Financial</td><td>External documentary (annual reporting; quantitative data)

Internal report collected via interview</td></tr>
</table>

3.4. Data analysis

During axial coding, we considered various interactions and activities both chronologically and functionally. We identified management control levers applied in coexisting cooperative and competitive activities within the two networks. We then characterized tensions created by coopetitive activities, by using a combination of theoretical framework developed by (Simons, 1995a, 1999) (cf. Figure 2) (belief, boundary, diagnostic and interactive control levers) with the two main types of control (formal and informal) (Das and Teng, 1998; Dekker, 2004; Smith et al., 1995). The selected material was then ordered and integrated using a meta-matrix (cf. Table 6).

4. Findings

4.1. Coopetition between banking networks

4.1.1. Competitive activities

Competition is inherent to the retail banking industry. Most of bank agencies belong to the two networks *Caisse d'Epargne* et *Banque populaire* and compete on the same geographical area, for the same markets and the same clients. They sell financial products, that could be sometimes very similar, but with their own brands to their own clients: individuals, entrepreneurs, small businesses (traders, craftsmen, etc.) or medium-sized businesses (SMEs, PMIs), local authorities and associations etc. Bank agencies act as intermediaries between available resources and resources' demands.

Competition is increasing with the current context of "historically low interest rates" and competition from the Fintech[2] markets. It becomes more complicated to make depositors' money grow and it encourages borrowers to renegotiate their loans more easily. Consequently, *Banque Populaire* and *Caisse d'Epargne* obtained contrasted results in the first quarter of 2016. While the net income of *Banque Populaire* increased of 1.2%, the one of *Caisse d'Epargne* decreased of 4.6%. Assets increased for both networks but more for *Caisse d'Epargne* (4.9%) than for *Banque Populaire* (3.3%). The fierce competition between banking agencies result also from the merger of regional banks and the closing down of some agencies (12 for Banque Populaire - 15 now) and 1 for Caisse d'Epargne - 17 today). These strategic moves lead to a strong concentration of the industry and enhanced the competition. For instance, the common firm BPCE planned to close 3,300 agencies for *Banque Populaire* and 4,200 for *Caisse d'Epargne.* About 3,600 retirements would not be replaced.

[2] Fintech: technology firms that focus on financial products and services as peer to peer lending and investment, crowdfunding, payment infrastructure, cash management. Fintech pioneers, such as PayPal, launched in the 1990s to provide a payment system for online purchases, has since expanded to provide instant lines of credit and mobile applications that locate nearby stores and restaurants that accept payment by PayPal

4.1.2. Cooperative activities

Beyond their inherent competition, agencies belonging to *Banque Populaire* and *Caisse d'Epargne* were involved in several cooperative activities: the creation of a common central purchasing, common risk management activities and a common network governance. These activities are monitored by two organizations, namely, the IT group central institution and the group central institution.

First, *Banque Populaire* and *Caisse d'Epargne* created an Economic Interest Group (EIG) named "BPCE Outsourcing and Technologies" dedicated to the pooling of purchasing activities. The aim was to improve the efficiency of both networks by pooling investments and IT purchases to optimize the costs and to improve the quality of the services for the entire production. The objective was to offer value-added infrastructure services (messaging, videoconferencing, IaaS ...) to internal users and external clients. *Banque Populaire* and *Caisse d'Epargne* pooled 1,200 employees from the IT departments within this common structure. The common structure is quite independent and has its own support functions (finance, human resources, audit, risks, architecture and security).

Second, *Banque Populaire* and *Caisse d'Epargne* created a common fund and implemented a common solidarity mechanism to guarantee the liquidity and the solvency. This collaboration on risk management was highly strategic for both companies. An interdependent central organ defines the operating rules, the procedures for intervention and for funds provided, as well as the contributions of the affiliated institutions.

