UNIVERSIDADE D
COIMBRA

Daniela Mota Cardoso

FROM COOPETITION TO COLLUSION: THE CHALLENGE OF HUB AND SPOKE CARTELS

Dissertação no âmbito do Mestrado em Gestão orientada pela Professora Doutora Catarina Cláudia Ferreira Frade e pelo Professor Doutor Pedro Marcelo Amado Garcia da Rocha Torres e apresentada à Faculdade de Economia da Universidade de Coimbra.

Julho de 2019

FEUC FACULDADE DE ECONOMIA
UNIVERSIDADE DE COIMBRA

FROM COOPETITION TO COLLUSION: THE CHALLENGE OF HUB AND SPOKE CARTELS

Daniela Mota Cardoso

Dissertação no âmbito do Mestrado em Gestão orientada pela Professora Doutora Catarina Cláudia Ferreira Frade e pelo Professor Doutor Pedro Marcelo Amado Garcia da Rocha Torres e apresentada à Faculdade de Economia da Universidade de Coimbra.

Julho de 2019

Este trabalho não seria possível sem o apoio fundamental de várias pessoas. Assim, embora as palavras não sejam o meu forte, não faria sentido terminar este percurso sem lhes deixar uma palavra de agradecimento:

Aos meus orientadores, a doutora Catarina Frade e o doutor Pedro Torres, o meu muito obrigada por toda a disponibilidade, conselhos e ensinamentos ao longo deste ano, mas, acima de tudo, obrigada por todas as palavras de encorajamento nos momentos em que eu mais precisava.

Aos meus pais, obrigada por moverem mundos e fundos para que eu tenha chegado onde cheguei. Sem todo o vosso esforço, nada disto teria sido possível…

Um agradecimento cheio de saudade aos meus avós, que foram sempre os meus maiores apoiantes e que, certamente, ficariam muito felizes com este momento…

À Filipa, à Carolina e à Guida, obrigada por serem o melhor que levo da FEUC e por provarem que é realmente verdade que na faculdade se fazem amizades para a toda a vida.

Um agradecimento que tem tanto de especial como de importante, às minhas meninas d'As FANS – Tuna Feminina da Universidade de Coimbra, a minha segunda casa nos últimos 4 anos, embora muitas vezes parecesse que era a primeira! É impossível pôr em palavras tudo o que significam para mim!

E por fim, a todos os meus amigos que contribuíram para a realização desta dissertação, desde a companhia para as tardes de estudo à companhia para as tardes de copos, o meu muito obrigada!

Abstract

Competition law plays a major role in business management and economics, by going beyond simply prohibiting certain anticompetitive behaviours and also regulating a firm behaviour and its interaction with its partners in a way that allows the market to work at its full competitive potential, and that way, benefiting all actors involved.

There are several different ways in which firms can interact with each other in their business networks. This interaction can either be legal or illegal, according to competition rules and the assessment of competition authorities. Finding that (il)legality line is this dissertation's main goal. In order to do that, this dissertation focuses on two topics that sit at that line and are yet to be compared in literature regarding business strategy, economy and competition law, and about which there's still much to investigate - coopetition and hub and spoke interactions. If certain conditions are met, coopetition, an interaction between firms that would be considered legal, may become a hub and spoke conspiracy.

Even though coopetition and hub and spoke interactions have some similar characteristics this dissertation finds their major differences. Those differences are what distinguish a legal from an illegal behaviour. The principal conclusion to be taken is that the most important difference focuses on the nature of information that is exchanged, as coopetitive relationships are based on the exchange of procompetitive information while in hub and spoke cartels the information that is shared has the power to reduce competition.

Focusing on hub and spoke cartels, and even though there is an extreme difficulty in defining them, this dissertation finds the similarities between the cases that were ruled as hub and spoke. Those similarities can be used as red flags when investigating new cases.

Keywords

Coopetition, Competition, Cooperation, Collusion, Hub-and-Spoke Cartels

Resumo

O direito da concorrência tem um papel muito importante na gestão e na economia, não apenas através da proibição de certos comportamentos anticompetitivos, mas também através da regulação dos comportamentos das empresas e da sua interação com os seus parceiros, de forma a permitir que o mercado funcione no seu máximo potencial competitivo e assim, beneficiando todos os atores envolvidos.

Há diversas formas através das quais empresas podem interagir entre si nas suas redes de negócios. Esta interação pode ser tanto legal como ilegal, dependendo das regras de concorrência e da avaliação das autoridades da concorrência. Descobrir a linha de (i)legalidade é o principal objetivo deste trabalho. Para tal, este trabalho foca-se em dois temas que se situam nessa linha e que ainda não foram comparados na literatura sobre estratégia empresarial, economia e direito da concorrência e sobre os quais há ainda muito para investigar: coopetição e carteis *hub and spoke.* Se certas condições se verificarem, coopetição, uma interação entre empresas que normalmente seria considerada legal, pode tornar-se uma conspiração *hub and spoke*.

Ainda que coopetição e interações *hub and spoke* sejam conceitos com características semelhantes, esta dissertação encontra suas principais diferenças. Essas diferenças são o que distingue um comportamento legal de um ilegal. A principal conclusão a ser retirada é que a principal diferença está na natureza da informação trocada, visto que relações coopetitivas baseiam-se na troca de informações que promovem a concorrência, enquanto que nos cartéis hub e spoke as informações trocadas reduzem a concorrência normal do mercado.

Em relação aos cartéis *hub and spoke* e embora haja uma dificuldade extrema em encontrá-los, esta dissertação sistematiza as principais semelhanças entre os casos que já foram definidos como *hub and spoke*. Estas semelhanças podem ser usadas como um sinal de perigo a ter em conta na investigação de novos casos.

List of Acronyms

- CA – Competition Act 1998
- CAT – Competition Appeal Tribunal
- CEC – Commission of the European Communities
- COA – Court of Appeal
- DC – District Court
- EC – European Commission
- EU – European Union
- FTC – Federal Trade Commission
- MFN – Most Favoured Nation
- OFT – Office of Fair Trading
- RPM – Resale Price Maintenance
- SA – Sherman Act
- SC – Supreme Court
- TFEU – Treaty on the Functioning of the European Union
- UK – United Kingdom
- US – United States

List of Figures

List of Tables

Table of Contents

Introduction

Coopetition and cartels are classical examples of licit and illicit interactions between firms, respectively. If two (or more) companies interact in a healthy way, respecting competition law and creating value to benefit the consumer, there might be an opportunity for coopetition to happen. On a negative side, when companies decide to collude and form cartels, disregarding competition law, they end up harming competition and consumers. Hub and spoke cartels are a new topic in literature regarding cartels, characterising situations in which information is exchanged between competitors through a third party operating at a different level of the supply chain (Amore, 2016). Even though coopetition is a term that's been fairly used in business strategy literature, its connection to hub and spoke cartels is an unexplored territory, meaning there's a great potential in comparing and studying the link between these two very complex topics.

Even though coopetition is a term that's been fairly used in business literature , its connection to hub and spoke cartels is an unexplored territory, meaning there's a great potential in studying the link between these two complex topics

For the past years, competition authorities around the world have been increasing their efforts towards the fight against cartels which raised a need for firms illegally behaving to find a way of having their illegal arrangements go unnoticed by authorities. Hub and spoke cartels appear from this necessity because, seeing as exchanging information in a vertical setting is very common in a business context, having a common retailer or supplier conducting the exchange of information would not raise as much concern among authorities.

The objective of this dissertation is to find what separates the two topics mentioned above, coopetition and hub and spoke interactions**.** I'll be investigating hub-and-spoke collusion in a way that allow firms to understand what they can and can't do when negotiating with their partners. Where is the line drawn between legal and illegal behaviour? What kind of information can firms share with their partners? When do firms

stop competing and start colluding? Is there any difference in the way hub and spoke cases are dealt with by US, UK and EU authorities?

I'll also be comparing coopetition to hub and spoke cartels in order to understand what makes one legal and the other illegal, paying close attention the way firms interact with each other, individual characteristics of each firm, the type of information exchanged in each of the interactions and the impact they have on the final consumer.

To answer these questions, the study's approach is to engage in a series of case studies of hub-and-spoke cartels. I'll examine several hub and spoke cases, looking to identify the differences across the cartels and in the way they are investigated by competition authorities from different countries, focusing mainly on the divergences between the United States, European Union and the United Kingdom.

This dissertation is divided in five parts. Part 1 offers a literature review on coopetition, going back to its beginnings and also focusing on its consequences. Part 2 provides an understanding on cartels, how they are dealt with by competition authorities and how some types of exchanges of information between competitors can give rise to anticompetitive concerns. Part 3 focuses on hub and spokes cartels and how firms collude using indirect information exchanges. A description of several alleged Hub and Spoke cases from the UK, the US and the EU is made in Part 4, presenting the necessary conditions to establish that firms have engaged in a hub and spoke cartel in those jurisdictions and also pointing out the common and the distinctive factors between cases already ruled as hub and spoke cartels. Lastly, Part 5 compares coopetition to hub and spoke cartels, proving that under certain circumstances a coopetitive relationship can turn into a hub and spoke cartel. I'll conclude by focusing on what firms can do in order to avoid being caught in a hub and spoke conspiracy

Part 1. Coopetition

1.1. Concept

The terms cooperation and competition are well established within business strategy research. Competition can be defined as “the pursuit of a market position by firms that offer comparable products to a targeted set of costumers” while research on cooperation defined it as “firms pursuing common or at least compatible goals while sharing and exchanging resources and engaging in joint activities” (Hoffmann, Lavie, Reuer, & Shipilov, 2018, p.3034). These two concepts have long been considered contradictory types of interaction between firms, however, in recent decades, studies have shown that firms are able to compete and cooperate at the same time (Hoffmann et al., 2018). Ray Noorda, CEO of Novell, used the term “coopetition” to characterise the simultaneous use of competitive and cooperative business strategies (Afuah, 2000).

Brandenburger & Nalebuff (1996) started to use that notion in strategy discussions; However, in the last decades, researchers haven’t been able to agree on a single definition of coopetition accepted by all (Bengtsson & Kock, 2000; Bengtsson & Raza-Ullah, 2016). While some researchers believe the lack of a general definition is due to the term being new and still under-researched (Zinenko, Rovira, & Montiel, 2015), others claim that coopetition has been studied on various different levels, network, dyadic, triadic and intra-firm, which makes it difficult to find a general definition as its nature and dynamics change from one level to another (Bengtsson & Raza-Ullah, 2016).

There have been several attempts to define coopetition:

- Brandenburger & Nalebuff (1996) believe that it can be broadly described as a value-net, including various actors, such as suppliers, customers, competitors, and complementors’ interests, that simultaneously compete and coordinate.
- M. Kramer and Porter (2011) state that coopetition is founded on the idea that competitors can create and share value by collaborating with each other;

- Zinenko et al. (2015) have a simpler approach to the term, defining coopetition as the simultaneous use of competitive and cooperative business strategies.
- Bengtsson and Kock (2000) define coopetition as a "paradoxical relationship that emerges when two firms cooperate in some activities (…) and at the same time compete with each other in other activities" (p.412)
- Dahl (2014) suggests that coopetition is a process between two or more companies based on simultaneous and mutual cooperative and competitive exchanges.
- Bouncken, Gast, Kraus and Bogers (2015) define coopetition as "a strategic and dynamic process in which economic actors jointly create value through cooperative interaction, while they simultaneously compete to capture part of that value". (p.17)

Even though the definition remains unclear, researchers can agree that, while cooperation and competition are "two ways of interaction between firms that involve strong and opposite logics" (Dorn, Schweiger, & Albers, 2016, p.485), they are not mutually exclusive and can still coexist in the same environment creating benefits for all firms involved (Ritala, Kraus, & Bouncken, 2016). Cooperation is the way for firms to better compete globally (Y. Luo, 2007).

There are several examples that demonstrate how a cooperative relationship between competitors could work. Toyota and General Motors are competitors in the automobile industry who cooperated to develop fuel cell-powered cars. Another example would be the cooperation between competitors Coca-Cola, Pepsi Co., Redbull and Unilever, to develop new and sustainable refrigeration techniques. (Kim, 2018)

1.2. Nature

Coopetition can involve explicit formal agreements and a well-established structure, others can be informal or implicit. Explicit coopetition happens when firms operate in each other's product market and collaborate via clear interfirm alliances (Bengtsson, Kock, Lundgren-Henriksson, & Näsholm, 2016). On the other hand, the

forms of coopetition that involve implicit or informal agreements can happen through price fixing and other forms of collusion between competitors(Hoffmann et al., 2018).

Gulati, Lawrence and Puranam (2005) suggest coopetition can happen in a vertical setting, between suppliers and buyers, that collaborate while competing for better margins at the same time; it can also take place horizontally, among firms that operate in the same level of the supply distribution chain.

Literature also makes a distinction between bilateral and multilateral coopetition. Hoffmann et al (2018) define bilateral coopetition as an interaction involving only two firms that cooperate and compete at the same time, while multilateral coopetition requires the involvement of third parties.

1.3. Types of Coopetition

Luo (2007) proposes four different types of coopetition, based on the intensity of the competition and cooperation occurring with a rival:

- Contending situation: a situation in which a firm competes with a rival in major international markets, in an environment of high competition and low cooperation.
- Isolation situation: happens when there's no significant interaction between rival firms, maintaining a simultaneous low competition and low cooperation environment.
- Partnering situation: exists when two firms voluntarily maintain high cooperation and low competition between them in order to maximize the joint synergies created by joining each firm's resources and capabilities. In this setting, rival firms might become partners.
- Adapting situation: happens when two firms reciprocally depend on each other, maintaining high cooperation and competition to achieve their goals.

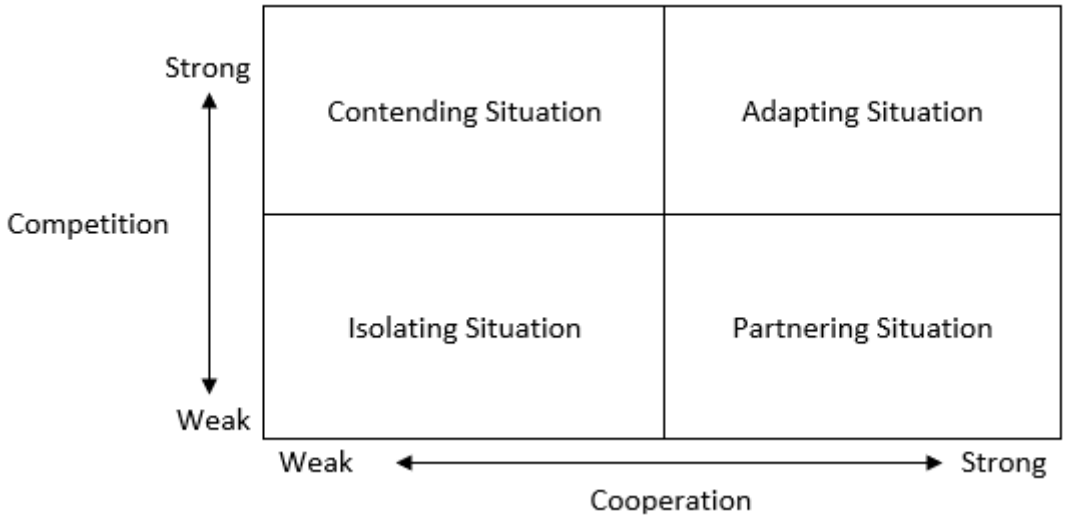

Figure 1- Types of Coopetition (adapted from Y. Luo, 2007)

1.4. Schools of Thought

Bengtsson & Raza-Ullah (2016) believe there are two schools of thought regarding Coopetition. One that focuses on the firms (The Actor School of Thought) and other that focuses on the firm's activities (The Activity School of Thought). Recently, there's been suggested the existence of a third school (The Blended School of Thought), to overcome the limitations of the previous Schools.

1.4.1. The Actor School of Thought

The Actor School of Thought separates cooperation and competition among its actors, whether they are customers, suppliers, complementor or competitors. (Brandenburger & Nalebuff, 1996). The actors and the interactions between them are then systematized in a map called the value network, that include both cooperative and competitive and vertical and horizontal relationships (Afuah, 2000; Lechner & Dowling, 2003).

This School and its supporters have been criticized. By defining coopetition in a broader sense, the supporters of this School are unable to address the specificities and the complexity of coopetitive relationships (Bengtsson & Raza-Ullah, 2016). The idea behind this school is simple: it is assumed that firms cooperate with their suppliers and

customers and compete with the firms that are a threat to their market performance (Brandenburger & Nalebuff, 1996). Bengtsson, Eriksson and Wincent (2010) believe that, this way, direct interactions between competitors are forgotten, with the transactions happening indirectly via a third party.

Bengtsson and Raza-Ullah (2016) consider the model to be very abstract, ignoring contradictions, challenges and tensions that may happen in a coopetitive situation and also key foundations of coopetition, such as cognitive, behavioural and emotional factors.

1.4.2. The Activity School of Thought

To overcome the critiques mentioned before, Bengtsson and Kock (2000) suggested the Activity School of Thought, which focuses on the coopetitive interaction in itself, rather than on the network created. They even believe that firms can compete on some activities while cooperating on others.

The model focuses on relationships happening on various levels. Bengtsson and Raza-Ullah (2016) refer the dyadic level, including both horizontal and vertical dyads. Horizontal dyads refer to direct competitors simultaneously cooperating and competing in different activities while vertical dyads happen when two partners launch their product on the each other's market. Madhavan, Gnyawalli and He (2004) mention the triadic level, where a firm uses its resources to help the other two firms creating a coopetitive relationship between them. The triadic level will be discussed later on this dissertation.

1.4.3. The Blended School of Thought

Mantena & Saha (2012) claim that the Actor and the Activity Schools are interconnected, affecting each other bilaterally and together influence the outcomes. On one hand, there are situations in which two firms in a coopetitive relationship are also part of a bigger network; on the other hand, a firm that's part of a network could also negotiate with a firm outside said network.

Bengtsson et al. (2010) conclude that the outcomes of coopetition would not only depend on the dyadic relationship but would also be influenced by the overall context of both firms.

1.5. Drivers of Coopetition

External Drivers

External drivers include environmental conditions, such as the characteristics of the industry, the technological demand and influential stakeholders, that force firms to form coopetitive relationships (Bengtsson & Raza-Ullah, 2016). Influential stakeholders, such as important costumers or the government, can promote coopetition, through incentives, policies, reforms or subsidies (Barretta, 2008; R. Wang, Ji, & Ming, 2010).

Some industry characteristics that influence coopetition are the degree of concentration of each industry and its stability. The concentration of each industry and its stability can influence the creation of coopetitive relationships. The more concentrated, regulated and unstable the industries are, the more likely the firms are to engage in coopetition (Dowling, Roering, Carlin, & Wisnieski, 1996). Coopetition will help firms achieve the desired stability (Dai, 2010; Ritala, 2012).

Coopetition is also motivated by technological demand seeing as some technological issues are so challenging that, to overcome them, firms operating in different industries need to integrate their efforts and join their know-how (Bengtsson & Johansson, 2014).

Relation-specific Drivers

From the point of view of a firm, the relation-specific drivers relate directly to the characteristics of the partner and the dynamics of the interaction between them. Firms choose their partners based on the contribution they will give to the achievement of their goals and so they tend to choose firms that are more advanced in the technological field (Gnyawali & Park, 2009; Y. D. Luo, Shenkar, & Gurnani, 2008).

Coopetition is more likely to happen when firms have complementary characteristics, their goals are in conformity, the exchange of information is reciprocal and there's a certain degree of both bargaining power and interpersonal trust (Y. D. Luo et al., 2008; Tortoriello, Perrone, & McEvily, 2011)

Internal Drivers

The internal drivers relate to each firm's internal environment, such as its specific motives, resources and capabilities (Bengtsson & Raza-Ullah, 2016). When a firm is perceived as being vulnerable, it has more incentives to pursue coopetitive relationships. By engaging in coopetition and exchanging knowledge with other firms, they can increase their bargaining power and competitive skills of each firm, and in the end, create more value.(Gnyawali & Park, 2009)

1.6. Outcomes of coopetition

Bengtsson and Raza-Ullah (2016) focus on the outcomes of coopetition, classifying them in four categories: Innovation, knowledge related, firm performance and relational outcomes.

Coopetition can lead to *innovation* seeing as, according to Park, Srivasta and Gnyawali (2014), while competition puts pressure on firms to innovate, cooperation allows the necessary information exchange for innovation to happen.

However, literature on coopetition hasn't been consistent on this matter. The majority of studies have found a positive correlation between coopetition and innovation, as explained above. There are also some that claim that there's no significant connection between the two (Mention, 2011) and some studies even propose a negative impact of coopetition on innovation (Ritala & Sainio, 2014)

Ho & Ganesan (2013) suggest that the cooperative side of coopetition leads to *knowledge sharing*, as in order to maximize the potential of coopetition firms need to exchange information with each other. The information exchanged enables firms to

create value that can then be used in the competitive side of coopetition (Song & Lee, 2012).

There are several traditional *firm performance* outcomes that have been linked to coopetition, such as economic performance (Liu, Luo, Yang, & Maksimov, 2014), profitability (Mantena & Saha, 2012), financial and customer performance (X. Luo, Slotegraaf, & Pan, 2006), efficiency (Parzy & Bogucka, 2014), sales volume, market position and quality of service support (Wu, Choi, & Rungtusanatham, 2010).

The last outcomes are related directly to the *dynamics of the relationship*, such as its maintenance and the trust that grows from successful coopetition. Ketchen, Snow and Hoover (2004) even admit that these outcomes are more important that all the others mentioned above, seeing as those will only happen if there's trust and a successful coopetitive relationship.

1.7. Consequences of Coopetition

1.7.1. Positive Consequences

The major positive consequences highlighted by literature on coopetition are related to innovation and financial performance (Hoffmann et al., 2018). Several authors have enumerated the many advantages of coopetition, that tend to mirror the motivations for it:

- Y. Luo (2007) focuses on innovative outcomes, believing that coopetition leads to more innovation with lower costs and risks and higher levels of production efficiency and quality control.
- Bouncken et al. (2015) suggest resource access and pooling, cost sharing and reduced risk as advantages of coopetition.
- Afuah (2000) claims that the value created by coopetition tends to improve firm performance, as it's been argued that firms cooperate to create such value and then compete to receive a part of the value (Brandenburger & Nalebuff, 1996).
- Ritala and Sainio (2014) state innovation and diversity of technologies as potential benefits.

