MULTIMARKET CONTACT AND COMPETITIVE AGGRESSIVENESS AT THE MARKETING MIX TACTICAL LEVEL

Thesis · December 2015

DOI: 10.13140/RG.2.2.28794.90566

1 author:

Juan Manuel Gonzalez
University ICESI

3 PUBLICATIONS **0** CITATIONS

SEE PROFILE

MULTIMARKET CONTACT AND COMPETITIVE AGGRESSIVENESS AT THE MARKETING MIX TACTICAL LEVEL

AN ABSTRACT SUBMITTED ON_____

TO THE DEPARTMENT OF MANAGEMENT

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

OF THE A.B. FREEMAN SCHOOL OF BUSINESS

OF TULANE UNIVERSITY

FOR THE DEGREE

OF

DOCTOR OF PHILOSOPHY

BY

_____

JUAN MANUEL GONZALEZ SANCHEZ

APPROVED: _____
ALBERT A. CANNELLA, Ph.D.
Director

_____
JOHN M. TRAPANI III, Ph.D.

_____
ANA ELISA IGLESIAS, PhD.

ABSTRACT

Multimarket competition theory centers in interfirm competition, specifically when a set of firms have presence and face each other as competitors in multiple different markets (Baum & Korn, 1996; Bernheim & Whinston, 1990; Gimeno, 1999; Gimeno & Woo, 1994, 1996; Haveman & Nonnemaker, 2000; Jayachandran, Gimeno, & Varadarajan, 1999). In such situation, the chances of knowing, hurting or benefiting each other increase, allowing firms to recognize their interdependence, pressing them to be cautious when deciding which competitive actions to make because the outcome of a move depends heavily on how rivals respond to it (Baum & Korn, 1996; Bernheim & Whinston, 1990; Gimeno, 1999; Haveman & Nonnemaker, 2000; Jayachandran et al., 1999). This situation pushes firms to tacitly collude and mutually forbear (Bernheim & Whinston, 1990; Edwards, 1955; Feinberg, 1985), lowering the intensity of competition understood as the level of aggressiveness and speed of the actions and counteractions firms initiate to compete in the market (Chen, 1996).

According to Smith, Ferrier and Ndofor (2001), most competitive actions can be classified as pricing actions, marketing actions, new product actions, capacity and scale-related actions, service and operations actions, and signaling actions. Each one describes a set of similar moves, that are assumed to have similar implications for the intensity of rivalry (Chen, 1996). However, in the field of marketing it is widely argued that many actions across categories are naturally interconnected (Borden, 1984; Constantinides, 2006; Magrath, 1986; McCarthy, 1978), and categorization used in competitive dynamics ignores that fact. Thus, in this dissertation, I propose to categorize all product, pricing,

distribution, and promotional actions as marketing actions, and group them in the marketing mix (McCarthy, 1978), which presents marketing tactics as sets of actions that can be categorized as either product, price, promotion, or place. I emphasize in this dissertation that what is broadly accepted by competitive dynamics researchers as different competitive action categories should be considered all marketing actions, and equally important, these actions should be jointly analyzed as tactical competitive moves, rather than analyzed in isolation or as independent strategic action categories.

Since tactical marketing actions, those of the marketing mix, are deployed on a day-to-day basis, even under multimarket contact conditions it may seem that competitive aggressiveness and intensity of competition increase, contrary to the tenets of the theory. In this line, I am proposing to analyze the consequences of multimarket contact from a tactical marketing perspective, mainly with the aim of understanding how firms under a multimarket contact setting deploy competitive movements at the marketing mix's tactical level without disrupting mutual forbearance. For this, I will develop some hypotheses and test them using the Colombian car industry as empirical setting.

MULTIMARKET CONTACT AND COMPETITIVE AGGRESSIVENESS AT THE MARKETING MIX TACTICAL LEVEL

A DISSERTATION SUBMITTED ON_____

TO THE DEPARTMENT OF MANAGEMENT

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

OF THE A.B. FREEMAN SCHOOL OF BUSINESS

OF TULANE UNIVERSITY

FOR THE DEGREE

OF

DOCTOR OF PHILOSOPHY

BY

_____

JUAN MANUEL GONZALEZ SANCHEZ

APPROVED: _____
ALBERT A. CANNELLA, Ph.D.
Director

_____
JOHN M. TRAPANI III, Ph.D.

_____
ANA ELISA IGLESIAS, PhD.

AKNOWLEDGEMENTS

In the first place I want to thank my advisor, Dr. Albert A. Cannella Jr. He did a great job guiding me through this long and meaningful process. Additionally, the comments and feedback of the members of my dissertation committee where very enlightening, for which I have to thank them: Dr. John Trapani and Dr. Ana Iglesias.

At las, but not least, I have to thank my wife Martha and my daughter María José for being patient, for sacrificing their time with me, for understanding me. Martha was there since the beginning and María José in the last year and a half, I love you both so much and this is dedicated to you.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

In today's markets, multimarket competition has become a reality that has caught the attention of researchers in different fields, especially in strategy from the perspective of competitive dynamics picturing the competitive relationship among firms that do not compete in isolated markets and have the need to find sources of growth while protecting the existing ones.

Multimarket competition occurs when two or more firms meet each other in more than one market, and it has several implications for the parties to such competition as well as for single-market rivals in those markets. For example, some of the implications include decisions about whether to attack competitors or not, whether to respond to the moves of rivals or not, which rivals to attack, and how to defend the firm market position from both single-market and multimarket rivals over time (Heide & Miner, 1992). When two or more firms compete in more than one market, the chances of knowing, hurting or benefiting each other increase, leading to a situation where firms recognize their interdependence. That is, they realize that their futures are intertwined, and that they must exercise caution when deciding which competitive moves to make because the outcome of a move depends heavily on how rivals respond to it (Baum & Korn, 1996; Bernheim & Whinston, 1990; Gimeno, 1999; Haveman & Nonnemaker, 2000; Jayachandran et al., 1999).

Scholars have argued about the immediate effects of multimarket competition, and it appears to be an agreement that it provides at least the possibility that the firms involved can develop mutual forbearance – the condition in which firms decide to implicitly collude and avoid attacking each other – the multimarket competitors, because those rivals can easily strike back at vulnerable points, inflicting significant harm (Bernheim & Whinston, 1990; Edwards, 1955).

The resulting mutual forbearance condition leads to a competitive stability reflected in higher and more stable prices in the market and higher margins for forbearing firms than if no forbearance at all was taking place (Bernheim & Whinston, 1990).

The focus on specific actions taking place in a setting of multimarket contact frames the field of multimarket competition in the field of competitive dynamics, which provides a basic model to understand and analyze how such firms will behave. In their comprehensive work, Smith, Ferrier and Ndofor (2001) characterize a competitive action as the conceptual foundation for the competitive dynamics research stream, and argue that most competitive actions can be classified as follows: pricing actions, marketing actions, new product actions, capacity and scale-related actions, service and operations actions, and signaling actions. Each of these categories describes a set of similar moves, that are assumed to have similar implications for the resulting intensity of rivalry (Chen, 1996) – a central construct in competitive dynamics. However, in the field of marketing, it is widely argued that many actions across categories are naturally interconnected (Borden, 1984; Constantinides, 2006; Magrath, 1986; McCarthy, 1978), and some of the actions classified into different categories as Smith et al. (2001) and others have done, ignores that fact. For example, viewing discrete categories of actions like pricing actions,

marketing actions, and new product actions separately naturally minimizes the importance of coordination among tactical marketing actions that must be considered jointly because they are interconnected (Borden, 1984).

In this dissertation, I propose to categorize all product, pricing, distribution, and promotional actions as marketing actions, and group them in McCarthy (1978)'s marketing mix, which presents marketing tactics as sets of actions that can be categorized as either product, price, promotion, or place. These four categories comprise the marketing mix, and, as noted earlier, marketing theory holds that the elements of the mix must be analyzed jointly. Product refers to the type of entity produced and sold, its features and changes in them, and even the firm's portfolio of related products (Borden, 1984). Price refers to how much a customer has to pay for a product or a service, as well as how to manage that number according to situational changes and competitive conditions (Borden, 1984; McCarthy, 1978). Promotion refers to all communicational elements related with both products and frequently brands that support products and services. Promotion includes advertising, publicity, and public relations among others (McCarthy, 1978). Finally place refers to distribution channels where the product is sold or where the service is delivered. Put differently, place is how the firm makes the product or service available to its customers (Borden, 1984; McCarthy, 1978). A fundamental assumption in my dissertation is what is broadly accepted by competitive dynamics researchers as different competitive action categories as in Smith et al. (2001), should be considered all marketing actions, and equally important, these actions should be jointly analyzed as tactical competitive moves, rather than analyzed in isolation or as independent action categories.