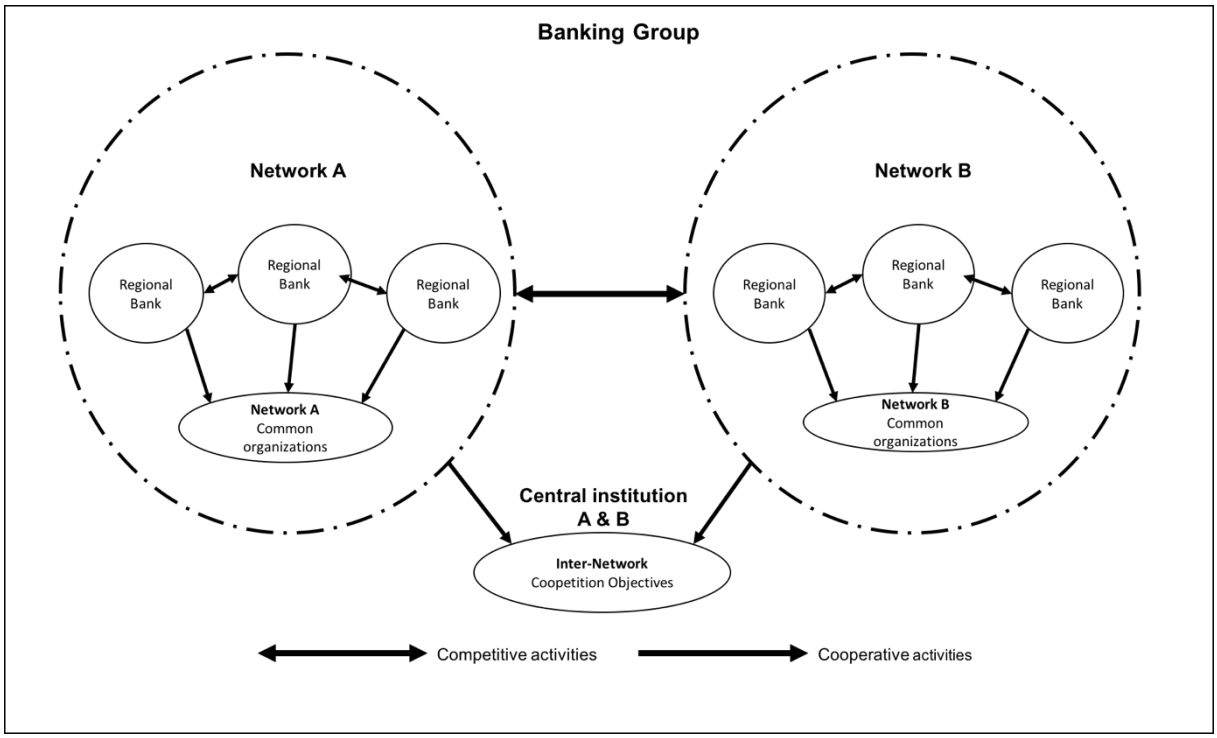
Finally, *Banque Populaire* and *Caisse d'Epargne* created a common governance structure to represent the network, to defend the network's rights and interests, in particular with local organizations, and to negotiate and sign national or international agreements. This governance organization aims to guarantee the equity of the collaboration between *Banque Populaire* and *Caisse d'Epargne.*

Competitive and cooperative activities are summarized in table 4. The structure of collaboration and competition between *Banque Populaire* and *Caisse d'Epargne* is presented in Figure 3.

Table 4 - Cooperative and Competitive activities

Competitive activities (65% of net banking income)	Sale of financial products with their own brands
Cooperatives activities	Common central procurement
	Common risk management
	Common network governance

Figure 3 - BP-CE cooperative and competitive activities



4.2. Coopetitive tensions in network coopetition

The simultaneous pursuit of competitive and collaborative activities between *Banque Populaire* and *Caisse d'Epargne* created tensions within the network. We detail three different types of coopetitive tensions: IT system tensions, risk management tensions and network governance tensions.