1.7.2. Negative Consequences

Despite the many positive outcomes of coopetition, Gnyawali & Park (2009) state that the tension created by coopetition can also lead to knowledge leakage, opportunistic behaviour and lack of commitment, which can dent the stability of the relationship and cause its termination.

Some studies also state collusion/cartels as a possible consequence of coopetition (Christ, Burritt, & Varsei, 2017) however, there's different opinions on the connection between coopetition and collusion; while some studies claim that collusion is a negative consequence that can arise from coopetition, others suggest that coopetition is one of the forms collusion can take (Walley, 2007)

Collusion/Cartels

Christ, Burritt and Varsei (2017) suggested that coopetition can lead to collusion, promoting cartel formation and gaining of monopoly power, where firms gain at the expense of consumers. These authors follow the point of view of traditional purist economists, who believe that the market equilibrates itself "through impersonal market mechanisms rather that socio-political arrangements such as cooperation" (p.1031). Cooperative agreements were seen as collusion over price or quantity of production.

In fact, there's a very thin line between collusion/cartels and coopetition, however it is possible to make a distinction. Walley (2007) differentiates collusion and coopetition based on the impact on the consumer: when "firms cooperate not just to their mutual benefit but also to the benefit of the consumer, the relationship is not collusive" (p.16)" whereas in a collusive environment, the consumer is penalized while firms benefit from increased producer surplus from rises in prices. This way, coopetition creates a win-win-win situation, whilst collusion provides a win-win-lose scenario. (Rusko, 2015). From a legal perspective, collusion differs from coopetition, as collusion violates the law and coopetition does not (Rusko, 2011).

Rusko (2011) claims that coopetition cannot be collusive as long as "the firms involved compete with regard to at least one strategic variable (e.g., quality, brand, or flexibility)" (p.312/313) however problems may appear if the number of firms involved

increase and some leave the agreement, or as the competitive environment changes, making independence more attractive (Christ et al., 2017).

Pressy, Vanharanta and Gilchrist (n.d.) claim that there are circumstances in which firms are tempted to expand their collaboration to include price fixing or market allocation, turning a coopetitive relationship to collusion. To exclude collusion and cartels from coopetition would lead to a faulty understanding of the concept.

A cartel is more likely to be reached in an isolation situation (defined above as a coopetitive relationship with both low competition and cooperation), because "low competitive interaction provides limited impetuous to improve and to search for new areas of cooperation that can create future competitive advantage" (Bengtsson et al., 2010, p.10) resembling a collusive situation. Chamberlin (1933) adds that if firms deliberately try not to compete and to avoid each other on the market, they might become more involved in the cartel.

Coopetitive Paradox

The coopetitive process is paradoxical, as it involves cooperation and competition, two interactions with such opposite logics (Raza-ullah, Bengtsson, & Kock, 2014) This opposition calls for conflicting corporate behaviour: while cooperation involves exchanging information and resources with a partner, competition drives a firm to protect such information and resources (Kale, Singh, & Perlmutter, 2000). Cooperation is the way firms can align their objectives and the coordination of their activities while competition motivates firms to reach their individuals goals, which can lead to free riding and opportunistic behaviour (Khanna, Gulati, & Nohria, 1998)

Gnyawali, Madhavan, He and Bengtsson (2016) argue that the "paradox between collaborating for collective interests and competing for individual benefits may lead to tension when two contrary forces are twisted inside the relationship" (p.354). Tidström (2014) defines that tension as "a situation of incompatible behaviour, goals, or activities between at least two parties occurring in coopetitive relationships". (p.262) though Das & Teng (2000) suggest that the tension could also arise from attempts to resolve such paradox.

The incompatible behaviour can arise from different factors, and so researchers have identified several types of tension, related to knowledge leakage, opportunistic behaviour, lack of commitment, and instability of intrafirm relations (Hoffmann et al., 2018).

Managing the tension

Since tension is developed as a consequence of the coopetition paradox, the tension must be managed to enable a balance between contradictory logics of interaction (Gnyawali et al., 2016). It is crucial to find strategies to manage the tension to advise firms on how to cooperate with a competitor (Ann Peng, Yen, & Bourne, 2018).

The first strategy is *organizational separation*. While one unit cooperates with a partner, another unit competes with it. In order for this strategy to work, all units within each firm need to coordinate. This separation could also happen within the same unit with different managers in charge of the competitive and cooperative interactions (Singh, Lavie, & Lechner, 2007). Le Roy and Fernandez, (2015) criticised this strategy because, while it can reduce tension with other firms, it may create them within the organization.

Secondly, there's the *temporal separation* strategy, defined by the alternation between competition and cooperation over time, so that both types of interaction don't happen at the same time (Hoffmann et al., 2018)

The third strategy involves cooperation and competition happening at the same time, yet they happen in different domains. This is the *domain separation* strategy. This separation only reduces tension if there's no interdependence between those domains. (Hoffmann et al., 2018)

The last approach 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." (Hoffmann et al., 2018, p.3034)

1.8. Coopetition outside the dyadic level

Kim (2018) believes that viewing coopetition simply as "a cooperation between competitors in a dyadic relationship between two firms"(p.1) is a very limited form of defining the concept, as it ignores the influence other firms might have on the dyadic relationship. Coopetition can arise from triadic relationships because "as a social actor, firms' behaviours are influenced by their economic and social relations, and in triadic relationships among three actors, two relationships affect the third relationship"(p.3). Gimeno and Jeong (2001) go further, stating that coopetition is more important when referred to in a network or industry level, as

> "firms often cooperate with other firms in order to compete more effectively against further firms (by) competitively seek out exclusive cooperative relations with attractive partners, matching cooperative initiatives of their rivals by similar initiatives of their own and, in some industries, forming groups of cooperating firms that compete with one another" (Gimeno & Jeong, 2001, p.3)

According to Gimeno and Jeong (2001), a network of cooperative and competitive relationships form an industry. Cooperative interactions, such as facilitating access to information, markets and resources of other firms will influence the firm's competitive advantage.

Gimeno and Jeong (2001) claim that "any dyadic relationship is embedded in many possible triads that may influence the behaviour of the dyad members toward each other"(p.7). In a situation where three firms are involved, each of these firms will work as an intermediary between the two remaining. The intermediary can have different functions in the triad, working as a mediator, in a way that, without it, the other two firms couldn't reach an agreement, the "tertius garden", when the intermediary benefits from a disagreement between the two, and the "divide and impera" strategy, where the intermediary encourages and benefits from a conflict between the other two firms. (Gimeno & Jeong, 2001; Simmel, 1950).

The structural balance theory, a social psychological theoretical perspective, suggests that "social relations among actors influence the formation of attituded towards (…) other actors" (Gimeno & Jeong, 2001, p.7; Kim, 2018). Figure 2 shows the

possible forms coopetition can take among three firms (P,O and X), and the way a relationship between two firms can affect a third one. The positive sign represents cooperative relationships between firms while the negative sign signifies competitive interactions (Kim, 2018).

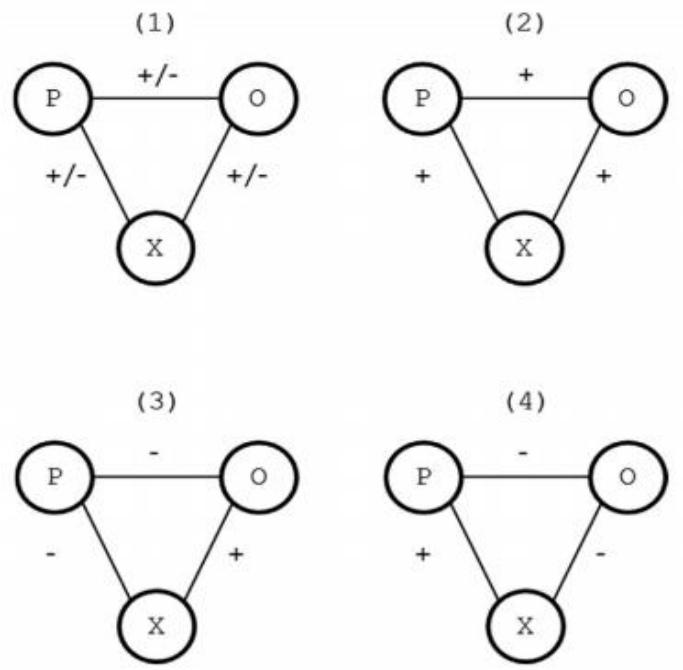

Figure 2- Coopetition dynamics in a triad (Kim, 2018,p.3)

According to Kim (2018), in a triad, "actors tend to adopt the attitudes of those with whom they are positively connected and oppose the attitudes of those with whom they are negatively connected"(p.3). Looking at 2 in figure 2, it's clear that a positive relationship between P and O and between O and X will lead P and X to be positively related as well (Kim, 2018).

Scheme 3 in figure 2 represents a situation in which two firms with a common rival will end up working together because they both face the same threats from the rival, incentivizing them to work together against that rival. Kim (2018) characterises this situation as "an enemy of my enemy is my friend", exemplifying it with the triad between SK Hynix, Apple and Samsung. SK Hynix is a manufacturer of memory chips, Apple manufacturers smartphones, while Samsung works in both the memory chip (supplying Apple's smartphones) and the smartphone market. This makes Samsung a rival of both SK Hynix and Apple. Apple and SK Hynix joined forces to purchase Toshiba Corp.'s memory chip unit, which, on one hand, would reinforce SK Hynix's competitive

advantage over Samsung on the memory chip market and, on the other hand, would reduce Apple's dependency on Samsung's chips (Kim, 2018). The competitive relationship between Hynix and Samsung and between Apple and Samsung (characterized by the negative signs in figure 3) lead Hynix and Apple to cooperate (positive sign) with the aim of reducing Samsung's advantage over both.

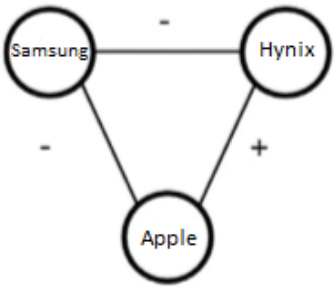

Figure 3- "an enemy of my enemy is my friend" (adapted from (Kim, 2018)

Looking at 4 in figure 2, the opposite of what was stated before is obvious. Competition can appear due to cooperative relationships between rivals as "firms may impose competitive threats to their rival's partner because rival's partner helps their rival improve competitive advantages and outcompete them" (Kim, 2018,p.3). Kim (2018) exemplifies this situation with a triad between Intel, Luxottica and Qualcomm, following the maxim of "a friend of my enemy is my enemy". Intel is a technology company, Qualcomm is a telecommunications equipment company, dominating the smartphone/ tablet markets as well as the IT wearable market and Luxottica is an Italian eyewear company. Intel partnered with Luxottica to launch smartglasses and thus, entering the smartglass market, dominated by Qualcomm. In response, Qualcomm partnered with ODG, enabling ODG to enter the eyewear market in which Luxottica is the dominant firm. This way, the partnership between Luxottica and Intel (positive sign in figure 4) drove Qualcomm, Intel's rival (negative sign), to partner up with one of Luxottica's biggest rival (ODG) with the aim of raising the competition it faces.

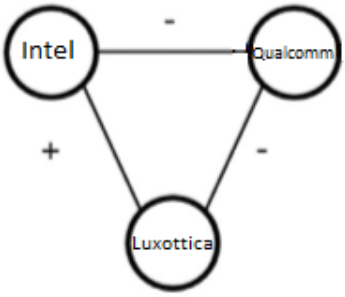

Figure 4- "a friend of my enemy is my enemy" (adapted from (Kim, 2018)

The concept of collusion has a different meaning depending on the perspective we study it from. Its legal and economic definition is not the same.

From an economic point of view, a situation in which the prices a firm practices on its specific market are higher than a certain competitive benchmark is considered a collusive situation. This benchmark usually is the equilibrium price that would happen if there was no opportunity for the companies involved in that market to coordinate their conduct. A situation in which firms set prices that are close to monopoly prices could also be considered collusion (Motta, 2004). From a legal perspective, collusion is defined by a coordination between firms, in the form of an agreement or concerted practice, that has as its object or effect the distortion, prevention or restriction of competition. While the economic definition is more focused on the outcome of the behaviour, the legal definition focuses on the behaviour in itself (Nielsen, 2011).

Collusion can be explicit, when firms act organized, or implicit/tacit, if they act in a non-cooperative way (Motta, 2004). For the purpose of this work, I'll only focus on explicit collusion, commonly referred to as cartel. It happens when "two or more firms collectively agree on exploiting their economic power and improving their profitability, by raising prices, restricting output, sharing markets or rigging bids" (Nielsen, 2011, p.9). This way, the firms involved in the cartel are able to reach an outcome similar to what they would get in a monopoly setting.

The EU, the US and the UK all have similar definitions for cartel. The European Commission (EC) defines cartels as

> agreements and/or concerted practices between two or more competitors aimed at coordinating their competitive behaviour on the market and/or influencing the relevant parameters of competition through practices such as the fixing of purchase or selling prices or other trading conditions, the allocation of production or sales quotas, the sharing of markets including bid-

> rigging, restrictions of imports or exports and/or anti-competitive actions against other competitors[1]

The Office of Fair Trading (OFT) defined cartel as agreements between businesses not to compete with each other that may be verbal or not and regard price fixing, bid rigging, output quotas or restrictions and/or market sharing (Office of Fair Trading, 2005); While in the US, in US v National Lead, cartels were defined as "a combination of producers for the purpose of regulating as rule, production, and, frequently, prices (and) quotas of production (…) to maximize the profits of participants by directly or indirectly maintaining prices at the level of greatest net return"[2]

2.1. Information exchanges

One of the key issues for competition law is to distinguish exchanges of information between firms that have positive consequences from those with negative impact on competition. Some exchanges of information have a neutral or beneficial effect on efficiency and others facilitate collusion threatening competition. (Whish, 2006; Whish & Bailey, 2018).

Bennett and Collins (2010) believe there is a consensus that some types of information exchange can harm market outcomes. However, researchers are not sure about where the cut between information that harms outcomes and information that is beneficial is made.

Whish and Bailey (2018) believe the Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements[3] provide a helpful guidance on this matter. Although they are not legally binding, the Horizontal Guidelines provide a helpful insight on how the Commission might deal with exchanges of information between firms, either on a horizontal or vertical setting.

[1] Commission Notice on Immunity from fines and reduction of fines in cartel cases, 2006/C 298/11, para.1

[2] US v. National Lead Co., 63 F. Supp. 513, 535

[3] From now on, the Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements will be referred to as Horizontal Guidelines

2.1.1. Arguments in favour of information exchange

Whish (2006) believes that sharing information between firms can be beneficial. Being informed about the conditions of the market, the volume of demand, the existing capacity of an industry and the investment plans of their rivals will help firms to make rational and effective decisions on their production and marketing strategies.

Information exchange may benefit consumers, competitors and the competitive process (Whish & Bailey, 2018).

The disclosure if information to consumers can have positive consequences on competition. The more informed the consumers are about the products and prices of each company, the more likely they are to make well-informed and well-reasoned decisions (Whish, 2006). Consumers must have access to information that allows them to make the better choice regarding their needs. Having access to all information available offers customers the ability to compare each firms' products and pick the most suitable one. In order for this to be done, costumers need access to clear information which is not always possible, either because firms hide information from the consumer, or the information is provided in a manner that consumers can't fully understand. According to Diamond (1971), the absence of this disclosure of information may distort consumer behaviour and it may also adversely impact competition and competitive outcomes. Bennett and Collins (2010) add that firms may not have the incentive to share this information with costumers. In some circumstances, it can even be more beneficial to firms to hide information from consumers or provide wrong data, to exploit consumers.

These authors also believe that sharing information with competitors can also lead to more efficiency and better competition. Having access to critical information allows firms to benchmark themselves against other competitors, promoting innovation and efficiency; Information can also improve allocative efficiency, allowing firms to allocate their resources to those who need them the most; information allows firms to better understand market trends, helping them to better match their supply to the demand; sharing information about individual consumers' risks can help to reduce problems of adverse selection and moral hazard; The EU has granted block exemptions to some sectors in recognition that sharing information with competitors may raise

anticompetitive concerns;. These exemptions allow firms to capture benefits from synchronization, rationalisation and economies of scale.

Even though information sharing has the ability to create benefits, it doesn't justify the activity in itself, as information that may promote competition can also allow firms to collude. Some kinds of information sharing may harm competition even if they have the power to generate benefits, as "they may also give rise to coordinated effects and there might be significant challenged in showing that the exemptions under article 101(3) are met" (Bennett & Collins, 2010,314).

2.1.2. Arguments against information exchange

Whish (2006) states that to compete firms should act independently on the market; It's easier for a firm to coordinate their behaviour with that of its competitors when they all agree to share information about prices, investments or projects.

Sharing certain types of information with competitors can lead to "restrictions of competition in situations where it is liable to enable undertakings to be aware of market strategies of their competitors"[4]. Whish and Bailey (2018:552) state that there are two big concerns arising from the exchange of sensitive information between competitors: First, sharing information may enable competitors "to predict each other's future behaviour and to coordinate their behaviour on the market" and second, it might result in "anti-competitive foreclosure of the market in which the exchange of information takes place".

Information exchanges can help firms to enter and maintain a collusive behaviour in three ways. First, given the many equilibriums that can be reached between firms in an industry, the exchange of information among the firms involved can be useful in choosing what equilibrium they should strive for (Motta, 2004). This can be done either through direct communication or through a third-party acting as an intermediary for the exchange of information (Levenstein & Suslow, 2006). Second, sharing information can help to promote the internal stability of the collusion, helping firms to monitor the adherence of other firms to the agreement and to know if there

[4] EC, Horizontal Guidelines, para. 58

are any deviators that should be punished. Thirdly, it can also promote the external stability of the coordination, as firms share information about any possible new entrance on the market, helping firms to coordinate their behaviour against those firms. Exchanges of information between a small and limited group of firms, gives those firms an advantage over all other firms present on the same market.

2.1.3. Conditions for anticompetitive effect

Defining an exchange of information as having anticompetitive effects on competition depends on two dimensions, the nature of the information exchanged and the relevant market conditions.[5]

2.1.3.1. Structure of the Market

Whish (2006) states that collusion is more likely and easier to reach in oligopolistic markets where firms offer homogenous products, as there is more common ground for firms to reach an understanding. On the contrary, it's more difficult to reach a coordinated behaviour on complex markets with very differentiated products, as more information is needed for firms to reach an agreement[6].

When the companies involved in the exchange of information cover a large part of the relevant market is more likely that competition could be restricted comparing to when these companies only cover a small part of the market, however it is important to know that what constitutes a large part of the market depends also on the information that's being exchanged. This way the firms that are out of the agreement could minimize the anticompetitive behaviour of the companies involved[7].

Transparent markets are more prone to collusion, as transparency makes it easier for companies to reach an agreement on the conditions of the collusion and it can also help the collusion by increasing its internal and external stability[8].

[5] EC, Horizontal Guidelines, para 75
[6] EC, Horizontal Guidelines, para 80
[7] EC, Horizontal Guidelines, para 87
[8] EC, Horizontal Guidelines, para 78

Collusive outcomes are more likely where the demand and supply conditions are relatively stable. In an unstable environment it may be difficult for a company to know the reason behind its lost sales, making it difficult to sustain a collusive behaviour[9].

The probability of a collusive situation is also higher when talking about firms with symmetric market structures. When companies are homogenous in terms of their costs, demand, market shares, product range, capacities etc., they are more likely to reach a common understanding on the terms of coordination[10]

To conclude, firms are more likely to reach a collusive agreements in transparent, concentrated, simple, stable and symmetric markets. However, even if the markets do not have these characteristics, exchange of information can still help firms to reach collusion by increasing transparency in the market, reducing market complexity, buffering instability or compensating for asymmetry. It's important to look at market condition but also at the way the information exchanged between firms may change those characteristics[11].

2.1.3.2. Nature of the information exchanged

The exchange of commercially sensitive data between competitors is likely to infringe competition, if it reduces each company own independence in taking decision by reducing their incentives to compete. The most commercially sensitive information is related to prices and quantities, followed by information about costs and demands.[12]

Exchanges of genuinely public information i.e. information that is available to everyone, are unlikely to infringe competition. For information to be easily accessed by everyone it must be costless and reaching it should be equally as easy for a firm outside the agreement and for the firms exchanging the information.[13]

[9] EC, Horizontal Guidelines, para 81.
[10] EC, Horizontal Guidelines, para 82.
[11] EC, Horizontal Guidelines, para 77
[12] EC, Horizontal Guidelines, para 86
[13] EC, Horizontal Guidelines, para 94

Information exchanged publicly is less likely to infringe competition as it makes the exchanged information equally accessible to all competitors and buyers, enabling them to constrain potential restrictive effect on competition[14].

Exchange of individualised data is more likely to facilitate collusion as it facilitates a common understanding on the market, and punishment strategies by allowing the coordinating companies to single out a deviator or entrant. Exchanges of genuinely aggregated data, i.e., where the recognition of individualised company level information is sufficiently difficult, are less likely to lead to restrictive effects[15].

The exchange of historic data is unlikely to lead to a collusive outcome as it is unlikely to be indicative of the competitors' future conduct or provide a common understanding on the market. Information about future conduct is more likely to be anticompetitive than information about past actions.[16] "The older the information is, the less impact it is likely to have on competition" (Whish, 2006).

Frequent exchanges of information that facilitate both a better common understanding of the market and monitoring of deviations increase the risks of a collusive outcome. However, depending on the structure of the market, it is possible that an isolated exchange may constitute a sufficient basis for the participating undertakings to concert their market conduct.[17]

2.1.3.3. Means of exchanging information

According to Whish (2006), the form the exchange of information takes does not affect whether the agreement harms competition or not. Whether the information is exchanged directly or indirectly, through a third party, has no influence on the harm it might do to competition. Indirect information exchanges will be explored in part 4, in the context of hub and spoke arrangements.

[14] EC, Horizontal Guidelines, para 84
[15] EC, Horizontal Guidelines, para 89
[16] EC, Horizontal Guidelines, para 90
[17] EC, Horizontal Guidelines, para 91

2.2. Prohibition under Competition Law

2.2.1. European Union

Article 101(1) of the Treaty on the Functioning of the European Union (TFEU), prohibit

> all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the internal market[18]

The terms "agreement", "concerted practices" or "undertakings" are not defined in any Treaty, however, given their major importance in the analysis of anticompetitive situations, there have been several situations in which these concepts were defined.