My assertion that the marketing mix should be used to analyze multimarket competition topics is important for two reasons. First, mutual forbearance does not result in firms in isolation from competition, but involves regular competitive engagement among rivals. However, the engagement is designed to avoid sharp conflicts, territorial incursions, or other actions that might set off large-scale price wars. Put differently, mutually forbearing rivals engage each other, but do so in ways that do not lead to sharp responses or escalating price wars. For example, Kang, Bayus and Balasubramanian (2010) showed that multimarket rivals tended to respond to price cuts from rivals with new product introductions, not destructive price cuts that are likely to lead to a protracted price war. The use of multimarket competition theory through the lens of the marketing mix tool will help me to predict how multimarket rivals might respond to actions in ways that are more or less aggressive, as mutual forbearance theory fundamentally predicts. The point here is that tactical actions around the marketing mix elements are useful to track intensity of competition for multimarket competing firms, because things like changes in the number of ads placed, changes in price, opening of new sales facilities, new product features and other changes in the marketing mix elements, are signals of firms' tacit agreement of preserving market equilibrium or not, depending on the way firms display such marketing mix changes.

Second, rather than view actions in isolation, the marketing mix approach permits me to analyze sets of what have been categorized as dissimilar actions as part of a broad marketing strategy, because tactical marketing actions must be considered jointly because they are interconnected (Borden, 1984) as they are the implementation of marketing strategy in terms of targeting and positioning, where changes in one element of the

marketing mix need adjustments in the other elements in order to maintain a coherent positioning according to the characteristics of the target market, hence, marketing mix actions are related to each other and can't be analyzed as isolated ones, and doing so misrecognizes the importance of coordination between strategy and tactic. The resulting analysis of competitive moves as tactical marketing mix actions will lead to new theory regarding how firms in a multimarket contact setting respond to aggressions by rivals, or initiate increases in aggression through their own actions without provoking destructive consequences such as price wars. In other words, multimarket contact as a mechanism that limits aggression without reducing the observed frequency of actions taken that can be considered aggressive.

Finally, my approach provides a more complex but complete and accurate picture of rivalry among firms with multimarket contact. By analyzing sets and sequences of actions as broad parts of tactical engagement among rivals, we can better understand the implications and characteristics of multimarket contact.

1.1 Literature Overview

Interfirm rivalry in multimarket competition has traditionally been studied from the perspectives of market structure (Porter, 1980), firms' characteristics, and some marketing variables such as product differentiation (Jayachandran et al., 1999). For the case of strategic marketing variables it is common to find research in the context of product line rivalry and entry strategy (Jayachandran et al., 1999); new product introduction and spending in advertising, promotion and sales force (Shankar, 1999); customer orientation, new product introduction, and brand advertising (Varadarajan, Jayachandran, & White, 2001); and price and new product introduction (Kang et al.,

2010). These approaches, however, leave a gap in analyses of interfirm rivalry in the presence of multimarket contact, because as Chen (1996) states, intensity of competition is reflected in changes to the marketing mix variables, which as noted earlier, are product, price, place and promotion (McCarthy, 1978). The marketing mix, as a whole, has not been brought to bear in the study of mutual forbearance Hypothesis nor for understanding the relationship between multimarket competition and competitive aggressiveness.

For example, changes in the message deployed in advertising, as an important marketing mix variable, frequently occur in nearly any day-to-day rivalry in settings where advertising is important to competition. Such changes may or may not provoke responses from rivals and could reflect one or more other marketing mix elements in the texts and images displayed. Firms may engage in such tactical deployment without improving their standing just as a matter of survival or for the purpose of maintain the status quo, which means developing advantages just to match other advantages previously developed by competitors in order not to be left behind, generating a Red Queen effect that will cause a competitive spiral where it is necessary for firms to invest resources in order to remain in an identical competitive position (Barnett & Hansen, 1996; Delacour & Liarte, 2012; Derfus, Maggitti, Grimm, & Smith, 2008; Voelpel, Leibold, Tekie, & Von Krogh, 2005). For instance, and from a tactical perspective, let's suppose a two-firm market where firm A cuts the price in a 50% and firm B does the same and matches firm A´s price, the competitive advantage developed by firm A will be destroyed by firm B, margins for both firms will decrease but market share will probably remain about the same, which means making efforts to end up at the same competitive positions where both firms were at before, which is a reflection of acting just for

maintaining the status quo. Therefore, theory behind the marketing mix would seem to benefit the attempt to capture the larger picture of competitive actions in the study of competitive aggressiveness in a multimarket setting.

The mutual forbearance Hypothesis suggests that as multimarket contact increases, intensity of competition or rivalry among multimarket competitors decreases (Bernheim & Whinston, 1990; Feinberg, 1985), which implies a positive relationship between multimarket contact and performance. Most research has shown support for this broad prediction (Yu & Cannella, 2013). In a recent comprehensive review Yu and Cannella (2013) presented intensity of rivalry as one of the core issues that has been extensively studied in the field of multimarket competition, and in that line, individual firm competitive behavior as the key way of capturing rivalry. In their review, Yu and Cannella (2013) refer to studies that used competitive moves and their speed as measures of intensity of rivalry, which in turn, if known in detail, can be deployed into attack characteristics such as those presented by Ferrier (2001). Ferrier pointed out that competitive actions or moves, when exerted in a sequence, have four dimensions: volume, duration, complexity, and unpredictability. This view, closely linked to Austrian economics, competitive dynamics, and hypercompetition (Ferrier, 2001) connects the notion of individual competitive actions with that of a competitive attack, which in turn, characterized in Ferrier's dimensions constitute a model of competitive aggressiveness that has performance as a consequence (Ferrier, 2001; Ferrier, Smith, & Grimm, 1999; Lee, Smith, Grimm, & Schomburg, 2000; MacCrimmon, 1993; Miller & Chen, 1996; Young, Smith, & Grimm, 1996).

Competitive actions can be strategic or tactical (Ansoff, 1984; Dutton & Jackson, 1987; Porter, 1980), and the difference between to retaliate or not is a matter of differentiating the nature of each type of action (Chen, Smith, & Grimm, 1992). Strategic actions, since they generally require major investments, involve a greater commitment in terms of time, resources (Galbraith & Kazanjian, 1986), and definition of business (Abell, 1980) among others, thus, as a reflection of such serious commitment, rivals may restrain themselves from responding (Porter, 1980; Schelling, 1960). Instead, because fewer resources and minor changes are needed, Porter (1980) and Ansoff (1984) stated that competing firms will be more willing to respond and will respond faster to tactical actions than to strategic ones, just as supported in Chen, Smith and Grimm's (1992) study. This difference establishes that the daily battleground for multimarket rivals is likely to be captured by tactical actions. Such is the case of firms introducing new products that must rely on marketing mix variables to sell them, as well as to remind customers of how great they are. This automatically makes these moves visible to competitors and prone to retaliation, thus, supposing there is actually a response, initiating a competitive dialog. Firms do not establish a competitive dialog directly among them; they orient most of their tactical actions to customers or markets. For mutual forbearance to emerge, the multimarket rivals must develop effective ways of communicating or signaling. In such a context, the marketing mix becomes a useful set of elements oriented to go after a particular market action (Waterschoot & Bulte, 1992) and for which a clear dialog between firm and customers is needed.

Since the marketing mix is a set of tactical actions oriented to implement strategic decisions (Borden, 1984), the way firms deploy it and make changes to it should

determine the competitive aggressiveness of the firm that manages it, thus, generating an impact on its subsequent performance and on that of competitors. Firms will be more prone to respond to competitive attacks at the tactical level (Ansoff, 1984; Chen et al., 1992; Porter, 1980), therefore, when they resort to tactical actions to communicate with their markets, new tactical actions will appear in response from competing firms. In such a scenario, competition is more intense and performance for competing firms is going to be lower than if no struggling was taking place at all and this prediction has received strong support in several studies of competitive dynamics (K. G. Smith et al., 2001).