4.2.1. IT system tensions

Some tensions are created by shared information technology systems (IT systems). Initially, both networks had managed their own information system, but in 2015, they decided to jointly

manage the outsourcing and new technologies activities. The objectives behind this collaboration in digitalizing their banking activities were mainly to reduce IT costs and time to market and to consolidate their network expertise and competencies. While the IT Group Central Institution was created to manage this cooperative activity, once the integration strategy was defined and approved by the IT Group Central Institution, common strategy reduced the regional banks' bargaining powers and freedom of choice. Consequently, tension appeared as banks compared the costs of their contributions to this common project to the gains in terms of knowledge and customer data. The constitution of the common IT system is a result of three years of internal negotiations within *Caisse d'Epargne* (from 2003 to 2006). The creation of the common BPCE IT organization took six years in total (from 2009 to 2015).

4.2.2. Risk management tensions

Tensions could also be created by regulatory risk management. In addition to their own fund management system, the two networks created a second common governance board, namely, the Group Central Institution, to manage global coopetitive strategies, mutual funds and prudential compliance. Thus, since 2009, the global network financial risk has been supported by a common fund, the *Fonds de Garantie Mutuel* (FGM), in which the BP network and the CE network have each deposited €180 million.

The objective of common funds is to ensure coherence, solvency and liquidity for the two banking networks and their subsidiary, Natixis. Therefore, the operating rules regarding these common funds establish the terms and conditions for member contributions. Although these mechanisms were originally established under a mutualist reinsurance approach, this solidarity, perceived as the distinctive value of cooperatives, creates tensions. For Natixis, in past crises, the equity and liquidity of all the banks in the two networks were called upon to financially support Natixis' risky activities. This solidarity placed the two cooperative networks in a difficult situation, and as a consequence, their opening up to the stock market resulted in tensions between the Group Central Institution and the listed subsidiary with all the banks in the two

networks. Indeed, using of external capital considerably increase the cost of financing cooperatives and increase the need for profitability of their activities.

The Group Central Institution is also responsible for prudential consolidation, which is a consolidation of the financial risks and the performance of the two networks to fit financial prudential standards requirements. This financial consolidation brings together the balance sheets of the independent banks that belong to the two networks to offset the risks and performances of these banks. As the two banking networks include independent regional banks whose competitive advantages and individual risks depend strongly on the economy of the territory, they must engage in financial consolidation to compensate for the risks. However, the prudential consolidation creates tensions among the regional banks since the regional banks must provide more relevant information, such as financial statements, in accordance with prudential rules to avoid the exclusion of the network.

4.2.3. Network governance tensions

At last, tensions could be created by networks representation activities. The Group Central Institution represents regional banks and negotiates and signs national and international agreements on their behalf. It also manages their interests and establishes coopetitive banking network strategy. However, because conflict arises between cooperative values and shareholder values due to the diversity of the two networks' property structures, it is becoming more difficult for the Group Central Institution to ensure the cohesion of the network and defend mutualist values. Furthermore, the tension between the BP and CE cooperative networks and Natixis is due to the shared common fund shared and the opposition in value between the network's actors, i.e., capitalist values for Natixis and cooperative values for the rest of the network. Cooperative network banks are owned and governed by their members such that each member clearly holds a vote in the democratic process in accordance with the one person, one vote democratic principle. The ideal cooperative bank seeks to maximize the benefits of its members (who are also customers) and maximize consumer bonuses. However, with respect to Natixis, even if it is a

subsidiary of BP and CE, it has a shareholder logic whereby maximizing the rate of return on capital is, if not the exclusive, at least the dominant business objective.

4.3. The management of coopetitive tensions in network coopetition

To manage coopetitive tensions within the network, actors rely on management accounting tools.

4.3.1. Design of tasks, information sharing, and information technology

Banque Populaire and *Caisse d'Epargne* share critical information about financial regularizations (prudential consolidation, financial security and solvency and bank liquidity) and define together the common strategic guidelines.