An agreement covers both written and spoken situations, including gentlemen's agreements. The parties do not have to be a physical meet, an exchange of letters or telephone calls is enough for an agreement to be reached[19]. For an agreement to exist it's only required that all parties have an interest in it being concluded, however, there's no need for that interest to be identical among all parties[20].(Harris, 2001)

A concerted practice may exist where there is informal co-operation without any formal agreement or decision. Authorities will need to prove that the parties knowingly substituted cooperation between them, even if they did not enter into an explicit agreement[21]. A concerted practice implies undertakings concerting together on a market conduct pursuant to a collusive practice, and a relationship of cause and effect between the two[22]. Some factors that authorities may take into consideration when

[18] TFEU, Article 101 (1)

[19] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/284396/oft401.pdf

[20] Bayer AG V EC, Case T-41/96, para.56

[21] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/284396/oft401.pdf

[22] EC v Anic Partecipazioni SpA, Case C-49/92, para. 4

establishing if a concerted practice exist are whether or not the parties knowingly cooperated between them, if their behaviour is a result of direct or indirect contact, or if the behaviour is a result of contact between firms that leads to conditions that wouldn't be the same in normal market conditions, the structure of the market and the nature of the product, the number of undertaking and if their cost structure and outputs are similar.[23]

Concerted practice fills the need the EU had to "bring within the prohibition of that Article a form of cooperation between undertakings which, without having reached the stage where an agreement so-called has been concluded, knowingly substitutes practical cooperation between them for the risks of competition."[24]

The term undertaking covers any person involved in an economic activity, including "companies, firms, businesses, partnerships, individuals operating as sole traders, agricultural co-operatives, associations of undertakings, non-profit-making organisations and (in some circumstances) public entities that offer goods or services on a given market."(Harris, 2001,p.263). An agreement between a company and its subsidiary, or between two companies which are under the control of a third, will not be agreements between undertakings if the companies have economic independence and thus, no freedom to determine their conduct on the market.

Even though an agreement or concerted practice might fall under article 101, it can still be declared as legal. There are two categories of exemptions, Article 101(3) and block exemptions (Nielsen, 2011):

- In Article 101(3), there are four conditions that must be cumulatively satisfied in order to qualify for the exemption, the arrangement must improve the production or distribution of goods or promote technical/economic progress and a part of that benefit should be allocated to the consumers. The agreement must not contain any

[23] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/284396/oft401.pdf

[24] Imperial Chemical Industries Ltd. v CEC, Case 48-69, para. 64

indispensable restrictions and it also cannot eliminate competition in respect of a substantial part of the products in question.[25]

- The Commission has issued a list of block exemptions for different types of contracts that include the contract terms which will be permitted and the ones that are banned from these exemptions. (Nielsen, 2011)

The UK follows the prohibition stated in the TFEU, specified on Section 2 of Chapter 1 of the Competition Act 1998 (CA)[26], the only difference being that practices are forbidden as long as they affect trade, or have as their object or effect the prevention, restriction or distortion of competition within the UK[27]. The UK also accounts for situations in which the prohibition might not be applied[28] and any agreement that is exempt from the EU prohibition is also exempted from the Chapter 1 prohibition[29].

As mentioned before, Article 101 of the TFEU applies to agreements "that have as their object or effect the prevention, restriction or distortion of competition"[30] thus it is very important to clarify the meaning of restriction by object and restriction by effect.

Restriction by Object

Certain types of collusion between firms are inherently capable of negatively affect competition. These are agreements in which the restriction of competition is a necessary consequence of the agreement.[31]

The anti-competitive object of a restraint is "based on the content of the provisions, the objectives and the economic and legal context of the constraint"[32] . It can be the case that what seems to be a restriction by object may turn out not to be a

[25] TFEU, Article 101 (3)
[26] Competition Act 1998, Chapter 1, Section 2 (1) a) and b)
[27] Competition Act 1998, Chapter 1, Section 2 (3)
[28] See Section 3, Chapter 1, CA
[29] Competition Act 1998, Chapter 1, Section 10 (1)
[30] TFEU, Article 101
[31] EC, Competitor Agreements under EU competition law, Alexander Italianer
[32] EC, Competitor Agreements under EU competition law, Alexander Italianer, p.5

restriction at all. However, in these situations it is not necessary to study the effects of that conduct on competition, competition authorities are only required to prove that the agreement, arrangement or practice does in fact exist.[33]

The sharing of disaggregated, confidential information on future intentions between competitors on a regular basis can help firms to reach collusion. These are very likely to infringe article 101 by object. Even if the exchange is not made directly but instead it's conducted through a third party, it can still be classified as an object infringement. (Bennett & Collins, 2010)

Restriction by Effect

There are cases, other than the ones that bluntly concern future prices or quantities, in which it is not easy to determine whether or not information exchanges are anticompetitive. In these doubtful cases, authorities need to follow an approach based on the effects these conducts have on the industry, conducting a full analysis of the market and its characteristics such as "its purpose, the conditions of access to it and participation in it and the type of information exchanged (…), the periodicity of such information and its importance for the fixing of the prices, volumes, or conditions of services"[34] (Whish & Bailey, 2018).

When the contextual analysis of the industry and the restriction in itself is does not provide a definite answer on the harm it has on competition, actual or potential anti-competitive effects need to be proved. This is done by comparing the existing situation to the one that would be happening if the restriction wasn't in place[35].

The Commission stated, in its 2006 Information Note[36], that "it is difficult to establish general rules to distinguish between information exchanges that are neutral or even pro-competitive from those that are restrictive of competition." Because of that

[33] EC, Competitor Agreements under EU competition law, Alexander Italianer

[34] Asnef-Equifax, Case C-238/05 EU:C:2006:734, para 54

[35] EC, Competitor Agreements under EU competition law, Alexander Italianer

[36] EC, 2006 Information Note, Issues raised in discussion with the carrier industry in relation to the forthcoming Commission guidelines on the application of competition rules to maritime transport services

"the Commission has adopted a case by case approach assessing each case in relation to the features of the market(s) where the exchange takes place"[37]. (Whish, 2006)

Aggregated information at the industry level is unlikely to be used for coordination – it is not helpful in reaching a focal point; Historic information is also unlikely to harm competition – it does not provide information on how companies will behave in the future; information that regards only a part of the market is unlikely to create harm; These exchanges of information should all be analysed based on the effects they have on the market. (Bennett & Collins, 2010)

Difficult classification

There are some exchanges of information that, as stated before, are relatively easy to classify. Sharing individualised private information regarding future prices/quantities intentions is very likely to negatively impact competition while exchanges of aggregated, public and historic information about non-strategic variable like costs, for example, is less likely to harm competition (Whish, 2006). The information that does not fall within either of these categories is the most difficult to classify, as shown in figure 5.

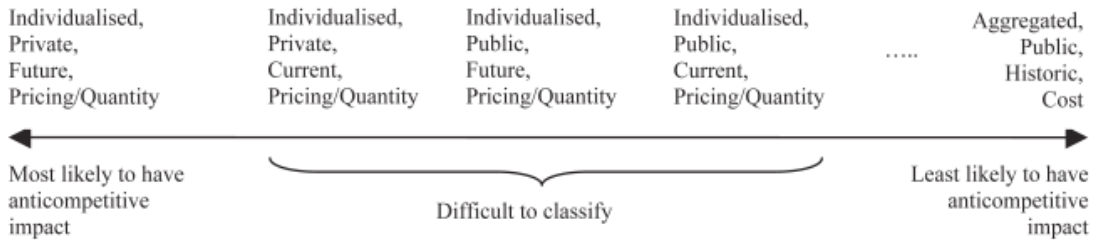

Figure 5- The impact on competition of different exchanges of information (Whish, 2006)

The EU Horizontal Guidelines suggest the distinction to be made on whether or not the information reveals future price or quantities policies, regardless if that information is current or future. Defining current information exchanges as an object

[37] EC, 2006 Information Note, Issues raised in discussion with the carrier industry in relation to the forthcoming Commission guidelines on the application of competition rules to maritime transport services, para. 17

infringement could reduce many of the benefits for consumers talked about earlier. Treating them as effect infringements may result in suboptimal deterrence. (Bennett & Collins, 2010)

It isn't clear whether public sharing of future pricing intentions will be classified as an object infringement. The horizontal guidelines state disclosing future price information in public will be considered as infringements by object. The sentence starts with "information exchanged between competitors" thus implying that exchanges; unilateral public disclosure of future pricing are not treated as object infringements (Bennett & Collins, 2010).

Bennett and Collins (2010) suggest differentiating object and effect restriction on the basis of whether the information is exchanged publicly or privately. Private exchanges of information would be considered as object infringements while public exchanges should be considered an effect infringement. Public announcements can be harmful as well, but, the fact that they are made publicly reduces the odds of not being detected by authorities.

2.2.2. United States

In the US, collusive agreements are prohibited by Section 1 of the Sherman Act (SA), declaring to be illegal for a person to engage in any "contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations"[38].

The term person (or persons) includes both corporations and associations existing under or authorized by the laws of the US, any of the Territories, States, or any foreign country[39].

The law in the US is less expansive than it is in the EU or the UK. The term concerted practice is not used in US law, meaning that, while a violation of chapter 1 of the CA or article 101 of TFEU can be proved without showing there is a real agreement between undertakings, in order to prove a violation of section 1 of the SA, plaintiffs are

[38] Sherman Antitrust Act, Section 1
[39] Sherman Antitrust Act, Section 7

required to attest the existence of an agreement (Harrington & Patrick Harker Professor, 2018). The US requires that "there must be direct or circumstantial evidence that reasonably tends to prove that the manufacturer and others had a conscious commitment to a common scheme designed to achieve an unlawful objective"[40]. The circumstances must prove "a unity of purpose or a common design and understanding, or a meeting of minds in an unlawful arrangement"[41] however, like in the EU and the UK, "no formal agreement is necessary to constitute an unlawful conspiracy (as) the essential combination or conspiracy in violation of the Sherman Act may be found in a course of dealings or other circumstances as well as in any exchange of words"[42] (Ghezzi & Maggiolino, 2013).

The US Department of Justice issued a report in 1977[43] in which it identified several areas that were exempted from antitrust laws, ranging from agriculture and energy to newspapers and baseball (Khemanif, 2002).

Section 1 of the SA forbids behaviours that restrict trade or commerce between the States or with foreign countries[44]. In order to determine if a conduct restricts trade, Courts have two approaches: the per se rule and the rule of reason.

A firm or individual that violate the SA can face criminal fines and jail time. A violation of the SA also enables injured private plaintiffs to receive a monetary compensation for the damaged caused by the unlawful practice (Wait, 2011)

Per se rule

There are certain types of collaboration between competitors that always, or almost always, restrain competition in an unreasonable manner and are therefore illegal per se. These types of conduct violate the law regardless of the market power of the

[40] Monsanto Co. v. Spray-Rite Svc. Corp., 465 U.S. 752, 753 (1984)
[41] Monsanto Co. v. Spray-Rite Svc. Corp., 465 U.S. 752, 764 (1984)
[42] American Tobacco Co. v. United States, 328 U.S. 781, 809, 810 (1946)
[43] US Department of Justice, Report of the Task Group on Antitrust Immunities, January 1977.
[44] The Sherman Antitrust Act 1980, Section 1 in http://neconomides.stern.nyu.edu/networks/ShermanClaytonFTC_Acts.pdf

participants, their motives, alleged business justifications or possible procompetitive justifications. (Fox, 1997)

A plaintiff is only required to prove that the specific anticompetitive conduct actually took place. There's no need to investigate its purpose or effect in the relevant product and geographic markets (Schrepel, 2017), neither need the plaintiff to demonstrate the conduct's competitive unreasonableness. Under the per se rule, defendants are not entitled to justify their behaviour based on any objective competitive justifications[45].

In the US, collaboration among competitors that includes price fixing agreements or agreements to restrict output, are examples of per se illegal behaviour and are always considered as anticompetitive without the necessity of studying its possible justifications. (Wait, 2011)

Rule of Reason

The rule of reason is the "prevailing standard" for determining if a restrictive conduct has any effect on competition."[46] It seeks to evaluate the pro-competitive features of a restrictive business practice against its anticompetitive effects in order to decide if the practice should be prohibited (OECD, 1993), considering several factors such as "specific information about the relevant business, its condition before and after the restraint was imposed, and the restraint's history, nature, and effect."[47] In order for the conduct to be considered anticompetitive, the plaintiff "must demonstrate that the anticompetitive harm of the conduct outweighs the procompetitive benefit."[48](Hovenkamp, 2018)

In the US, if a plaintiff claims that an information exchange between competitors is likely to have anticompetitive effects under the rule of reason framework, the defendants will have the opportunity to rebut that allegation by providing evidence of the procompetitive benefits of the arrangement (promoting the conception of new

[45] Glass Antitrust Litigation 385 F.3d 350 (3rd Cir. 2004)
[46] Craftsmen Limousine, Inc. v. Ford Motor Co., 363 F.3d 761, 772 (8th Cir. 2004)
[47] Craftsmen Limousine, Inc. v. Ford Motor Co., 363 F.3d 761, 772-73 (8th Cir. 2004)
[48] United States v. Microsoft Corp., 253 F.3d 34, 20 (D.C. Cir. 2001)

products, creating efficiencies or cost saving arrangements) and showing that these outweigh any anticompetitive effects. (Wait, 2011)

Quick Look

The quick look is an abbreviated version of the rule of reason analysis, applied to restraints that are not per se unlawful but have a certain degree of anticompetitiveness which makes it unnecessary to perform a full rule of reason inquiry[49]. The quick-look can be applied "where a practice has obvious anticompetitive effects"[50].

The quick look analysis doesn't require the plaintiff to perform an extensive and detailed market analysis (Stucke, 2009). "If, based upon economic learning and the experience of the market, it is obvious that a restraint of trade likely impairs competition, then the restraint is presumed unlawful"[51], shifting to the defendant the burden of demonstrating its procompetitive effects or its insufficient market power (Schrepel, 2017; Stucke, 2009).

This approach should only be applied when even someone with no knowledge on competition, business or economics can reach the conclusion that the arrangement would negatively affect costumers and markets[52].

2.2.3. Differences between US and EU approaches

The European restriction by object is a rough approximation to the US per se rule, as it is "unnecessary (…) to demonstrate any actual effects on the market" (Abbott, 2005). However, under Section 1 of the SA, if a Court proves that a conduct is anticompetitive it will be considered a per se restriction and therefore necessarily and

[49] California Dental Ass'n v. FTC, 526 U.S. 756, 763 (1999)
[50] California Dental Ass'n v. FTC, 526 U.S. 756, 770 (1999)
[51] Polygram Holding, Inc. v. FTC, 416 F.3d 29, 28 (D.C. Cir. 2005)
[52] California Dental Ass'n v. FTC, 526 U.S. 756, 770 (1999)

irretrievably unlawful. There's no similar rule in the EU, as no restraint can be "necessarily and irretrievably unlawful" (p.7).[53]

This difference happens because the European analysis of the cases never balances the possible pro and anti-competitive effects of the restraint. Under Article 101 TFEU, the Commission or the plaintiffs are only interested in understanding if the consequences of the restraint negatively impact the competitive process. The balance of the benefits and the harm the restrictions bring is only made when considering article 101 (3) TFEU. The defendants have the right to justify their action, proving that each of the conditions of article 101 (3) TFEU has been met. Defendants need to prove that the restriction actually drives competition and benefits the consumers.[54]

[53] EC, Competitor Agreements under EU competition law, Alexander Italianer
[54] EC, Competitor Agreements under EU competition law, Alexander Italianer

3.1. Definition

Amore (2016,28) defines hub and spoke practices as triangular arrangements, where “the interaction between a supplier/ manufacturer and its distributor/retailers or between a distributor/retailer and its supplier/manufacturers may facilitate or lead to collusion, reduce competition on retail prices or quantities and, ultimately, harm consumers”. Vereecken (2014,3) gathers several definitions from past cases and defines a hub and spoke cartel as “the exchange of sensitive information between competitors through a third party that facilitates the cartelistic behaviour of the competitors involved”. Harrington (2018,54) has a wider definition of hub and spoke collusion, considering it “involves an information exchange in which a firm (hub) collects and disseminates information on price or supply intentions among its upstream suppliers or downstream customers (spokes) for the purpose of restraining competition”.

The most common hub and spoke configuration has two (or more) retailers reaching a horizontal agreement, with the help of a common supplier. The information is passed from a retailer to another, indirectly, through the supplier. There’s never any direct communication between the retailers. The common supplier is the hub while the retailers are the spokes. Other terminology used in the literature on Hub and Spoke arrangements is A-B-C concerted practice, where A and C are the downstream firms (spokes) and B is the common supplier (hub) (Odudu, 2011). There are also cases in which the collusive plan is initiated by the hub (Harrington & Patrick Harker Professor, 2018). The configurations of hub and spoke conspiracies will be discussed later on this dissertation.

The fact that the hub is a common supplier is a distinguishing element from other cases of indirect exchange of information (this could be done by another competitor, a government agency, a sector regulator, among others). Literature has focused on the particularity of the information being transmitted by a common supplier. (Van Cayseele, 2014).

The spokes will approach the hub (and not contact directly) in order to camouflage their illegal behaviour. Elkerbout (2013) explains that "a hub-and-spoke cartel is a subtler and often more effective variant of the classic horizontal price cartel" (p.56).

Odudu (2011) believes that hub and spoke cartels are set up to achieve a coordinated market response. This coordination is reached in three steeps. First, it needs to include a strategy that benefits all participants; Second, it's important to set up a mechanism that monitors deviations from that strategy and third, there needs to be the possibility to put pressure on all parties to prevent them from deviating. Bennett and Collins (2010) suggest that triangular information exchanges could help reach the first and second elements described above.

Often, the hub plays a passive role, merely facilitating collusion between the spokes. However, it can also be more active in the triangular scheme, encouraging or recommending the spokes to join the arrangement, conducting conversations back and forth between the spokes. There's even cases, in which there's a possibility of the hub being coerced into entering the agreement. (Vereecken, 2014)

Generally, economic players that operate at different levels of the supply chain usually have different economic interests. Yet, in hub and spoke practices they cooperate on an issue that is beneficial for both: the creation of horizontal collusion through a set of similar vertical restraints, with the aim of reducing competition (Amore, 2016). P. J. G. Van Cayseele (2014) suggests the "hub-and-spoke cartel configuration deals with horizontal agreements between downstream firms that materialises with the help of a common upstream supplier." (p.1)

However, some studies claim that the definition and the aim of hub and spoke conspiracies isn't that straightforward. Zampa and Buccirossi (2013) state that these types of arrangements can be interpreted in two ways. On one hand, they might be just a consequence of a set of similar vertical restraints, on the other hand, they can also be a form of organizing horizontal cooperation between firms. Some economists believe they are neither an indirect exchange of information nor horizontal collusion made possible by vertical restraints; a new and separate theory of harm is needed to explain hub and spoke collusion.

Odudu (2011) focuses on another issue, stressing that there's also a distinction to me made between situations in which firms may or must share information with trading partners, from the situations in which competing undertakings use this common trading partner as a channel that facilitates anti-competitive behaviour.

In the EU, although there's no definition for a hub and spoke cartel, the EC has already recognized the concept, stating on the Guidelines on Vertical Restraints, that

> (these) agreements may facilitate collusion between distributors when the same supplier serves as a category captain for all or most of the competing distributors on a market and provides these distributors with a common point of reference for their marketing decisions[55]

The EC even acknowledged that Information exchange can happen through various forms. In paragraph 55 of the Horizontal Guidelines, the EC notes that:

> data can be directly shared between competitors (…) data can be shared indirectly through a common agency (for example, a trade association) or a third party such as a market research organisation or through the companies' suppliers or retailers[56]

The EC has attempted to control the information a firm can receive about its competitors, via a common partner, recognizing it can give rise to anticompetitive concerns. (Odudu, 2011). To address those concerns, in the same Guidelines, the EC:

> preclude any direct or indirect contact between competitors, the object or effect of which is to create conditions of competition which do not correspond to the normal competitive conditions of the market in question (…) to influence conduct on the market of an actual or potential competitor, or to disclose to such competitor the course of conduct which they themselves have decided to adopt or contemplate adopting on the market[57]

The EC recognizes that "information exchange can constitute a concerted practice if it reduces strategic uncertainty"[58], however it never states how authorities should deal with these information exchanges. (Odudu, 2011)

[55] EC, Guidelines on Vertical Restraints, para. 211
[56] EC, Horizontal Guidelines, para. 55
[57] EC, Horizontal Guidelines, para. 61
[58] EC, Horizontal Guidelines, para. 61

3.2. Types of Hub and Spoke Arrangements

Typical Hub and Spoke cases usually consist of a dominant retailer (the hub) coordinating a group of suppliers/manufacturers to boycott a rival of the retailer and drive it out of the market or, a group of horizontal competitors using a common supplier/manufacturer/retailer to help them boycotting a rival. (Clark, 2017)

Amore (2016) separates Hub and Spoke practices into two groups. The first group features one supplier/manufacturer acting as the "hub" in an upstream level and various distributors/retailers playing the role of "spokes" in a downstream level. The second group is symmetrical, including one distributor/retailer acting as the "hub" in a downstream level and, on the upstream level, several suppliers/manufactures operating as "spokes".

In type 1 cases, the common supplier is in charge of setting the collusive prices, monitoring the adherence of other retailers to those prices and punishing those who do not practice the prices agreed (Van Cayseele, 2014). The retailers inform the supplier about a certain problem in the market, the supplier then communicates with all the other retailers involved in the arrangement and tries to find a solution to the problem that is beneficial for all. This can be done through the imposition of fixed or minimum-price *resale price maintenance* agreements (RPM) (Bennett, Giovannetti, Fletcher, & Stallibrass, 2011).

