MULTIMARKET PIONEERS: DOES MULTIMARKET CONTACT IMPROVE THEIR PERFORMANCE?

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Abstract: First-mover advantages (FMA) and multimarket contact (MMC) have evolved independently in the strategic management literature. This is surprising because FMA erode as a result of competition which, in turn, is affected by MMC. This paper links these literatures through the concept of spheres of influence and analyses the effect of MMC on pioneers' profitability. We use the order of market entry to identify spheres of influence and to determine their distribution among multimarket firms. The distribution of spheres of influence allows us to distinguish between reciprocal MMC and non-reciprocal MMC and to study how each of them determines pioneers' profitability. We test our hypotheses in the mobile telecommunications industry. Our findings show that reciprocal MMC has a positive effect on pioneers' results, but non-reciprocal MMC negatively affects them.

Keywords: pioneers; reciprocal multimarket contact; non-reciprocal multimarket contact; spheres of influence; mobile telecommunications.

INTRODUCTION

First-mover advantages (FMA) exist when the pioneers in a market obtain higher benefits in terms of profitability, value creation, or survival than the followers (Lieberman and Montgomery, 2013). Early studies focused on verifying the existence of FMA (Kerin and Varadarajan, 1992) and on explaining their drivers (Lieberman and Montgomery, 1988). These studies concluded that FMA generally exist, although they may depend on the methodological decisions taken by researchers (Vanderwerf and Mahon, 1997). Recent work on entry timing has evolved into other features of the theory and claims that the logic of FMA is invalid without attention to contingencies (Zachary et al., 2015). This implies that FMA are not correctly explored by simple and direct effects on performance but are best assessed incorporating contingent factors (Fosfuri, Lanzolla, and Suárez, 2013).

The relevant question for the literature, nowadays, is not whether FMA exist but the factors that determine them (Dykes and Kolev, 2018; Zachary et al., 2015). Following this vein of research, some studies have been oriented to the macro (Gomez, Lanzolla, and Maícas, 2016; Suárez and Lanzolla, 2007) and micro (Franco et al., 2009) determinants of FMA. Despite their contribution to FMA literature, there is still much to learn about the boundary conditions that affect the magnitude of these advantages (Lieberman and Montgomery, 2013; Zachary et al., 2015) and, consequently, the opportunity for studies on FMA that improve our understanding of the phenomenon under novel theoretical lenses (Dykes and Kolev, 2018).

In understanding the boundary conditions surrounding FMA, we base on the idea that followers can erode the profits of pioneers through their competitive actions (Dykes and Kolev, 2018; Lee et al., 2000) and, therefore, that competition is a significant driver that determines pioneering advantages (Kerin et al., 1992; Zachary et al., 2015). Besides this, with few exceptions (Ethiraj and Zhu, 2008; Gal-or, 1985), the literature on FMA has paid little attention to the effects of competition. We contribute to fill this gap and to better understand FMA by

analysing how competition determines the magnitude of these advantages. In doing so, we adopt the lenses provided by the theory of multimarket competition, which depends on the existence of multimarket contact (MMC).

MMC has been defined as a situation in which firms simultaneously compete with the same rivals in different markets (Bernheim and Whinston, 1990; Spagnolo, 1999), and it has been shown to have important implications for firms' competitive aggressiveness (Gimeno and Woo, 1999). In particular, the number of competitive actions decrease with the number of common markets between rivals (Young et al., 2000; Yu et al., 2009), so that MMC might lead to mutual forbearance between competitors (Haveman and Nonnemaker, 2000). These ideas suggest that pioneers that have MMC with their followers confront highly different competitive conditions than pioneers with single-market followers and, therefore, the magnitude of their advantages will be different. With this in mind, we argue that connecting FMA and MMC theories helps us to better understand the phenomenon of FMA.

To explain the contingent role of MMC on FMA, we use the concept of spheres of influence. In particular, we adopt the idea that multimarket firms do not assign the same importance to all markets but tend to place more importance on the markets where they obtain higher profits (Bernheim and Whinston, 1990). These important markets are called 'spheres of influence' and significantly determine firms' competitive behaviour (Bernheim and Whinston, 1990; Gimeno, 1999). In this study, we base on the evidence supporting FMA and expect that multimarket firms place more importance on the markets where they are first movers. Thus, we identify spheres of influence as the markets where multimarket firms are pioneers.

The identification of spheres of influence is important because it allows us to observe the way in which they are distributed among multimarket competitors and, therefore, the type of MMC that pioneers have with their followers. We elaborate on the distinction between reciprocal and non-reciprocal MMC (Gimeno, 1999) and contend that not only the existence of MMC between

pioneers and their followers but also its type is important in explaining the magnitude of FMA. A reciprocal MMC between two firms is defined as a MMC in which the pioneer in market *n* is a follower in market *m,* and the pioneer in market *m* is a follower in market *n*. All the other situations in which there is a MMC but firms do not have reciprocal positions in the common markets fall in the category of non-reciprocal MMC.

We contend that the reciprocity of firms' market positions improves the effectiveness of MMC and leads to a reduction in the level of competition between pioneers and followers from the beginning of their multimarket relationship. This implies that reciprocal MMC has a linear, and negative effect on competition and a positive effect on pioneers' profitability. In contrast, we argue that the relationship between non-reciprocal MMC and pioneers' profitability is more complex. Although non-reciprocal MMC can also ultimately have a rivalry reducing effect, this consequence only arise when the amount of MMC between the pioneer and its followers is high enough for them to recognize their interdependences, given the lower credibility and effectiveness of this type of MMC. This means that non-reciprocal MMC is not effective as a rivalry reducing mechanism for low levels of MMC. In fact, for low levels of non-reciprocal MMC, an increase in competition is the most likely outcome of an increase in MMC. Only when non-reciprocal MMC accumulates up to a medium level, it starts having reduced rivalry and increased profitability as a consequence. As a result, we propose a U-shaped influence of non-reciprocal MMC on pioneers' profitability.

We test our hypotheses in the worldwide mobile telecommunications industry. Our sample is made up of 2,094 quarterly observations, from 2001 to 2012, that belong to 81 pioneers in 72 countries.[1] Our results confirm the existence of FMA and show that their magnitude is dependent on the type of MMC between pioneers and followers.

[1] For us, each country is a market. Hence, the terms country and market are synonymous in this study.

The contributions of this study are twofold. First, we incorporate MMC as a contingent factor that determines the magnitude of FMA and, therefore, contribute to the identification of the boundary conditions surrounding these advantages. The analysis of boundary conditions has for long been recognized as critical for theory advancement (Gonzalez-Mulé and Aguinis, 2018). Understanding the situations in which a theory holds and the way in which contingent factors can "…change the nature and/or direction of relations among variables" is critical if we want to provide a more precise guidance to managers (Gonzalez-Mulé and Aguinis, 2018: 2247). In the case of the literature on FMA, several authors have highlighted the need to pay attention to contingencies (Lieberman and Montgomery, 2013; Zachary et al., 2015) if a valid theory is to be built. For example, the (in)existence of MMC could explain why FMA could be (lower) higher in some situations than in others. Similarly, MMC theory suggests that the increased profits from forbearing in a market could be obtained at the expense of the reduction of profits in other markets (see, for example, Bernheim and Whinston, 1990, McGrath et al., 1998, Fernández and Marin, 1998). This is important for our understanding of FMA theory, given that the higher profitability obtained in a given market by a pioneer could be offset by the lower profitability earned by the pioneer in the markets in which this firm is a follower. Although prior studies have made an effort on explaining some of these contingences, there is still much to learn from the integration of different theories (Dykes and Kolev, 2018; Zachary et al., 2015). In particular, we are not aware of any efforts attempting to integrate the FMA and MMC literatures. The inclusion of the competitive dynamics generated by MMC allows us to better understand the phenomenon of FMA.

Second, this study extends the analysis of the two literatures to an international setting, adding another contingency to our understanding of FMA theory. With a few exceptions (Gomez and Maicas, 2011; Yu et al., 2009), most research on both FMA and MMC has been limited to one market (Kim and Lee, 2011; Makadok, 1998). In the case of the study of FMA this is especially

important, given that the empirical results of the scarce studies developed in an international setting have been mixed (Dykes and Kolev, 2018). It is important to note that countries may differ in a number of attributes such as their culture or their degree of institutional development that may lead to differences in the magnitude of pioneering advantages (Dykes and Kolev, 2018). Additionally, studies on FMA that have broadened their analysis to different markets (Gómez and Maícas, 2011; Song et al., 1999) have not considered the multimarket nature of firms. However, incorporating MMC into the study of FMA in an international setting is a natural addition, as firms often expand abroad (Hitt et al., 2016), and, then, might compete simultaneously with the same rivals in several international markets.

Therefore, the international dimension of our study contributes to the literature on FMA and responds to a recent call for the necessity of broadening the analysis of these advantages to an international context (Dykes and Kolev, 2018). In this sense, our research adds to the evidence that confirms that FMA exist in an international setting and shows that their magnitude significantly depends on the number of international markets where pioneers meet their followers and the type of MMC between them. Similarly, the international dimension of our study contributes to the MMC literature. It is important to note that the coordination between the activities that firms develop in different markets, which is required for mutual forbearance to arise, is more difficult in an international setting (Yu et al., 2009). Despite this, our results reveal that reciprocal MMC is effective in reducing rivalry in this context. However, coordination might be more difficult in a situation of non-reciprocal MMC, in which the number of MMC required for mutual forbearance to arise is high.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

In this section, we first examine the FMA literature and, then, review the main findings in the literature on MMC. This allows us to describe the main arguments of the two theories, before presenting the model and hypotheses, which is done in the next section.

Determinants of FMA

FMA imply that pioneering in a new geographic or product market leads to increased performance (Lieberman and Montgomery, 1988; 1998). Although some studies have concluded that the order of entry does not have any effect on firm performance (Golder and Tellis, 1993) or that the effect is negative (Robinson and Fornell, 1985), most studies have confirmed that FMA exist (see Vanderwerf and Mahon, 1997). These advantages have been shown in different contexts, such as manufacturing (Ahlbrecht and Eckert, 2013), advertising agencies (Magnusson, Westjohn, and Boggs, 2009), the oil industry (Mascarenhas, 1992) and the mobile telecommunications industry (Gómez and Maicas, 2011; Jakopin and Klein, 2012), leading to the conclusion that FMA are widespread. Different mechanisms have been argued to explain how FMA emerge, but the most accepted idea is that these advantages are primarily derived from the pre-emption of resources, consumer switching costs, and technological leadership (Lieberman and Montgomery, 1988).

Besides the consensus about the existence of FMA and their mechanisms, prior literature also agrees that FMA do not last forever and tend to diminish over time (Lieberman and Montgomery, 2013). This fact has led researchers to focus on the factors that affect the magnitude of FMA, distinguishing between firm (Franco et al., 2009) and environmental factors (Suárez and Lanzolla, 2007).