In multimarket contact settings, evidence has shown that competition will be less intense to preserve equilibrium and avoid rivals' counterattacks in important markets (W. Barnett, 1993; Heggestad & Rhoades, 1978; Martinez, 1990), which suggests that playing at a tactical level, as discussed previously, would be a way to disturb such equilibrium and negatively affect performance. If that were the case, it would not be possible to find stable industries with firms competing aggressively at a tactical level, because it would mean that if no firm makes a strategic move such as investing in R&D and developing a disrupting technology, the whole industry should have to stay still and not make any tactical movement. Apparently, in some industries, multimarket competing firms just have to be aggressive at the tactical level to maintain the equilibrium as a consequence of a Red Queen effect (Barnett & Hansen, 1996; Delacour & Liarte, 2012; Derfus et al., 2008; Voelpel et al., 2005), otherwise, reducing aggressiveness could mean impoverishing performance. In other words, aggressiveness at the tactical level is what firms in the multimarket scenario are expecting for maintaining the equilibrium, but if

not; it will be disrupted because some more aggressive rival will move to fill in the space left by a less aggressive one.

In this entire context and according to what previous research has used for measuring intensity of competition (Jayachandran et al., 1999; Kang et al., 2010; Shankar, 1999; Varadarajan et al., 2001), tactical competitive actions need to be fully accounted for in order to understand their impact on competitive aggressiveness and firm performance in a multimarket setting. In light of that, there is an opportunity to, through advertising analysis, analyze an almost-daily competitive dialog among multimarket competitors and the impact such interaction has on competitive aggressiveness and performance deployed in four dimensions of attack characteristics: volume, duration, complexity, and unpredictability. In that sense, and developing from the relationship between multimarket contact and performance, and the one between competitive aggressiveness and performance, a research linking multimarket contact, the role of competitive aggressiveness from the view proposed by Ferrier (2001), and performance is needed. In that line, *the purpose of my research is to understand how firms under a multimarket contact setting deploy competitive movements at the marketing mix's tactical level without disrupting mutual forbearance.*

To work out this research I will develop a study using the Colombian car industry, a dynamic market with 34 different brands and more than 200 car models competing in 10 product market, not geographic, segments, where each of them will play the role of a market with presence in the whole country. For capturing all the tactical movements, I will analyze car advertisings for years 2010, 2011, 2012, and 2013 in *Semana* magazine, the one with the greatest readability in Colombia, not only counting the number of ads

placed every week by each brand, but also analyzing the content of the advertising looking for key elements that reflect the other 3 p´s of the marketing mix. In this setting, the level of analysis will be at the model of car identified by brand, and multimarket contact will be captured using information about presence of brands in product market segments, understanding that competitors in this research are car brands.

Since most research in multimarket competition centered in its outcomes has focused on performance, intensity of competition, market entry/exit, individual firm competitive behavior, firm grow/service quality and investment on tangible and intangible resources (Yu & Cannella, 2013), the present research can further those approaches contributing to the field in four different ways as mentioned before:

1. Developing new theory regarding how firms in a multimarket contact setting mange to tactically attack and respond without disturbing the equilibrium (engaging in destructive price wars).
2. Including the concept of marketing mix to better understand the fundamental aggressiveness of actions in context. This will help us understand how multimarket rivals might respond to actions in ways that are more or less aggressive, as mutual forbearance theory fundamentally predicts.
3. Developing a marketing mix approach that will permit the categorization and understanding of what have traditionally been viewed as dissimilar actions as part of a broad marketing strategy, rather than as actions in isolation.
4. Providing a better understanding of the implications and characteristics of multimarket contact through analyzing sets and sequences of actions as broad parts of tactical engagement among rivals, which in turn represents a more

complex but complete and accurate picture of rivalry among firms with multimarket contact.

The following parts of this dissertation are organized as follows. In Chapter two I review important literature regarding multimarket competition and its main principles, including the mutual forbearance Hypothesis, intensity of competition, spheres of influence, antecedents and consequences of multimarket competition, and measures and levels of analysis. In the same chapter I also review the concept of competitive aggressiveness from the perspective of Ferrier (2001), and the tool of the marketing mix. Finally, I close Chapter two with a short review. In Chapter three I present the research model, put all the theory, concepts, and tools together, and follow a line of reasoning that leads me to the development of the Hypotheses that constitute the heart of this study. Chapter four presents the explanation of the research setting or context; I explain where data comes from and finally give the explanation of the methodology I am going to use. In Chapter five I present the results, and finally, in Chapter six, I proceed to present conclusions related to the findings reported on the results.

CHAPTER 2

LITERATURE REVIEW

2.1 Multimarket competition, concepts and extant research

Multimarket competition is a rapidly growing theory in strategic management (Chen, 1996; Gimeno & Woo, 1994, 1996; Jayachandran et al., 1999; Karnani & Wernerfelt, 1985). This theory centers in interfirm competition, specifically when a set of firms have presence and face each other as competitors in multiple different markets, thus, having multimarket contact and being multimarket competitors (Baum & Korn, 1996; Bernheim & Whinston, 1990; Gimeno, 1999; Gimeno & Woo, 1994, 1996; Haveman & Nonnemaker, 2000; Jayachandran et al., 1999). Multiple contacts among firms can decrease the intensity of competition (Edwards, 1955), and in that sense Edwards (1955)'s Hypothesis suggested that multimarket competitors are vigilant to how competitive moves in a given market impact competition in other markets, and as a result will tacitly organize coordinated actions that will generate a mutual benefit for all the firms involved. In light of that, firms that are multimarket competitors develop such interdependencies that competitive moves in one market may cause responses in other markets.

Firms meet in product markets and geographic markets. A product market is understood as a group of similar consumers that are seeking goods and/or services that serve similar functions (Abell, 1980; Jayachandran et al., 1999). In my study, product

markets are market segments. In the case of the Colombian car industry, there are 10 such markets, as seen in Table 2.1.

Insert Table 1 about here

A geographic market is a group of consumers classified and divided by geographic units to be served with goods and/or services. In my study there is a single geographic market which is the whole Colombia, because brands do not discriminate by selling some models in some regions of the country, all models can be bought and are advertised country wide. When a firm operates in a given number of geographic-product markets they become the firm's market domain (Jayachandran et al., 1999). For firms to be engaged in multimarket competition it is necessary that firms' market domains overlap, which actually happens because rival firms usually have incompatible positions due to the fact that they fight for the same resources (especially customers). Thus, one firm's move is seen and felt by the other or others (Baum & Korn, 1996; Caves, 1984; Porter, 1980; Scherer & Ross, 1990) in much the same way as single-market competition (Hannan & Freeman, 1989). Since competing firms have overlapping market domains, they need similar resources in order to cope with their markets' needs, and the more similar the requirement for resources, the greater the potential for competition in the meeting markets (Aldrich, 1979; Hannan & Freeman, 1977; Hannan & Freeman, 1989; Porter, 1980; Scherer & Ross, 1990; Tirole, 1988). Interdependencies as such described previously are also called multimarket contact (MMC), which is a central construct in multimarket competition and is stated to be a predictor of intensity of competition among firms.

For a better understanding the basics of multimarket competition, Figure 2.1 depicts a general model of it.

Insert Figure 1 about here

2.1.1 Mutual forbearance and intensity of competition

The common situation characterizing multimarket competition is that of a firm challenging a competitor in a market and receiving the counterattack not only in the challenged market but also in other markets where both firms compete and vice versa.

The fact that moves made by a given firm can be seen and felt by its competitors means that competitors can countermove in order to defend their stakes of interest. This possibility might place a warning sign to the firm that is considering making the first move, because the reaction of the attacked firm could mean the loss of the position occupied in one or more markets (i.e. market share loss), pressing the former firm to decide not to attack the latter one or to act less aggressively (Chen, 1996).

When firms behave in such manner, tacitly colluding, deciding not to hurt each other due to the menace or threat of retaliation across multiple markets, keeping each other from defecting from the established equilibrium; it is said that there is mutual forbearance (Bernheim & Whinston, 1990; Edwards, 1955; Feinberg, 1985). The threat of retaliation across markets becomes a deterrence device (W. Barnett, 1993) or deterrence mechanism (Karnani & Wernerfelt, 1985) that, when effective, lowers the intensity of competition understood as the level of aggressiveness and speed of the actions and counteractions firms initiate to compete in the market (Chen, 1996). Low intensity of competition can lead to higher prices and higher margins for competing firms that high intensity of competition might not cause, since firms don´t have to invest in

aggressive competitive moves because they just try to keep the balance for not putting their interests at risk.

Ultimately, the situation described above represents for leader firms a lower intensity of price competition from rivals, a higher equilibrium market share, and a need for less intense competitive behavior display. On the other hand, those are often socially undesirable outcomes (Bernheim & Whinston, 1990) since benefit is being maximized for competing firms while customers, down in the market, have to pay the price of an implicit monopoly. Put differently, prices are higher under multimarket competition than would be in an open competition.