The EC defines RPM agreements as "agreements or concerted practices having as their direct or indirect object the establishment of a fixed or minimum resale price or fixed or minimum price level to be observed by the buyer"[59]. It also recognizes the possibility that including RPM conditions in an arrangement will give rise to a presumption that the agreement restricts competition[60]. The EC also describes how competition might be affected by RPM agreements[61]. It can enable collusion because, firstly, it increases price transparency, and so it becomes easier to detect deviations from the agreed equilibrium, and second, because it eliminates intra-brand competition. RPM can also soften competition when manufacturers use the same distributors and

[59] EC, Guidelines on Vertical Restraints, para. 223
[60] EC, Guidelines on Vertical Restraints, para. 223
[61] EC, Guidelines on Vertical Restraints, para. 224

they all apply the same RPM. RMP also leads to price increases and to the foreclosure of rivals (if it is implemented by a firm with great market power). Lastly, RPM might prevent more efficient retailers from entering the market, therefore reducing dynamism and innovation,

O'Brien and Shaffer (1992) claim that RPM agreements are a way to ensure that all firms are committed to the agreement: a retailer will only agree to increase its prices if all its rivals do the same; it's the hub's role to conduct conversations with the spokes to ensure this happens and later monitor the agreement to prevent any deviations from happening.

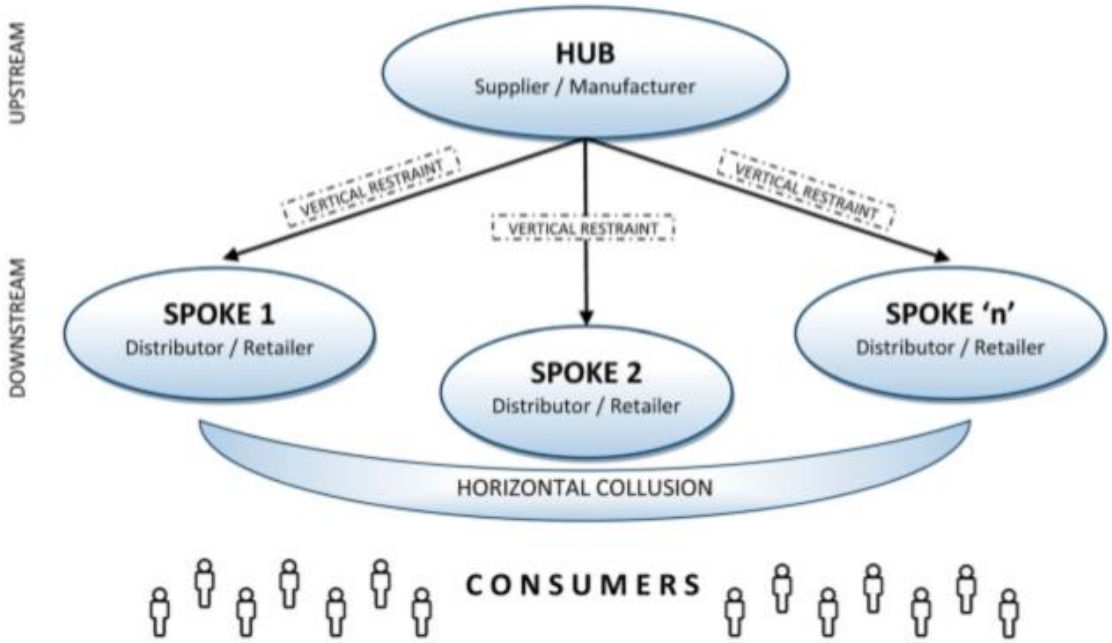

Figure 6 - Type 1 hub-and-spoke collusion (Amore, 2016, p.31)

Regarding type 2 cases, Amore (2016) defines them as having a group of suppliers operating in an upstream level of the supply chain, the spokes, imposing identical vertical restraints, usually at the request of a common retailer, the hub, with the aim of preventing new firms of entering the market or to drive price cutters out of the market. This can be done through formal or de facto exclusivities or Most Favoured Nation (MFN) clauses.

The author defines Most Favoured Nation (MFN) and "retail prices" MFN clauses. MFN clauses are known as "agreements in which a supplier agrees to treat a particular costumer no worse than other costumers" (p.39) while retail prices MFNs clauses indicate that the suppliers can set the final prices but must agree not to offer lower prices through any other retailers. These may be harmful to competition because

> they have the object or effect of softening competition between retailers on the fees charged to their suppliers for their platform services (,) the clauses restrict entry by potential retail competitors with low-end business models (and) RPMFNs eliminate price competition at the retail/distribution level, by removing any incentive for competing retailers/distributors to undercut their rivals. (p.41)

In Hub and Spoke arrangements suppliers set final prices but are required not to offer lower prices to any other retailer outside the agreement. This way both the manufacturer and the retailer set the final price for the consumer (LEAR, 2012).

This author also distinguishes exclusive and selective distribution. An 'exclusive distribution' agreement would mean that the supplier would agree to sell its products to only one distributor and refuse to sell to any firm operating outside of the agreement. On the other hand, a 'selective distribution' agreement depends on criteria related to the nature of the product e.g. "the manufacturers chose not to sell some of their products (let's say generally and imprecisely their premium products) to discounters" (p.38).

These exclusive agreements are addressed by the EC on the Guidelines on Vertical Restraints. The exclusive agreements include those "that have as their main element that the supplier is obliged or induced to sell the contract products only or mainly to one buyer"[62]. They pose an anticompetitive threat, as they can lead to the foreclosure of other buyers, especially if the hub as a great power on the downstream market[63]. The EC claims that "where a company is dominant on the downstream market, any obligation to supply the products only or mainly to the dominant buyer may easily have significant anti-competitive effects"[64]

[62] EC, Guidelines on Vertical Restrains, para. 192
[63] EC, Guidelines on Vertical Restrains, para. 194
[64] EC, Guidelines on Vertical Restrains, para. 194

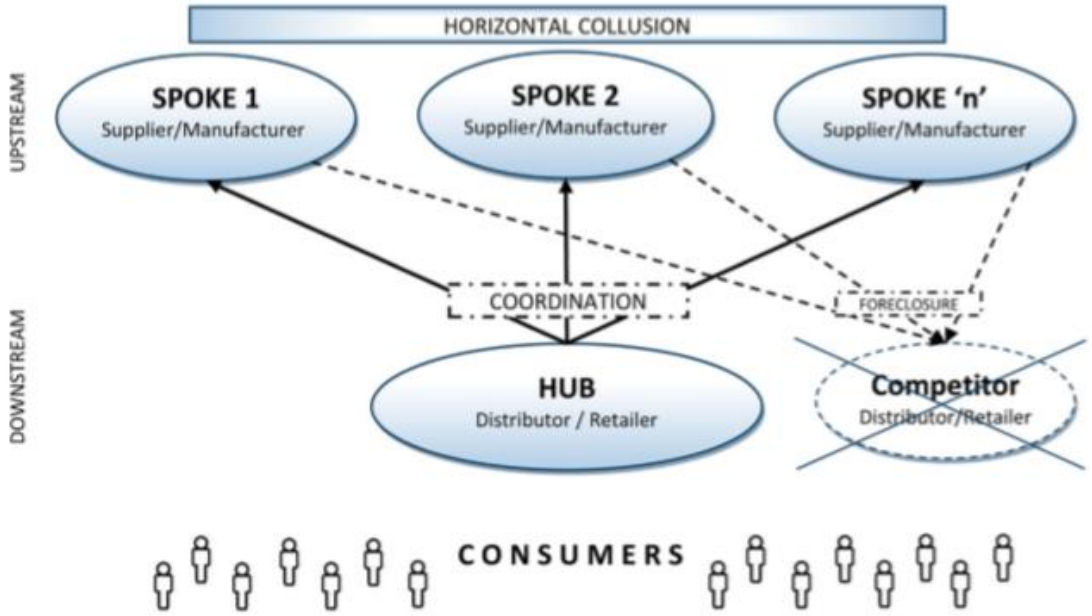

Figure 7 - Type 2 hub-and-spoke collusion (Amore, 2016, p.32)

In both types of hub and spoke collusion, the spokes reach a horizontal agreement by the imposition by the suppliers of fixed or minimum retail prices, with the goal of reducing competition at a downstream level. Also similar in both cases is the pressure the retailers make for the suppliers to enter the agreement. The difference in the types is that "in Type 1 the horizontal collusion is the starting point of the H&S scheme and the driving force that leads to RPM (…), while in Type 2 the collusion among suppliers is the consequence of the retailer's imposition" (Amore, 2016, p.41).

3.3. Role of the hub

Osborne (1976) states that in order for a cartel to be successful firms need to agree, among others, on the price to practice, the division of the surplus, a mechanism to detect deviations and a punishment for the deviators. P. J. G. Van Cayseele (2014) believes that a third-party (hub) could be helpful in reaching an agreement, for example, transmitting information that wouldn't be available otherwise.

The spokes may not agree on the price to be charged for a certain product. The hub may help by suggesting, imposing or recommending a price, seeing as it has the best overall view of the whole market (Van Cayseele, 2014). There are situations in which the

spokes agree on a price increase but none of them wants to be the first to increase the prices. Here, the hub could help by coordinating the price increase, assuring that all other spokes would follow the first spoke that chose to increase its prices (Z. Wang, 2008). Borenstein (1994) reminds that the hub would have to have discipline powers in order to make sure that the spokes follow its demands.

The hub can also affect the surplus of the agreement, changing the margins each part gets or the volume the spokes transact. The margin is determined by the wholesale price of the product. The gain from deviating the cartel needs to be smaller than the loss in profits caused by the punishment from deviating (Friedman, 1971).The margins change depending on the phase of the business cycle: in a boom the profit from deviation is bigger than it is in a recession. The hub could act as a stabilizer, raising wholesale prices during a boom, thus reducing the incentive to deviate and decreasing them in a recession, to make punishment more impacting (Sahuguet & Walckiers, 2013).

The hub could also interfere in the arrangement through a change in volumes. For example, by establishing exclusive territories, the hub ensures that each spoke will achieve a cartel outcome on each territory.

The hub could also affect the arrangement by punishing a deviator by refusing to supply it. However, this could have negative consequences for the hub, as eliminating a spoke form the market means that some costumers would follow that spoke and also leave the market. On the other hand, the retailers who didn't deviate may gain market power which could lead to a decrease in the wholesale price. (Van Cayseele, 2014).

3.4. Necessary Conditions to reach Hub and Spoke collusion

An arrangement must meet three conditions in order to be considered a Hub and Spoke arrangement. First, the retailers must have some degree of market power. Second, retailers must use their bargaining power to set identical vertical restraints with the aim of reaching horizontal collusion. Third, the creation of extra profit that is later divided by all involved, relies on the fact that the retailers agree to those vertical restraints (Amore, 2016).

It is necessary that at least one retailer has some degree of market and bargaining power since, as stated by the EC on the Vertical Guidelines, "strong or well organised distributors may be able to force or convince one or more suppliers to fix their resale price above the competitive level and thereby help them to reach or stabilise a collusive equilibrium."[65] In type 1, a retailer with no market power would simply act as a facilitator of the horizontal collusion (Sahuguet & Walckiers, 2013) In type 2, a retailer with no market power, would not be able to force the suppliers to act accordingly to its request (Amore, 2016).

Amore (2016) also addressed the issue of intra and inter brand competition, considering that the distinction of the two is also an important factor in Hub and Spoke arrangements. In industries with strong inter-brand competition, a vertical restraint won't have significant anti-competitive effects, even if it reduces competition among distributors of the same product (Bishop & Walker, 2010). In type 2 cases, there is no collusion if there is strong upstream competition and those firms are acting independently. In type 1, if there is strong inter-brand competition, the adoption of an RPM by the supplier will have limited impact on final consumers.[66]

There are also some economic factors to consider when establishing the existence of a hub and spoke arrangement. First, the present value of the payoff of not entering the agreement plus the value of the punishment must be less than the present value of the payoff of joining and staying in the collusive agreement. Second, the bargaining power of the retailers involved will determine the number of firms entering the agreement. Lastly, the payoff of the retailers will be the reduction of the competition and pressure on retail prices while, for the suppliers, their payoff will be equal to the rent sharing effect i.e. the opportunity to share part of the extra income created at the downstream level. The share of the rent the suppliers are expecting to get must be bigger than the loss in sales (Amore, 2016).

[65] EC, Guidelines on Vertical Restrains, para. 224

[66] Amore (2016) concluded that the usual distinction between intra and inter brand competition isn't as simple when talking about hub and spoke arrangements and so claims that it shouldn't be a starting point for investigations of hub and spoke cases.

3.5. Constituent elements of a Hub and Spoke arrangement

The US Court Of Appeal (COA) identified the elements that are usually present in a Hub and Spoke conspiracy: "a hub, such as a dominant purchaser; spokes, such as competing manufacturers or distributors that enter into vertical agreements with the hub; and the rim of the wheel, which consists of horizontal agreements among the spokes"[67]. Orbach (2016) adds a fourth element, the existence of vertical restraints connecting the hub and the spokes, for example, geographic restraints, exclusivity clauses, RPM, most-favoured-nation (MFN) clauses, and loyalty discounts.

Odudu (2011) focuses his research on the indirect exchange of information and refers that it entails two phases, each one of those phases including other two elements. The first phase, from A to B, entails a direct exchange of strategic and sensitive information from A to B, and this information is intended to be disclosed to one or more of A's competitors. In the second phase, from B to C, B discloses the strategic and sensitive information, that was passed on by A, to C, and C relies on this information as uses it when choosing its business strategy.

For each phase, it is necessary to prove that there is a collusive agreement or concerted practice in place and that these arrangements restrict competition seeing as "Information exchange can only be addressed under Article 101 if it establishes or is part of an agreement, a concerted practice or a decision by an association of undertakings."[68] and has "the object or effect of which is to create conditions of competition which do not correspond to the normal competitive conditions of the market in question"[69]

3.5.1. The A-B phase

3.5.1.1. Direct exchange of commercial information

According to the COA, collusion in the first phase can be said to exist when "retailer A discloses to supplier B its future pricing intentions in circumstances where A may be taken to intend that B will make use of that information to influence market

[67] In re Musical Instruments & Equip. Antitrust Litig., 798 F.3d 1186 (9th Cir. 2015)
[68] EC, Horizontal Guidelines, para. 60
[69] EC, Horizontal Guidelines, para. 61

conditions by passing that information to other retailers (of whom C is or may be one)"[70].Thus, if A shares strategically sensitive information with B and A can be taken to intend that B would pass the information to other retailers in order to influence market conditions then collusion is established[71] (Odudu, 2011).

Firms will then face the problem of distinguishing the exchanges of information that harm competition from those that are a necessity in commercial relations between undertakings operating at different levels of the supply chain. The COA found it legitimate "for a manufacturer to ask its distributors, as a matter of routine, to inform it of the prices at which and the terms on which they sell its products, (…) for its own commercial purposes and in the context of the ongoing relationship with each distributor separately"[72]. European and US' authorities agree with this view.[73] However, concerns may arise when:

> the information is obtained in order to be shared with other customers of the same manufacturer (or) the information is given to the manufacturer in the context of pressure by the party supplying the information, (…) in order to get another customer into line as regards prices, expecting that the information may be used by the manufacturer in relation to the other customer to persuade it to raise its prices.[74]

Odudu (2011) claims that if authorities choose to have a "overly proscriptive approach to the law and law enforcement", the benefits that may arise from information exchanges as less likely to happen; thus, in these situations, it's the complainant role to prove that there's no legitimate explanation for the disclosure of information.

[70]Argos Limited, Littlewoods limited and JJB Sports PLC v OFT, Case No 2005/1071, 1074 and 1623, para. 141

[71] The possibility that a firm may unwillingly participate in a cartel is also recognized. The CAT admits that "A, (..) could not reasonably have foreseen that such information would be used by B in a way capable of affecting market conditions" in JJB Sports PLC and Allsports limited v OFT, CASE 1021/1/1/03 and 1022/1/1/03, para 660

[72] Argos Limited, Littlewoods limited and JJB Sports PLC v OFT, Case No 2005/1071, 1074 and 1623, para. 99

[73]

[74] Argos Limited, Littlewoods limited and JJB Sports PLC v OFT, Case No 2005/1071, 1074 and 1623, para. 99

3.5.1.2. Intention that commercially sensitive information be disclosed to one or more of A's competitors

It is important to notice that, as stated by the Competition Appeal Tribunal (CAT), "a simple disclosure of retail pricing information by a retailer to a supplier cannot be treated, without more, as an agreement to fix the retail price."[75] The Competition authorities should focus on the undertaking's state of mind. When the information is communicated directly between retailers, it is easy to demonstrate that they acted with the necessary state of mind, however, when there's a third party, B, conducting the conversations (between A and C), there can be no certainty about A's state of mind. In these cases, it's "incumbent on a competition authority to demonstrate that A acted with the relevant state of mind to avoid A being held strictly liable for the conduct of B, over whom it may have limited control."[76] In order to define an arrangement as hub and Spoke collusion, there needs to be compelling evidence that A knew that its pricing intentions would be passed on to C by B (Odudu, 2011).

As stated before in this dissertation, Article 101 of TFEU and Section 2 of the Competition Act only apply to agreements and concerted practices that have as their object or effect the prevention, restriction or distortion of competition. The EC admits that "the exchange of strategic information can facilitate coordination (that is to say, alignment) of companies' competitive behaviour and result in restrictive effects on competition"[77].

If, in order to achieve a legitimate transaction with, it's absolutely necessary the disclosure of strategic and sensitive information, the presumption that the parts acted with an anticompetitive intention should not be applied. If the exchange of information does not relate to the goods and services involved in the transactions between A and B, this presumption shouldn't be applied either[78] (Vereecken, 2014). The US Federal Trade Commission (FTC) claim that this presumption depends on "the nature of the collaboration, its organization and governance, and safeguards implemented to prevent

[75] Makers UK Limited v OFT, case 1061/1/1/06, para. 99
[76] Tesco v OFT, case no: 1188/1/1/11, para. 65
[77] EC, Horizontal Guidelines, para. 65
[78] Tesco v OFT CAT 31, Case 1188/1/1/11, para.300

or minimize such disclosure"[79]. If "appropriate safeguards governing information sharing (were) in place"[80] there would be no need for the presumption of anticompetitive behaviour to exist.

On the other hand, the presumption is stronger and cannot be revoked if

> there is reciprocity: in the sense that C discloses to supplier B its future pricing intentions in circumstances where C may be taken to intend that B will make use of that information to influence market conditions by passing that information to (amongst others) A, and B does so.[81]

An anticompetitive behaviour can also be attributed when "A complains to (…) B about the market activities of (…) (C), and the supplier B acts on A's complaint in a way which limits the competitive activity of C, then A, B and C are all parties to a concerted practice to prevent, restrict or distort competition"[82]. This is not the case when A complains to B with the aim of obtaining better conditions for itself (Odudu, 2011).

Suspicion of anticompetitive behaviour can also rise due to the timing of the information exchange. The disclosure of commercially sensitive information may be legitimate when negotiating an agreement and its terms between two firms. However, if the information is shared after the agreement was concluded and there's no other legitimate explanation for that disclosure then an intention to restrict competition may be inferred (Odudu, 2011).

[79] FTC, Antitrust Guidelines for Collaborations Among Competitors, para. 3.34 (e)

[80] FTC, Antitrust Guidelines for Collaborations Among Competitors, para. 3.34 (e)

[81] Argos Limited, Littlewoods limited and JJB Sports PLC v OFT, Case No 2005/1071, 1074 and 1623, para. 141

[82] JJB Sports PLC and Allsports limited v OFT, CASE 1021/1/1/03 and 1022/1/1/03, para 664; The COA has also recognized that "the circumstances of the complaint might be such that the complainer did not expect any action, or at least any unlawful action, to be taken in response to his complaint" in Case no: 2005/1071,1074 and 1623, Argos Limited, Littlewoods Limited and JJB Sports PLC v OFT 2006 EWCA Civ 1318, para. 86

3.5.2. The B-C phase

3.5.2.1. B's disclosure of A's commercially sensitive information

In this second phase, the COA believes collusion is established when "B does, in fact, pass that information to C"[83].

This disclosure of information might facilitate an agreement and it allows firms to be aware of its rival's strategic information.[84] However, this is only a concern when either the object or the effect of the collusive conduct is to prevent, restrict or distort competition[85] (Odudu, 2011).

Both the OFT[86] and the EC believe that a unidirectional disclosure of information would be sufficient to satisfy the legal requirement of collusion. The EC states that

> It is then irrelevant whether only one undertaking unilaterally informs its competitors of its intended market behaviour, or whether all participating undertakings inform each other of the respective deliberations and intentions. When one undertaking alone reveals to its competitors' strategic information concerning its future commercial policy, that reduces strategic uncertainty as to the future operation of the market for all the competitors involved and increases the risk of limiting competition and of collusive behaviour[87]

We can conclude that legal requirement of collusion is satisfied by this reduction of uncertainty (Odudu, 2011). The reduction of uncertainty must also restrict competition for it to be prohibited (Bennett & Collins, 2010).

[83] Argos Limited, Littlewoods limited and JJB Sports PLC v OFT, Case No 2005/1071, 1074 and 1623, para. 141

[84] EC, Horizontal Guidelines, para. 58

[85] EC, Horizontal Guidelines, para. 61

[86] See Apex Asphalt and Paving CO Limited v OFT, case 1032/1/1/04, para. 181

[87] EC, Horizontal Guidelines, para. 62

3.5.2.2. C relies on the information disclosed

However, collusion can't be established solely because B disclosed information to C, C must use that information to determine its future pricing strategy. The EC claims that "when a company receives strategic data from a competitor (…), it will be presumed to have accepted the information and adapted its market conduct accordingly unless it responds with a clear statement that it does not wish to receive such data"[88]

The restriction element of the second phase is established when C relies on the commercially sensitive information it received from B (Odudu, 2011). The EC believes that,

> subject to proof on the contrary, which it is for the economic operators concerned to adduce, there must be a presumption that the undertakings participating in concerting arrangements and remaining active on the market take account of the information exchanged with their competitors when determining their conduct on the market[89]

This is defined as the Anic Presumption, described by Bailey (2018) as the "presumption that where firms remain active on the market they are presumed to take account of the information exchanged with their competitors"(p.24).