Regarding firm-level factors, studies have proposed technological capabilities (Franco et al., 2009) and R&D investments (Kim and Lee, 2011) as enhancers of the relationship between pioneering and performance. Similarly, researchers have highlighted the evolution of the technology and the market (Suárez and Lanzolla, 2007), the appropriability regime (Kim and Lee, 2011), and the number of competitors as environmental determinants of the magnitude of FMA (Makadok, 1998). In this regard, some factors of the competitive dynamics, such as imitation, the introduction of new products and, the entry of new competitors into the market

lead to an erosion of almost all competitive advantages (Wiggins and Ruefli, 2002). This means that the magnitude of FMA significantly depend on the competition between pioneers and followers (Ethiraj and Zhu, 2008; Ferrier et al., 1999; Lee et al., 2000). Pioneers that do not face competition during a longer time benefit more from monopolistic results and learning effects. In contrast, FMA erode in the gale of competition (Lee et al., 2000), meaning that the followers' inroads erode pioneers' performance (Boulding and Christen, 2003). In this regard, followers may overcome the advantages from early entry through imitation (Ethiraj and Zhu, 2008; Lee et al., 2000) and some others competitive movements (Ferrier et al., 1999). For instance, the faster a follower introduces the same product as offered by the pioneer in the market, the shorter the pioneering advantage (Lee et al., 2000). Additionally, FMA may be diminished as late entrants launch new products (Ethiraj and Zhu, 2008), make price reductions and, make R&D investments (Ferrier et al., 1999). This erosion of FMA derived from competitors' behaviour is an accelerating process that places a premium on competitor analysis (Lieberman and Montgomery, 2013).

Based on this idea, our study focuses on the role of competition in determining pioneers' profits in an international context. The international dimension of this study makes us adopt a broad perspective of competition and consider that pioneers can compete with their followers in many countries. In this regard, the competitive behaviour of firms differs considerably depending on the number of markets that they share with their competitors (Karnani and Wernerfelt, 1985; Smith and Wilson, 1995). Consequently, to analyse properly the effect of competition on FMA, we introduce the theory of MMC.

MMC and rivalry: The role of spheres of influence

Researchers have defined MMC as a situation in which firms simultaneously compete with the same rivals in different geographic or product markets (Baum and Korn, 1999; Yu and Canella, 2013). A growing number of studies in economics (Evans and Kessides, 1994) and strategy

(Boeker et al., 1997; Fuentelsaz and Gómez, 2006) have tested the effect of MMC on competition, which is known as the mutual forbearance hypothesis. Although the existing literature has offered mixed results, recent papers have found that MMC has an inverted U-shaped effect on competition (Fuentelsaz and Gómez, 2006; Haveman and Nonnemaker, 2000). When MMC is low, multimarket firms have incentives to show their competitive capabilities in order to dissuade their competitors from making future attacks. This makes multimarket firms establish footholds in their rivals' markets (Karnani and Wernerfelt, 1985). These entries in rivals' markets lead to an increase in the intensity of competition among multimarket competitors (Klein et al., 2020). Thus, low levels of MMC increase the level of competition among multimarket firms. Nevertheless, the incentives to be aggressive with rivals change as MMC increases. As the level of MMC among multimarket firms grows, they have more points to retaliate and to exchange relevant information, which make these firms aware of their interdependencies. Familiarity and the threat of retaliation are the key mechanism that make multimarket firms prone to mutually forbear, leading to a reduction in the level of rivalry among these firms (Jayachandran et al., 1999).

Regarding the threat of retaliation, MMC implies that firms can respond to an attack of a multimarket rival in the same market in which they have been attacked, in another common market that is more important for the attacking firm, or in all the markets in which both firms are present (Karnani and Wernerfelt, 1985; Porter, 1980). Therefore, MMC creates many channels of retaliation that make firms vulnerable to receiving a competitive response by a multimarket rival (Chuang and Thomson, 2017). The underlying logic of MMC theory is that the fear of retaliation makes firms be mutually forbearing, which leads to a reduction in competition.

Additionally, researchers have claimed that familiarity and information exchanges between multimarket firms lead to mutual forbearance (Boeker et al., 1997; Jayachandran et al., 1999).

As the amount of MMC between two firms grows, the information exchanges between them also increase. Greater information about rivals allows multimarket firms to predict the competitive movements of these rivals more easily, and this makes multimarket firms more capable of responding. Similarly, familiarity increases the awareness of firms' interdependencies and reduces their competitive aggressiveness.

An important point to benefit from the mutual forbearance is that multimarket firms need to internally coordinate their actions between subunits (Jayachandran et al., 1999; Ma, 1998). This coordination tends to be more difficult when the multimarket relationship is revealed across several international markets (Yu et al., 2009). In these markets, multimarket firms might confront different conditions that create the necessity of being locally responsive (Ma, 1998) and that hinder the coordination of firms' actions across international markets. Different mechanisms have been proposed to explain why a given subunit feels the pressure of being locally responsive in the market, such as regulatory restrictions in the host country and the existence of cultural distance between the parent firm's home country and the subsidiary's location (Yu et al., 2009). Despite these coordination challenges, some researchers have confirmed that MMC reduces the competitive behaviour of multimarket firms in an international context, and that it increases their performance (Domínguez et al., 2016; Yu et al., 2009).

Research on MMC has centred on additional factors that could affect the relationship between MMC and competition (see Yu and Canella, 2013, for a review). One of these contingencies is related to the existing spheres of influence that might significantly determine the relationship between MMC and rivalry (Bernheim and Whinston, 1990; Gimeno, 1999). Firms can compete in many markets, and not all of them are of equal importance to them (Livengood and Reger, 2010). Differences in the importance that markets have for multimarket firms lead to differences in their incentives to protect these markets and make the mechanism of spheres of influence

come into play. A sphere of influence is a market that is important for a firm because it has a dominant position there (Bernheim and Whinston, 1990; Gimeno, 1999). When spheres of influence emerge in a multimarket relationship, each firm would attempt to safeguard its important market and would tend to give up the market that is important for its multimarket rival (Gimeno, 1999). In other words, a firm will respect its multimarket rival's important market in the expectation that its own important market will be similarly respected. Thus, through spheres of influence, multimarket firms may create tacit agreements that reinforce the rivalry-reducing effects of MMC (Fuentelsaz and Gómez, 2006).

The MMC literature does not show a consensus on which dimensions best identify spheres of influence. Prior research has identified them as attending to market share, resource centrality, percentage of total revenues, or percentage of total branches (Fuentelsaz and Gómez, 2006; Gimeno, 1999). We step away from prior research by connecting spheres of influence and the timing of entry into the markets. Following prior research on FMA, we consider that the order of entry has an important effect on firms' market positions and, consequently, that the timing of entry significantly defines the territorial interests of multimarket firms. In particular, due to the existence of FMA, we identify spheres of influence as the markets where firms are pioneers.

MMC and performance

Although the relationship between MMC and competition has received the greatest attention, the effects of multimarket competition on firms' performance have been also investigated (see Yu and Canella, 2013, for a review). In accordance with the mutual forbearance result, the most accepted idea is that multimarket competition leads to higher prices and profits. One of the first authors to study this relationship was Scott (1982), who found a positive effect of multimarket competition on profits. Some years later, Hughes and Oughton (1993) showed that MMC has a positive effect on price-cost margins. Similar results have been found in industry-specific studies. For instance, a positive effect of MMC on prices and profits has been found in the

airlines industry (Evans and Kessides, 1994; Gimeno and Woo, 1999) and higher volumes of MMC have been associated with greater stability in banks' market shares (Heggestad and Rhoades; 1978). Studies on the mobile telecommunications industry have shown a positive relationship between MMC and prices (Busse, 2000) and, more recently, a U-shaped effect of MMC on firms' performance (Domínguez et al., 2016). In contrast, in the global semiconductor industry, Chuang et al., (2018) found an inverted U-shaped effect of MMC on firms' market share. These recent studies suggest that the evidence supporting the positive effect of multimarket competition on firms' performance (Yu and Canella, 2013) is more complex and might be dependent on the number and type of MMC between multimarket firms, an issue that we explore in this paper.

HYPOTHESES

Regardless of what mechanism leads to FMA, whether these advantages are temporary or more durable is largely determined by rivals' competitive behaviour (Lee et al., 2000) and its effect on the isolating mechanisms proposed by Lieberman and Montgomery (1988). For instance, resource pre-emption implies that pioneers have better access to the relevant resources than do late entrants **(**Lieberman and Montgomery, 1988), which allows them to obtain a greater performance. Nevertheless, as the market evolves, the initial resources are only 'the beginning of the full set of core resources' that firms will need to satisfy consumers (Vidal and Mitchell, 2013: 337). With market evolution, followers can deploy new resources that surpass those of the pioneer and, consequently, erode pioneering advantages. Similarly, switching costs tend to create only temporary barriers to competition, because regulatory actions that promote competition and reduce switching costs are often designed. The same reasoning may be applied to technological leadership, the third isolating mechanism. Take, for example, the protection granted by patents. If competition exists, rivals may benefit from the existence of knowledge

externalities and from the reduction in the barriers to knowledge diffusion, which have declined in many industries (Vidal and Mitchell, 2013). Additionally, pioneers often have a greater commitment with their historical R&D investments, which makes them more likely to invest in minor projects (Robinson and Chiang, 2002). In contrast, followers are more likely to invest in major projects that allow them to 'leapfrog the pioneers' technology' (Robinson and Chiang, 2002: 856). As a consequence, followers' investments in R&D may nullify the pioneers' technological leadership.

All this reasoning suggests that followers' competitive actions negatively affect the isolating mechanisms, making FMA increasingly difficult to sustain over time (Vidal and Mitchell, 2013). As a result, pioneering advantages depend ultimately on the competitive dynamics between pioneers and followers and, therefore, the nature of competition between pioneers and later entrants significantly explains the magnitude of FMA (Zachary et al., 2015). When it comes to analysing the effect of competition on FMA, it is important to consider the multimarket nature of pioneers and the type of MMC that they have with their followers. In the following lines, and before presenting the hypotheses, we briefly connect the FMA and MMC literatures and present the different types of MMC that we distinguish in this research: reciprocal and non-reciprocal MMC.

Integrating the FMA and MMC literatures

Although MMC and FMA theories have evolved independently, these can be naturally connected because firms usually operate in many markets and, consequently, may encounter the same rivals in more than one market. Additionally, these multimarket firms are usually different in terms of their order of entry in the markets where they compete. This, in turn, generates differences in the strength of their competitive positioning in these markets and it also leads to differences in the level of importance attributed to these markets. We use the concept of spheres of influence to distinguish between the importance that firms assign to the markets

in which they operate and to integrate MMC into the analysis of FMA. Our contention in this study is that the order of entry into the market creates market importance asymmetries ─i.e., differences in the importance that multimarket firms give to the markets where they operate─ and generates spheres of influence. In particular, given the existence of FMA, we argue that multimarket firms give more importance to the markets where they are pioneers than to the markets where they are not. Thus, we identify spheres of influence as the markets where firms are pioneers.