2.1.2 Spheres of influence

When different multimarket competitors have dominant market positions in different markets among those in which they overlap, it can be said that spheres of influence exist (Edwards, 1955; McGrath, Chen, & MacMillan, 1998).

Market positions, when firms are involved in multimarket competition, could be different in all overlapping markets. The differences arise because of differences in technological development, market knowledge, costs of production, and even strategic interests among the rivals. These differences will lead to different firms dominating different markets, being the dominated markets the spheres of influence of the firm that dominates them and the real stakes to defend. For each firm, its spheres of influence represent those markets in which it is dominant and therefore both most profitable and most vulnerable to harm from an attack. In light of that, if the spheres of influence of multimarket competing firms are different and are attacked by rivals, then the intensity of competition between those firms will tend to be accentuated (Baum & Korn, 1996). For

example, if firm A threatens with entering or attacking firm B's spheres of influence, the threatened firm could, and surely will, counterattack entering or increasing the intensity of competition in firm A's spheres of influence as a deterrence mechanism. These set of actions will probably generate a result such like the dividends of the taken action in the spheres of influence of the attacked firm won't compensate the cost generated by the counterattack of the offended firm in firm A's spheres of influence. Thus, if the situation, it is better to just lower the intensity of competition and respect to each other's spheres of influence (Baum & Korn, 1996).

Jayachandran, Gimeno and Varadarajan (1999) state that firm's internal coordination mechanisms are one condition for mutual forbearance, because coordination within the firm is frequently needed for coordination between firms (Golden & Ma, 2003). Additionally, in general lines multimarket contact, according to Bernheim and Whinston (1990), for generating mutual forbearance behavior needs to meet the following conditions:

- Firms and/or market asymmetries (i.e., spheres of influence).
- Repeated interactions.
- Perfect monitoring.

In other words, firms and markets cannot be identical, there must be spheres of influence, and there has to be always detection and punishment for defection where the prospect of losses is greater than the prospect of gains from defecting from the equilibrium. However, more recent works than Bernheim and Whinston have challenged the asymmetry condition (Spagnolo, 1999) and the perfect monitoring condition (Matsushima, 2001). Despite these challenges, the mutual forbearance Hypothesis has

received strong empirical support and is widely accepted as a central tenet of multimarket competition.

In summary, the mutual forbearance that emerges from multimarket competition is characterized by a deterrence effect that keep firms away from vigorously attacking each other, or at least showing respect for their spheres of influence, which finally will end up reducing the intensity of competition (Alexander, 1985; Feinberg, 1985; Heggestad & Rhoades, 1978). That means there is a negative relationship between the degree of multimarket contact and the intensity of competition between firms (Gimeno, 1999).

2.1.3 Antecedents and consequences of multimarket competition

2.1.3.1 Antecedents

Part of the research in multimarket competition has been oriented to its antecedents (Baum & Korn, 1999; Fuentelsaz & Gómez, 2006; Gimeno, 2002; Gimeno & Woo, 1999; Henrich R. Greve, 2000; H. R. A. Greve, 2006; Helaine J. Korn & Baum, 1999; H.J. Korn & Rock, 2001; Varadarajan et al., 2001). Whether multimarket contact emerges from an intentional process or not is a matter of discussion. For instance, Korn and Baum (1999) point out that firms can find themselves in a multimarket competition setting without intending to be part of it, just as a result of market conditions produced by a conjunction of individual firms' strategies. Other researchers have followed the same path and, in one way or other from results on their research, defend the position that creation of multimarket competition is often unintentional. An opposing position is that of those who state that the creation of multimarket competition is intentional because

managers seek it to obtain the benefits of mutual forbearance (Fuentelsaz & Gómez, 2006; Henrich R. Greve, 2000; Jayachandran et al., 1999).

Regarding the intentionality behind multimarket contact, Gimeno (2002) empirically demonstrated that multimarket contact can emerge intentionally or unintentionally, but either way the final effect on performance is the same, mutual forbearance and its implied effects. Gimeno's (2002) findings are not to be taken for granted since several studies, despite accounting for intentionality, have not found support for mutual forbearance (Alexander, 1985; Mester, 1987; Rhoades & Heggestad, 1985; Strickland, 1985). In Gimeno's (2002) defense, many others have found empirical support for mutual forbearance (W. Barnett, 1993; Baum & Korn, 1996, 1999; Boeker, Goodstein, Stephan, & Murmann, 1997; Cotterill & Haller, 1992; Evans & Kessides, 1994; Feinberg, 1985; Fernandez & Marin, 1998; Gimeno, 1999; Gimeno & Woo, 1994, 1999; Heggestad & Rhoades, 1978; Hughes & Oughton, 1993; Martinez, 1990; Parker & Röller, 1997; Sandler, 1988; Scott, 1982, 1991; Singal, 1996).

One plausible explanation for such equivocal results is that most of the studies that did not find support for the mutual forbearance Hypothesis used cross-sectional data, which contrasts with most studies that have found support for the mutual forbearance Hypothesis, which have used longitudinal data (Jayachandran et al., 1999). In that line, my study uses longitudinal data.

2.1.3.2. Consequences

Another scope of the research in multimarket competition has been oriented toward the consequences or outcomes of such competition. In this line of research, intensity of competition or rivalry and performance have become important centers of

attention. In the following three paragraphs I center attention on the type of actions accounted for in the studies despite their findings, because my intention is to note that an approach from the perspective of tactical actions like marketing mix actions, taking all together into consideration, is lacking in the literature.

Performance has received a lot of attention by scholars. On one hand, several researchers have found strong support for a positive relationship between multimarket contact and firm performance (Yu & Cannella, 2013) using different settings such as banking (Heggestad & Rhoades, 1978), airlines (Kim & Singal, 1993) manufacturing (Hughes & Oughton, 1993), different diversified and conglomerated U.S. industries (Feinberg, 1985), and among diversified U.S. manufacturers (Scott, 1982). On the other hand, there have been studies that have not found support for the positive relationship between multimarket contact and performance, and such is the case of Strickland (1985) in a sample of 195 of the top 200 U.S. manufacturers in 1963, Rhoades and Heggestad (1985) in U.S. local banking markets, and Waldfogel and Wulf (2006) in U.S. radio broadcast markets. Despite the conflicting evidence, and probably because of it, performance is still a matter of interest as an outcome for multimarket competition researchers.

Several authors have used different constructs to capture intensity of competition, many of them at the strategic level, others overlooking key elements of a complete competitive scene, but none of them analyzing day-to-day rivalry with the complete set of tools that firms use to compete at the tactical level such as the marketing mix. For example, Rhoades (1973) used price-cost margins to measure intensity of rivalry, and found support for the Hypothesis that diversification is an structural element of the

industry that has a systematic effect on industry profit performance by creating barriers to entry. Strickland (1985) used advertising ratios to test the mutual forbearance Hypothesis, and Heggestad and Rhoades (1978) used market share instability in 1974's dominant banking markets in the United States to test the prediction that multimarket contact between dominant banks negatively affects the degree of rivalry between them. Martinez (1990) used changes in the overall rank positions of firms in testing the linked oligopoly Hypothesis or mutual forbearance Hypothesis, finding support for the prediction that as larger banks in the United States meet one another in increasing numbers of local banking markets, the competitiveness of these markets is lowered.

A number of studies have used firm-level actions that are directly observable as their concepts of interest. For example, Fuentelsaz and Gómez (2006), Haveman and Nonnemaker (2000), and Baum and Korn (1999) used market entry and exit to capture intensity of rivalry, finding an inverted U-shaped relationship between multimarket contact and rates of entry in the Spanish banking industry, savings and loans in 58 counties in California, and in the commuter airline market in California respectively. Entry and exit behavior are troublesome concepts to use in studies of multimarket contact, however, because these actions are not only guided by the implicit rules of multimarket contact, but the actions themselves change the level of multimarket contact. Some researchers have used individual firm rivalrous behavior to capture intensity of rivalry. For example, (Yu & Cannella, 2007) studied the behavior of 13 global automakers competing in some 27 countries, Those authors used speed of response as their central measure of rivalry. Similarly, Young, Smith, Grimm and Simon (2000) used

frequency and speed of competitive actions in the U.S. software industry as their key outcome variable.