According to Odudu (2011), the Anic presumption can be justified on three separate grounds: First, the presumption is justified if reliance is what firms are trying to get through the exchange of information because, "undertakings colluding with the intention of restricting competition are more likely to restrict competition than if they had no such intention"(p.224). Second, it is justified if reliance occurs more often than not, even if companies do not request the information. According to Judge Vesterdorf[90], when firms receive information they will necessarily and unavoidably take it into consideration when acting on the market.[91] Lastly, as it is C's role to prove that it did not use the information that it received, "the presumption is all the more justified, or

[88] EC, Horizontal Guidelines, para. 62
[89] CEE v Anic Partecipazioni SpA, Case C-49/92 P, para. 121
[90] Advocate General
[91] Rhône-Poulenc v Commission, Case T-1/89, Opinion of Mr Vesterdorf Acting as Advocate General, 1991

separately justified, if it is easier for C to prove that it did not rely on the information than it would be for a complainant to prove reliance"(p.225)

The last factor to take into consideration is how to determine the credibility of the information disclosed. The fact that information is shared indirectly makes it harder to imply credibility, as information becomes less reliable than if it were transmitted directly (Odudu, 2011).

In order to evaluate the credibility, the UK CAT requires that "C may be taken to know the circumstances in which the information was disclosed by A to B"[92]. C must be informed about "the circumstances in which the information was disclosed by A to B"[93]. C must also be able to distinguish credible information from market rumour, speculation and gossip, and B's opinion on the matter. It is unclear if a single interaction is sufficient to imply credibility can be established or if repeated interaction is needed (Odudu, 2011).

3.5.2.3. Rebutting the Presumption of Reliance

In order to demark themselves of that collusion, firms need "responds with a clear statement that it does not wish to receive such data"[94]. According to the CAT, "It is open, of course, for C to seek to demonstrate that it determined independently the policies it pursued and did not act on the basis of A's future pricing intentions"[95]

Firms need to take proactive steps to prove that they did not act on the information they received, starting by "inform(ing) the other companies represented, with sufficient clarity, that, despite appearances, it disagrees with the unlawful steps which they have taken"[96].

In order to dissociate itself from the cartel, C has to reply immediately to B stating the information was not requested and is unwelcome. This must be done in

[92] Argos Limited, Littlewoods limited and JJB Sports PLC v OFT, Case No 2005/1071, 1074 and 1623, para. 141

[93] Argos Limited, Littlewoods limited and JJB Sports PLC v OFT, Case No 2005/1071, 1074 and 1623, para. 141

[94] EC, Horizontal Guidelines, para. 62

[95] Tesco v OFT, case No: 1188/1/1/11, para. 86

[96] Adriatica di Navigazioe SpA v CEC, T-61/99, para. 137

writing and very promptly. Internal documents or oral rejection will be insufficient. Bailey (2008) adds that C must also be able to prove that its subsequent strategy was determined without taking into consideration the information it received from B.

3.5.3. Interdependence between phases

Odudu (2011) states that both the phases described above need to be linked in order for the A-B-C information exchange to form a single collusive arrangement. Linking the two phases turns the agreement horizontal (rather than vertical), as A and C and competitors.

The fact that B has separate vertical agreements with A and C doesn't, on itself, establish the existence of prohibited information exchanges between A, B and C, as

> there could be a series of bilateral vertical agreements between one supplier and several of its customers, none of the customers being aware of the fact or nature of the agreements between the supplier and other customers, such that there would be no horizontal element to the customers' agreements[97]

The US COA claims that there needs to be a rim enclosing the spokes on a single conspiracy thus, when "the "spokes" of a conspiracy have no knowledge of or connection with any other, dealing independently with the hub conspirator, there is not a single conspiracy, but rather as many conspiracies as there are spokes."[98].However, "If (…) each customer did know of the other agreements, it could be equivalent to a multilateral agreement between the supplier and each of the customers."[99]

The author believes that it's the use of information obtained in phase 1 during phase 2 that makes the arrangement horizontal. And it is A's role in monitoring and ensuring compliance with phase 2 agreements, to which it is a third party, that negates the idea that the two phases operate independently, as "the phase two arrangement

[97] Argos Limited, Littlewoods limited and JJB Sports PLC v OFT, Case No 2005/1071, 1074 and 1623, para. 31

[98] US v Chandler 376 F.3d 1303, No. 03-10725, para.77

[99] Argos Limited, Littlewoods limited and JJB Sports PLC v OFT, Case No 2005/1071, 1074 and 1623, para. 31

cannot exist without the express or implied participation of another undertaking" (p.239). He considers that a wheel conspiracy exists when

> one central figure, the hub, conspires with several other spokes. The question is whether there is a rim to bind all the spokes together in a single conspiracy. A rim is found only where there is proof that the spokes were aware of one another's existence and that all promoted the furtherance of a common objective (Odudu, 2011, p.237)

3.6. Classification of hub and spoke cartels

There's a lot of uncertainty surrounding hub and spoke cartels and their classification as vertical or horizontal agreements.

As hub and spoke cartels have both horizontal and vertical effects, Vereecken (2014) suggests defining a hub and spoke cartel as a "hybrid competition infringement, usually consisting of a form of RPM at a vertical level, and a classic cartel infringement at a horizontal level"(p.27).

3.6.1. Legal consequences of the classification

The legal approach to determine if a hub and spoke cartel is legal or not depends on the classification of the agreement as vertical or horizontal (Lemley & Leslie, 2008). Under European law, there are two grounds on which this classification is fundamental: leniency programs and the subjection to the object/effect approach.

The Leniency programme "offers companies involved in a cartel - which self-report and hand over evidence - either total immunity from fines or a reduction of fines which the Commission would have otherwise imposed on them"[100]. Under the scope of leniency programmes, it would be easier for competition authorities to combat hub and spoke cartels as it would allow them to obtain secret information from a participant on the cartel. However, the majority of the existing leniency programmes only apply to

[100] http://ec.europa.eu/competition/cartels/leniency/leniency.html

horizontal arrangements, so authorities would benefit on classifying hub and spoke cartels as a horizontal agreement.

The majority of horizontal agreements are subject to the object approach, there's no need to prove that they also have anticompetitive effects. The contrary is true for vertical agreements, as their object usually isn't enough to prove a violation of competition. According to Vereecken (2014) this happens because horizontal agreements are usually considered to be more harmful than vertical agreements, as their potential to harm competition is so high that it is unnecessary to prove actual effects on the market. Classifying hub and spoke cartels has a vertical agreement would mean that authorities would have to prove that both the object and the effect of the agreement were anticompetitive, while if the agreement was considered horizontal, it would be sufficient to prove that its object harmed competition.

4.1. Description of the alleged hub and spoke cases

4.1.1. United Kingdom

In the UK, there have been three cases judged as hub and spoke conspiracies: Replica Kit, Toys and Dairy Products. In **Replica Kit**, Umbro, the supplier, coordinated price strategies with JJB Sports and Sports Soccer, the retailers, to control the reproduction of shirts, shorts and socks for English Football Clubs[101]. A similar situation happened in the **Toys** case, where Hasbro, the largest toy and games manufacturer in the UK, engaged in bilateral communications with the leading retailers, Argos and Littlewoods, in order to raise the toys and games' prices[102]. The **Cheese products** case amounts to a collusive plan between the processors, Dairy Crest, Glanbia and McLelland, and the major supermarket chains, Asda, Safeway, Sainsbury and Tesco, aiming at increasing cheese prices in the UK[103].

In all three cases the retailers conditioned the acceptance of the agreement on their competitor's actions, requiring assurance that they would also accept the terms of the conspiracy. The hub conducted bilateral conversations between them in order to provide the assurance needed[104]. In the toys case, to ensure compliance and confidence in the scheme, Hasbro monitored the agreement and punished the deviators[105].

These three cases were all judged in a similar way. The Court believes that:

> if (i) retailer A discloses to supplier B its future pricing intentions in circumstances where A may be taken to intend that B will make use of that information to influence market conditions by passing that information to other retailers (of whom C is or may be one), (ii) B does, in fact, pass that information to C in circumstances where C may be taken to know the

[101] Price-fixing of Replica Football Kit, CA98/06/2003, para. 55

[102] Argos limited and Littlewoods Limited v OFT, Case no. 1014 and 1015/1/1/03, para. 88

[103] Dairy retail price initiatives, CA98/03/2011, para. 1.5 i)

[104] Price-fixing of Replica Football Kit, CA98/06/2003, para. 393; Argos limited and Littlewoods Limited v OFT, Case no. 1014 and 1015/1/1/03, para. 88; Dairy retail price initiatives, CA98/03/2011, para. 5.239

[105] Argos limited and Littlewoods Limited v OFT, Case no. 1014 and 1015/1/1/03, para. 123 to 125

> circumstances in which the information was disclosed by A to B and (iii) C does, in fact, use the information in determining its own future pricing intentions, then A, B and C are all to be regarded as parties to a concerted practice having as its object the restriction or distortion of competition (…) The case is all the stronger where there is reciprocity : in the sense that C discloses to supplier B its future pricing intentions in circumstances where C may be taken to intend that B will make use of that information to influence market conditions by passing that information to (amongst others) A, and B does so.[106]

In the **Cheese** Case, the Court explains how to prove that those conditions are satisfied:

> the first limb of the test is satisfied by proving that: i. retailer A may be taken to have intended that supplier B would make use of that information to influence market conditions by passing that information to other retailer competitors or, in the alternative, ii. retailer A did, in fact, foresee that supplier B would make use of that information to influence market conditions by passing that information to other retailer competitors. (…) the second limb of the test is satisfied by proving that: i. retailer C may be taken to know the circumstances in which the information was disclosed by retailer A to supplier B or, in the alternative, ii. retailer C did, in fact, appreciate that the information was being passed to it with retailer A's concurrence.[107]

In the **Tobacco case**, the OFT started by issuing a statement of objection in which it stated that Imperial Tobacco and Gallaher, two major tobacco manufacturers in the UK, had engaged in a series of bilateral agreements with several retailers to fix the price of the tobacco products[108]. It also alleged that the parties had engaged in indirect exchanges of future pricing intentions with their competitors, reaching a concerted practice which had the object and/or the effect of preventing, restricting or distorting the competition[109]. The OFT later dropped this allegation claiming that it had insufficient evidence to prove that there had been an infringement of the Act[110].

[106] Argos Ltd and Littlewoods Ltd v OFT and JJB Sports plc v OFT, Case 2005/1071, 1074 and 1623 para. 141

[107] Dairy retail price initiatives, CA98/03/2011, para. 3.49 , 3.50

[108] Tobacco, Case CE/2596-03, para. 1.1 , 1.2

[109] Tobacco, Case CE/2596-03, para. 2.108

[110] Tobacco, Case CE/2596-03, para. 2.120

The **private schools** case is different from the ones already mentioned. It involves a group of 50 private schools that engaged in the exchange of confidential information concerning future pricing intentions[111]. This information was organised by the bursar of one of the involved schools and then shared with all participants[112]. The OFT concluded that there was an agreement or concerted practice with the object of preventing, restricting or distorting competition[113], however, it cannot be labelled as a hub and spoke case, as the hub of the scheme works on the same level of the supply chain and for a hub and spoke conspiracy to happen there needs to be firms acting on different levels.

4.1.2. European Union

The EU is yet to charge a hub and spoke cartel, possibly due to its difficult identification .

The **e-books case** was the only hub and spoke case the Commission dealt with, however, seeing as the parts reached early commitments there isn't a full analysis on how European Law would apply to these types of cartels.

The Commission believed the joint conversion from a wholesale model to an agency model performed by five books publishers and Apple amounted to a concerted practice aiming at raising e-books' prices[114] with an appreciable effect on trade between Member States, given that it was part of a wider strategy, within the meaning of article 101(1) TFEU and article 53(1) of the EEA Agreement[115] and does not fall within Article 101(3) of the Treaty and Article 53(3) of the EEA Agreement as the conditions stated in those articles are not fulfilled[116].

Apple and the publishers offered commitments to address the Commission's concerns, agreeing to terminate all agency agreements in the EEA, not to enter into any new agreements that include price MFN clauses for five years, a two-year cooling-off

[111] Independent Schools, CA98/05/2006, para. 1
[112] Independent Schools, CA98/05/2006, para. 3
[113] Independent Schools, CA98/05/2006, para. 6
[114] Case COMP/39.847/E-Books, para. 86
[115] Case COMP/39.847/E-Books, para. 96
[116] Case COMP/39.847/E-Books, para. 99

period, during which retailers can set the e-books prices and offer discounts and they also commit not to enter into or enforce any retail price MFN clauses for a period of five years[117].

The Commission does not conclude if there has been an infringement of EU competition rules however, it makes these commitments legally binding and ends the Commission's proceedings against these companies. If a company breaks the commitments, the Commission can enforce a penalty of up to 10% of its annual worldwide turnover, without having to find an infringement of the antitrust rules.[118]

Even though there hasn't been a hub and spoke case dealt with by the EC, there have been four cases, AC-Treuhand I and II, Marine Hoses and ICAP that might help to judge any hub and spoke scheme.

The difference between these cases and a hub and spoke cartel relies on the market in which the hub works. A hub and spoke cartel require the hub to work in the same market as the other firms, yet this doesn't happen in the following cases**. AC-Treuhand** is a swiss consultancy firm that organised meetings between the firms involved in the cartel and covered up evidence of said cartel[119]; its role later included fixing prices, market sharing, customer allocation and exchanges of commercially sensitive information[120]. The **Marine Hoses** cartel operated through a firm that did not manufacture or market marine hoses, but instead provided consultancy services regarding the hoses' supply/ demand and its prices[121]. **ICAP** was an interdealer broker that facilitated the manipulation of the JPY LIBOR interest rates in several banks[122]. In all three cases, the firms shared sensitive information with the hub/ facilitator who would then treat that information and communicate it back to the firms involved[123].

[117] E-BOOKS – Case COMP/39.847 2013/C 73/07 para. 18 to 21
[118] In http://europa.eu/rapid/press-release_IP-12-1367_en.htm
[119] C-99/04 AC-Treuhand v Commission, para. 7
[120] C-194/14 P - AC-Treuhand v Commission para. 38
[121] Case COMP/39406 – Marine Hoses, para. 49
[122] T-180/15 - Icap and Others v Commission, para. 2
[123] Case COMP/39406 – Marine Hoses, para. 100; C-99/04 AC-Treuhand v Commission, para. 2; C-194/14 P - AC-Treuhand v Commission para. 38; T-180/15 - Icap and Others v Commission, para. 15

AC-Treuhand states three conditions under which it can be established that an undertaking facilitated an unlawful agreement (in a hub and spoke cartel, this would be the role of the hub):

> the Commission must prove that that undertaking intended, through its own conduct, to contribute to the common objectives pursued by the participants as a whole and that it was aware of the substantive conduct planned or implemented by other undertakings in pursuance of those objectives, or that it could reasonably have foreseen that conduct and that it was ready to accept the attendant risk[124]

The facilitators/hub defence is based on the facts that they weren't active on the cartelised market, their conduct did not affect its own goods and services[125] and that the conduct of the other firms was so different from their own that it couldn't have possibly contributed to the cartel[126]. The Court of Justice states that seeing as the terms agreement and concerted practice[127] have such a broad scope under European Law that wouldn't be difficult to include AC-Treuhand's conduct in those definitions. Consultancy firms are expected to evaluate the anticompetitive risks their activity may bring about[128]. Thus, even though these cases are not considered hub and spoke schemes, it does not mean the behaviour can't be fined under European Competition Law.

4.1.3. United States of America

There have been several cases judged as hub and spoke cartels in the US: Interstate Circuit, Toys R Us, Masonite, Eaton Corp, General Motors, Parke Davis, E-books, Disposable Contact Lenses and Klor's.

[124] C-99/04 AC-Treuhand v Commission, para. 130

[125] C-99/04 AC-Treuhand v Commission, para. 119

[126] T-180/15 - Icap and Others v Commission, para. 165

[127] "Concerted practice: Coordination between undertakings which, without having reached the stage of concluding a formal agreement, have knowingly substituted practical cooperation for the risks of competition. A concerted practice can be constituted by direct or indirect contact between firms whose intention or effect is either to influence the conduct of the market or to disclose intended future behaviour to competitors" in Glossary of terms used in EU competition policy, EC

[128] C-99/04 AC-Treuhand v Commission, para. 2

The US District Court (DC) claims that "a plaintiff may plead an agreement by alleging direct or circumstantial evidence, or a combination of the two, but allegations of direct evidence, that are adequately detailed, are sufficient alone."[129]

In **Interstate Circuit**, a first-run movie operator (Interstate Circuit) Circuit believed that the second-run theatres were competing too aggressively[130], and so engaged in bilateral communications with the movie distributors, demanding a minimum price for second-run theatres and a policy against double features[131], threatening that it wouldn't show that distributors' movies if it did not comply[132]. **Toys R Us**, the dominant toy retailer in the US, was feeling threatened by warehouse clubs, that were offering the same products as Toys R Us but at a lower price[133]. Toys R Us started to negotiate with the manufactures, pressing them not to deal with Warehouse Clubs[134]. **Masonite,** a manufacturer, distributor and patent holder of hardboard entered into agency agreements with its competitors to sell its product[135], designating the minimum selling price and the conditions of sales at which the competitors could sell its product[136].

There is direct evidence of horizontal arrangements as each of the parts involved knew about the existence of all the others; in **Interstate Circuit**, the manager of Interstate sent a letter with its demands to all distributors, naming all of them as addresses; the trial court inferred an agreement "from the nature of the proposals, from the manner in which they were made, from the substantial unanimity of action taken, and from the lack of evidence of a benign motive"[137]. In **Toys R Us**, Godden, TRU' president of Merchandising, admitted that they "made a point to tell each of the vendors that we spoke to that we would be talking to our other key suppliers."[138]. In **Masonite**, the Supreme Court (SC) states that "the escrow agreement was signed by each of the companies and included the name of each of the other "agents". Each

[129] Wallach v. Eaton Corp., 814 F. Supp. 2d 428, 440 (D. Del. 2011)
[130] Interstate Circuit v. U.S., 306 U.S. 208, 218 (1939)
[131] Interstate Circuit v. U.S., 306 U.S. 208, 217 (1939)
[132] Interstate Circuit v. U.S., 306 U.S. 208, 217 n.3 (1939)
[133] Toys "R" US, Inc. v. FTC, 221 F.3d 928, 931 (7th Cir. 2000)
[134] Toys "R" US, Inc. v. FTC, 221 F.3d 928, 932 (7th Cir. 2000
[135] U.S. v. Masonite Corp., 316 U.S. 265, 268-69 (1942)
[136] U.S. v. Masonite Corp., 316 U.S. 265, 271 (1942)
[137] Toys "R" US, Inc. v. Federal Trade Commission, 221 F.3d 928, 935 (7th Cir. 2000)
[138] Toys "R" US, Inc. v. Federal Trade Commission, 221 F.3d 928, 932 (7th Cir. 2000)

"agent" knew at that time that Masonite proposed to make substantially identical agreements with the others." and condition their acceptance on the acceptance of their rivals. [139]

All these cases have some points in common, firstly, the acceptance of the agreement goes against each spoke economic self-interest[140], so they would only be willing to follow the agreement if they are convinced that their competitors would follow the same scheme[141]. The hub then engages in bilateral communications between itself and the spokes, trying to convince them to accept the terms of the agreement[142].

In Interstate Circuit, and later in Masonite, the Court provides the condition for a hub and spoke conspiracy to be established:

> It was enough that, knowing that concerted action was contemplated and invited, the distributors gave their adherence to the scheme and participated in it. Each distributor was advised that the others were asked to participate; each knew that cooperation was essential to successful operation of the plan. They knew that the plan, if carried out, would result in a restraint of commerce, which (…) was unreasonable within the meaning of the SA, and knowing it, all participated in the plan.[143]

The US competition authorities also dealt with the **e-books** case. The DC believes that Apple played an essential role in the conspiracy, orchestrating a cartel between the publishers. There is evidence that Apple engaged in bilateral communications with the publishers informing them about other publishers' intentions and that they were all getting the same terms of the agreement (the publishers required assurance than the agreement would be accepted by all as they would only follow Apple's plan if their rivals did so) [144].

[139] U.S. v. Masonite Corp., 316 U.S. 265, 269,270 (1942)

[140] Toys "R" US, Inc. v. FTC, 221 F.3d 928, 932 (7th Cir. 2000)

[141] Toys "R" US, Inc. v. FTC, 221 F.3d 928, 930 (7th Cir. 2000); Interstate Circuit v. U.S., 306 U.S. 208, 219 (1939)

[142] Interstate Circuit v. U.S., 306 U.S. 208, 216 (1939); Toys "R" US, Inc. v. FTC, 221 F.3d 928, 932 (7th Cir. 2000)

[143] Interstate Circuit v. U.S., 306 U.S. 206,207 (1939);U.S. v. Masonite Corp., 316 U.S. 265, 275 (1942)

[144] US v. Apple Inc., 952 F. Supp. 2d 638, 692 (S.D.N.Y. 2013)

The evidence of the conspiracy includes e-mails from Apple, the Publishers, Amazon, and others; and compelling circumstantial evidence, including, common goals among the distributors, agency agreement being an abrupt shift from the past, parallel conduct and action against individual self-interest on the part of the publishers.[145] Apple also monitored the negotiations between the publishers and Amazon.[146] The Court condemned Apple and the publishers of arranging a per se unlawful hub and spoke conspiracy. [147]

Differing from the European case, where all parts reached early commitments, in the US, the publishers settled their claims, but Apple went to trial claiming that the plaintiffs failed to prove the existence of a horizontal price fixing conspiracy[148]. The Court found Apple guilty of conspiring to restrain trade in violation of Section 1 of the SA[149]. Apple also lost the appeal to the Second Circuit Court and to the SC on the basis that, even though the agency agreement wasn't unlawful, Apple acted unlawfully by coordinating the adoption of the agreement by all publishers[150].

When there's no direct evidence of a horizontal agreement, one can be established given the presence of parallel conduct i.e. the adoption of the same conduct at the same time and some plus factors. In *Wallach v. Eaton Corp.*, the DC describes how to establish the existence of an agreement from circumstantial evidence. First, the plaintiff "may not plead mere parallel conduct or conclusory allegations of agreement. (…) instead (…) they must be placed in a context that raises a suggestion of a preceding agreement, not merely parallel conduct that could just as well be independent action."[151]. Plus factors are " circumstances in which the inference of independent action is less likely than that of concerted action"[152] and, although there's not an extensive list of plus factors, " one recognized, and important, plus factor is parallel action that is contrary to self-interest."[153]

[145] United States v. Apple Inc., 952 F. Supp. 2d 638, 693 (S.D.N.Y. 2013)
[146] United States v. Apple Inc., 952 F. Supp. 2d 638, 682 (S.D.N.Y. 2013)
[147] US v. Apple Inc., 952 F. Supp. 2d 638, 647 (S.D.N.Y. 2013)
[148] US v. Apple Inc., 952 F. Supp. 2d 638, 691 n.58 (S.D.N.Y. 2013)
[149] US v. Apple Inc., 952 F. Supp. 2d 638, 709 (S.D.N.Y. 2013)
[150] US v. Apple, Inc., 791 F.3d 290, 316 (2d Cir. 2015)
[151] Wallach v. Eaton Corp., 814 F. Supp. 2d 428, 440 (D. Del. 2011)
[152] Wallach v. Eaton Corp., 814 F. Supp. 2d 428, 440 (D. Del. 2011)
[153] Wallach v. Eaton Corp., 814 F. Supp. 2d 428, 440 (D. Del. 2011)

This happened in three cases in the US: Guitar Centre, Eaton Corp and Disposable Contact Lenses.