Another important point to understand this research is that the distribution of spheres of influence across multimarket competitors determines the type of MMC that they have. Two types of multimarket contact are considered: reciprocal and non-reciprocal (Gimeno, 1999). This distinction is critical, because the incentives to tolerate the rival may be different in each case. Figure 1 depicts how the distribution of spheres of influence among multimarket competitors leads to reciprocal and non-reciprocal MMC (see Gimeno, 1999). In this figure, we define two different scenarios, A and B, in which two firms, *i* and *j*, occupy different market positions in terms of their order of entry into markets *n* and *m*. Situation A illustrates what is called reciprocal multimarket contact, in which firm *i* is the pioneer and *j* is the follower in market *n*, while in market *m* firms *i* and *j* have the opposite roles—that is, *j* is the pioneer and *i* the follower. Situation B reflects two different scenarios in which firms *i* and *j* have non-reciprocal multimarket contact. In scenario B.1, firm *i* is the pioneer and firm *j* is the follower in market *n*. In market *m*, in which both operate, they are followers. In scenario B.2, firm *i* is the pioneer and firm *j* the follower in both markets, *n* and *m*.

We consider Figure 1 as the reference to develop our hypotheses. They integrate the MMC and FMA literatures to analyse how the type of MMC may explain why some pioneers perform better than others. With this in mind, the first hypothesis analyses a situation of reciprocal MMC

between pioneers and followers while the second focuses on a situation where these firms have non-reciprocal MMC.

Insert Figure 1 here

Pioneers' profitability and reciprocal MMC

The entry of a follower into a market in which a pioneer is the monopolist signals the start of competition. In fact, market commonality, i.e., the coincidence of firms in the same competitive space, is a pre-requisite and a driver of competition (Chen, 1996). As the pioneer's advantage is likely to diminish with an escalation in competition (Dykes and Kolev, 2018; Lee et al., 2000), a pioneer would prefer keeping its monopolistic position. However, entry into a new market has traditionally been seen as an aggressive movement (Haveman and Nonnemarket, 2000; Fuentelsaz and Gomez, 2006). Therefore, once a follower has adopted an aggressive stance through entry into a market, the pioneer is likely to respond to this entry in order to protect its advantage, and competition is likely to escalate. This escalation of competition can take different forms, such as imitation (Lee et al., 2000), product differentiation (Mathews, 2002), R&D investments (Robinson and Chiang, 2002), or price reductions (Schnaars, 1994). All these forms hinder the maintenance of FMA and, consequently, lead to an erosion of these advantages (Dykes and Kolev, 2018; Zachary et al., 2015).

New entries into the markets occupied by competitors are also a likely outcome of an escalation of competition (Baum and Korn, 1996, 1999), increasing the number of MMCs between pioneers and followers. In some cases, once a follower has entered a focal market, the pioneer in that market responds by entering the market in which the follower acts as a pioneer and where it has important territorial interests, creating a reciprocal MMC (Karnani and Wernerfelt, 1985). Reciprocal MMC refers to a situation in which the pioneer and the follower have reciprocal positions in their common markets. Situation A in Figure 1 illustrates this. Due to the existence

of FMA, firm *i* has a performance advantage over firm *j* in market *n*, and firm *j* has an advantage over firm *i* in market *m*. Thus, firms *i* and *j* have different interests in the markets in which they compete, so they attribute different levels of importance to the markets in which they are operating: each firm gives a greater importance to the market where it is a pioneer. Hence, firm *i* is expected to prioritise market *n* over market *m*, while firm *j* gives more importance to market *m* than to market *n*.

The existence of reciprocal MMC implies the existence of reciprocal territorial interests in the markets where the pioneer and its follower compete simultaneously. The literature on MMC has argued that, as each firm prioritises a different market, it tends to give up its rival's important market—that is, the market where the rival enjoys FMA—in exchange for the same treatment in its own important market (Bernheim and Whinston, 1990; Sorenson, 2007). This means that the pioneer/follower will refrain from imitating, launching new products, or making price reductions if the follower/pioneer behaves in the same way in the market that is more important for this rival. In other words, our contention is that reciprocal MMC reduces the incentives that pioneers and followers have to compete, leading to mutual forbearance.

Prior research on MMC has concluded that mutual forbearance can be reached if two competing firms have credible threats of retaliation (Gimeno, 1999). In a situation of reciprocal MMC, each firm is present in its rival's important market and, consequently, both have credible retaliatory threats. If the pioneer is attacked, it could respond effectively in the follower's important market. Similarly, the follower can respond effectively to an attack in the important market of its rival. As each firm knows its multimarket rival's capabilities for responding effectively to an attack, both are willing to respect their rival's important market in exchange for the same treatment in their own important market. Therefore, the retaliatory capability of the pioneer/follower leads the follower/pioneer to respect its territorial interests. Because rivals' competitive actions erode FMA (Lee et al., 2000), the reduction in the number of competitive

actions that is derived from reciprocal MMC helps pioneers to protect their advantages in the market. It is important to note that this reduction in the level of competition takes places as soon as reciprocal MMC between the pioneer and the follower appears, leading to a direct and positive effect of this type of MMC on pioneers' profitability. Based on this reasoning, our first hypothesis posits that:

Hypothesis 1: *Reciprocal MMC has a positive effect on pioneers' profitability.*

Pioneers' profitability and non-reciprocal MMC

Non-reciprocal MMC might also affect competitive behaviour, ultimately reducing the escalation of competition elicited by a follower's initial entry into the market of the pioneer, but its effect is significantly different than that of reciprocal MMC. As opposed to the circumstance that generates the first hypothesis, reciprocity in firms' market positions now does not exist. While the entry into the market of the pioneer means that the follower is now present in its rival's important market, we now focus on a situation in which the escalation of competition does not lead the pioneer to an entry into a salient market of its follower. The absence of reciprocity alters the way in which MMC affects competition, especially in the case of the follower's competitive behaviour (Gimeno, 1999). This implies that the effect of non-reciprocal MMC over the intensity of rivalry and FMA is different from the situation described in Hypothesis 1.

In this situation, the lack of reciprocity implies that the pioneer and the follower do not have similar capabilities to damage each other. In particular, the follower that is present in an important market of its multimarket rival, poses a greater threat of retaliation on the pioneer. The reason is that the follower can respond effectively to any attack of the pioneer in the market where this firm enjoys FMA. In contrast, the pioneer is not present in any salient market of the follower.

We use Situation B of Figure 1 to better explain these differences between the capabilities of the pioneer and the follower to pose an effective threat of retaliation in a situation of non-reciprocal MMC. Due to the existence of FMA, firm *i* would attribute more importance to the markets in which it is the pioneer. This firm could receive a response to an attack in the market in which it enjoys FMA, and this possibility makes this pioneer be prone to reduce its aggressiveness against the follower in every market in which both firms compete, seeking to safeguard the market in which it enjoys FMA. In contrast, firm *j* is always a follower. Thus, it will assign similar levels of importance to the markets in which it competes with firm *i,* in terms of the order of market entry. As firm *j* (the follower) does not have a strong position in any of the markets in which it competes with the firm *i* (the pioneer), this pioneer does not exert such an effective threat of retaliation on its follower when reciprocity does not exist.

Therefore, in a situation of non-reciprocal MMC, the initial incentives of the follower to tolerate the pioneer are lower than in a situation of reciprocal MMC. As a result, the escalation of competition elicited by the initial entry of the follower into the pioneer's market is likely to last longer than in the case of reciprocal MMC. However, the lower incentives of the follower to tolerate the pioneer of the market may change as the amount of non-reciprocal MMC between the two firms increases (Haveman and Nonnemaker, 2000; Fuentelsaz and Gomez, 2006).

We argue that, in a situation of non-reciprocal MMC, it is the level of MMC which determines whether the follower has incentives to compete or to collude with the pioneer. The reason is that, an increasing level of non-reciprocal MMC steadily increases the threat of retaliation, as the number of markets shared by the two firms increases and the stakes at risk are higher. This means that when the amount of non-reciprocal MMC increases from low to medium, the threat of retaliation is not high enough to mutual forbearance to arise. Thus, the follower has incentives to compete against the pioneer, with the subsequent negative effect on FMA. Nevertheless, when the volume of non-reciprocal MMC between the two firms is from medium

to high, and the threat of retaliation is high, the stakes at risk make the follower to start having incentives to mutually forbear and, consequently, this benefits FMA. The combination of these countervailing effects on FMA, first decreasing, then increasing, leads to a U-shaped effect of non-reciprocal MMC on pioneers' profitability.

From low to medium levels of non-reciprocal MMC, the follower perceives that the benefits of competing in the market are higher than its costs. This follower is not aware of its interdependencies with the pioneer yet and, consequently, has incentives to improve its position through competitive actions. Thus, this follower will launch new products in the market, make R&D investments, or engage in price reductions with the purpose of competing against the pioneer of the market (Ferrier et al., 1999; Lee et al., 2000). These competitive actions will increase the intensity of market rivalry (Baum and Korn, 1999) and, more importantly, will limit the ability of the pioneer to protect its advantageous position (Lieberman and Asaba, 2006). Hence, a reduction in pioneer's profits is expected when this firm has low to medium levels of non-reciprocal MMC with its follower.

We expect this effect on the pioneer's profits to be different with higher levels of non-reciprocal MMC. As non-reciprocal MMC between the pioneer and its follower increases, the mechanisms that lead to a reduction in the level of competition between multimarket firms—namely, familiarity and fear of retaliation—become operative. In such a situation, the follower perceives than the costs of competing in the market may be greater than its benefits.

On the one hand, a greater market overlap provides multimarket firms with more information about the resources and behaviours of their competitors, increasing their familiarity. This, in turn, makes multimarket firms aware of their interdependencies and of the benefits of maintaining low levels of competitive behaviour. Furthermore, greater knowledge of competitors enables multimarket followers to anticipate pioneers' movements. Due to this, the follower becomes aware of the pioneers' capability to cause real damage.

On the other hand, a greater market overlap also increases the threat of retaliation. Therefore, a pioneer that meets its follower in more markets can respond to its attacks in the same market where the attack takes place, in any of the markets where they compete, or, even, in all of them (Karnani and Wernerfelt, 1985; Porter, 1980). Thus, the potential damage from retaliation increases with the number of common markets. The uncertainty about where the retaliation will take place and the possibility that it takes place in many markets at the same time lead the follower prone to forbear under intermediate levels of MMC. From this volume of MMC, the follower's competitive behaviour softens and, therefore, the number of competitive actions in the market lessens. This reduction in market rivalry helps the pioneer to protect its advantageous position (Lieberman and Asaba, 2006) and increases the magnitude of FMA.