In order to deal with the information sharing the BPCE created a common subsidiary to act as a central body. This common subsidiary named BPCE SA is an anonymous company owned equally by *Banque Populaire* and *Caisse d'Epargne*[3]. It is governed by a management board and a supervisory board.

BPCE SA is in particular responsible for ensuring representation to the supervisory authorities, defining the range of products and services offered, organizing the depositors' guarantee, certifying the directors and ensuring the smooth operation of the institutions of the whole network. BPCE SA also owns NATIXIS, another subsidiary of BPCE in the sector of retail banking and corporate banking.

Both *Banque Populaire* and *Caisse d'Epargne* have different and conflictual strategic objectives. On one side, *Caisse d'Epargne* wanted to reduce its operating expenses (10% higher than the banking average) and to expand their market. On the other side, *Banque Populaire* strategy was to develop both the individual and the mortgage markets. Because of this lack of common objectives, tensions emerged and the BPCE SA contributed to manage them. The central organization helps to define the strategic priorities for the global network. Indeed, the central organization is governed by the leaders of *Banque Populaire* and *Caisse d'Epargne*. This common and joint governance helped to manage the trade-offs between the different possible

[3] The Board is constituted as at 31 December 2014 of 17 members (1): 7 members of the Banque Populaire, 7 Caisse d'Epargne members and 3 independent members.

strategic orientations for the network. This dual governance helped to achieve the strategic objectives of the whole network and of each of the members.

Banque Populaire and *Caisse d'Epargne* also created BPCE Outsourcing and Technologies. This common structure comprises 1,200 employees coming from the group's internal IT structures. BPCE Outsourcing and Technologies groups IT production activities and aims to increase collective efficiency by pooling investments and purchases. This common structure allows the BPCE network to consolidate infrastructures and to pool purchases. Thus, the BPCE network is able to optimize its costs, to improve the quality of service for all production and to offer infrastructure services (messaging, video -conference, IaaS ...) with added value for users and information systems.

BPCE Outsourcing and Technologies contributed to manage coopetitive tensions due to the dilemma between value creation and value appropriation. The organization was created by the prudential authorities as competitors' representative organization, to foster communication and to dissuade free-riding behaviors. The external legitimacy given to BPCE Outsourcing and Technologies, allows the structure to balance between cooperation (mutual values) and competition (market value).

4.3.2. Performance Measurement Systems (PMS): Goal setting, incentive systems, performance monitoring and executive rewards

In terms of Performance Measurement Systems, *Banque Populaire and Caisse d'Epargne* designed a common PMS at the network level while maintaining their own one. The common PMS is management by a Board composed of the CEO of *Banque Populaire* and the CEO of *Caisse d'Epargne.* They are responsible for the establishment of a joint financial report of the network detailing the short-term benefits, the post-employment benefits, the long-term benefits and the termination benefits of each member (*Banque Populaire and Caisse d'Epargne*). This joint financial report leads to a high transparency concerning the sources of benefits within the

network. Each member is aware of the individual performance of its partner. Thus, competition can appear between network members in order to obtain better performances than the partner.

4.3.3. Process controls: Rules, regulations, structures, job descriptions, reporting structures

As previously explained, *Banque Populaire and Caisse d'Epargne* are mutual banks. They have a domestic organization composed of various regional banks embedded in the local culture. At the upper level, a national structure ensures the consistency of the regional banks and the synergies between them. Regional banks are independent but they cannot survive alone. They need to pool their resources in the network in order to have the critical size to compete at the national level. Simultaneously, through the network, bank agencies benefit from the pooling of traditional expertise and regional integration. While the network structure offers advantages to regional banks, in counterpart, they have to commit to respect rules and standards implemented and coordinated from the central organization. An audit committee appointed at the network level is in charge to control every network members (i.e. regional banks) at least once in a year.