In *Guitar Centre***,** the plaintiffs alleged a hub and spoke conspiracy, where Guitar Centre (the hub) pressured each of the manufacturers (the spokes) to adopt minimum-advertised-prices policies, and the manufacturers agreed among themselves to adopt the policies (the rim)[154]. The plaintiffs claimed parallel conduct, negating independent behaviour, seeing as the circumstances suggest that the adoption of the policies was combined between the manufacturers, as the MAP policies were against the manufacturer's self-interest and would only benefit them if they all agree to follow them[155]. The plus factors alleged were the common motive to conspire, the fact that the action taken goes against the manufacturer's self-interest, the simultaneous adoption of the similar policies, the Manufacturer's participation in the National Association of Music Merchants (previously under investigation of the FTC for price fixing) and an increase in prices and decrease in the quantity sold at that period[156]

In *Eaton Corp*, plaintiffs have alleged the existence of a hub-and-spoke conspiracy, in which Eaton individually agreed to work with each Truck Original Equipment Manufacturer (OEM) and the OEMs in turn agreed to work together[157], with the aim of driving Eaton's biggest competitor out of business[158]. The plaintiffs allege parallel conduct and plus factors, such as some terms of the agreement that offered lucrative rebates to each OEM and contained provisions that minimize ZF Meritor's market share[159]; furthermore, the action is contrary to their self-interest[160]..

In *Disposable Contact Lenses*, the plaintiffs claim that ABB, a wholesaler of disposable contact lens, conspired to impose minimum resale prices on certain contact lens by subjecting them to Unilateral Pricing Policies, thereby reducing price competition

[154] Ramsey v. Nat'l Ass'n of Music Merchs., Inc. (In re Musical Instruments & Equip. Antitrust Litig.), 798 F.3d 1186, 1192 (9th Cir. 2015)

[155] Ramsey v. Nat'l Ass'n of Music Merchs., Inc. (In re Musical Instruments & Equip. Antitrust Litig.), 798 F.3d 1186, 1189 (9th Cir. 2015)

[156] Ramsey v. Nat'l Ass'n of Music Merchs., Inc. (In re Musical Instruments & Equip. Antitrust Litig.), 798 F.3d 1186, 1194 (9th Cir. 2015)

[157] Wallach v. Eaton Corp., 814 F. Supp. 2d 428, 440 (D. Del. 2011)

[158] Wallach v. Eaton Corp., 837 F.3d 356, 362 (3d Cir. 2016))

[159] Wallach v. Eaton Corp., 814 F. Supp. 2d 428, 433 (D. Del. 2011)

[160] Wallach v. Eaton Corp., 814 F. Supp. 2d 428, 440-41 (D. Del. 2011)

on those products[161]. The plaintiffs believe ABB was acting as the hub in a hub and spoke conspiracy, conducting information between the manufacturers, and communicating to each manufacturer that its competitors also intended to implement the UPP[162]. To prove this, they claimed parallel conduct on the part of the manufacturers seeing as they imposed similar UPPs at the same time[163]. They also alleged some plus factors, such as the UPPs being contrary to each manufacturer's economic self-interest so no reasonable manufacturer would drastically increase its prices and restrict its available sales without assurances that others would follow suit[164]; The UPPs were actively enforced by the Manufacturers and any retailer not complying with the mandatory minimum price, faced elimination from the competition to sell the contact lens[165]. The conduct was also an abrupt shift from past actions[166].

In these last two cases, Eaton Corp and Disposable Contact Lenses, the Court finds that a rimmed hub-and-spoke conspiracy has been sufficiently pled seeing as sufficient parallel conduct and plus factors have been stated[167]. In Guitar Centre, the COA states that the plaintiffs don't show enough evidence of a horizontal conspiracy, claiming that each manufacturer adopted the MAP policies in its own interest, pressured by Guitar Centre's substantial market power[168] believing that "decisions to heed similar demands made by a common, important customer do not suggest conspiracy or collusion"[169]. However, one judge opposed, claiming that the Court focused on each of the plus factors, failing to address the six plus factors as a whole. In this judge's opinion, when analysed together, the plus factors suggest that the manufacturer reached an illegal horizontal agreement[170].

[161] In re Disposable Contact Lens Antitrust, 215 F. Supp. 3d 1272, 1279 (M.D. Fla. 2016)
[162] In re Disposable Contact Lens Antitrust, 215 F. Supp. 3d 1272, 1286 (M.D. Fla. 2016)
[163] In re Disposable Contact Lens Antitrust, 215 F. Supp. 3d 1272, 1296 (M.D. Fla. 2016)
[164] In re Disposable Contact Lens Antitrust, 215 F. Supp. 3d 1272, 1297 (M.D. Fla. 2016)
[165] In re Disposable Contact Lens Antitrust, 215 F. Supp. 3d 1272, 1299 (M.D. Fla. 2016)
[166] In re Disposable Contact Lens Antitrust, 215 F. Supp. 3d 1272, 1284 (M.D. Fla. 2016)
[167] Wallach v. Eaton Corp., 814 F. Supp. 2d 428, 441 n.8 (D. Del. 2011); *In re Disposable Contact Lens Antitrust*, 215 F. Supp. 3d 1272, 1300 (M.D. Fla. 2016)
[168] Ramsey v. Nat'l Ass'n of Music Merchs., Inc. (In re Musical Instruments & Equip. Antitrust Litig.), 798 F.3d 1186, 1197 (9th Cir. 2015)
[169] Ramsey v. Nat'l Ass'n of Music Merchs., Inc. (In re Musical Instruments & Equip. Antitrust Litig.), 798 F.3d 1195 (9th Cir. 2015)
[170] Ramsey v. Nat'l Ass'n of Music Merchs., Inc. (In re Musical Instruments & Equip. Antitrust Litig.), 798 F.3d 1186, 1197 (9th Cir. 2015)

Another path some plaintiffs tried to follow is the rimless wheel theory. However, no case has ever been ruled as a rimless hub and spoke cartel. Orbach (2016) refers that proof of a horizontal agreement among competitors is what distinguishes a lawful vertical agreement from vertical arrangements that facilitate an unlawful horizontal conspiracy and so, proving a hub and spoke cartel requires proving that there's a rim connecting all the spokes.[171]

This happened in *Elder-Beerman* and *MyLan Laboratories***.** In the latter, Mylan laboratories, a pharmaceutical company, claims that its competitors entered into agreements with the Food and Drug Administration (FDA) to facilitate the approval of their new drug applications and delay/deny those of Mylan[172]. Mylan claims that "an antitrust conspiracy may consist of a hub and spokes without a rim"[173], stating that "each corporation's tie to the FDA "hub" is a sufficient allegation of the existence of a conspiracy between the corporations."[174] The Court also disagreed in this case, claiming that even if separate activities have the same purpose, they do "not constitute a conspiracy 'without the rim of the wheel to enclose the spokes.' There must be a connection among all of the alleged participants sufficient to support a finding that they had entered into the alleged conspiracy." [175] otherwise it doesn't exclude the possibility of independent behaviour.[176] Mylan should have presented plus factors to exclude independency and it failed to do so.

In *Elder- Beerman*, a chain of department stores (Elder-Beerman), claimed that Federated Department Stores conspired with several suppliers with the aim of obtaining

[171] Orbach (2016) adds that the first time the SC used the metaphor "hub and spoke" wasn't in an antitrust context, however the idea of the necessity of the rim was also present in that case: In Kotteakos v. US, 328 U.S. 750 (1946)**,** Simon Brown, president of a construction company, conspired with Kotteakos and others, to defraud the government, by acting as a broker and making fraudulent loan applications to various financial institutions, violating the National Housing Act; Evidence showed independent vertical agreements between the hub and each of the spokes, however no connection was shown between the spokes themselves, the only thing they had in common was the use of the same broker. The pattern was "that of separate spokes meeting in a common centre (…) without the rim of the wheel to enclose the spokes". The evidence shown could support several vertical conspiracies but not a single overall conspiracy.

[172] Mylan Laboratories, Inc. v. Akzo, N.V., 770 F. Supp. 1053, 1058 (D. Md. 1991)

[173] Mylan Laboratories, Inc. v. Akzo, N.V., 770 F. Supp. 1053, 1066 (D. Md. 1991)

[174] Mylan Laboratories, Inc. v. Akzo, N.V., 770 F. Supp. 1053, 1066 (D. Md. 1991)

[175] Mylan Laboratories, Inc. v. Akzo, N.V., 770 F. Supp. 1053, 1066 (D. Md. 1991)

[176] Mylan Laboratories, Inc. v. Akzo, N.V., 770 F. Supp. 1053, 1068 (D. Md. 1991)

a monopoly[177]**;** There's evidence that Federated coerced the suppliers to accept the agreements[178]; however, the judges believed that there was no evidence that the spokes agreed with each other and with the hub to participate in the conspiracy thus, there was no rim to this wheel i.e. no proof of a horizontal conspiracy[179].

The Court goes a step further in *Elder-Beerman*, claiming that in order to establish a conspiracy under the rimless wheel theory plaintiffs must show that there is an "overall-unlawful plan or common design", that "knowledge that others must be involved is inferable to each member because of his knowledge of the unlawful nature of the subject of the conspiracy (but knowledge on the part of each member of the exact scope of the operation or the number of people involved is not required), and must provide evidence of each alleged member's participation"[180]. In this case, the Court holds that Elder-Beerman failed to offer sufficient evidence to establish the alleged single conspiracy, as it was unable to demonstrate that each supplier had knowledge of the existence of said conspiracy[181].

In *Dickson v Microsoft*, the plaintiffs also attempted to claim a single rimless wheel conspiracy[182]. The case entails a complaint by Dickson, claiming that Microsoft's distribution agreements with three Original Equipment manufacturers violated competition[183]. Following the requirements set in Elder-Beerman, the plaintiffs alleged single vertical conspiracies between the hub and each spoke, however the Court believes the plaintiff was unable to prove that there was a shared "unity of purpose or a common design and understanding" between the hub and each of the spokes[184].

One judge dissented, believing that the plaintiff showed evidence for all three conditions required by the test in Elder-Beerman, and so a rimless wheel conspiracy is sufficiently pled: there is an overall plan that by nature was broader than just a vertical

[177] Elder-Beerman Stores Corp. v. Fed. Dept Stores, 459 F.2d 138, 140 (6th Cir. 1972)
[178] Elder-Beerman Stores Corp. v. Fed. Dept Stores, 459 F.2d 138, 140 (6th Cir. 1972)
[179] Elder-Beerman Stores Corp. v. Fed. Dept Stores, 459 F.2d 138, 153 (6th Cir. 1972)
[180] Elder-Beerman Stores Corp. v. Fed. Dept Stores, 459 F.2d 138, 146 (6th Cir. 1972)
[181] Elder-Beerman Stores Corp. v. Fed. Dept Stores, 459 F.2d 138, 147 (6th Cir. 1972)
[182] Dickson v. Microsoft Corp., 309 F.3d 193, 199 (4th Cir. 2002)
[183] Dickson v. Microsoft Corp., 309 F.3d 193, 199 (4th Cir. 2002)
[184] Dickson v. Microsoft Corp., 309 F.3d 193, 204 (4th Cir. 2002)

relationship between the hub and a spoke, and so the spokes should have inferred that others would be involved[185].

General Motors, *Parke Davis* and *Klor's* are three cases in which the SC disagreed with the lower courts' decision. In *General Motors* and *Klor's*, the hub agreed with the spokes that they wouldn't deal with its rival, otherwise the hub would stop negotiating with the spokes [186]; similarly, in *Parke Davis*, the hub also threatened to stop supplying the spokes that didn't follow its suggested minimum retail price[187]. In all three cases, the hub met with the spokes informing them that unanimity would be essential for the scheme to work, trying to secure their adherence[188]. The DC didn't find a violation of Section 1 of the SA in any of these cases. In *General Motors*, the DC concluded that each firm acted on its own self-interest, and although they may have engaged in parallel action, there was never an agreement between them[189], while in the Parke Davis' case the DC claimed that Parke Davis' actions were unilateral[190]. In *Klor's*, the DC believed the opportunities for customers to buy in a competitive market were not reduced, so there are no anticompetitive effects[191]. The SC reversed the decision in all three cases, stating that by promoting general compliance and creating combinations or conspiracies to enforce it, and seeing as group boycotts are illegal, there can be no doubt that the firms violated the SA[192].In *General Motors* the Court claims the process cannot "be described as "unilateral" or merely "parallel.""[193] as "joint and collaborative action was pervasive in the initiation, execution, and fulfilment of the plan."[194] and the fact that each firm may have acted in its lawful self-interest has no influence when determining if there's been a breach of the SA[195].

[185] Dickson v. Microsoft Corp., 309 F.3d 193, 217 (4th Cir. 2002)

[186] US v. General Motors, 384 U.S. 127, 136 (1966); Klor's v. Broadway-Hale Stores, 359 U.S. 207, 208 (1959);

[187] US v. Parke, Davis Co., 362 U.S. 29, 33 (1960)

[188] U.S. v. General Motors, 384 U.S. 127, 144 (1966); U.S. v. Parke, Davis Co., 362 U.S. 29, 33 (1960)

[189] U.S. v. General Motors, 384 U.S. 127, 142 (1966)

[190] U.S. v. Parke, Davis Co., 362 U.S. 29, 36 (1960)

[191] Klor's v. Broadway-Hale Stores, 359 U.S. 207, 210 (1959)

[192] U.S. v. Parke, Davis Co., 362 U.S. 29, 38 (1960); U.S. v. General Motors, 384 U.S. 127, 145 (1966); Klor's v. Broadway-Hale Stores, 359 U.S. 207, 211 (1959)

[193] United States v. General Motors, 384 U.S. 127, 145 (1966)

[194] United States v. General Motors, 384 U.S. 127, 143 (1966)

[195] United States v. General Motors, 384 U.S. 127, 142 (1966)

The next four cases describe situations in which hub and spoke conspiracy is claimed but there's not enough evidence provided to back up those allegations.

In *Pepsi v Coca-Cola*, Pepsi claimed that the loyalty clauses that Coca-Cola included in its contracts with distributors (requiring them to choose between Pepsi and Coca-Cola)[196] established a hub and spoke conspiracy, violating Section 1 of the SA, seeing as, according to Pepsi, Coca-Cola assured the distributors that others were being similarly informed[197]. The DC rejected Pepsi's allegations as it failed to prove the existence of a horizontal agreement among the distributors, seeing as "the only evidence PepsiCo relies upon is an inference of implied understanding amongst certain foodservice distributors that Coca-Cola enforced the same loyalty policy with each of its foodservice distributers."[198] and that was not enough to prove an agreement[199]. There was also no evidence of the manufacturers abruptly shifting their practices, no evidence of communication among the distributors and no evidence of the distributors condition their acceptance of the agreement on their competitors acceptance[200].

In *Impro Products v Herrick***,** Impro, a manufacturer of animal biologics complained that Dr. John Herrick, a veterinarian, had enter into similar consulting arrangements with several manufacturers of antibiotic drugs[201]. The DC followed Elder-Beerman's test to establish a rimless wheel conspiracy and it found that there is no evidence of the existence of an overall plan, seeing as the defendants had no communications regarding Impro prior to the lawsuit, also failing to prove that each defendant had knowledge that others were involved. The Court also proves that there was no evidence of an agreement to harm Impro between any of the defendants and Herrick [202].

In *McCormick***,** plaintiffs allege that McCormick, a manufacturer of canned black pepper, conspired with large retailers to reduce the amount of ground black pepper

[196] Pepsico, Inc. v. Coca-Cola Co., 315 F.3d 101, 103 (2d Cir. 2002)
[197] Pepsico, Inc. v. Coca-Cola Co., 315 F.3d 101, 109 (2d Cir. 2002)
[198] Pepsico, Inc. v. Coca-Cola Co., 114 F. Supp. 2d 243, 259 (S.D.N.Y. 2000)
[199] Pepsico, Inc. v. Coca-Cola Co., 315 F.3d 101, 110 (2d Cir. 2002)
[200] Pepsico, Inc. v. Coca-Cola Co., 315 F.3d 101, 110 (2d Cir. 2002)
[201] Impro Products, Inc. v. Herrick, 715 F.2d 1267, 1270 (8th Cir. 1983)
[202] Impro Products, Inc. v. Herrick, 715 F.2d 1267, 1280 (8th Cir. 1983)

contained in the McCormick-supplied, store-branded cans[203] but still maintaining the same retail prices [204]. Plaintiffs focus their allegations on the relationship between McCormick and each retailer, failing to show evidence of a horizontal conspiracy between the retailers. It would also be needed to allege plus facts, and they failed to do so. The Court also believes that the plaintiffs didn't show evidence that McCormick and the retailers agreed on retail prices. There is also a lawful explanation for the observed prices and no proof that the retailers were acting against their independent economic self-interest, and also no proof of specific communications supporting agreement and no alleged motivations for defendants to make an agreement on price[205]. The Court also held that the alleged agreements between McCormick and the retailers do not unreasonably restrain trade[206]. Therefore, there's no proof of a hub and spoke conspiracy.

In *K-Dur*, Plaintiffs claim the existence of a hub-and-spoke conspiracy, with Schering (a pharmaceutical manufacturer) as the hub and with Upsher and ESI (generic manufacturers) acting as the spokes, working together to prevent and delay the market entry of generic substitutes for K-Dur, a supplement[207]. Previously, Shering had already settled two patent litigation cases with the generic manufacturers and the plaintiffs allege that each individual settlement was part of a larger scheme to prevent competition[208]. The Court finds that there is no evidence that Schering, Upsher, and ESI had a common goal and that the plaintiffs failed to offer sufficient evidence of any concerted action between Schering, Upsher, and ESI to support the existence of a single conspiracy or horizontal agreement[209], as Upsher and ESI separately settled their patent

[203] In re McCormick & Co., Inc., Pepper Prods. Mktg. & Sales Practices Litig., 275 F. Supp. 3d 218, 219 (D.D.C. 2017)

[204] In re McCormick & Co., Inc., Pepper Prods. Mktg. & Sales Practices Litig., 275 F. Supp. 3d 218, 220 (D.D.C. 2017)

[205] In re McCormick & Co., Inc., Pepper Prods. Mktg. & Sales Practices Litig., 275 F. Supp. 3d 218, 221 (D.D.C. 2017)

[206] In re McCormick & Co., Inc., Pepper Prods. Mktg. & Sales Practices Litig., 275 F. Supp. 3d 218, 221 (D.D.C. 2017)

[207] In re K-Dur Antitrust Litig., Civil Action No. 01-cv-1652 (SRC)(CLW), at *41 (D.N.J. Feb. 25, 2016)

[208] In re K-Dur Antitrust Litig., Civil Action No. 01-cv-1652 (SRC)(CLW), at *44 (D.N.J. Feb. 25, 2016)

[209] In re K-Dur Antitrust Litig., Civil Action No. 01-cv-1652 (SRC)(CLW), at *45 (D.N.J. Feb. 25, 2016)

litigation with Shering, without each other's involvement, proving that there's no indication of any agreement between the spokes[210].

[210] In re K-Dur Antitrust Litig., Civil Action No. 01-cv-1652 (SRC)(CLW), at *42 (D.N.J. Feb. 25, 2016)

4.2. Analysis of alleged hub and spoke cases in a comparative perspective

From all alleged hub and spoke cases in the UK, the Courts ended up ruling three as hub and spoke cartels: Replica Kit, Toys and Cheese. The cases regarding tobacco and private schools were not considered hub and spoke.

The UK authorities formulated a test to establish the existence of a hub and spoke cartel, setting several conditions that the hub and the spokes (and the relationship between them i.e. the exchange of information) must check off in order for the conspiracy to be considered hub and spoke. The three cases considered as hub and spoke, Replica Kit, Toys and Cheese, follow perfectly the conditions the test states, as it is shown in table 1.

The case regarding the private schools fails to be classified as a hub and spoke cartel because the hub, the company that organized the exchange of information with the cartel, doesn't operate in a different level of the chain. This is the only condition on the hub and spoke test that this conspiracy fails to tick off, as it is clear in table 1. The alleged hub acts exactly as a true hub would do, receiving and organizing information and sharing it back to the spokes. Even though this cartel wasn't considered hub and spoke, the arrangement was still charged for harming competition, so I believe that, had the "hub" been operating in another level of the supply chain and still performing the same tasks, this arrangement could have been ruled as hub and spoke.

As this case was still considered a cartel that violates competition, the line between legal and illegal behaviour cannot be drawn from it.

It's also difficult to extract any information form the tobacco case as the Court dropped the claims of illegal information exchanges. The firms acted on the same market and on different levels of the supply chain, had the plaintiffs stuck to the illegal exchange of information claims, and if the Court believed this to be true, it is my understanding that this case could have been considered hub and spoke.

Table 1 shows the conditions that each case needs to fulfil in order to be considered a hub and spoke arrangement, making it easier to understand the reason behind why some cases failed to be ruled as hub and spoke.