In summary, as opposed to reciprocal MMC that directly softens both the pioneer's and the followers' competitive behaviour, we expect non-reciprocal MMC only to reduce the level of competition between the pioneer and its multimarket follower when it ranges from medium to high.[2] Thus, non-reciprocal MMC is expected to improve pioneers' profits only when the amount of MMC between the pioneer and the follower is high enough for the mechanisms of familiarity and threat of retaliation to be effective. We expect these mechanisms not to be effective in reducing competition from low to medium levels of non-reciprocal MMC and, therefore, in these situations market overlap is likely to elicit competition and negatively affect the performance of pioneers. Accordingly, we propose our second hypothesis as follows:

Hypothesis 2: *Non-reciprocal MMC has a U-shaped influence on pioneers' profitability.*

[2] Some researchers argue that high levels of MMC might be associated with greater coordination problems, and that it might lead to an increase in competition (Chuang et al., 2018). Nevertheless, our reasoning is based on prior evidence, which confirms that a high volume of MMC is associated with low competitive actions (Fuentelsaz and Gómez, 2006; Klein et al., 2020) and, consequently, with a higher performance (Domínguez et al., 2016).

SAMPLE, VARIABLES, AND METHODOLOGY

Sample

We test our hypotheses in the mobile telecommunications industry. The information on mobile operators was obtained from GSMA Intelligence. Prior studies on FMA in the mobile telecommunications industry have shown that first-mover operators outperform their rivals in the market (Gómez and Maícas, 2011; Jakopin and Klein, 2012), confirming the existence of FMA in this industry. We also tested whether pioneers obtain better results than followers in our sample and confirmed that pioneers outperform their followers.[3] After confirming the existence of FMA, we observe how reciprocal and non-reciprocal MMC affects the profitability of pioneers. The sample consists of quarterly observations for 81 mobile operators[4] that were first movers in 72 countries[5], from the beginning of 2001 to the end of 2012. This leads to a sample of 2,094 pioneer-country-quarter observations. To construct the database of this study, we first observed which firm was the pioneer in each country and, afterwards, included the observations of these firms in our sample, whether they were operating at the end of our time frame or not. Thus, our sample does not have survival biases.

[3] The results of these estimations are available from the authors on request.

[4] There is usually one pioneer per country. However, in some countries, two operators launched mobile services with a second generation (2G) technology at the same time and both are viewed as pioneers. Previous studies have usually assumed 2G as the starting point of this industry due to the low number of subscribers in the previous generation (Gómez and Maícas, 2011). While the first generation (1G) was mainly targeted at business consumers, 2G was expanded to everyone and, therefore, attracted much more users of mobile services (Grajek and Kretschmer, 2009).

[5] The countries that are included in our sample are: Albania, Argentina, Armenia, Austria, Belarus, Belgium, Bulgaria, Chad, Chile, China, Colombia, the Congo Democratic Republic, Croatia, the Czech Republic, Denmark, Ecuador, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hong Kong, Hungary, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Latvia, Liberia, Macao, Macedonia, Malawi, Malaysia, Maldives, Montenegro, Morocco, Mozambique, Nepal, the Netherlands, New Zealand, Nigeria, Norway, Oman, Palestine, Peru, Poland, Portugal, Qatar, Romania, Serbia, Slovakia, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sudan, Syria, Sweden, Switzerland, Tajikistan, Turkey, Uganda, Ukraine, the United Kingdom, and Uzbekistan. The selection of these countries can be explained by two factors. Firstly, in the mobile telecommunications industry, only operators that have gained a license in the market can operate there. Some countries, such as Brazil or the United States, do not give these licenses with national coverage but with regional coverage. Since we do not have information to measure MMC in regional terms, we select only countries in which licenses have national coverage. Secondly, we include only countries with availability of information for all the variables included in our model.

The mobile telecommunications industry is an ideal laboratory to test both FMA and MMC. Regarding FMA, at least two reasons make the industry particularly suitable for this study. First, mobile operators must either obtain a license (Gruber, 2005) or acquire an incumbent operator in the market to be able to provide services in a particular market. This requirement allows us to determine the order of market entry of every player and, therefore, to identify the pioneers of each market. Second, the existing literature has proved the existence of FMA in the mobile telecommunications industry (Gómez and Maícas, 2011; Gómez et al., 2016; Jakopin and Klein, 2012). However, the emergence of new technologies, the increase in product lines, deregulation, and the internationalization process have increased the levels of competition (Jakopin and Klein, 2012). This may hinder the ability of pioneers to obtain higher results. In relation to MMC, the mobile telecommunications industry has experienced a significant process of market openness since the 1990s (Gruber, 2005), leading to mobile firms' internationalization. The increase in the number of markets in which firms are present means that MMC has also increased in this industry.

Variables

Dependent variable

Prior studies in the FMA literature have claimed that profitability is the most suitable measure to observe these advantages and have highlighted that market share and survival may lead to misleading results (Lieberman and Montgomery, 2013). Following this recommendation, we use a profitability variable. In particular, we use the EBITDA margin ($EBITDAm_{int}$) that is calculated as the firm's operating profit before interest, tax, depreciation, and amortization divided by its total revenue in the market. This is a quarterly and firm-in-market variable that has been frequently used to measure firms' performance in the mobile telecommunications industry (Asimakopoulos and Whalley, 2017; Domínguez et al., 2016), to interrogate the existence of FMA in this industry (Gómez and Maícas, 2011; Gómez et al., 2016; Jakopin and

Klein, 2012), and to measure firms' performance in other contexts as well (see, as examples, Belezon et al., 2016; Stern and James, 2016; Shapira, 2017).

Independent variables

Reciprocal multimarket contact ($RMMC_{int}$). We base on past research (Gimeno, 1999) and consider that the pioneer has one reciprocal MMC with its follower when four conditions are simultaneously met: (1) that the focal firm *i* is the pioneer of market *n* (P_{in}); (2) that another firm *j* is also present[6] in market *n* as a follower (I_{jn}); (3) that firm *j* is the pioneer of market *m* (P_{jm}); and (4) that firm *i* is a follower in market *m* (I_{im}). To better illustrate these conditions, we take the case of Telefonica and Vodafone as an instance of one reciprocal MMC in our sample. Telefonica was the first group to launch mobile services in Spain (P_{in}), where Vodafone entered some years later (I_{jn}). In contrast, Vodafone was the first mover in the United Kingdom (P_{jm}), and Telefonica entered this country some time later (I_{im}).

We use dummy variables to account for each of these conditions. The product of the four dummies is equal to one only when all conditions are met and, therefore, one reciprocal MMC between the pioneer and its follower exists. To calculate the total number of reciprocal MMCs that the pioneer has with the followers in market *n*, we incorporate all other markets (different from *m*) and followers (different from *j*).

As each pioneer can have a different number of followers in the focal market *n*, we weight the variable of reciprocal MMC by the number of followers that the pioneer has in that market (Fuentelsaz and Gómez, 2006). Thus, our variable, $RMMC_{int}$, is a firm-in-market measure that is calculated as follows:

[6] In the mobile telecommunications industry, mobile operators are often part of a group, which is present in two or more markets at the same time (GSMA Intelligence, 2018). Groups are present in the markets through their participation in the mobile operators' equity. When measuring MMC, we must take into account that mutual forbearance can emerge only when coordination between multimarket firms' subunits—that is, mobile operators—can take place. Groups that have a low participation in the operators' capital are not allowed to make important decisions, such as deciding whether to compete against or to forbear the competitors in the market. Thus, to ensure that coordination between mobile operators could take place, we required that groups had a participation of at least 50% in the operators' capital. Below this threshold, we did not consider that groups are present in the markets.

$$RMMC_{int} = \frac{\sum_j \sum_m P_{in} \times I_{jn} \times P_{jm} \times I_{im}}{\sum_j I_{jn}}$$

The variable reflects the average amount of reciprocal MMCs that the pioneer (*i)* has with the followers of the focal market (*n)*. However, this measure does not take into account the asymmetries in firms' market importance. By definition, a multimarket pioneer operates in two or more markets at the same time and can give each of them a different importance. To capture the asymmetries of reciprocal MMCs, we multiply $RMMC_{int}$ by the importance that the pioneer gives to the focal market *n*. In particular, for each quarter, we consider the percentage of the pioneer's total connections[7] that come from this market.

Non-reciprocal multimarket contact ($NRMMC_{int}$). This variable captures the average amount of MMCs of the pioneer and its followers when reciprocity does not exist. Similar to the prior measure, four conditions should be met to consider that there is a non-reciprocal MMC between the pioneer and its follower: (1) that the focal firm *i* is the pioneer of market *n* (P_{in}); (2) that another firm *j* is present in market *n* as a follower (I_{jn}); (3) that firm *j* is present in market *m* as a follower (I_{jm}); and (4) that firm *i* is present in market *m*, whatever it is a pioneer or a follower (I_{im}).

Therefore, in the case of non-reciprocal MMC, two different situations are possible. First, in both markets *n* and *m*, firm *i* is the pioneer (P_{in}; P_{im}) and firm *j* is a follower (I_{in}; I_{im}). Second, firm *j* is a follower in both markets (I_{jn}; I_{jm}), while firm *i* is the pioneer in market *n* and a follower in market *m* (P_{in}; I_{im}). One example of the first situation is observed between Vodafone and Telefonica in Germany and Ireland. In both countries, Vodafone was the pioneer and Telefonica the follower. An example of the second situation can be found for Orange and Vodafone in the Netherlands and the United Kingdom. Vodafone was the pioneer in the UK, where Orange was

[7] We obtained the total connections of each firm from GSMA Intelligence. This data source measures a firm's connections as 'the total unique SIM cards (or phone numbers, where SIM cards are not used) that have been registered on the mobile network at the end of the period' (GSMA Intelligence, 2018).

also present as a follower. However, in the Netherlands both firms have the status of followers. We use dummy variables to represent each condition that is required to measure a non-reciprocal MMC. The product of the four dummies is equal to one, only when the four conditions are simultaneously met and there is one non-reciprocal MMC between the pioneer and its follower. We calculate the total number of non-reciprocal MMCs that the pioneer has with the followers of market *n* by adding all other markets (different from *m*) and followers (different from *j*).

Since each pioneer can encounter a different number of followers in the focal market, we weight the total number of non-reciprocal MMCs by the total number of followers that this pioneer has in the focal market *n*. Accordingly, we define $NRMMC_{int}$ as follows:

$$NRMMC_{int} = \frac{\sum_j \sum_m P_{in} \times I_{jn} \times I_{jm} \times I_{im}}{\sum_j I_{jn}}$$

Just as with our measure of reciprocal MMC, we correct this measure by the importance that the focal market *n* has for the pioneer to account for the asymmetries in non-reciprocal MMCs. In particular, we multiply $NRMMC_{int}$ by the percentage of the pioneer's total connections that come from market *n* at time *t.*

Control variables

As is common in studies appearing in the FMA and MMC literatures, we classify the control variables into two main groups: firm and market characteristics. In relation to firm characteristics, we include four variables. First, researchers have related the size of the firm to resource endowments (Audia and Greve, 2006) and firm performance (Jakopin and Klein, 2012). Thus, we include the variable of *Firm size* which is measured by the total number of connections in the market at the end of each period (Jakopin and Klein, 2012).[8] Second, we include *Market importance*, since it may determine the magnitude of a firm's aggression in a

[8] This variable is divided by 1,000,000.

given market (Chuang et al., 2018). We measure this variable as the ratio of the connections that the firm obtains in the focal market to the firm's total connections. Third, prior research on the mobile telecommunications industry has highlighted that being an incumbent operator in fixed-line telecommunications may provide a firm with some complementary resources that may be useful in the mobile sector (Jakopin and Klein, 2012). Therefore, we include *Incumbent* that is a dummy variable taking the value of 1 if the firm was an incumbent in fixed-line telecommunications and 0 otherwise. Lastly, we control for the scope of the firm market domain through the variable of *Total markets*. Prior studies have argued that the degree of a firm's internationalization may affect FMA (Gómez et al., 2016). Following these studies, we measure this variable by counting the number of markets where the firm is operating at the end of each period.