In a different line, some researchers have focused their attention on the investment that firms make in tangible and intangible resources to capture intensity of rivalry. Example measures include marketing spending for new brand introduction (Shankar, 1999), multiproject contacts (Vonortas, 2000), and decisions about prices and new product introductions (Kang et al., 2010). Researchers have also used firm and sales growth to capture intensity of rivalry, finding support for the mutual forbearance Hypothesis (H. R. Greve, 2008; Haveman & Nonnemaker, 2000). And, additionally, changes in service quality as a measure of intensity of rivalry was used by Prince and Simon (2009) in their empirical work in the U.S. airline industry, finding support for the mutual forbearance Hypothesis.

Thereafter, and understanding that research in the field has looked at intensity of competition in terms of strategic actions or has used some tactical actions in isolation, not jointly with other tactical actions in order to really reflect strategy, my contribution is to apply a new set of tools that firms themselves use to compete at the tactical level – specifically the marketing mix. As a result, my research approaches the analysis of multimarket competition's consequences from a new perspective, which helps to shed light on the mechanisms that govern competitive relationships at the tactical level among firms that have multimarket contact. Specifically, using the marketing mix permits me to link together a variety of actions that have been treated as separate or even not taken into consideration at all. I view actions from the perspective of the marketing mix rather than isolated or as singly occurring in response to the actions of rivals. This means that I see

competitive actions as a complex set of interrelated ones that are the implementation of strategy, and as such, they need to be analyzed together instead of isolated like in previous research because analyzing tactical actions in isolation means losing sense of strategy, which at the end is the *what* that traces the rout for organizations . This allows me to approach the construct of intensity of rivalry as never before in the strategy literature.

2.1.4 Measures and levels of analysis used in multimarket competition research

Since research in multimarket competition started, several measures at different levels of analysis have been used. In this section, I present those levels of analysis and some measures that can be used in multimarket competition research with the sole purpose of understanding the level of analysis selected for the present study.

The most aggregated set of measures is the market level, which is focused on the effects of multimarket contact on market-level outcomes such as performance (Gimeno & Jeong, 2001). Some settings where the market level of analysis has been used are manufacturing (Feinberg, 1985; Hughes & Oughton, 1993), airline routes (Evans & Kessides, 1994; Singal, 1996), and regional cement markets (Jans & Rosenbaum, 1997). The simplest measure of multimarket contact at the market level is a basic count, which could include the number of multimarket contacts among firms in the focal market, the average multimarket contact of all the dyads in a focal market (Evans & Kessides, 1994) or the average number of rivals without multimarket contact in the focal market (Jans & Rosenbaum, 1997), among others. One possible shortcoming of using this level of analysis emerges because multimarket contact is the result of relationships between two firms (Baum & Korn, 1999), and this raises problems for studies that use aggregated or

averaged measures. Specifically, because such measures don't permit the researcher to observe the actions of individual firms they can hamper our understanding of the competitive relationships between firms – fundamental to tests of multimarket contact theory.

Another set of measures are those at the firm-by-market level or firm-in-market level, which captures the aggregated degree of multimarket contact between a focal firm and its competitors in a given market (Gimeno & Jeong, 2001). Some settings where firm-in-market level of analysis has been used include airline routes (Baum & Korn, 1996; Gimeno & Woo, 1996), manufacturing (Feinberg, 1985), and hospital services (Boeker et al., 1997). As in the case of market-level measures, the firm-in-market level doesn't give a clear understanding of the competitive relationship between pairs of firms because of the aggregated nature of the measures (Gimeno & Jeong, 2001), but represents a good measure when there is no information about which competitive movements are targeted to which competitor.

The dyad level comprises a third level of analysis, capturing the total degree of multimarket contact between two firms across all the markets where they encounter each other and downplaying the idea of a focal market (Gimeno & Jeong, 2001). As with the other levels of analysis, airline routes have been used as a setting for multimarket contact research at the dyad level (Baum & Korn, 1999; Chen, 1996). This level of analysis accounts for some details of individual dyads that can yield a better reflection of the competitive relationship between two firms, if compared to market and firm-in-market levels of analysis. However, since a firm's competitive actions in one market may target one specific rival, some rivals, or all rivals, it can be difficult to identify which action is

targeting which rival. Double-counting of actions, therefore, is almost inevitable at the dyad level of analysis (Gimeno & Jeong, 2001).

Finally, the dyad-in-market level of analysis strives to capture the degree of multimarket contact between pairs of firms in a given market (Gimeno & Jeong, 2001). A good example of the use of this level of analysis is the work of Scott (1982) in a manufacturing product setting with sales as the dependent variable. As with other levels of analysis, a basic count of multimarket rivals is the simplest measure and the departing point for measuring multimarket contact at the dyad-in-market level of analysis. This level of analysis puts together what is most valuable of the previous three levels of analysis, market, firm-in-market and dyad, because it permits the researcher to capture the competitive relationship between two firms accounting for the market context of the pair, and accordingly, allowing the explanation of competitive behavior in a specific market (Gimeno & Jeong, 2001). Again, when it is not clear who the target of the competitive action is, this measure represents a problem for the researcher because double-counting of actions may distort data.

In accordance with the previous four paragraphs, market, dyad, and dyad-in-market levels of analysis would not be as precise and objective as what is needed in the present study, since market level is too general and does not capture enough information about the competitive relationship among firms, and dyad and dyad-in-market levels have the serious problem of double-counting of actions plus the limitation that data available does not permit to know the target of specific competitive actions. . In light of that, and since competitive actions in this study are not targeted to an specific rival, instead they are intended for all competitors in the market, firm-in-market level measurement is

optimal for my study, since it will permit me to capture details about the relationships among competing firms while considering the competitive context - the market, which, in turn, will lead me to a more realistic analysis of the effects of multimarket contact on the relationships to be proposed later on this document.

2.2 Competitive aggressiveness

Understanding Schumpeter's (1989) creative destruction is basic for understanding competitive dynamics. In order to boost present performance firms seek to innovate to surpass their own capacities and those of their competitors, hence, creating competitive advantages that will disturb the status quo of the market, which in turn will place the innovative firm in a stronger position improving performance in terms of market share or margin. After disturbance, the market stabilizes until another competitor seeking new competitive advantages, or perhaps the same player, starts a new movement to unbalance market conditions in its favor. This scenario can be thought of as a type of game where players start a competitive engagement when one says and does something and the other responds to it. The response can involve mimicking the previous competitors' movement with more or less intensity or doing something completely different and perhaps completely unexpected. That is the game of competitive dynamics, where the actor, the competitive action, the reactor, the competitive response, the competitive environment, and the consequences of the action are studied (K. G. Smith et al., 2001). The mentioned elements of study can be grouped into four categories: the actors or competitors, the competitive actions of those actors, the competitive environment, and the consequences of competitive actions for the competitors.

In order to define competitive aggressiveness it is necessary to understand competitive actions, which can have many forms or characteristics such as type, magnitude, scope, threat, implementation requirements, irreversibility, speed, and visibility (K. G. Smith et al., 2001). With those characteristics, competitive actions are simply reflections of individual-firm competitive behavior, and observing competitive moves is a way to capture competitive rivalry (Yu & Cannella, 2013). In their comprehensive review, Yu and Cannella (2013) cite studies that used competitive moves and their speed as measures of intensity of rivalry. However, aggressiveness characterizes a sequence of actions rather than individual actions.

The concept of competitive aggressiveness was introduced by Ferrier (2001) and Smith, Ferrier and Ndofor (2001) as a way to characterize a set of competitive actions. This approach links a number of actions together to identify a competitive attack of specific duration and intensity. Further, Ferrier (2001) proposed four dimensions that capture the aggressiveness of an attack: volume, duration, complexity, and unpredictability (Ferrier, 2001; Ferrier et al., 1999; Lee et al., 2000; MacCrimmon, 1993; Miller & Chen, 1996; Young et al., 1996).

Volume refers to the total number of competitive actions that comprise an attack (Abbott, 1983, 1990). According to this, firms that have attacks with greater volume are more competitively aggressive (Ferrier et al., 1999; Gunther & D'Aveni, 1994; Young et al., 1996)

Duration refers to the time from the beginning of a competitive attack to the end – from the first competitive action in a sequence to the last (Abbott, 1983; Ramaprasad,

1992). Firms that sustain attacks of longer duration are perceived as more aggressive (Gunther & D'Aveni, 1994).