4.3.4. Trust, socialization processes, values

Mutualist values are represented and managed formally by a network institution and informally by social networks. Several social networks are deliberately created by *Banque Populaire and Caisse d'Epargne* to encourage information sharing, to develop trust and to reduce risks of opportunism between network's members. Social professional networks are particularly powerful for network members to access relevant information at a lower cost. Trust among network's members improves the efficiency of information sharing. Indeed, trust contributes to encourage the dissemination of information while reducing opportunism and risks of plunders.

The social professional networks created by *Banque Populaire and Caisse d'Epargne* are more flexible than formal procedures because they are organized horizontally, by profession or by location. Thus, they respect the rules and the norms of the profession.

Based on horizontal connections, these social professional networks use similar operating rules. Consequently, they need less standardization and give members more flexibility. They are also

extremely reactive enabling any member to get a fast answer to his request. Social professional networks combine beliefs, professional identity and conventions.

Table 5 summarizes the main management control mechanisms and tools used to manage tensions in coopetition network.

Table 5. Synthesis of management control mechanisms and tools

Management control mechanisms	Tools
Inter-organizational management controls systems design	Design of tasks, information sharing, information technology
Performance measurement systems	Goal setting, incentive systems, performance monitoring and executive rewards
Process controls	Rules, regulations, structures, job descriptions, reporting structures
Behavioral control, social control, informal control	Trust, socialization processes, values

5. Discussion

5.1. Contributions

Our research aims to provide insights into the management of coopetition at the network level. Based on an in-depth case study in the banking industry, our findings present several interests. First, we illustrated coopetition relationships at the network level in the French banking industry. Second, our study highlighted specific coopetitive tensions at the network level. Finally, we provided insights into the operational management by these coopetitive tensions. Focusing on management control systems, we showed that the efficient management of coopetition at the network level relied on the interactive use of four levers of control. We explained how these levers can be combined which led us to identify a new management principle for coopetition at the network level: the interaction principle.

They present various contributions to the existing literature on coopetition and on management accounting.

First, in line with previous studies, our study confirms the specificities of coopetition at the network level. Our study showed the specificities of the management of coopetition at the network level.

At the organizational level, both coopetition and management accounting literatures recognized the key role of formal and informal control to manage coopetitive tensions (Caglio and Ditillo, 2008; Chiambaretto and Fernandez, 2016; Dekker, 2016; van der Meer-Kooistra and Scapens, 2008; Mouritsen and Thrane, 2006; Peng and Bourne, 2009; Séran et al., 2016). Several studies have emphasized that formal and informal control mechanisms do not work separately and must be combined to efficiently manage tensions between partners and increase alliance performance (Das and Teng, 2001; Faems et al., 2008; de Man and Roijakkers, 2009). Séran and colleagues (2016) studied leading French banking institutions and showed how formal and informal management practices help individuals to cope with coopetition tensions. This research provided interesting insights into the implementation of the integration principle at the individual level. Another research conducted by Fernandez and Chiambaretto (2016) pointed out that the management of tensions related to information in coopetitive projects requires a combination of formal control mechanisms and informal control mechanisms. Formal and informal control mechanisms are used to foster the success of a common project while limiting the risk of opportunism (Das and Teng, 2001).

At the network level, both coopetitive and management accounting literatures insist on the essential role of formal contract and informal social mechanisms, such as trust, shared norms, implicit sanctions and symbolic communication to manage coopetition. These mechanisms lead to increased cognitive salience of competitors as well as to mutual coordination. Formal contracts are often incomplete but they can be combined with informal social control mechanisms to provide an efficient management (Anderson et al., 2014). Informal self-enforcing agreements between firms, i.e., relational contracts, rely on a range of social and other

relationship-based control mechanisms and are sustained by the expected value of the future relationship (Baker et al., 2002).

By definition a network lacks of central authority and is rather governed jointly and equally by the members (Dekker, 2004). Thus, decision making and conflict resolution rely on the quality of communication and negotiations between network's members. Accordingly, the design and the implementation of management control is also subject to negotiation and approval of network's members. The management accounting that result from these negotiations combines mechanisms and practices that served not a single firm but various partners. Another difference between the interfirm and the intrafirm settings is the role of arbitrators when failures or conflicts occur. This role also results from the absence of a complete hierarchy, and thus adds other parties to the relationship that are not present within the firm (Dekker, 2016).