In relation to the country characteristics, we first control for the level of competition in the market through the variable of *Number of firms* (Chuang et al., 2018; Gómez and Maícas, 2011; Klein et al., 2020). We expect firms that confront a lower number of rivals to have better performance. Second, we control for *Market size* through its total population.[9] Larger markets generally have a higher number of users (Gruber and Verboven, 2001); therefore, firms may achieve higher levels of profitability. Additionally, consumers in wealthier countries have a higher demand for telecom services (Gruber and Verboven, 2001; Koski and Kretschmer, 2005). Accordingly, we include *GDP per Capita* as a control variable (Jakopin and Klein, 2012; Yu et al., 2009).[10] We also consider that firms operate more successfully when the host and the home countries are closer (Gerpott and Jakopin, 2007). Thus, we control for the *Proximity* between the home and the host countries by using a dummy variable that takes the value 1 when both countries are located in the same region and 0 otherwise. We classify countries into five regions in accordance with the regional division of the United Nations. Lastly, we take into

[9] This variable is divided by 1,000,000.
[10] This variable is divided by 100,000.

account that regulation is an important issue in the mobile telecommunications industry. Following prior studies on this industry, we include an industry-specific control for the regulatory dimension of each country by considering whether mobile number portability (MNP) has been introduced in the market or not (Asimakopoulos and Whalley, 2017). MNP is an important regulatory measure that reduces consumer switching costs and increases competition in the market (Sánchez and Asimakopoulos, 2012). Thus, we include the variable of *MNP* that is a dummy variable taking the value of 1 when mobile number portability is available in the country and 0 otherwise.

Finally, we incorporate annual and quarterly dummies to control for yearly and seasonal effects.

Descriptive statistics

Table 1 shows the descriptive statistics for the variables included in our sample. The sample consists of 2,094 observations. The late launch of 2G mobile services in some countries, the mergers and acquisitions that took place in the industry in the observed period, and the lack of information for some variables in some quarters determined the number of observations in our sample.

In Table 1, the average value of the dependent variable is 0.40. The minimum value of *EBITDAm* is -0.42 and the maximum value is 0.85. To remove outliers, we required that the values of the dependent variable ranged between -1 and 1. Regarding the variables measuring MMC, *RMMC* has an average value of 0.07. This variable ranges between 0 and 1.10. The mean of *NRMMC* is 0.19 and the minimum and maximum values are 0 and 3.45, respectively. The stricter requirement in firms' market positions for the reciprocal MMC variable implies that it has lower values.

Table 1 also shows the correlations among the variables of this study. The correlation between the main independent variables of this study, *RMMC* and *NRMMC*, is 0.39. Pioneers that have a higher volume of reciprocal (non-reciprocal) MMC with their followers tend to also show

higher values of non-reciprocal (reciprocal) MMC with them. The reasoning is that those pioneers that are present in more countries are, consequently, more likely to encounter their followers in many countries. In fact, the correlations between *Total markets* and *RMMC,* and *Total market* and *NRMMC* are 0.36 and 0.41, respectively. The highest correlation is found between *Firm size* and *Market size*, which shows a value of 0.85. This is not surprising, as firms that operate in bigger countries can register many more users in their networks and, consequently, they usually have a bigger size than firms that operate in smaller countries. Similarly, *Total markets* and *Market importance* have a correlation of -0.70. This indicates that the importance that a market has for a certain firm tends to be smaller as the firm is present in a greater number of countries. We also observe a high correlation between *MNP* and *GDP per capita*. This is due to the fact that a greater GDP per capita is associated with more developed countries, where regulatory policies are more likely (Waverman and Koutroumpis, 2011). Although some correlations between variables are high, we do not confront multicollinearity problems. We check this issue by computing the variance inflator factor (VIF). The mean VIF is 2.86, and none of the individual VIF values exceed the widely accepted threshold of 10.

Insert Table 1 here

Methodology

The quarterly structure of the data leads us to use regression models with panel data. The use of the generalized method of moments (GMM) system is particularly suitable for this study because we have a dynamic model in which pioneers' profitability depends on their own past realisations (Roodman, 2009). In this regard, the GMM estimates are consistent, even in the presence of endogenous variables (Bardhan et al., 2013). Additionally, the GMM allows us to use the variables of the model as instrumental variables, avoiding the requirement to find

suitable instruments outside the model.[11] Hence, we use the GMM to test the hypotheses of this study. In particular, we employ the two-step GMM-system estimator since it is efficient and robust (Roodman, 2009).

Specifically, the equation that is used to estimate the effects of reciprocal and non-reciprocal MMC on pioneers' profitability is specified in the following way:

$$EBITDAm_{int} = \beta_1 * RMMC_{int} + \beta_2 * NRMMC_{int} + \beta_3 * NRMMC_{int}^2$$
$$+\beta_4 * Control\ variables$$

where the subscripts refer to the firm (*i*), the market (*n*), and the period (*t*). The control variables can be measured at the firm-in-market level (*int*), at the firm level (*it*), or at the market level (*nt*). Apart from these control variables, as indicated previously, the specification model also introduces lagged values of the dependent variable.

RESULTS

Table 2 shows the results of the GMM estimates. This table includes five models. Model 1 uses the control variables and the lagged values of the dependent variable to explain the profitability of pioneers. Model 2 tests the effect of reciprocal MMC on pioneers' profitability. Model 3 tests the effect of the linear term of non-reciprocal MMC, and Model 4 includes its quadratic effect on pioneers' profitability. Finally, Model 5 is the full model and simultaneously includes both reciprocal MMC and non-reciprocal MMC. F-tests are reported at the bottom of the table and reveal that Model 5 is preferred. We use this model to interpret the results of our study.

[11] The GMM assumes that researchers do not have good instruments to estimate beyond the variables of their models. Thus, it allows taking these variables as instruments and avoids searching for instruments outside the model (Roodman, 2009). We take the variables of our model as instruments and use the xtabond2 command in Stata to obtain our results. The results of the Arellano–Bond test at the end of Table 2 confirm no second-order GMM residual correlation, and the Hansen test rejects the existence of overidentification problems. This confirms that all the models in Table 2 are correctly identified.

Insert Table 2 here

Hypothesis 1 posited that reciprocal MMC improves the profitability of pioneers in the market. Model 5 gives support to this hypothesis since the coefficient of *RMMC* is positive and statistically significant. To see the economic significance of this result, we take into account the value of the coefficient of *RMMC* ($\beta = 0.0910$; $p < 0.05$) and observe how the pioneer's profitability changes as a consequence of having one additional reciprocal MMC with its followers. The effect of one reciprocal MMC is to increase the pioneer's profitability, on average, from 0.4021 to 0.4931. This means that pioneers that have reciprocal MMC with their followers benefit from a reduction in the level of competition in the market that allows them to obtain better profits. We thus confirm Hypothesis 1.

Hypothesis 2 expected a curvilinear U-shaped effect of non-reciprocal MMC on pioneers' profitability. Looking at the coefficients of *NRMMC*, we observe that the influence of the lineal term on pioneers' profitability is negative ($\beta = -0.0634$; $p < 0.05$), but the quadratic effect is non-significant ($\beta = 0.000217$; $p > 0.10$). Once again, we assess the economic meaning of this result by taking into account the value of the coefficient of *NRMMC*. The effect of an additional non-reciprocal MMC between the pioneer and its followers is to decrease the average profitability of the pioneer from 0.4021 to 0.3387. Pioneers that have non-reciprocal MMC with their followers obtain lower profits than pioneers that compete against single-market followers. Contrary to reciprocal MMC, non-reciprocal MMC makes followers compete more fiercely against the pioneer of the market. As competition between pioneers and their multimarket followers increases, the profitability that first movers obtain in the market decreases. We must reject Hypothesis 2 since the curvilinear effect is not supported.

Table 2 also confirms the importance of including some controls in our study. Control variables remain stable in all the models, so we focus on Model 5, the preferred model, to comment on them. This model shows that pioneers' prior profitability positively determine the magnitude

of their current profitability, as is shown by the coefficient of the fourth lag of EBITDA margin ($\beta = 0.00443$; $p < 0.05$). The coefficient of *Firm size* indicates that a bigger size negatively determines firms' profits ($\beta = -0.000224$; $p < 0.05$). Additionally, we observe that larger countries allow pioneers to obtain better results, as can be seen in the positive coefficient of *Market size* ($\beta = 0.000156$; $p < 0.01$). Moreover, *GDP per capita* has a negative and significant effect on *EBITDAm* ($\beta = -0.141$; $p < 0.10$).

Robustness checks

We conducted some additional analyses to assess the robustness of our results. First, the international dimension of this study might lead to the existence of some interdependencies between firm observations among countries. That is, there might be some interdependencies between the observations of a firm that is a pioneer in more than one country.[12] To deal with this, we run a new set of estimations where we include a variable that accounts for the belonging of the pioneer to an international mobile group. In particular, we include the variable *Group* in each one of the models of Table 2. This variable takes the value of 0 when the firm does not belong to any mobile group, meaning that there are no interdependencies between firm observations among countries. Otherwise, the variable is equal to the code identification of the mobile group which the pioneer belongs to, gathering the observations of pioneers that belong to the same mobile group. The results of this estimation are consistent with those reported in Table 2 and confirm that reciprocal MMC has a positive effect on pioneers' profitability while non-reciprocal MMC has a negative effect on them.[13]

We also reran all the models of Table 2 in a sample that is compounded by pioneers that, indeed, have FMA. Although we confirmed the existence of FMA in our sample, one could argue that some pioneers that are included may be outperformed by their followers and, consequently, fail

[12] We thank an anonymous reviewer for this comment.
[13] The results of this estimation are available from the authors on request.

in enjoying performance advantages.[14] In this regard, some studies have argued that second entrants frequently obtain better results than pioneers, as they benefit from the experience of the pioneer in the market and do not confront as much uncertainty as it did (Lieberman and Montgomery, 1998). To confront this issue, we remove from our sample the observations of those pioneers that are outperformed by the second entrants in the market. Additionally, we also remove from our sample those countries where pioneers have an average EBITDA margin that is above the average EBITDA margin of their rivals, regardless of whether they are second movers or later entrants. The results of this estimation are consistent with the main findings reported in Table 2 and confirm that reciprocal MMC has a positive effect on pioneers' profitability while non-reciprocal MMC negatively determines the performance advantages of pioneers.