		Replica Kit	Toys	Cheese	Tobacco	Private Schools
HUB	Operates in the same market	Yes	Yes	Yes	yes	yes
	Operates at a different level of the supply chain	Yes	Yes	Yes	yes	no
	Facilitates the conspiracy promoting compliance	Yes	Yes	yes	yes	yes
INFORMATION EXCHANGE	A discloses sensitive information to B intending that B will pass the information to C	Yes	Yes	yes	the court dropped the claims of illegal information exchange	yes
	B passes the information to C	Yes	Yes	Yes		yes
	C knows the information was passed on with A's understanding	Yes	Yes	Yes		yes
	C uses that information in determining its own conduct	yes	Yes	Yes		yes
	C discloses sensitive information to B intending that B will pass the information to A	yes	Yes	Yes		yes
	B passes the information to A	yes	Yes	yes		yes
Hub and Spoke?		Yes	Yes	yes	No	No

Table 1- Cases in the UK

The EU has yet to deal with a true hub and spoke cartel. The alleged cases described above, AC-Treuhand I and II, Marine Hoses and ICAP, cannot be considered hub and spoke because the companies involved on these arrangements weren't operating on the same market, which isn't consistent with a hub and spoke agreement. By looking at table 2, it's easy to understand that the four agreements have the same characteristics as hub and spoke arrangements, the only difference being that instead

of involving firms operating in a different level of the same supply chain, the European cases involved a related market.

Nevertheless, these cartels were still ruled as anticompetitive, and the companies that were operating as alleged hubs were charged as facilitators of the conspiracy. The EU uses the term facilitator to describe a hub that acts on a different market from the spokes. Other than this detail, the behaviour of the facilitator is consistent with that of a hub. I believe that if the facilitators were operating on the same market, these conspiracies would be considered hub and spoke cartels.

The e-books case could have been a good case to understand how the European authorities would deal with hub and spoke cases (and to compare the EU and the US approaches to hub and spoke cartels), however, as a full analysis of this case was never performed, there's no way of knowing if the EC would reach the same conclusion as the US did or even if the whole analysis would be similar.

			AC-Treuhand	Marine Hoses	ICAP	e-Books
HUB	Operates in the same market		No	no	No	the parties reached early commitments
	Operates at a different level of the suppy chain					
	Facilitates the conspiracy	Intended to contribute to the common objective of the scheme	Yes	yes	Yes	
		Aware of or could have reasonably foreseen the conduct of other undertakings	Yes	yes	Yes	
		Ready to take the risk	Yes	yes	Yes	
Sensitive information exchange between firms			Yes	yes	Yes	
Hub and spoke?			No	No	No	

Table 2- Cases in the EU

Regarding the alleged cases investigated by US authorities, synthetized on table 3, it's simple to conclude that all cases that weren't considered hub and spoke conspiracies failed to do so as the plaintiffs weren't able to prove the existence of the rim of the wheel i.e. a horizontal agreement between the spokes. By failing to demonstrate a horizontal agreement, the alleged hub and spoke conspiracy is no more than a set of vertical arrangements between the hub and the spokes. Every situation in which the hub doesn't promote the spokes compliance to scheme or whenever the spokes aren't aware of each other's existence, the courts tend to exclude the possibility of a horizontal agreement.

The plaintiffs are required to show direct or circumstantial evidence of that agreement. By failing to do that, the allegations of a hub and spoke cartel also fail to thrive. However, when talking about circumstantial evidence, it's important to note that the evidence of parallel conduct and the plus factors provided need to be strong enough to prove the agreement. Otherwise courts cannot exclude the possibility of independent behaviour. There were cases (the most obvious one is Guitar Centre) in which the plaintiffs showed circumstantial evidence of the agreement, parallel conduct backed up with some plus factors to exclude the possibility of independent behaviour, and the Court still failed to rule those arrangements as hub and spoke conspiracies.

Another important factor to take into consideration is that the outcome of the process will always depend on the judge's understanding of the case. And the judges in charge the case might not agree on how to rule it. So even if the plaintiffs show evidence of an alleged hub and spoke agreement the Court can still state that that evidence is not strong enough to prove the agreement. It all comes down to whether or not the judge in charge of that judgement believes the evidence shown is compelling enough.

				Interstate Circuit	Toys R Us	Masonite	e-books	Eaton Corp	Contact Lenses	Klor's	General Motors	Parke Davis
HUB	Operates in the same market			Yes	Yes	Yes	Yes	Yes	yes	yes	yes	yes
	Operates at a different level of the supply chain			Yes	Yes	Yes	Yes	Yes	yes	yes	yes	yes
	Has vertical agreements with the spokes			Yes	Yes	Yes	Yes	Yes	yes	yes	yes	yes
	Promotes compliance			Yes	Yes	Yes	Yes	Yes	yes	yes	yes	yes
RIM	Knowledge that other spokes were involved			Yes	Yes	Yes	Yes	Yes	yes	yes	yes	yes
	Direct evidence	Direct evidence of communication		Yes	Yes	Yes	Yes			yes	yes	yes
		Conditional agreement		Yes	Yes	Yes	Yes					
	Circumstantial evidence	Parallel conduct					Yes	Yes	yes		yes	
		Plus factors	Common motive				Yes		yes			
			Market departure from previous business behaviour				Yes		yes			
			Monitoring by the hub and the spokes				Yes		yes		yes	yes
			Action against their economic self-interest		Yes		Yes	Yes	yes		no	
			Opportunities to conspire					Yes	yes			
			Others									
	Sufficient evidence of a rim/horizontal conspiracy			Yes	Yes	Yes	Yes	Yes	yes	yes	yes	yes
Hub and Spoke?				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

				Guitar Centre	Elder-Beerman	MyLan	Pepsi	Impro products	McCormick	K-Dur	Dickson
HUB	Operates in the same market			Yes	Yes	Yes	Yes	Yes	Yes	yes	yes
	Operates at a different level of the supply chain			Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	Has vertical agreements with the spokes			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
	Promotes compliance			Yes	No	No	No		No		No
RIM	Knowledge that other spokes were involved			Yes	No		Yes	No	No	No	No
	Direct evidence	Direct evidence of communication							No	No	
		Conditional agreement					No				
	Circumstantial evidence	Parallel conduct		Yes		Yes					
		Plus factors	Common motive	Yes	Yes?		No		No	No	No
			Market departure from previous business behaviour								
			Monitoring by the hub and the spokes								
			Action against their economic self-interest	Yes					No		
			Opportunities to conspire	Yes							
			Others	Yes							
	Sufficient evidence of a rim/horizontal conspiracy			No	No	No	no	No	No	No	no
Hub and Spoke?				No	No	No	No	No	No	No	No

Table 3 - Cases in the US

4.3. Common and distinctive factors in hub and spoke cartels

In order to better understand hub and spoke conspiracies, the cases that were ruled as hub and spoke cartels, by European, US or UK Courts, are summarized below in table 4. The table synthetises who are the hub and the spokes of either one of the cases, and where in the supply chain they operate, the nature of the vertical relationship between the hub and the spokes and the horizontal conspiracy they aim to achieve. This way, it's easier to draw conclusions and understand the differences and similarities between cases.

From the analysis of table 4, the distinction between type 1 and type 2 hub and spoke cases is very clear. All UK cases are type 1, Replica Kit, Cheese and Toys, where the hub is the upstream supplier/manufacturer and the spokes are the downstream retailers. Masonite, Eaton Corp, General Motors and Parke Davis are the type 1 cases in the US. Type 2 cases, in which the suppliers/manufacturers operating in an upstream level of the supply chain are the spokes and the hub is a common downstream retailer, are all from the US and include Interstate Circuit, Toys R Us, MyLan Laboratories, E-books, Disposable Contact Lenses and Klor's.

In type 1 cases the hub, in response to a complain of one of the spokes, and after conducting bilateral communications with the spokes, sets the price, usually trough fixed or minimum-price RPM agreements, while in type 2 cases, the spokes impose similar vertical restrains at the request of the hub, to prevent new firms from entering or drive any discounters out of the market.

Replica Kit, Toys, Cheese and Parke Davis are all type 1 cases, where the hub fixed the price and required the spokes to respect it. In Replica Kit and Parke Davis, the hub also threatened to stop dealing if they didn't comply. There's also a distinguishing element in the way the conspiracy started, as in Replica Kit and Toys the hub acted on a spoke's complain while in Parke Davis and Cheese it was the hub's idea to set the price.

In Eaton Corp and General Motors, type 1 cases, and Interstate Circuit, Toys R Us and Klor's, type 2 cases, the hub requested the spokes not to deal or to deal in very harsh conditions with a competitor.

In General Motors the refusal to deal came about as a result of a complain of one of the spokes. In Eaton Corp it was achieved through a very subtle way, as the hub engaged in several exclusive agreements with the spokes. Also, in Eaton Corp, the competitor mentioned above is a rival of the hub, while in General Motors, the competitor is a rival of the complainant spoke. In Interstate Circuit and Toys R US, the hub goes a step further and threatens to stop carrying the spokes' products if they don't comply.

In Masonite (type 1) and e-books (type 2) the conspiracy was achieved through agency agreements between the hub and each of the spokes.

In all cases mentioned above, the retailers agreed to follow the hub's conditions, whether it was an RRP, a refusal to deal or an agency agreement, each one being aware that the other(s) would do so too.

Case	Hub	Spokes	Vertical Agreements	Horizontal conspiracy
Replica Kit	Umbro (supplier/upstream)	JJB, Sports Soccer (retailers/downstream)	The hub (acting on a spoke's complain) set an RRP and required the spokes to respect it.	The retailers agreed to follow the RRP, each one being aware that the other would do so.
Toys	Hasbro (supplier/upstream)	Argos, Littlewoods (retailers/downstream)	The hub (aware that the spokes were unhappy) set an RRP and required the spokes to respect it.	The retailers agreed to follow the RRP, each one being aware that the other would do so.
Cheese	Dairy Crest, Glanbia, McLelland (suppliers/upstream)	Asda, Safeway, Sainsbury's, Tesco (retailers/downstream)	The hub requested the spokes to increase their retail prices.	All retailers raised their prices, each one being aware that the other would do so.
Interstate Circuit	Interstate circuit (retailer/downstream)	Movie distributors (suppliers/upstream)	The hub requested the spokes to deal with the hub's rival in very unfavourable conditions, threatening to stop dealing with the spokes if they didn't comply.	The spokes agreed to the hub's conditions, each one being aware that the others would do so.

Toys R Us	Toys R Us (retailer/downstream)	Mattel, Hasbro, Tyco and Little Ticks (suppliers/upstream)	The hub requested the spokes not to deal with the hub's rival, threatening to stop dealing with the spokes if they didn't comply.	The spokes agreed to the hub's conditions, each one being aware that the others would do so.
Masonite	Masonite (supplier/upstream)	Sellers of hardboard (manufacturers/downstream)	Agency agreements	The spokes agreed to the hub's conditions, each one being aware that the others would do so.
e-books	Apple (retailer/downstream)	Book Publishers (suppliers/upstream)	Agency agreements	The spokes agreed to the hub's conditions, each one being aware that the others would do so.
Eaton Corp	Eaton Corp (supplier/ upstream)	Truck Original Equipment Manufacturers (manufacturer/ downstream)	De facto exclusive agreements, requiring the spokes not to deal with the hub's rival	The spokes agreed to the hub's conditions, each one being aware that the others would do so.
Contact Lenses	ABB (retailer/downstream)	Contact lenses manufacturers (manufacturers/ upstream)	The hub requested the spokes to implement UPPs, threatening to stop dealing with the spokes if they didn't comply.	The spokes agreed to the hub's request, each one being aware that the others would do so.

General Motors	General Motors (supplier/ upstream)	Chevrolet sellers (retailers/ downstream)	The hub (acting on a spoke's complain) required the spokes not to deal with discounters	The spokes agreed to the hub's request, each one being aware that the others would do so.
Parke Davis	Parke Davis (supplier/upstream)	Retailers (downstream)	The hub set an MRP and required the spokes to respect it, threatening to stop dealing with the spokes if they didn't comply.	The spokes agreed to the hub's conditions, each one being aware that the others would do so.
Klor's	Broadway-Hale stores (retailer/downstream)	Appliance suppliers (upstream)	The hub requested the spokes not to deal with the hub's rival.	The spokes agreed with the hub's request, each one being aware that the others would do so.

Table 4 - Hub and Spoke cases

As mentioned before in this dissertation, a hub and spoke arrangement can be defined as the exchange of information between competitors through a third party acting on a different level of the supply chain, with the aim of restricting competition in a more camouflaged way (Amore, 2016; Harrington & Patrick Harker Professor, 2018; Vereecken, 2014). It can also be said that in a hub and spoke cartel there's a third firm facilitating a cooperative, yet illegal, relationship between two or more competitors.

Cooperation between competitors is one of the key elements for a concept that was also mentioned before: coopetition. Even though there's a vast array of definitions for coopetition, this chapter will be based on Kramer & Porter's (2011) idea that firms can create value by cooperating with their competitors. This chapter will also divert from the simplistic idea that coopetition is a process that happens between two firms (as it is the focus of most the literature on this matter) and emphasise the view of some authors who believe that coopetition also happens outside the dyadic level, involving three or more firms and the interactions between them (Gimeno & Jeong, 2001; Kim, 2018; Madhavan et al., 2004). Madhavan et al., (2004) claim that coopetition can happen in a triad, where a coopetitive relationship between two firms can be facilitated by the actions of a third firm, because, in a dynamic world and in a business setting between three firms, it wouldn't be reasonable to believe that the relationships between each of the firms happen in a closed environment. Kim (2018) claims that, considering a triad, all relationships have some type of influence over each other.

The important information to retain from the paragraph above is that there are situations in which a cooperative relationship between two competitive firms can be facilitated and influenced by the actions of a third firm. This concept mirrors the idea of a hub and spoke arrangement, where a collusive relationship between two competitors is facilitated by a third party, that conducts exchanges of information between the two competing firms. However, it is also imperative to note that, while very similar, these two concepts have some fundamental differences that will be explored next.

Firstly, there's a difference in legality between triadic coopetition and hub and spoke arrangements (although this difference can also apply to any other type of coopetition and collusion, not just triadic coopetition and hub and spoke cartels). In coopetition, competing firms cooperate to create more value for themselves but also to the benefit of the consumer, in a win-win-win scenario (Rusko, 2015; Walley, 2007). In hub and spoke cartels, or any other form of collusion, the firms involved in the collusive behaviour gain at the expense of the consumer, from price increases, for example, creating a win-win-lose scenario (Rusko, 2015). Rusko (2011) points out that the difference between the two concepts is down to the fact that collusion (and hub and spoke cartels) violates the law and coopetition does not, however it's not always easy to understand when a violation of the law is happening, especially in a hub and spoke scenario.

Secondly, the legality issues in hub and spoke arrangements are also related to the type of information that is exchanged between the competing firms, and whether the exchange of that information is pro or anticompetitive[211], however, this issue is also not exclusive to hub and spoke arrangements and triadic coopetition, any type of collusion and coopetition would also face this problem. Any exchange of information that reduces a firm's independence or its incentive to compete is expected to be anticompetitive. Individualised information related to prices, quantities, costs, demand and other future intentions, or any information that would be considered confidential, will most likely restrict competition if received by a competitor. Exchanges of sensitive information done in a regular and frequent basis also fall on the category of information that will most likely bring harm to competition[212] (Whish, 2006). These types of information are exchanged in a hub and spoke context but not in a coopetitive setting. On the contrary, the goal in coopetition is for the exchanges of information to lead to more efficiency and positively impact competition. For example, information about market conditions i.e. its demand and existing capacity will lead firms to make better informed strategic decisions (Whish, 2006). Exchange of information between competitors can also promote innovation, improve the allocative efficiency of each firm,

[211] See chapter 4.1 to 4.3
[212] EC, Horizontal guidelines, para. 81, 85 and 87

reduce problems of adverse selection and moral hazard and will help firms to understand market trends (Bennett & Collins, 2010).

Thirdly, another key difference between triadic coopetition and hub and spoke cartels lies on the configuration of both arrangements. Contrary to the differences mentioned before, the following one relates only to coopetition in a triadic level and hub and spoke cartels. Triadic coopetition can happen between any three firms. Following the view that a coopetitive relationship between two firms can be facilitated by a third one (Madhavan et al., 2004), there are no restrictions that should be applied to the third firm facilitating the arrangement between the other two, no conditions on the market it acts on, or the level of the supply chain it operates on, or the relationship it must have with the other firms. The same cannot be said about a hub and spoke cartel. By definition, a hub and spoke arrangement must involve firms operating on the same market and on two different levels of the supply chain, involving either the interaction a supplier/ manufacturer and its distributors/retailers or between a distributor/retailer and its suppliers/manufacturers (Amore, 2016).

However, it is my belief that the fundamental idea of a hub and spoke arrangement i.e. the exchange of sensitive information between competitors through a third party (Vereecken, 2014) can still happen even if the third party does not operate on the same market as the other two firms, seeing as the role of conducting information between does not require the conducting firm to be in the same market as the other two. The EC has had an important contribute to this matter, calling this third party a facilitator of the overall unlawful agreement. AC-Treuhand is a very important case on this topic, as the EC decision establishes that

> as regards the relationship between competitors on the same relevant market and the relationship between such competitors and their clients, the case-law recognises the joint liability of the undertakings which are co-perpetrators of an infringement under Article 81(1) EC and/or which have played an accessory role in such an infringement, in so far as it has been held that the objective condition for the attribution of various anti-competitive acts constituting the cartel as a whole to the undertaking concerned is satisfied where that undertaking has contributed to its implementation, even

> in a subsidiary, accessory or passive role, for example by tacitly approving the cartel and by failing to report it to the administrative authorities[213]

The EC also establishes the conditions that need to be fulfilled in order to prove that an undertaking contributed "actively and intentionally" to an unlawful agreement. First, the undertaking must have intended to contribute to objectives the cartel. Second, it must have been aware or could have reasonably foreseen the conduct followed by the other firms in pursuing those same objectives. Third, it must have been ready to accept the attendant risk[214]. This applies to "any undertaking which as adopted collusive conduct, including consultancy firms which are not active on the market affected by the restriction of competition"[215]. Vereecken (2014, 38) submits that "this reasoning can be applied *mutatis mutandis* on any third party that intentionally fulfils the function of a hub in a hub and spoke cartel". In light of these considerations, any third party facilitating a cartel acts as a hub in a hub and spoke cartel as long as it intended to contribute the infringement. Therefore, there's no need to confine the role of the hub to a firm that acts on the same market as the spoke, as a common supplier or retailer.

Following the example of an abuse of a dominant position, the market[216] can be the one the abuser dominates or any other related market[217]. The same should happen in hub and spoke cases, as the third party can be given the power to influence markets besides the one it operates on. However, it can be argued that there are circumstances in which the role of the hub, explained in part 3.3 of this dissertation, is better played by a firm of the same market. For example, when the hub is not a supplier/ retailer cannot threat to stop supplying/selling the products of the spokes that do not comply with its demands. Still, this should not influence whether or not a firm operating

[213] C-99/04 AC-Treuhand v Commission, para. 133

[214] C-99/04 AC-Treuhand v Commission, para. 134

[215] C-99/04 AC-Treuhand v Commission, para. 150

[216] "The definition of the relevant market in both its product and its geographic dimensions often has a decisive influence on the assessment of a competition case.(…) A relevant product market comprises all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products' characteristics, their prices and their intended use.(…) The relevant geographic market comprises the area in which the undertakings concerned are involved in the supply and demand of products or services, in which the conditions of competition are sufficiently homogeneous, and which can be distinguished from neighbouring areas because the conditions of competition are appreciably different in those area" in Commission Notice on the definition of relevant market for the purposes of Community competition law (97/C 372/03), para.4,7,8

[217] See http://ec.europa.eu/competition/consumers/abuse_en.html

on another market can be a hub, as there several other ways in which it can still facilitate a hub and spoke cartel.

Still, the second condition, the requirement of having the hub operating in a different level of the supply chain, should be maintained. If the hub operated in the same level of the chain, there would be no difference between a hub and spoke cartel and a classic cartel. If all the firms were competitors operating in the same level of the supply chain, the firm playing the role of conducting the exchanges of information would gain access to information that would be useful to its business strategy, as it would be coming from one of its competitors. The exchange of sensitive information between competitors would also more easily raise competition authority's attention, and thus hub and spoke cartels would no longer be a subtler and camouflaged version of the classic cartel.

To conclude, there are important differences between triadic coopetition and hub and+ spoke cartels regarding the legality of the arrangements, their impact on consumers, the type of information that is exchanged, the markets and the level of the supply chain the firms operate on. These differences are summarized on table 5.

	TRIADIC COOPETITION	**HUB AND SPOKE CARTELS**
Number of firms involved	3 firms	3 or more firms
Legality of the arrangement	Legal	Illegal
Impact on the final consumer	Benefits consumers	Harms consumers
Type of information exchanged	Unlikely to harm competition	Likely to harm competition
Market in which the firms operate	Same or different markets	Same market
Level of the supply chain in which the firms operate	Same or different levels of the supply chain	Different level of the supply chain

Table 5 - Differences between triadic coopetition and hub and spoke cartels

5.1. Avoiding Hub and Spoke Liability

The most important conclusion to take from all alleged hub and spoke cases described above, and perhaps the most obvious one, is that firms should avoid any communication with competitors, whether it is done directly or indirectly, about product pricing or any subject that might raise an anticompetitive concern. In an indirect exchange of information, the firm acting as the connection between the competitors should also refrain from passing on the information.

Firms should also avoid complaining about the business strategy of a competitor to a common partner, whether or not they are hoping that the common partner acts on the complaint and tries to change conditions it offers to the competitor. Either way, the complainant should not be absolved of responsibility[218]. On the same topic, the common partner shouldn't act on complaints made by a firm about a competitor.

Any firm can decide not to do business with another firm, however this has to be done independently. When there's an agreement between competitors not to deal with certain firms, an anticompetitive problem will arise. A company also cannot ask its suppliers or retailers to stop dealing with one of its competitors, as it would be orchestrating an agreement between competitors. This was one of the problems in *Toys R Us*. It is also important to refer that, although manufacturers/suppliers are allowed to recommend retail prices for their products, they cannot threaten to penalise retailers who chose not to follow said prices (OECD, 2008). For example, this happened in *Disposable Contact Lenses* and was one of the plus factors the authorities took into consideration. These last two issues aren't exclusive to hub and spoke situations, however if they happen in a hub and spoke setting, it raises the anticompetitiveness of the situation.