Complexity refers to the extent to which an attack is composed of different types of actions (Ferrier, 2001). According to previous research, firms that deploy more complex attacks (those involving different kinds of actions) are more aggressive than those that deploy simpler attacks (Ferrier et al., 1999; Gunther & D'Aveni, 1994; Miller & Chen, 1996).

Unpredictability refers to the extent to which the sequence of competitive actions deployed during an attack differs from that of a previous or subsequent attack (Ferrier, 2001). Firms with unpredictable repertoires can disrupt the equilibrium of the market (Gunther & D'Aveni, 1994; MacCrimmon, 1993; Rizzo & O'Driscoll, 1985), and hence are perceived as more aggressive.

Ferrier's (2001) dimensions of a competitive attack provide a good theoretical backdrop for understanding how competitive aggressiveness is linked to firm performance. The important point for my study here is that those dimensions, combined as a proxy for competitive aggressiveness and in a multimarket contact setting, have the potential to capture tactical movements such as those of a day to day rivalry reflected in the marketing mix variables, giving me the opportunity to combine Ferrier's (2001) approach and the action-response one into one that allows me to analyze sets of traditionally categorized dissimilar actions as part of a broad marketing strategy, instead of viewing actions in isolation, providing a better understanding of the implications and characteristics of multimarket contact from a perspective of tactical engagement among rivals, which in turn represents a more complex but complete and accurate picture of

rivalry among firms with multimarket contact, complementing extant literature which focuses on strategic perspectives.

2.3 The 4p's of the marketing mix

The marketing mix is a business tool used in marketing, and has only recently begun to evolve into a clear theory with a body of knowledge developed around it. My intent is to use it as the lens through which multimarket competition can be understood at a tactical level, reflective of day-to-day strategic engagement. This sections is focused on providing key concepts and definitions that will be used later to develop specific Hypotheses.

The concept of the marketing mix appeared in the 1950's as a list of 12 elements, responsibilities, and worries common to all of those responsible for marketing in organizations (Borden, 1984). During the 60's the marketing mix concept gained relevance with the appearance of the 4p´s concept, which rapidly gained importance for theorists as well as for marketing professionals (Constantinides, 2006). According to Jobber (2001) the strength of the 4p's resides in the practical framework it represents for decision-making and for the practical tool it is for case analysis in colleges and universities.

Changes in markets, evolving consumers, constantly changing organizations, globalization, innovation and a complex environment are factors that have made researchers and practitioners think about extending marketing theory to better understand these factors. Additionally, many believe that in recent years, consumers have become more demanding, more self-centered, more independent, more critical and better informed (Capon & Hulbert, 2000; Lewis & Bridger, 2000). Further, consumer power

has increased due to the increased amount of information available, accessible through the internet to companies and customers alike. This has motivated companies to change the scope of their actions from those oriented toward mass markets to those oriented toward personalized ones, involving direct dialog and interaction with consumers. These changes, added to a rapidly growing services sector and the appearance of the Internet as a buying and delivery channel, reflect the problematic of services and social sectors as particular industries, where the traditional marketing mix is not enough to respond to the industry challenges (Lovelock, 2011), requiring to take into consideration the role of physical evidence, processes and people in service delivery.

As all disciplines, marketing has its own basic principles, but the central ones are those that cope with decisions shaped by targeting and positioning choices, the marketing strategy. Targeting refers to the process of evaluating the potential and commercial attractiveness of each market segment in order to select one or more to be served with products and services (Kotler & Armstrong, 2010; Lawther, Hastings, & Lowry, 1997), and positioning refers to the process of developing a desired detailed position of the product in a market segment in reference to other's positions (Kotler & Armstrong, 2010; Lawther et al., 1997).

Targeting and positioning decisions have to be implemented, thus, taken to a tactical level that requires designing, developing, and introducing products to markets; pricing those products; selecting proper distribution and commercialization channels for those products; and communicating both the nature of the products and their benefits through advertising, personal selling, or publicity as free advertising, or a mix of all these (McCarthy, 1978). This "marketing mix" needs to be carefully tailored since changing

one element can cause a misalignment with the strategy (represented by the marketing mix). So, in order to change one element, marketing executives must make integral decisions, typically involving simultaneous changes in several marketing mix elements at once in order to achieve strategic alignment. McCarthy (1978) developed today's 4p's classification – Product, Price, Place, and Promotion, in an easy-to-remember format that has been widely accepted and used in both marketing practice and marketing research (Waterschoot & Bulte, 1992).

As suggested above, services marketing has often been considered as separate and distinct from product marketing, and thus for services there are other elements to the "mix" concept. However, for products (which are the focus of my study), the traditional 4p's approach fits very well and comprises the key factors driving the purchase decision. Table 2.2 contains a more precise definition of each P constructed from Borden (1984), McCarthy(1978), and Kotler (2010).

Insert Table 2.about here

The marketing mix is a tool that supports decision-making because it is the implementation of marketing strategy, which on its own is a reflection of organizational strategy. Marketing mix decisions can be made and changed on a daily basis as a way to cope with rivalry, which contrasts with the nature of strategic choices. Strategic choices tend to be much more stable since strategy is not changed frequently. Analyzing competition from a tactical perspective provides a better understanding of the dynamics that executives face every day and how those dynamics are calibrated with long-run organizational dynamics. An adequate way to capture day to day competitive dynamics is to track those competitive movements that are intended to influence and facilitate

customers' buying decision processes, moving, in the short run, customers away from competitors offerings. That is exactly what the marketing mix is intended for, therefore its use in this study can help to explain why in a multimarket contact setting firms seem to be active and aggressive while mutually forbearing reducing intensity of competition at a strategic level.

2.4 What do I know so far?

To this point I have reviewed the main concepts of multimarket competition, competitive aggressiveness and the marketing mix. In this section I will consolidate the material I have covered and explain how I will use the marketing mix as a key new theoretical framework and how that will contribute to knowledge about competitive aggressiveness and multimarket contact.

About multimarket competition I know that the theory describes the outcome of a form of competition characterized by firms that have presence and face each other as competitors in multiple different markets (Baum & Korn, 1996; Bernheim & Whinston, 1990; Gimeno, 1999; Gimeno & Woo, 1994, 1996; Haveman & Nonnemaker, 2000; Jayachandran et al., 1999). This situation can decrease the intensity of competition because multimarket competitors are vigilant about how competitive moves in a given market impact competition in other markets, tacitly colluding, generating a mutual benefit for all parties involved (Edwards, 1955). Benefits include each rival preserving its spheres of influence (Edwards, 1955; McGrath et al., 1998). This outcome is broadly described as mutual forbearance (Bernheim & Whinston, 1990; Edwards, 1955; Feinberg, 1985).

Much research about the outcomes of multimarket competition has focused on performance, intensity of competition, market entry/exit, individual firm competitive behavior, firm grow/service quality and investment in tangible and intangible resources (Yu & Cannella, 2013). However, it lacks a tactical focus that enhances understanding of the rules of engagement for day to day rivalry. To resolve this shortcoming, I argue that the marketing mix concept accurately characterizes the tactical actions that firms engage in as their overall marketing strategy (Borden, 1984; McCarthy, 1978), which in turn is a translation of the firm-level strategy to the marketing context.

The value of the marketing mix approach to understand competitive engagements at the tactical level is that it offers an integrative approach, which means that changes in one element – a P, require changes and adjustments in the other P's, because of the marketing strategic principle of positioning. Positioning requires that in order to define, maintain or change the marketing strategy a firm must adjust all the marketing mix elements so that they are aligned in the same direction/position and are consistent (Borden, 1984; Kerin, Hartley, & Rudelius, 2011; Kotler & Armstrong, 2010; Mahajan, Varadarajan, & Kerin, 2011). Marketing mix adjustments are competitive actions at the tactical level.

Additionally, many studies have used competitive moves and their speed as measures of intensity of rivalry (Yu & Cannella, 2013), hence, rivalry as competitive actions can be classified into attack and response characteristics such as the ones presented by Ferrier (2001). This permits me to consolidate a set of individual competitive actions into a broader notion of a competitive attack, which can be

characterized by Ferrier's four dimensions - volume, duration, complexity, and unpredictability.

I am now in a position to integrate the three topics reviewed earlier – multimarket competition, competitive aggressiveness and the marketing mix to provide a more tactical approach to understanding day-to-day competitive engagement and to test the predictions from that approach with respect to firm performance at a tactical level. The manipulation of product, price, place and promotion features as a tactical display of marketing strategy is a compendium of competitive actions that constitute an attack that can be more or less aggressive based on its volume, duration, complexity and unpredictability, depending on the competitive conditions of the relationship between them, whether if they have multimarket contact or not.