Additional results: The relationship between MMC and followers' results

The aim of this study was to analyse the effect of competition on FMA in an international context through the lens of MMC. We have already shown that reciprocal MMC improves pioneers' performance while non-reciprocal MMC negatively affects them. Nevertheless, the prior analysis observes the effects of reciprocal and non-reciprocal MMC only in the markets where multimarket firms are pioneers. Our main premise is that multimarket firms tend to be pioneers in some markets and followers in others. In fact, reciprocal MMC requires that the pioneer of the market has the role of a follower in another market. Some studies on MMC have suggested that multimarket firms benefit in one market in exchange for obtaining lower profits in other markets. This means that multimarket pioneers must sacrifice markets in which they are followers to enhance their results in their spheres of influence (McGrath et al., 1998).

We already know that reciprocal MMC improves the performance of pioneers in the markets where they enjoy FMA, but we do not know how it affects the performance of these firms in

[14] Once again, we thank an anonymous reviewer for this comment.

the markets where they are followers. Following prior research, a possibility is that multimarket pioneers could obtain worse results in the markets where they are followers in exchange for better results in the markets where they enjoy FMA. To observe whether multimarket pioneers must sacrifice the markets in those cases in which they are followers, we now analyse the effects of reciprocal and non-reciprocal MMC in the markets where multimarket firms are followers.

Table 3 shows the descriptive statistics for the sample of followers. As shown, 2,982 observations, which belong to 128 mobile operators,[15] are included in our models. The mean variable of *EBITDAm* is 0.27[16] with a standard deviation of 0.22. Regarding the independent variables, *RMMC*[17] has a mean value of 0.10. The minimum and maximum values of this variable are 0 and 2.06, respectively. The mean value of *NRMMC* is 0.44. Once again, the minimum value is 0 but the maximum value is 20.83. As can be seen, followers have a greater number of MMCs than pioneers. This is explained by how we measure our variables of reciprocal and non-reciprocal MMC. These variables differentiate between pioneers and followers and calculate the average number of MMC that pioneers (followers) have with the followers (pioneers) of the market. As the number of followers in the market is greater than the

[15] The 128 mobile operators that are included operate in 71 countries. These countries are the same as in the sample of pioneers with the exception of Palestine. In this country, two operators were identified: Jawwal (PalTel), which was the first mover, and Wataniya Mobile, that entered later. We have information about the firm variables of this study for the pioneer but not for the follower.

[16] This value is glaringly lower than the mean value of *EBITDAm* in the sample of pioneers, which is 0.40. This is consistent with the result that confirmed the existence of FMA in our sample and, consequently, supports the association between first-moving and spheres of influence.

[17] *RMMC* and *NRMMC* were measured in the same way as done in the pioneers' sample. However, in this case, we observe firms that are followers in the reference market. Following the notation that we have used in Figure 1 and in the variables' description section, we now focus on firm *j* instead of focusing on firm *i*, as in the prior analysis. Besides this, the same four conditions must be met to consider that followers have reciprocal or non-reciprocal MMC with the pioneer. That is, reciprocal MMC exists when the follower of the market *n* (firm *j*) is the pioneer in market *m*, and the pioneer of market *n* (firm *i*) is a follower in market *m.* When this reciprocity in firms' market positions does not exist, the follower has non-reciprocal MMC with the pioneer. Similar to the pioneers' variables of MMC, in those markets where there is more than one pioneer, we use an average measure. Thus, to construct followers' variables of MMC, we firstly add up the total number of reciprocal (non-reciprocal) MMCs that followers have with the pioneer(s). Afterwards, we divide this number by the total number of pioneers in the market. Nevertheless, since there is usually only one pioneer per market, in the followers' sample, the denominator of the *RMMC* and *NRMMC* variables tend to be 1. In markets where two firms launched mobile services at the same time, both are considered as pioneers and the denominator of the MMC variables is 2.

number of pioneers, followers show a greater number of reciprocal and non-reciprocal MMCs than do pioneers.

Insert Table 3 here

Table 4 shows the results of our estimation in the sample of followers. Models 1 to 5 present the results of testing how reciprocal MMC and non-reciprocal MMC affect their profitability.[18] Model 1 includes only the control variables and the lagged values of the dependent variable. Model 2 tests the effect of reciprocal MMC. Models 3 and 4 test the lineal and quadratic effects of non-reciprocal MMC, respectively. Finally, Model 5 refers to the full model and incorporates all the variables together. Once again, the results of the F-tests are reported at the bottom of the table and show that Model 5 is preferred. We focus on this model to present the results of our estimates on the sample of followers.

Insert Table 4 here

The coefficient of *RMMC* is positive and statistically significant ($\beta = 0.0495$; $p < 0.10$). We offer an economic interpretation of this result by analysing the effect of one additional reciprocal MMC. On average, an increase of one reciprocal MMC with the pioneer of the market increases the followers' profitability from 0.2686 to 0.3181. This indicates that followers that have reciprocal MMC with the pioneers of the market obtain greater performance than those that compete against single-market pioneers. The rivalry-reducing effect of reciprocal MMC also improves the results that followers obtain in the market, revealing that multimarket firms do not suffer from a reduction in profits in the markets in which they are followers.

Similarly, non-reciprocal MMC also determines the profits of the followers. Model 5 of Table 4 shows that *NRMMC* is negative and statistically significant ($\beta = -0.0459$; $p < 0.01$), and

[18] Table 4 replicates the specification models of the pioneers' sample and, therefore, we include the same variables as in Table 2.

NRMMC^2 has a positive but small impact on followers' profitability ($\beta = 0.000981$; $p < 0.01$). Followers that have non-reciprocal MMC with the pioneer of the market obtain worse performance than followers that compete with this firm only in that market. Nevertheless, the negative effects of having non-reciprocal MMC may disappear when the number of these contacts with the pioneer increases, as suggested by the positive effect of the quadratic term. To confirm whether this curvilinear effect takes place, we depict the relationship between non-reciprocal MMC and followers' profitability in Figure 2. As can be seen, the profitability of followers decreases as the amount of non-reciprocal MMC with the pioneers increases. Although the slope of the curve flattens at high levels of non-reciprocal MMC between pioneers and followers, Figure 2 does not show a positive influence of non-reciprocal MMC on followers' profitability.[19] It reveals that an increase of one non-reciprocal MMC between the follower and the pioneer makes the average follower performance decrease from 0.2686 to 0.2227.

Insert Figure 2 here

The effect of MMC on pioneers' and followers' results

Our findings show that pioneers that enjoy FMA and have reciprocal MMC with their followers obtain greater profits than those that compete with single-market followers. Similarly, reciprocal MMC also benefits these firms in the markets where they are followers, allowing them to have higher profits than followers that compete with single-market pioneers. Non-reciprocal MMC is also relevant to explain the magnitude of FMA, but its effect on the performance of multimarket pioneers is negative. In accordance with this result, followers that

[19] We calculated the inflection point of *NRMMC*. It is located at 23.44 non-reciprocal multimarket contacts with the pioneers of the market. As shown in Table 3, the maximum value of *NRMMC* that followers have with pioneers is 20.83. Thus, we cannot confirm the positive effect of *NRMMC* on followers' performance but only its negative effect (Haans et al., 2016).

have non-reciprocal MMC with the pioneers obtain worse performance than those that compete only with the pioneers in one market.

The question that arises at this point is whether the effect of reciprocal and non-reciprocal MMC on firms' profitability is stronger in the markets where firms are pioneers than in the markets where they are followers. This point is important, as it will determine whether pioneers that enjoy FMA are able to maintain the performance gap between their results and those of the pioneers or, contrarily, that this gap is smaller over time. Tables 3 and 4 show that the marginal effects of reciprocal MMC and non-reciprocal MMC are bigger for pioneers than for followers. This suggests that reciprocal MMC and non-reciprocal MMC have a stronger effect on the profitability that multimarket firms obtain in the markets where they are first movers. The effects of MMC are spread across all the markets in which multimarket firms compete. Nevertheless, these effects are stronger in the markets where multimarket firms are first movers. To illustrate this, Figure 3 depicts the effects of reciprocal MMC on pioneers' and followers' profitability. The solid line refers to pioneers and the dotted line to followers. As can be seen, the solid line is above the dotted line. This means that multimarket pioneers benefit more from having reciprocal MMC with their followers than do multimarket followers with the pioneers of the market. Thus, pioneers that enjoy FMA benefit more from this kind of MMC in the market than their multimarket followers and, consequently, the performance gap between their results is increased by reciprocal MMC.

Figure 4 depicts the effects of non-reciprocal MMC on pioneers' and followers' profitability. In this case, the dotted line, which refers to followers, is above the solid line that refers to pioneers. Followers receive the negative effects of non-reciprocal MMC less than do pioneers. This result suggests that non-reciprocal MMC is a relevant factor to explain the erosion of FMA over time. Although non-reciprocal MMC makes both pioneers and followers obtain lower profits in the market, the negative effects are stronger for pioneers.

Insert Figure 3 here

Insert Figure 4 here

DISCUSSION AND CONCLUSIONS

Despite the importance of competition on FMA, few empirical studies have addressed the relationship between competition and these advantages. Considering that economic liberalisation and globalisation have converted MMC into a common characteristic in an array of industries, it is surprising that the strategic management literature has not included multimarket competition in its analysis of entry timing. In fact, to our knowledge, this is the first paper that analyses FMA from a MMC perspective. We link the FMA and MMC literatures through the concept of spheres of influence. By linking the two theories, we improve the analysis of FMA by considering how the competition between pioneers and followers in different markets determines the magnitude of these advantages.

Our findings show that reciprocal MMC improves the profitability of pioneers that enjoy FMA, explaining why some of them obtain bigger advantages than others. The presence of pioneers in the markets, where their followers are first movers, makes followers conscious of the pioneers' capability to retaliate. If multimarket followers make an aggressive movement in a market, such as a price cut or a new product development, the pioneer can respond with the same movement in the market where multimarket followers enjoy FMA. This leads multimarket followers to respect the market where their rivals enjoy FMA, in exchange for the same treatment in their own important markets. As followers reduce their competitive actions in the markets, the profitability of pioneers that enjoy FMA increases.

We also show that reciprocal MMC benefits multimarket firms not only in the markets where they are pioneers but also in those markets where they are followers. This result is important because it shows that the improvement in profitability that pioneers enjoy in the markets in

which they have FMA is not maintained at the expense of important reductions in profitability in the markets in which they follow. In other words, the effects of mutual forbearance are felt in all the markets where multimarket competitors meet and not only in those that are more important to them. This result suggests that the threat of retaliation is enough to enact mutual forbearance in all the markets in which firms operate (Fernández and Marín, 1998). Additionally, it also reveals that followers benefit from having reciprocal MMC and shows that this type of MMC does not produce a zero-sum result where one firm gains and the others lose. On the contrary, every firm in the market can benefit from a reduction in competition.