A common subject in many hub and spoke cases is the adoption of agreements that wouldn't be in line with the firms' independent economic self-interest. Authorities are suspicious of these situations, in *Toys R Us* a horizontal conspiracy was inferred, among other reasons, because it was "suspicious for a manufacturer to deprive itself of

[218] JJB Sports PLC and Allsports limited v OFT, CASE 1021/1/1/03 and 1022/1/1/03, para 664

a profitable sales outlet"[219]. The next question to be asked is whether or not firms would independently choose to adopt the conduct that is being asked, even if they had no knowledge about what their competitors were planning to do. Most of the times, when the conduct that is being asked is so out of line with the economic interest of each firm, they require assurance that their competitors are also being asked the same and that they will adopt said conduct or, going a step further, there's situations in which firms condition their acceptance of the conduct on the acceptance of the same conduct by the rival. In *re Musical Instruments & Equip. Antitrust Litigation* [220] the COA is in line with this statement, claiming that "if no reasonable manufacturer would have entered into a MAP policy without assurances that all other manufacturers would enter into similar agreements, that would suggest collusion". The conclusion to take from this issue is that a firm should unilaterally adopt its business conduct, refraining from seeking information about its rivals actions or from condition its participation on an agreement on the participation of the rival.

An abrupt change from past business decisions can give rise to the inference of an agreement, particularly when there's no reason for that sudden change. In these situations, Courts tend to exclude the possibility that firms acted independently. Perhaps the conclusion to be taken from this topic would be that firms should avoid making drastic changes in their relationships with other firms, whether they are competitors, suppliers or buyers. In *Toys R Us*, the COA also relied on the fact that "the manufacturers' decision to stop dealing with the warehouse clubs an abrupt shift from the past"[221] to infer a horizontal conspiracy. However, it is possible that there might be lawful circumstances where a firm business strategy requires a change from past actions. Nevertheless, firms should be aware that such conduct might carry the possibility of a conspiracy being inferred[222], and so they should actively try to depart itself from that inference.

[219] Toys "R" US, Inc. v. FTC, 221 F.3d 928, 935 (7th Cir. 2000)

[220] Ramsey v. Nat'l Ass'n of Music Merchs., Inc. (In re Musical Instruments & Equip. Antitrust Litig.), 798 F.3d 1195 (9th Cir. 2015)

[221] Toys "R" US, Inc. v. FTC, 221 F.3d 928, 935 (7th Cir. 2000)

[222] In addition to other conditions. From the cases I studied, it would seem unlikely that a Court would infer a conspiracy just from an abrupt change in the business conduct of a single firm.

Any firm that receives unwanted sensitive information, whether that firm is the hub receiving information from a spoke, or a spoke receiving information from the hub, needs to express clearly that it didn't want to receive that information[223]. In Adriatica di Navigazioni v Commission of the European Communities (CEC)[224], the Court of First Instance[225] stated that in order to avoid liability the firm needs to clearly inform the other(s) involved that it does not agree with its(their) conduct. Unless the firm does this, it will be presumed to have accepted the information that was shared.

When the firms meet in person (in hub and spoke cases these meeting could only happen between the hub and each of the spokes) they should take steps to avoid anticompetitive concerns from raising in the future. A preventive measure firms can also take is to meet with a counsel before communicating with other firms. The counsel and the firms should be attentive to any circumstances that could bring about anticompetitive concerns (Bell, Hubbard, & Monts, 2017).

[223] EC, Horizontal Guidelines, para. 62
[224] Adriatica di Navigazioni SpA v CEC, Case T-61/99, Para.137
[225] Now known as the General Court

This dissertation reaches the conclusion that ,under the right circumstances, coopetition and hub and spoke cartels are mirror concepts. There are situations in which cooperation between two competitors is facilitated by a third firm. Following the same line of thought, a hub and spoke cartel entails a collusive relationship between two competitors that is facilitated by a third party The line between legal and illegal behaviour can be drawn from how a coopetitive relationships can turn into a hub and spoke cartel. The information firms share with their competitors, even if it's done through a third party, has a great importance in defining a relationship as coopetition or as a hub and spoke cartel. Firms should refrain from sharing information that can give rise to anticompetitive concerns, and instead, aim to exchange information that has the power to impact competition.

However, it's not always as simple and easy to know when an arrangement amounts to a hub and spoke conspiracy. Competition authorities are yet to provide a full test on how to establish that a hub and spoke cartel is taking place. I believe that formulating a test for competition authorities to follow when investigating an alleged hub and spoke cartel should be done as soon as possible. It would be very helpful not only to competition authorities but also to companies as they would be aware of the kinds of behaviours that might be raising anticompetitive concerns. The similarities on the behaviours of the firms that this dissertation found between the cases that were ruled as hub and spoke cartels, can be useful in new investigations, as competition authorities can now be aware that when a firm adopts one of those behaviours it is likely that competition can be harmed.

I also conclude that defining a hub and spoke cartel as involving the relationship between a retailer and a supplier should be reviewed, as it is clear from this dissertation that there are cases in which the role of the hub can be played by a firm from any other market. I believe that, as long as there is an unlawful horizontal agreement being facilitated and arranged by a third party outside that horizontal arrangement, a hub and spoke cartel is in place.

Abbott, A. F. (2005). A brief comparison between European and American Competition Law.

Afuah, A. (2000). How much do your co-opetitors' capabilities matter in the face of technological change? *Strategic Management Journal*, *21*(3), 387–404.

Amore, R. (2016). Three (or more) is a magic number: hub & spoke collusion as a way to reduce downstream competition. *European Competition Journal*, *12*(1), 28–53. https://doi.org/10.1080/17441056.2016.1191226

Ann Peng, T. J., Yen, M. H., & Bourne, M. (2018). How rival partners compete based on cooperation? *Long Range Planning*, *51*(2), 351–383. https://doi.org/10.1016/j.lrp.2017.10.003

Bailey, D. (2008). Publicly Distancing' Oneself from a Cartel. *World Competition*.

Bailey, D. (2018). Presumptions in EU competition law. *Journal of Antitrust Enforcement*, *6*(2), 189–212. https://doi.org/10.1093/jaenfo/jny008

Barretta, A. (2008). The functioning of co-opetition in the health-care sector: An explorative analysis. *Scandinavian Journal of Management*, *24*(3), 209–220. https://doi.org/10.1016/j.scaman.2008.03.005

Bell, R. B., Hubbard, H., & Monts, W. L. (2017). Avoiding Hub-and-Spoke Liability : Recent Antitrust Cases and Practical Advice for Vertical and Horizontal Players.

Bengtsson, M., Eriksson, J., & Wincent, J. (2010). Co-opetition dynamics - an outline for further inquiry. *Competitiveness Review: An International Business Journal*, *20*(2), 194–214.

Bengtsson, M., & Johansson, M. (2014). Managing coopetition to create opportunities for small firms. *International Small Business Journal*, *32*(4), 401–427.

Bengtsson, M., & Kock, S. (2000). "Coopetition" in Business Networks - to Cooperate and Compete Simultaneously. *Industrial Marketing Management*, *29*(5), 411–426. https://doi.org/10.1109/NATW.2018.8388867

Bengtsson, M., Kock, S., Lundgren-Henriksson, E. L., & Näsholm, M. H. (2016). Coopetition research in theory and practice: Growing new theoretical, empirical, and methodological domains. *Industrial Marketing Management*, *57*, 4–11. https://doi.org/10.1016/j.indmarman.2016.05.002

Bengtsson, M., & Raza-Ullah, T. (2016). A systematic review of research on coopetition: Toward a multilevel understanding. *Industrial Marketing Management*, *57*, 23–39. https://doi.org/10.1016/j.indmarman.2016.05.003

Bennett, M., & Collins, P. (2010). The Law and Economics of Information Sharing: The Good, the Bad and the Ugly. *European Competition Journal*, *6*(2), 311–337. https://doi.org/10.5235/174410510792283754

Bennett, M., Giovannetti, E., Fletcher, A., & Stallibrass, D. (2011). Resale Price Maintenance: Explaining the Controversy, and Small Steps Towards a More Nuanced Policy. *Fordham International Law Journal*, *33*(4), 1278–1299. https://doi.org/10.5194/acp-3-2147-2003

Bishop, S., & Walker, M. (2010). *The economics of EC competition law: concepts, application and measurement*. Sweet & Maxwell.

Borenstein, S. (1994). Rapid Price Communication and Coordination: The Airline Tariff Publishing Case. *The Antitrust Revolution*, 233–251.

Bouncken, R. B., Gast, J., Kraus, S., & Bogers, M. (2015). Coopetition: a systematic review, synthesis, and future research directions. *Review of Managerial Science*, *9*(3), 577–601. https://doi.org/10.1007/s11846-015-0168-6

Brandenburger, A. M., & Nalebuff, B. J. (1996). *Co-opetition*. New York: Bantam Doubleday Dell Pusblishing Group.

Chamberlin, E. (1933). *The theory of monopolistic competition*. Cambridge: Harvard University Press.

Christ, K. L., Burritt, R. L., & Varsei, M. (2017). Coopetition as a Potential Strategy for Corporate Sustainability. *Business Strategy and the Environment*, *26*(7), 1029–1040. https://doi.org/10.1002/bse.1967

Clark, T. (2017). Swiping Through the Pages of Apple's E-Book Saga : A Comment on Hub-

And-Spoke Conspiracies Under the Sherman Act. *Law School Student Scholarship*, 33.

Dahl, J. (2014). Conceptualizing coopetition as a process: An outline of change in cooperative and competitive interactions. *Industrial Marketing Management*, *43*(2), 272–279.

Dai, L. (2010). Maximizing cooperation in a competitive environment. *Advances in Competitiveness Research*, *18*(1), 54–72.

Das, T. K., & Teng, B.-S. (2000). Instabilities of Strategic Alliances: An Internal Tensions Perspective. *Organization Science*, *11*(1), 77–101. https://doi.org/10.1037//1082-989X.5.2

Diamond, P. A. (1971). A model of price adjustment. *Journal of Economic Theory*, *3*(2), 156–168. https://doi.org/10.1016/0022-0531(71)90013-5

Dorn, S., Schweiger, B., & Albers, S. (2016). Levels, phases and themes of coopetition: A systematic literature review and research agenda. *European Management Journal*, *34*(5), 484–500. https://doi.org/10.1016/j.emj.2016.02.009

Dowling, M. J., Roering, W. D., Carlin, B. A., & Wisnieski, J. (1996). Multifaceted relationships under coopetition - description and theory. *Journal of Management Inquiry*, *5*(2), 155–167.

Elkerbout, M. (2013). Hub-and-spoke : terra incognita tussen zakelijke interactie en een ménage à trois, (2), 3.

Fox, E. M. (1997). US and EU Competition Law: A Comparison. *Institute for International Economics*, 339–354.

Friedman, J. W. (1971). A Non-cooperative Equilibrium for Supergames. *Review of Economic Studies*, *28*, 1–12.

Ghezzi, F., & Maggiolino, M. (2013). *EU concerted practices & US concerted actions: beyond William H. Page's Proposal*.

Gimeno, J., & Jeong, E. (2001). *A structural balance theory of alliance formation: competition and cooperation in the global airline industry*.

Gnyawali, D. R., Madhavan, R., He, J., & Bengtsson, M. (2016). The competition-cooperation paradox in inter-firm relationships: A conceptual framework. *Industrial Marketing Management*, *53*, 7–18. https://doi.org/10.1016/j.indmarman.2015.11.014

Gnyawali, D. R., & Park, B. R. (2009). Co-opetition and Technological Innovation in SMEs: A Multilevel Conceptual Model. *Journal of Small Business Management*, *47*(3), 308–330.

Gulati, R., Lawrence, P. R., & Puranam, P. (2005). Adaptation in vertical relationships: Beyond incentive conflict. *Strategic Management Journal*, *26*(5), 415–440. https://doi.org/10.1002/smj.458

Harrington, J. E., & Patrick Harker Professor, J. T. (2018). *How Do Hub-and-Spoke Cartels Operate? Lessons from Nine Case Studies*. Retrieved from https://ssrn.com/abstract=3238244

Harris, H. S. (2001). *Competition Laws Outside the United States*. American Bar Association.

Ho, H. (Dixon), & Ganesan, S. (2013). Does Knowledge Base Compatibility Help or Hurt Knowledge Sharing Between Suppliers in Coopetition? The Role of Customer Participation. *Journal of Marketing*, *77*(6), 91–107. https://doi.org/10.1509/jm.11.0570

Hoffmann, W., Lavie, D., Reuer, J. J., & Shipilov, A. (2018). The interplay of competition and cooperation. *Strategic Management Journal*, *39*(12), 3033–3052. https://doi.org/10.1002/smj.2965

Hovenkamp, H. J. (2018). The Rule of Reason. *Faculty Scholarship at Penn Law*.

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. https://doi.org/10.4018/IJTHI.2017010104

Ketchen, D. J., Snow, C. C., & Hoover, V. L. (2004). Research on competitive dynamics: Recent accomplishments and future challenges. *Journal of Management*, *30*(6), 779–804. https://doi.org/10.1016/j.jm.2004.06.002

Khanna, T., Gulati, R., & Nohria, N. (1998). The dynamics of learning alliances: Competition, cooperation, and relative scope. *Strategic Management Journal*, *19*(3), 193–210. https://doi.org/10.1002/1097-0266(200007)21:7<775::AID-SMJ111>3.0.CO;2-F

Khemanif, R. S. (2002). Application of competition law: exemptions and exceptions. In *United Nation Conference on Trade and Development* (p. 39).

Kim, K. (2018). Coopetition : Complexity of cooperation and competition in dyadic and triadic relationships. *Organizational Dynamics*. https://doi.org/10.1016/j.orgdyn.2018.09.005

Kramer, M., & Porter, M. (2011). The Big Idea: Creating Shared Value. *Harvard Business Review*, *41*(1), 12–13. https://doi.org/10.2469/dig.v41.n1.28

Le Roy, F., & Fernandez, A. S. (2015). Managing Coopetitive Tensions at the Working-group Level: The Rise of the Coopetitive Project Team. *British Journal of Management*, *26*(4), 671–688. https://doi.org/10.1111/1467-8551.12095

LEAR. (2012). *Can 'Fair' Prices Be Unfair? A Review of Price Relationship Agreements*. Retrieved from http://www.learlab.com/publication/1145/

Lechner, C., & Dowling, M. (2003). Firm networks: External relationships as sources for the growth and competitiveness of entrepreneurial firms. *Entrepreneurship and Regional Development*, *15*(1), 1–26. https://doi.org/10.1080/08985620210159220

Lemley, M. A., & Leslie, C. R. (2008). Categorical analysis in antitrust jurisprudence. *Iowa Law Review*, *93*(4), 1207–1270.

Levenstein, M. C., & Suslow, V. Y. (2006). Cartel bargaining and monitoring: The role of information sharing. *Swedish Competition Authority*, 43–82. Retrieved from http://www.konkurrensverket.se/globalassets/english/research/the-pros-and-cons-of-information-sharing.pdf

Liu, Y., Luo, Y. D., Yang, P. P., & Maksimov, V. (2014). Typology and effects of co-opetition in buyer-supplier relationship: Evidence from the chinese home appliance industry. *Management and Organization Review*, *10*(3), 439–465.

Luo, X., Slotegraaf, R. J., & Pan, X. (2006). Cross-Functional "Coopetition":The

Simultaneous Role of Cooperation. *Journal of Marketing*, *70*(2), 67–80. https://doi.org/10.1509/jmkg.70.2.67.

Luo, Y. (2007). A coopetition perspective of global competition. *Journal of World Business*, *42*(2), 129–144. https://doi.org/10.1016/j.jwb.2006.08.007

Luo, Y. D., Shenkar, O., & Gurnani, H. (2008). Control-cooperation interfaces in global startegic alliances: a situational typology and strategic responses. *Journal of International Business Studies*, *39*(3), 428–453.

Madhavan, R., Gnyawalli, D. R., & He, J. (2004). Two's Company, Three's a Crowd? Triads in Cooperative-Competitive Networks. *Academy of Managment Journal*, *47*(6), 918–927. https://doi.org/10.1373/clinchem.2013.216606

Mantena, R., & Saha, R. L. (2012). Co-opetition between differenciated platforms in two-sided markets. *Journal of Management Information Systems*, *29*(2), 109–139.

Mention, A. L. (2011). Co-operation and co-opetition as open innovation practices in the service sector: Which influence on innovation novelty? *Technovation*, *31*(1), 44–53. https://doi.org/10.1016/j.technovation.2010.08.002

Motta, M. (2004). *Competition Policy: Theory and Practice*. Cambridge University Press.

Nielsen, M. (2011). *Cartels in the EU from a legal and economic perspective*. Aarhus School of Business.

O'Brien, D. P., & Shaffer, G. (1992). Vertical Control with Bilateral Contracts. *The RAND Journal of Economics*. https://doi.org/10.2307/2555864

Odudu, O. (2011). Indirect information exchange: the constituent elements of hub and spoke collusion. *European Competition Journal*, *7*(2), 205–242. https://doi.org/10.5235/174410511797248324

OECD. (1993). Glossary of Industrial Organisation Economics and Competition Law.

OECD. (2008). Roundtable on Resale Price Maintenance.

Office of Fair Trading. (2005). Cartels and the Competition Act 1998 - A guide for purchasers.

Orbach, B. (2016). Hub-and-Spoke Conspiracies. *Antitrust Source*, *3*, 1–15.

Osborne, D. K. (1976). Cartel Problems. *The American Economic Review*, *66*(5), 835–844.

Park, B. J., Srivasta, M. K., & Gnyawali, D. R. (2014). Impact of coopetition in the alliance portfolio and coopetition experience on firm innovation. *Technology Analysis & Strategic Management*, *26*(8), 893–907.

Parzy, M., & Bogucka, H. (2014). Coopetition methodology for resource sharing in distributed OFDM-based cognitive radio networks. *IEEE Transactions on Communications*, *62*(5), 1518–1529. https://doi.org/10.1109/TCOMM.2014.031214.130451

Pressy, A., Vanharanta, M., & Gilchrist, A. (2014). Towards a Typology of Collusive Indistrial Networks: Dark and Shadow Networks. *Industrial Marketing Management*, *43*(8), 1435–1450.

Raza-ullah, T., Bengtsson, M., & Kock, S. (2014). The coopetition paradox and tension in coopetition at multiple levels. *Industrial Marketing Management*, *43*(2), 189–198. https://doi.org/10.1016/j.indmarman.2013.11.001

Ritala, P. (2012). Coopetition Strategy - When is it Successful? Empirical Evidence on Innovation and Market Performance. *British Journal of Management*, *23*(3), 307–324. https://doi.org/10.1111/j.1467-8551.2011.00741.x

Ritala, P., Kraus, S., & Bouncken, R. B. (2016). Introduction to coopetition and innovation: contemporary topics and future research opportunities. *International Journal of Technology Management*, *71*(1/2), 1. https://doi.org/10.1504/IJTM.2016.077985

Ritala, P., & Sainio, L. M. (2014). Coopetition for radical innovation: technology, market and business-model perspectives. *Technology Analysis and Strategic Management*, *26*(2), 155–169. https://doi.org/10.1080/09537325.2013.850476

Rusko, R. (2011). Exploring the concept of coopetition: A typology for the strategic moves of the Finnish forest industry. *Industrial Marketing Management*, *40*(2), 311–320. https://doi.org/10.1016/j.indmarman.2010.10.002

Rusko, R. (2015). Coopetition for Organizations. https://doi.org/10.4018/978-1-4666-5888-2.ch055

Sahuguet, N., & Walckiers, A. (2013). Selling to a Cartel of Retailers: A Model of Hub-and-spoke Collusion. *Centre for Economic Policy Research*, 1–18.

Schrepel, T. (2017). A New Structured Rule of Reason Approach For High-Tech Markets. *Suffolk University Law Review*, *50*(1), 29.

Simmel, G. (1950). *The sociology of Georg Simmel*.

Singh, H., Lavie, D., & Lechner, C. (2007). The Performance Implications of Timing of Entry and Invovlevement in Multipartner Alliances. *Academy of Management Journal*, *50*(3), 578–604. Retrieved from http://ideas.repec.org/p/ces/ceswps/_2011.html

Song, D.-W., & Lee, E.-S. (2012). Coopetitive networks, knowlegde aquisition and maritime logistics value. *International Journal of Logistics-Research and Applications*, *15*(1), 15–35.

Stucke, M. E. (2009). Does the Rule of Reason Violate the Rule of Law ? *UC Davis Law Review*, *42*(5), 1375–1490.

Tidström, A. (2014). Managing tensions in coopetition. *Industrial Marketing Management*, *43*(2), 261–271. https://doi.org/10.1016/j.indmarman.2013.12.001

Tortoriello, M., Perrone, V., & McEvily, B. (2011). Cooperation among competitors as status-seeking behavior: Network ties and status differentiation. *European Management Journal*, *29*(5), 335–346. https://doi.org/10.1016/j.emj.2011.02.001

Van Cayseele, P. (2014). Hub-and-spoke Collusion: Some Nagging Questions Raised by Economists. *Journal of European Competition Law & Practice*, *5*(3), 164–168. https://doi.org/10.1093/jeclap/lpt082

Vereecken, B. (2014). *Hub and Spoke Cartels in EU Competition Law*. Universiteit Gent.

Wait, A. L. (2011). Competitor Information Exchanges : Practical Considerations from FTC Consent Decrees.

Walley, K. (2007). Coopetition: An Introduction to the Subject and Research. *International Studies of Management and Organization*. https://doi.org/10.2753/IMO0020-8825370201

Wang, R., Ji, J.-H., & Ming, X. G. (2010). R&D partnership contract coordination of information goods supply chain in government subsidy. *International Journal of Computer Applications in Technology*, *34*(3–4), 297–306.

Wang, Z. (2008). Collusive communication and pricing coordination in a retail gasoline market. *Review of Industrial Organization*, *32*(1), 35–52. https://doi.org/10.1007/s11151-008-9163-2

Whish, R. (2006). Information Agreements. *The Pros and Cons of Information Sharing Konkurrensverket Swedish Competition Authority*, 19–42.

Whish, R., & Bailey, D. (2018). *Competition Law* (9th ed.). Oxford.

Wu, Z. H., Choi, T. Y., & Rungtusanatham, M. J. (2010). Supplier-Supplier relationships in buyer-supplier-supplier triads: Implications for supplier performance. *Journal of Operations Management*, *28*(2), 199–209.

Zampa, G. L., & Buccirossi, P. (2013). Hub and Spoke Practices: Law and Economics of the New Antitrust Frontier? *Competition Law International*, *9*.

Zinenko, A., Rovira, M., & Montiel, I. (2015). The fit of the social responsibility standard ISO 26000 within other CSR instruments: Redundant or complementary? *Sustainability Accounting, Management and Policy Journal*, *6*(4), 498–526.