Second, our study contributes to both coopetition and management accounting literatures by proposing a comprehensive theoretical framework of tensions in coopetitive networks. We built on Simons (1995) to develop a theoretical framework that aims to frame a strategic area, to design a strategy, to develop opportunities and to manage multiple tensions. This framework is particularly helpful because it points out the interactions between the business strategy i.e. the coopetition strategy and the control systems to manage the resultant tensions. As presented in figure 1, Simons' framework includes four managerial control levers: (1) beliefs systems, (2) boundary systems, (3) diagnostic control systems, and (4) interactive control systems. Our findings illustrate this framework.

Our results show that the combination of beliefs and boundary systems helped to frame the coopetition strategy at the network level. The combination of both systems contributed to define the coopetition area.

The beliefs control system is "*the explicit set of organizational definitions that senior managers communicate formally and reinforce systematically to provide basic values, purpose, and direction.*" This formal communication style provides basic shared values and direction for inter-

coopetitive networks and relies on relational contracting to establish credible commitments among firms (Grafton and Mundy, 2016). This system is presented as behavioral control, social control, and informal control in Table 3. Specifically, the Group Central Institution as a network representative organization makes extensive use of shared values, group norms, meetings, informal gatherings, partner selection, restricted access, and the threat of collective sanctions to manage various relational risks associated with coopetitive activities. Dependence and repeated exchanges between partners can reduce opportunistic behaviors because any firm that operates against the norms of the group potentially faces the threat of being excluded from other collaborative activities critical to their survival as an independent bank.

The boundary control system is defined as "*the acceptable domain of strategic activity for organizational participants, through communicating, implementing and enforcing codes of business conduct.*" As such, it outlines the acceptable domain of the banking business model, including credit risk and security, for inter-coopetitive networks and is presented in Table 3 as an inter-organizational management controls systems design. Concretely, the Group Central Institution oversees the global coopetitive activities of the two networks through the implementation of a three to five-year strategic plan voted on by both banking networks and the strengthening of internal control. As part of its supervisory role, the Group Central Institution has the power to dismiss and replace the top managers from among the network members (e.g., regional banks) if they fail to comply with its directives or banking regulations. A strong internal merge has occurred in recent years within the regional banks of these networks either for economy of scale or in the event that were not sufficiently profitable.

Our results show that the implementation of the coopetitive strategy relies on the simultaneous use of diagnostic and interactive control systems. The diagnostic control system is designed "*to ensure the implementation of intended strategies and the achievement of planned outcomes, allowing the managers to monitor the activity of employees or partner's organizations through the review of critical performance coopetitive variables*" and is represented by the performance

measurement systems and process controls in Table 3. The system includes budget and reporting and allows feedback of coopetitive networks.

The interactive control system is based on "*the personal involvement and interest of managers in the critical elements of strategy design and implementation, creating an ongoing dialogue with subordinates and partners, and actively finding of best solutions for the identified problems*" and controls inter-coopetitive networks with the use of formal tools in an interactive way. For example, the implementation of cost allocation control systems in the annual budget is managed via an interactive control system through the informal internal networks that are inter-related and embedded one in another (Séran et al., 2016). This control is effective because, on the one hand, cooperative banking networks are characterized by an information asymmetry between member-owners (shareholders) and managers that is much stronger than in conventional banking networks. The limitation of the ownership rights of the members, and in particular, the weak correlation between dividend and bank's performances, weakens their incentive to control the managers. On the other hand, the dilution of control and the weak link between capital ownership and the composition of management bodies reinforce discretionary managerial power and organizational inefficiency that can include overstaffing, lack of penalties for incompetence, lack of motivation to reduce operating costs and improve productivity, excessive remuneration, existence of free cash flows and creation of high reserves (Akella and Greenbaum, 1988; Mayers and Smith, 1994). However, the discretionary power of regional banking managers is limited by the risk to be closed or merged by a collective decision and by the existence of an internal labor market in which managers must preserve their reputations (informal control system). These informational asymmetries favor the development of informal interactive control through the networks of senior executives.