Similarly, the effect of MMC is also significant in all the markets in which firms participate in a non-reciprocal multimarket relationship. However, in contrast to the prior situation, the effect of non-reciprocal MMC is negative for both pioneers and followers. Thus, our research shows that each type of MMC has a highly different effect on firms' profitability and contributes to prior studies on this issue (Gimeno, 1999). Regarding the pioneers, an explanation for the negative effect of non-reciprocal MMC is that the lack of reciprocity hinders their capability to exert a credible retaliatory threat on their multimarket followers.[20] Instead of creating incentives to collude, non-reciprocal MMC poses a greater competitive tension between pioneers that enjoy FMA and their followers, which reveals itself as an increase in competitive actions in the market and, therefore, as a decrease in the magnitude of FMA. These effects of non-reciprocal MMC are not limited to a specific market but are spread across all the markets where multimarket competitors meet. As a consequence, followers that have non-reciprocal MMC with pioneers obtain lower profits results than do single-market followers.

Finally, our study also suggests that reciprocal and non-reciprocal MMC does not affect firms' profitability in the same way within all their markets. On the contrary, our findings suggest that the effects of both reciprocal and non-reciprocal MMC are stronger in the markets where

[20] This could also imply that the number of multimarket contacts in our sample is not high enough to generate mutual forbearance.

multimarket firms are pioneers. Multimarket firms benefit more from having reciprocal MMC in the market where they enjoy FMA. Similarly, non-reciprocal MMC has a stronger negative effect on multimarket firms' profitability when they perform as pioneers. An explanation for this result can be found in the differences between multimarket firms' interests in their common markets. Our result suggests that MMC allows multimarket firms to redistribute their profits among the markets where they are operating according to their own interests (Fernández and Marín, 1998). As multimarket pioneers prefer to improve FMA than obtaining higher profits in markets where they are followers, they act consequently and redistribute their profits in this way.

Our study significantly contributes to the FMA and MMC literatures. First, we confirm the convenience of linking MMC and FMA and show that multimarket competition is an important contingent factor that explains FMA. We, thus, contribute to the identification of the boundary conditions surrounding FMA. Additionally, this integration is highly advisable because the current competitive landscape is characterised by firms that often expand abroad (Hitt et al., 2016), so that pioneers might encounter the same rivals in different countries (Gimeno and Jeong, 2001). The theory of MMC helps us to understand actions between pioneers and followers that, from a single-market perspective, would not make sense (McGrath et al., 1998). More importantly, without the MMC perspective, the analysis of competition on FMA might lead to misleading results by attributing to the FMA isolating mechanisms that are the result of competition.

Second, we also confirm the importance of distinguishing between reciprocal and non-reciprocal MMC. Although prior research has already highlighted this and concluded that reciprocal MMC has a stronger effect on competition (Gimeno, 1999), this study goes beyond that and shows that each type of MMC has a different effect on firm profitability. While reciprocal MMC leads to a direct reduction on competition—and, consequently, to an

improvement in performance—non-reciprocal MMC makes multimarket firms initially have incentives to compete instead of forbear.

Third, we extend both the FMA and MMC literatures to an international setting. In relation to the FMA literature, this is important, as pioneers face different conditions in each country that significantly explain differences in the magnitude of their profits (Dykev and Kolev, 2018). Considering 72 countries allow us to broaden our knowledge by better comprehending FMA in an international setting. This is important, as countries differ in some respects that have been suggested to affect profitability in an international setting, such as differences in economic or institutional factors (Goldszmidt et al., 2011). More specifically, the institutional setting has been proposed as an interesting avenue for analysing FMA in an international setting (Fosfuri et al., 2013).

In the case of MMC, researchers have highlighted that firms need to coordinate their business units to benefit from mutual forbearance (Jayachandran et al., 1999). Coordination is much more difficult in an international context because firms have to deal with different market conditions that make them be 'adaptive to the specific requirements of different country markets' (Yu et al., 2009: 129). Our results show that, besides these coordination challenges, the mutual forbearance takes place in an international setting when firms have reciprocal MMC. Nevertheless, we do not find support for the mutual forbearance in an international context when firms have non-reciprocal MMC with their rivals. This is interesting and might indicate that the challenges of coordination across international markets might be emphasised when MMC is non-reciprocal.

This study also has some managerial implications. We add new evidence on the effects that the timing of entry into the market have on firms' performance. As prior studies have already shown, managers should consider that the timing of entry has important effects on the

performance of their firms. Despite this, it is important to underline that FMA do not last forever and tend to diminish over time (Lieberman and Montgomery, 2013; Vidal and Mitchell, 2013). At this point, our study offers another interesting implication for the managers of firms that enjoy FMA. Pioneers that have reciprocal MMC with their followers obtain greater results than pioneers that compete with their rivals only in that market. Therefore, if they want to benefit from MMC, they should engage in a reciprocal multimarket relationship, given that the non-reciprocal type induces a reduction in profitability. From a dynamic point of view, managers of these firms must assess whether to enter a new market of their followers to benefit from lower competition in the market where they have performance advantages.

Nevertheless, they should be careful when selecting the markets to enter. More specifically, our findings suggest that these firms should enter an important market of their followers to create a reciprocal multimarket relationship between them. Otherwise, entries in followers' markets may lead to a competitive escalation in all the markets where pioneers encounter their rivals, including the market where they enjoy FMA. Hence, instead of creating favourable competitive conditions in their important markets, managers would create more difficulties to sustain their advantageous position.

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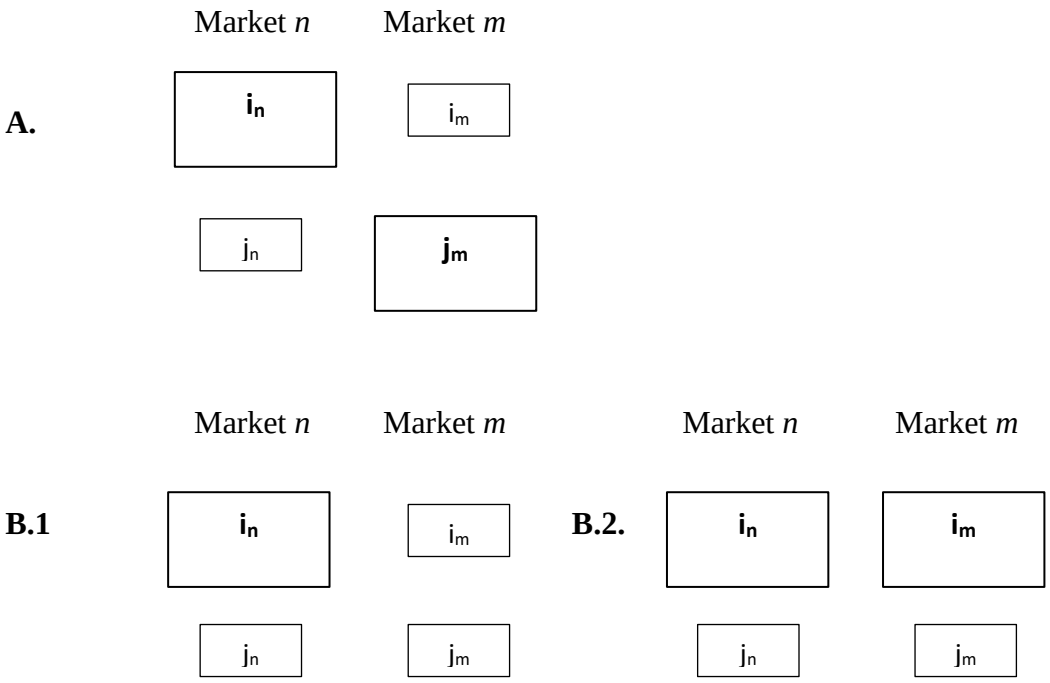
Figure 1. Different situations of MMC between pioneers and followers



Source: Own elaboration based on Gimeno (1999)

Table 1. Descriptive statistics

Variable	N	Mean	Sd.	Min.	Max.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
EBITDAm (1)	2,094	0.40	0.110	-0.42	0.85	1											
RMMC (2)	2,094	0.07	0.17	0	1.10	-0.01	1										
NRMMC (3)	2,094	0.20	0.42	0	3.45	-0.23*	0.39*	1									
Firm size (4)	2,094	14.46	52.24	0.03	649.57	0.13*	-0.02	-0.05*	1								
Market importance (5)	2,094	0.53	0.39	0.005	1	0.07*	-0.18*	-0.29*	0.18*	1							
Incumbent (6)	2,094	0.49	0.50	0	1	0.01	-0.02	-0.18*	-0.11*	0.29*	1						
Total markets (7)	2,094	7.58	7.07	1	30	-0.09*	0.36*	0.41*	-0.09*	-0.70*	-0.23*	1					
Number of firms (8)	2,094	3.79	1.50	1	11	-0.07*	0.02	0.02	-0.04	-0.08*	-0.26*	0.13*	1				
Market size (9)	2,094	54.47	189.37	0.31	1,372.75	0.19*	-0.05*	-0.06*	0.86*	0.19*	-0.17*	-0.10*	-0.03	1			
GDP per capita (10)	2,094	0.14	0.13	0.0012	0.72	-0.23*	0.22*	0.07*	-0.08*	-0.08*	0.20*	0.07*	0.11*	-0.14*	1		
Proximity (11)	2,094	0.65	0.48	0	1	-0.007	0.16*	-0.16*	-0.13*	-0.36*	-0.05*	0.18*	0.19*	-0.18*	0.32*	1	
MNP (12)	2,094	0.55	0.50	0	1	-0.18*	0.19*	0.04	-0.10*	-0.14*	0.17*	0.05*	0.14*	-0.18*	0.52*	0.32*	1