Using the marketing mix as a means to implement strategy is an approach that fills a gap in the literature, since most research is centered on strategic moves instead of tactical ones, and those that do take into consideration tactical moves do not account for the relationship that different types of tactical moves have with each other. Contrary to the case of tactical marketing moves, mainly marketing mix ones, which require checking for the need of adjustment of different elements of the 4 P's if one or more of them are manipulated as a competitive attack or response. The need for adjustment of the 4 P's responds to the coherence that is required in order to establish and preserve a market positioning (Borden, 1984; Kotler & Armstrong, 2010), therefore, integrally taking into consideration marketing mix movements is a more realistic approach to competition than just looking at isolated competitive movements, whether strategic or tactical ones, and becomes an approach that opens a new route to analyze day to day rivalry among firms

that can be very useful not only for researchers to further the field of study, but also to practitioners to understand real competitive dynamics at a level that captures much of their time and effort while decision making.

CHAPTER 3

THEORY DEVELOPMENT AND HYPOTHESES

This chapter develops a research framework for understanding how firms under a multimarket contact setting deploy competitive movements at the marketing mix's tactical level without disrupting mutual forbearance. I propose a model that focuses on two dimensions of competitive aggressiveness at the tactical level, and their behavior in a multimarket contact setting. The chapter begins by describing the model, with its elements, and connections. Then, I discuss the concept of competitive aggressiveness and its dimensions in terms of attack characteristics at the tactical level through the lens of the marketing mix tool and taking into account a multimarket contact setting. Finally I develop Hypotheses about the expected tactical competitive behavior of multimarket competing firms regarding advertisement placement, and Hypotheses about two advertising characteristics – duration and complexity, in a multimarket contact setting.

Insert Figure 2 about here

Figure 3.1 presents a theoretical model that represents the expected relationships between multimarket contact and two selected characteristics of competitive aggressiveness. In the figure, the dotted line gathers the selected characteristics of competitive aggressiveness, and the solid lines represent the relationships explored in this dissertation. Those relationships have been previously studied using multimarket contact as the key antecedent variable and with the intent of evaluating support for the mutual

forbearance hypothesis. In contrast, my dissertation focuses on the relationships represented by the solid lines at the marketing mix tactical level, where the mutual forbearance hypothesis will be tested with respect to mechanisms that have not been previously studied.

As stated before, aggressiveness is greater, or at least perceived as such, when each of the attack characteristics or dimensions is more prominent (Ferrier et al., 1999; Gunther & D'Aveni, 1994; MacCrimmon, 1993; Miller & Chen, 1996; Rizzo & O'Driscoll, 1985; Young et al., 1996). Following that logic, a long-lasting competitive attack or response, let's say an advertising program, composed of several different actions – information about product, price and distribution, and that does not resemble in type, time, magnitude, and order those of previous attacks is an aggressive one. However, at the same time, the level of competitive aggressiveness is a relative concept, since it depends on how actions impact rivals and the competitive actions it provokes from rivals. What would seem to be a very aggressive attack might not turn out to be so aggressive, as such attacks might be common practice in the industry and generally lead to minimal harm for rivals. Therefore, aggressive attacks need to be salient, and saliency means investing more resources implying a higher financial commitment. This situation is very clear at the marketing mix level, which calls for tactical decisions and actions (Borden, 1984; McCarthy, 1978).

To illustrate, a competitive attack could imply developing changes to the product, adjusting pricing features, decisions about distribution channels, and developing a communication strategy. All of these require financial outlays and all of them must be coordinated to obtain or maintain a desired positioning. Recall that all the marketing mix

variables have to be adjusted at the same time towards the same position, because they are interconnected (Borden, 1984). However, the way actions at the marketing mix level are deployed would seem to imply aggressiveness, because Ferrier's (2001) dimensions of a competitive attack are all simultaneously affected. The number of actions of price, communication, distribution channels, and product configuration, despite the composition of the mix, are the volume of the attack. The time taken during the deployment of the total marketing mix actions is the duration of the attack. The composition of the mix used during the attack represents its complexity, and finally the extent to which the type, time, order, and magnitude of the marketing mix actions deployed during the attack resemble those of previous attacks refers to attack unpredictability.

The first and last dimensions of competitive aggressiveness (volume and unpredictability) will not be considered in my study. First, volume would be a single count of advertising pieces, which does not add to the purpose of using the marketing mix tool. For unpredictability, determining detailed changes from one competitive attack to the other requires analyzing detailed content of advertising texts, which takes the study to a level beyond the fundamental interest in focusing on tactical marketing actions – product, pricing, promotion, and distribution. For example, my interest is in how a firm reacts when a competitor includes references to product features in its advertising, but I am not concerned with the type of product features that are included in the advertising.

The notion is similar to that used previously in competitive dynamics research (Baum & Korn, 1996; Ferrier, 2001; Ferrier et al., 1999; K. G. Smith et al., 2001). The main differences are that the one proposed here is limited to the tactical level, instead of the strategic level, and that I propose the use of the marketing mix to track competitive

behavior since analyzing the four components of the mix together is essential (Borden, 1984; McCarthy, 1978).

When a firm focuses on a single or a small number of market segments it centers a lot of its resources on growing its segments and defending them, since they become the company's spheres of influence and become the territory to be defended. That is an expected behavior since the firm's revenues derive from those segments.

When different multimarket competitors have dominant market positions in different markets among those in which they overlap, it can be said that spheres of influence exist (Edwards, 1955; McGrath et al., 1998), but when a firm does not compete in multiple markets, its lone market is its sphere of influence even if its market share is well below the leader's. In a situation like this, aggressive competitive movements, either as attacks or as responses, can be expected when the firm feels threatened. In addition, when a firm competes in different market segments and the competitors it meets in each market are unique to that market, no multimarket contact exists so there is no mutual forbearance (Bernheim & Whinston, 1990). As such, the firm has no reason to forbear and will act aggressively, either attacking or responding to attacks, in its markets. In this situation (without the possibility of mutual forbearance) an aggressive attack from the marketing mix perspective would require several long-lasting advertising placements on the media, including information about the product, the price and the distribution channels.

3.1 Expected behavior

The mutual forbearance Hypothesis suggests that as multimarket contact increases, intensity of competition of rivalry among multimarket competitors decreases

(Bernheim & Whinston, 1990; Feinberg, 1985), which implies a positive relationship between multimarket contact and performance, for which several researchers have found strong support (Yu & Cannella, 2013). The mutual forbearance Hypothesis suggests the existence of equilibrium in the market as a consequence of multimarket contact (Feinberg, 1985; Heggestad & Rhoades, 1978; Hughes & Oughton, 1993; Kim & Singal, 1993; Scott, 1982). However, firms still have to act. Mutual forbearance simply suggests that the actions taken by firms will be intentionally planned so as not to provoke increased rivalry with each other. It also can be the consequence of firms moving in the same direction as competitors in order to preserve the equilibrium, which, finally, means moving forward, spending resources and at the end maintaining the same position.

Following the logic of mutual forbearance, when a firm decides to place a new ad in the media, changing an existing one, it confronts a potential market-equilibrium breaker, which can be neutralized if multimarket competing firms also place new ads. The same can happen when a firm decides to change advertising complexity reducing or adding product, price and distribution features placed on it, therefore multimarket competing firms may change their advertising complexity to neutralize the competitors' move and as a means to maintain or restore equilibrium. Additionally, and following the same logic, in a high multimarket contact setting, firms' advertising features are likely to resemble each other in the sense that firms do not want their advertising features to contrast sharply with multimarket rivals in order to preserve mutual forbearance. In the same sense and in consequence with existing theory, in a high multimarket contact setting firms' advertising features may move away from price emphasis, because price movements, such as cuts are likely to lead to disruptive price wars (Kang et al., 2010),

and stable prices are a consequence of mutual forbearance (Bernheim & Whinston, 1990). In consequence, the four following predictions are developed:

H1a: When a firm launches a new ad, its multimarket rivals are more likely than its single-market rivals to launch new ads too.

H1b: When a firm changes its ad complexity, its multimarket rivals are more likely than its single-market rivals to change their ad complexity in the same direction.

H1c: When multimarket contact is high, a firm's advertising is likely to emphasize features that it shares with its multimarket rivals.

H1d: When multimarket contact is high, a firm's advertising is less likely to emphasize price and more likely to emphasize product and/or place.