Table 6. Coopetitive tensions and coopetition management at the network level

Network coopetition activities	Coopetitive tensions	Control mechanisms & tools	Simons' levers of control
Common information system management	Tension created in IT activities management	Cost allocation and annual budget	Diagnostic and interactive control system
	Tension created by knowledge sharing	Specific governance structures through role and task sharing	Diagnostic and interactive control system
Regulatory risk management	Tension in the management of mutual funds and the joint subsidiaries taking more financial risks	Five-year strategic plan Internal audit control	Boundary control system
	Tensions created by comparing IT performance and IT risks between regional banks	Global network consolidated reporting / IT - internal audit control	Diagnostic control system
Networks representation activities	Representation equilibrium between cooperative values and shareholder values	Decision system (equity, interdependence) Democracy Solidarity	Beliefs control system Interactive control system

The emergence of a new management principle to manage network coopetition: the interaction principle

Literature on coopetition management highlighted several principles to efficiently manage coopetition. First, a separation principle was recommended at the organizational level (Bengtsson and Kock, 2000; Herzog, 2010; Poole and Van de Ven, 1989). Second, other authors recommended an integration principle at the individual level (Chen, 2008; Farjoun, 2010; Luo et al., 2006; Séran et al., 2016). Recent research highlighted a co-management principle to manage coopetition at the working-group level (Le Roy and Fernandez, 2015). In line with these previous studies about principles, our research reveals a new managerial principle, dedicated to the management network coopetition. We name this principle the interaction principle. This principle consists in using multiple and interactive management controls systems at the network level, to transform coopetitive tensions into organizational capabilities (innovativeness, learning, entrepreneurship, market orientation) that are positive for both the members and the network.

In a coopetitive network, the intensity of tensions varies and depends on the forces influencing the strategies. Consequently, the interactive use of control systems becomes permanent and an essential condition for network coopetition success.

Recent researches on coopetition management consider managerial principles not as exclusive principles but rather as complementary principles. Separation, co-management and integration principles should be simultaneously implemented in order to achieve an efficient management of coopetition and to ensure the success of the relationship (Fernandez and Chiambaretto, 2016; Fernandez et al., 2014; Le Roy and Fernandez, 2015; Séran et al., 2016). Consistently with this principles combination perspective, we consider that the interaction principle highlighted could be implemented at the network level, and combined with the separation at the organizational level, the co-management at the working-group level and the integration at the individual level. This finding allows to propose an overview of the coopetitive tensions and the principles and tools to manage coopetition relationships at different levels (Table 7).

Table 7. Overview of principles and tools to manage coopetition

Level of analysis	Individual	Working-group	Organization	Network
Major source of coopetitive tension	Identity Culture Empowerment vs Accountability Freedom vs Constraints	Resource allocation Creation and appropriation of business unit value	Knowledge sharing and protecting Value creation and value appropriation	Resources and power structure of the firm Opportunities search vs Limits Deliberate strategies vs Emergent strategies
Management principle	Integration	Co-management	Separation	Interaction
Management tools	Coopetitive mindset and capabilities	Project organizational designs Co-governance Informal control mechanisms	Third-parties Formal control mechanisms	360 degrees intensive feedbacks through democratic debates, formal and informal control

The interaction principle encourages dialogue and information sharing among network's members. It stimulates the emergence of new ideas and initiatives and drives the design of new strategies to deal with uncertainties. In line with previous studies, the interaction principle

highlighted in this research contributes to knowledge dissemination, information distribution and communication, and the emergence of strategic actions (Haas and Kleingeld, 1999; Malina and Selto, 2001; Simons, 1995).