Significance level: * $p<0.05$

Table 2. The relationship between MMC and pioneers' results

	(1) EBITDAmargin	(2) EBITDAmargin	(3) EBITDAmargin	(4) EBITDAmargin	(5) EBITDAmargin
L4.EBITDAmargin	0.00390*	0.00459**	0.00309	0.00310	0.00443**
	(1.87)	(2.24)	(1.48)	(1.49)	(2.19)
Firm size	-0.000223**	-0.000234***	-0.000206**	-0.000207**	-0.000224**
	(-2.45)	(-2.71)	(-2.15)	(-2.16)	(-2.47)
Market importance	-0.00128	-0.00538	-0.00477	-0.00499	-0.0133
	(-0.03)	(-0.13)	(-0.12)	(-0.12)	(-0.34)
Incumbent	0.0265	0.0273	0.0195	0.0197	0.0187
	(1.25)	(1.35)	(0.94)	(0.95)	(0.99)
Total markets	-0.000835	-0.00138	0.000172	0.000183	-0.000671
	(-0.46)	(-0.73)	(0.10)	(0.10)	(-0.37)
Number of firms	0.00108	0.00150	0.000159	0.0000838	0.000700
	(0.18)	(0.26)	(0.03)	(0.01)	(0.12)
Market size	0.000167***	0.000169***	0.000155***	0.000155***	0.000156***
	(6.59)	(7.02)	(5.87)	(5.87)	(6.16)
GDP per capita	-0.154**	-0.162**	-0.133*	-0.135*	-0.141*
	(-2.03)	(-2.07)	(-1.75)	(-1.70)	(-1.78)
Proximity	0.0314	0.0299	0.0190	0.0186	0.0132
	(1.14)	(1.08)	(0.70)	(0.66)	(0.48)
MNP	-0.0204	-0.0220	-0.0186	-0.0187	-0.0214
	(-0.98)	(-1.08)	(-0.92)	(-0.92)	(-1.09)
RMMC		0.0447			0.0910**
		(1.16)			(2.30)
NRMMC			-0.0472**	-0.0443*	-0.0634**
			(-2.53)	(-1.65)	(-2.28)
$NRMMC^2$				-0.000183	0.000217
				(-0.20)	(0.25)
Yearly dummies	Yes	Yes	Yes	Yes	Yes
Quarterly dummies	Yes***	Yes***	Yes***	Yes***	Yes***
_cons	0.380***	0.385***	0.395***	0.396***	0.408***
	(8.37)	(8.42)	(8.62)	(8.55)	(8.79)
N	2,094	2,094	2,094	2,094	2,094
ar1	-3.292	-3.288	-3.314	-3.314	-3.314
ar1p	0.000996	0.00101	0.000919	0.000919	0.000921
ar2	0.710	0.750	0.690	0.690	0.807
ar2p	0.478	0.453	0.490	0.490	0.420
hansen	4.269	4.243	4.010	4.009	3.879
hansenp	0.511	0.515	0.548	0.548	0.567
F-test vs 1		1.35	6.42**	7.42**	10.46**
F-test vs 2					8.95**
F-test vs 3				0.04	5.41*
F-test vs 4					5.31**

t statistics in parentheses; Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3. Descriptive statistics of the followers' sample

Variable	N	mean	sd	min	max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
EBITDAm (1)	2,982	0.27	0.22	-0.98	0.77	1											
RMMC (2)	2,982	0.10	0.30	0	2.06	0.12*	1										
NRMMC (3)	2,982	0.44	1.78	0	20.83	0.08*	0.62*	1									
Firm size (4)	2,982	7.85	16.59	0.035	199.66	0.19*	0.11*	0.10*	1								
Market importance (5)	2,982	0.49	0.42	0.007	1	0.13*	-0.06*	-0.07*	0.17*	1							
Incumbent (6)	2,982	0.19	0.40	0	1	0.20*	0.17*	0.28*	0.03	-0.01	1						
Total markets (7)	2,982	6.79	6.69	1	30	0.002	0.17*	0.17*	-0.01	-0.70*	0.11*	1					
Number of firms (8)	2,982	4.02	1.48	2	11	-0.09*	-0.09*	-0.09*	-0.02	0.14*	-0.11*	-0.11*	1				
Market size (9)	2,982	49.20	159.46	0.30	1,372.75	0.10*	-0.01	-0.02	0.86*	0.18*	-0.05*	-0.10*	-0.05*	1			
GDP per capita (10)	2,982	0.16	0.13	0.001	0.74	-0.05*	0.05*	-0.09*	-0.03	0.02	-0.15*	0.07*	0.03	-0.11*	1		
Proximity (11)	2,982	0.54	0.50	0	1	0.03	0.30*	0.21*	-0.07*	-0.46*	-0.02	0.27*	-0.20*	-0.15*	0.20*	1	
MNP (12)	2,982	0.60	0.49	0	1	-0.04*	0.06*	-0.06*	-0.02	0.02	-0.13*	0.05*	0.09*	-0.13*	0.56*	0.18*	1

Significance level: * $p<0.05$

Table 4. The relationship between MMC and followers' results

	(1) EBITDAm	(2) EBITDAm	(3) EBITDAm	(4) EBITDAm	(5) EBITDAm
L4.EBITDAmargin	0.0705***	0.0705***	0.0705***	0.0700***	0.0702***
	(26.86)	(26.85)	(27.09)	(26.52)	(26.50)
Firm size	0.00446***	0.00433***	0.00474***	0.00523***	0.00507***
	(4.35)	(4.19)	(4.56)	(4.93)	(4.75)
Market importance	0.0701***	0.0675**	0.0749***	0.0596**	0.0553*
	(2.62)	(2.40)	(2.80)	(2.07)	(1.85)
Incumbent	0.0507**	0.0494**	0.0586***	0.0658***	0.0663***
	(2.38)	(2.33)	(2.65)	(2.97)	(2.90)
Total markets	0.00298**	0.00285*	0.00329**	0.00275*	0.00253
	(2.02)	(1.85)	(2.17)	(1.77)	(1.61)
Number of firms	-0.0127***	-0.0125***	-0.0135***	-0.0122***	-0.0123***
	(-2.74)	(-2.71)	(-2.94)	(-2.64)	(-2.65)
Market size	-0.000344***	-0.000333***	-0.000369***	-0.000403***	-0.000390***
	(-3.46)	(-3.32)	(-3.68)	(-3.91)	(-3.78)
GDP per capita	-0.109*	-0.106	-0.111*	-0.0860	-0.0805
	(-1.67)	(-1.61)	(-1.72)	(-1.40)	(-1.29)
Proximity	0.0222	0.0183	0.0277	0.0351*	0.0290
	(1.07)	(0.79)	(1.34)	(1.69)	(1.30)
MNP	-0.0228**	-0.0229**	-0.0240**	-0.0248**	-0.0265***
	(-2.10)	(-2.11)	(-2.21)	(-2.51)	(-2.66)
RMMC		0.0202			0.0495*
		(0.92)			(1.81)
NRMMC			-0.00761***	-0.0411***	-0.0459***
			(-3.53)	(-7.63)	(-8.02)
$NRMMC^2$				0.000970***	0.000981***
				(7.95)	(8.06)
Yearly dummies	Yes***	Yes***	Yes***	Yes***	Yes***
Quarterly dummies	Yes***	Yes***	Yes***	Yes***	Yes***
_cons	0.225***	0.227***	0.223***	0.222***	0.226***
	(6.09)	(6.01)	(5.98)	(5.63)	(5.70)
N	2,982	2,982	2,982	2,982	2,982
ar1	-2.495	-2.494	-2.499	-2.541	-2.543
ar1p	0.0126	0.0126	0.0125	0.0111	0.0110
ar2	-0.896	-0.896	-0.887	-0.841	-0.838
ar2p	0.370	0.370	0.375	0.400	0.402
hansen	53.35	53.41	53.58	51.71	51.97
hansenp	0.243	0.242	0.236	0.295	0.286
F-test vs 1		0.85	12.49***	63.47***	70.33***
F-test vs 2					69.78***
F-test vs 3				63.21***	69.58***
F-test vs 4					69.78***

t statistics in parentheses; Significance levels: * p < 0.10, ** p < 0.05, *** p < 0.01

Figure 2. The effect of non-reciprocal MMC on followers' results

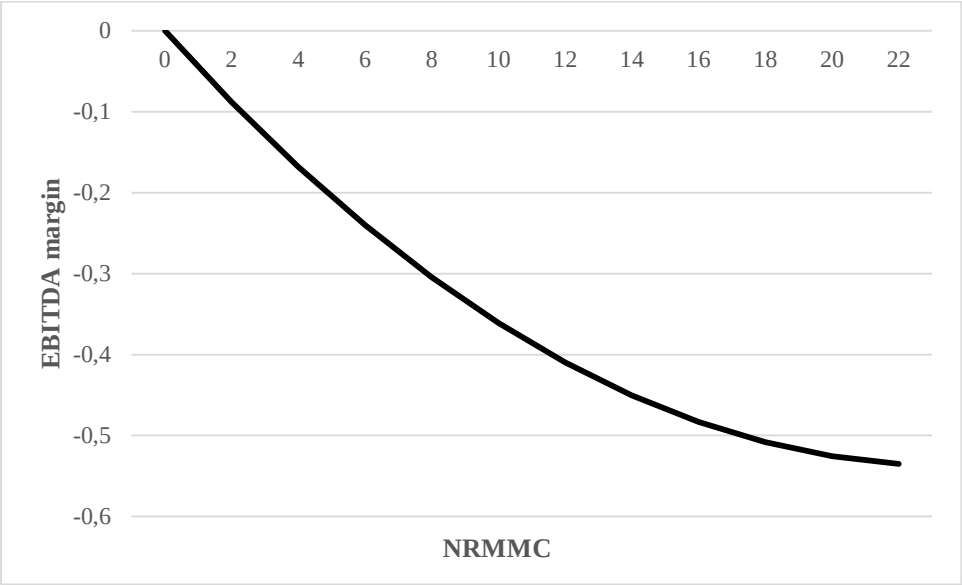


Figure 3. The effect of reciprocal MMC on pioneers' and followers' results

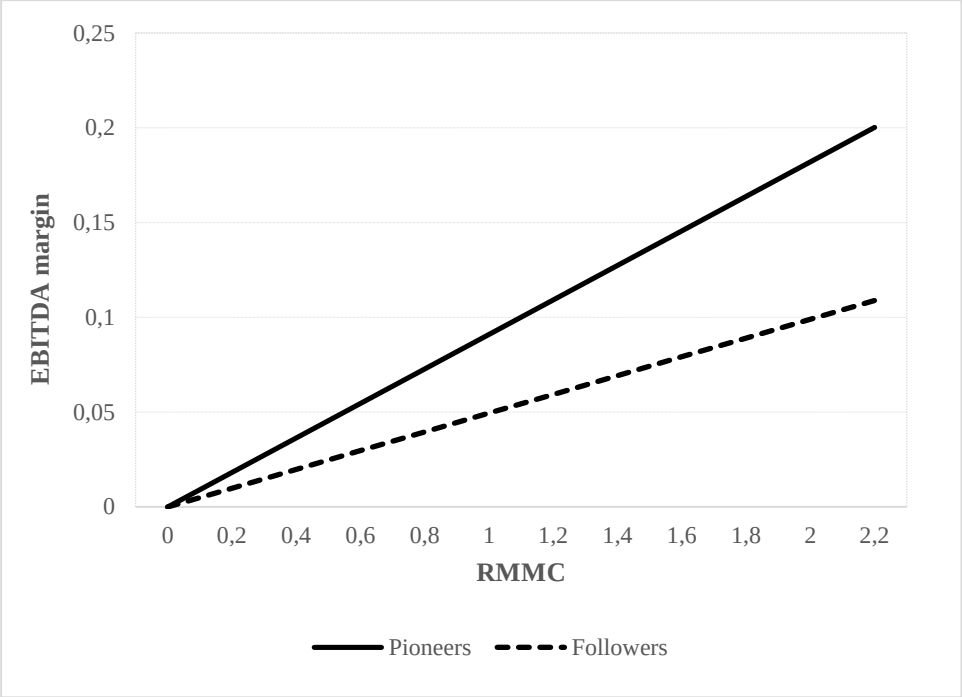


Figure 4. The effect of non-reciprocal MMC on pioneers' and followers' results