Our findings confirm previous studies that argue that the four control levers are necessary to transform tensions into a positive dynamic for the organization (Bruining et al., 2004; Kruis et al., 2016; Tuomela, 2005; Widener, 2007). Indeed, our results show that the interactive use of MCS contributes to expanding the network's information capacity and fostering interaction among network actors. These results are consistent with Simons (1987, 1991, 1995) and Chapman (1998). The use of multiple levers of controls create positive tensions and positive effects on the network. Chapman (1998) also argues that under uncertainty, effective organizations combine formal MCS but with intense informal communication between organizational groups. In this perspective, the interaction principle helps the network to balance opposite forces and helps members to create and capture more value. Indeed, the social informal structure of the network enables the development of horizontal trust and informal interactive control. Because of the multi-stakeholder nature of the network and the need of consensus between network's members, formal procedures are irrelevant. Our research goes further than Simons (1987, 1991, 1995) by showing the role of interactive control in managing network coopetition.

As explained by Simons (1995), "*good managers work constantly to help employees rise to their potential. In small organizations, managers do this informally. While eating or traveling together, they communicate core values and missions, the rules of the game, and current targets – and they learn about significant changes. As companies become larger, more decentralized, and geographically dispersed, senior managers are no longer in constant contact with all the employees who will identify and respond to emerging problems and opportunities*". Our research confirms that informal social networks facilitate the interaction principle. They promote a culture of dialogue in order to develop trust, social processes and values and organizational capabilities.

These values create positive energy balancing the negative energies resulting from performance control procedures.

5.2. Managerial implications

The highlight of the interaction principle to manage coopetition at the network level has strong managerial implications. The interaction principle helps to manage coopetitive tensions in a positive way for the network and for the organization. To do so, top managers involved in network coopetition should pay attention to the information sharing within the network. Information sharing should be part of the strategic agenda of top managers. Information sharing should be discussed and interpreted among the network member at different hierarchical levels. Top managers should also pay frequent and regular attention to all the formal and information interactions between members over time. The rules of information sharing should also be discussed and negotiated among team members frequently.

6. Conclusion

Coopetition management literature presented the management of this relationships as a determinant factor of its success (Le Roy and Czakon, 2016). Thus, coopetition management became a pervasive research questions. Three relevant principles of management have been highlighted (Pellegrin-Boucher et al., 2017; Séran et al., 2016) and two different designs (Fernandez et al., 2017; Le Roy and Fernandez, 2015). However, these previous studies on coopetition management remained focused on dyadic relationships neglecting coopetition among multiple firms. Our research aimed to fill this gap by exploring network coopetition building on management accounting theory and in particular, on Simons' (1995) framework. To illustrate our framework, we conducted of a qualitative case study of an international banking network constituted by *Caisse d'Epargne* (CE) and *Banque Populaire (BP)*. Based on this study, we evidenced coopetition relationships at the network level. We identified the specific tensions resulting from coopetition at this level and explored how these tensions are managed. As a result, we found that the key success factor of network coopetition is an interaction principle. Firms

should implement simultaneously and in an interactive way, the four leverages of control identified by Simons (1995). We provide insights into how these levers can be combined efficiently. These have findings present several contributions for the literature on both coopetition management and management accounting.

However, our research faces some limitations that could drive new investigations. First, in terms of theoretical perspectives, our research was based on Simons' framework. We showed the four leverages of control are simultaneously necessary to manage coopetitive tensions at the network level. However, further researches could go further by exploring deeper how the four levers interact to achieve this effective management. This question could also be explored in a dynamic perspective. Second, our research faces methodological limitations. Since it is based on a single case study of a coopetition network, it seems impossible to draw general conclusions out of this research. More studies should be replicated at the network level in other industries (high-tech, low-tech etc.) to allow possible generalization. More broadly, our findings demonstrated the specificities of coopetition network and invited for further research on this topic.

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