3.2 Advertising characteristics

An aggressive advertisement will harm competitors' performance when the ad is introduced, but as the duration of the advertisement prolongs and ad repetition increases, its effectiveness will begin to diminish because of saturation (Schumann, Petty, & Clemons, 1990). Since firms in a single market need to protect that market, and letting ad effectiveness decrease because of excessive exposure is not a desired outcome, such firms will change ads on a regular basis before saturation occurs. This suggests that being aggressive through ad exposure duration requires that the ad campaign's timing is short enough to avoid saturation. Note that this prediction differs from Ferrier's (2001) prediction about competitive attacks – the greater the duration the more aggressive the movement.

In a situation characterized by multimarket contact, intensity of competition will lessen for reasons attributable to mutual forbearance (Bernheim & Whinston, 1990; Edwards, 1955; Feinberg, 1985). That is, lower competition arises because firms know each other very well and know their spheres of influence, their interdependencies, their capabilities (Alexander, 1985; Feinberg, 1985; Heggestad & Rhoades, 1978). However,

despite the previous, firms keep on competing on a day-to-day basis because they have to maintain communication with their customers. They keep implementing tactical actions in distribution channels and make product and price adjustments, but do so in ways that permits the equilibrium to persist. It may seem that firms are aggressive when exerting marketing mix movements since such movements reflect strategy implementation (Borden, 1984), but firms may be careful in selecting what moves to make and how to make them in order to appear aggressive while not actually being aggressive. This avoids disrupting the equilibrium brought by mutual forbearance as a result of multimarket contact. The situation I describe is one that appears to be aggressive, but upon closer examination reflects coordination and mutual forbearance among the multimarket rivals. For example, an advertising campaign that persists for a long time may seem to be very aggressive because of its duration, is actually less aggressive because as ad repetition increases, effectiveness starts to diminish because of saturation (Schumann et al., 1990). Firms that compete in multimarket settings tend to mutually forbear and seek to manage the intensity of competition (Baum & Korn, 1996; Bernheim & Whinston, 1990; Chen, 1996; Edwards, 1955; Feinberg, 1985). As such, the duration of ads placed on the media will tend to be long enough to reduce their effectiveness, and as such the firm can avoid disturbing the equilibrium established by mutual forbearance. The long ad duration will compensate for the disrupting effects of the early stage of ad placement when it actually is effective due to novelty (Schumann et al., 1990). From this I derive the following prediction:

H2a: The relationship between the level of multimarket contact and focal firm's ad placement duration will be positive.

Product differentiation is a well-known marketing strategy that consists of distinguishing a product or brand from competitors' products or brands by changing or highlighting an attribute that is meaningful, relevant, and valuable for consumers (Carpenter, Glazer, & Nakamoto, 1994; Kotler & Armstrong, 2010; Porter, 1985). In the same line, highlighting several attributes when differentiating a product may send a confusing message to consumers, since where the real value is will not be clear for audiences that will see products as trying to be good on many dimensions but being outstanding in none (Dickson & Ginter, 1987; Kotler & Armstrong, 2010; Nowlis & Simonson, 1996; Simonson, Carmon, & O'Curry, 1994; W. R. Smith, 1956). In addition, there is empirical evidence showing that as the emphasis on future sales rises, the optimal number of product features decreases, reflecting feature fatigue (Simonson et al., 1994; Thompson, Hamilton, & Roland, 2005). A product (or advertisements about a product) that emphasizes several remarkable features is a complex one, parallel to competitive attacks comprised of several different types of actions (Ferrier, 2001). An advertising piece that contains information about product features, price features and distribution features is a compound of tactical information in the full sense of the 4 p's of the marketing mix and it reflects complexity.

According to Ferrier (2001), more complex attacks are more aggressive than those less complex, but theory and evidence from marketing (Kotler & Armstrong, 2010; Thompson et al., 2005) implies otherwise in the case of advertisements. In that context, being less complex and highlighting fewer features is likely to be more effective than being more complex and presenting a larger set of features. In the same sense, an advertisement full of marketing mix features could be thought of as very aggressive from

Ferrier's (2001) perspective but in fact be not very aggressive according to marketing theory. In that line of reasoning, a firm that has to defend its sphere of influence or only source of revenue would be prone to be aggressive with its advertising by trying to avoid complexity, and providing much focused advertising. While complex attacks are aggressive according to existing theory (Ferrier, 2001), but from the perspective of a consumer a complex advertisement – an ad full of product, price, and distribution features simply falls victim to feature fatigue (Thompson et al., 2005), reducing its effectiveness. Because it is not be clear for audiences where the product's value proposition is (Kotler & Armstrong, 2010), the impact of such an ad on competitors performance is minimal. In that same sense, multimarket contact firms that are benefiting from a reduced intensity of competition as a consequence of mutual forbearance have an incentive to continue on placing complex advertising pieces that tend to preserve the established equilibrium and its benefits. The previous reasoning leads me to the following prediction:

H2b: The relationship between the level of multimarket contact and focal firm's ad complexity will be positive.

In this chapter I proposed a model that focuses on two competitive actions at the tactical level and their behavior in a multimarket contact setting: advertising complexity and advertising duration, after testing for an expected behavior according to marketing theory. The research framework developed in this chapter in order to propose the mentioned model, definitely will help to understanding how firms under a multimarket contact setting deploy competitive movements at the marketing mix's tactical level without disrupting mutual forbearance.

In the next three chapters I will focus on explaining the methods that I will follow in order to test the hypotheses developed in the present chapter, as well as to present the results and relevant conclusions according to the findings.

CHAPTER 4

METHODS

4.1 Research context

To conduct this research I developed a study based on the Colombian car industry, a dynamic industry with, as at 2013, 34 different brands and 217 car models. The 34 brands belong to 23 parent companies that own them, and have a presence in 10 well-defined segments as can be seen in Table 2.1. For the purpose of this study, each of these segments represents a market. For capturing all the tactical movements, I analyzed car advertisements for the years 2010, 2011, 2012, and 2013 in *Semana* magazine, the one with the greatest distribution in Colombia, not only counting the number of ads placed every week by each parent, but also analyzing the content of the advertising looking for key elements that reflect the other 3 p´s of the marketing mix. In this context each parent represents a competitor as can be seen in Table 4.1

Insert Table 3 about here

The Colombian car industry, for its size, has a good number of competitors, with a wide variety of representation in segments as presented in Table 4.2. These market segments are based only on product characteristics; geography is not a component of the market, because competitors have a presence country-wide and they advertise and communicate their brands in media that covers the whole national territory

.

Insert Table 4 about here

In the Colombian market it is very common that firms invest much money in printed magazines to advertise their different corporate branded vehicles and their characteristics and communicate information about distribution channels, financing and price features. These factors make for a good setting to capture multimarket contact and marketing mix deployment. In light of that, this is a proper setting with multimarket firms with extended interdependence because the same competitors are likely to encounter each other in several product markets. Additionally, even though products are not identical, within segments, vehicles tend to have the same features, causing a certain level of product homogeneity. In this setting there are also competitors of different sizes, with different performance, and different levels of multimarket contact, which permits this setting to have heterogeneity in the dependent and independent variables. The condition of full observability for the setting is also met since vehicle features, price, and distribution channels are extensively published in Colombia, and therefore are in the public domain. Finally, this setting permits me to have longitudinal data at a fairly disaggregated level.

4.2 Data sources

The data required for this study were gathered from different sources: from *Semana* Magazine, the advertising pieces which include information about product, price and distribution features; from *Publicaciones Semana* - the holding company that owns the magazine, I gathered information about car advertising expenditure; from the *Registro Único Nacional de Tránsito* – RUNT (Colombian National Transit Registry) I gathered data about car sales (in number of units) for each model sold in the country; from

Asociación Nacional de Medios de Comunicación – ASOMEDIOS (Colombian Media National Association) I gathered information about total advertising expenditure by car companies in the country; and finally, from SOFASA, a leading car manufacturer in Colombia and one of the oldest in the Country, I gathered the categories and characteristics for market segments.

I created the study's final datasets in two different stages. First by identifying all the brands and their car models advertised in *Semana* magazine in the years 2010, 2011, 2012 and 2013. Then, I classified each reference into one market segment according to the advertisement itself. After that, I created a questionnaire that was sent to marketing experts in different Colombian universities asking for the most determining elements, among marketing mix features present in printed car advertising. With the information from the questionnaire , I reviewed each advertising piece in *Semana* magazine for the years 2010, 2011, 2012, and 2013 , and created the complexity variable. I calculated advertising duration by checking each advertisement for each car model in *Semana* magazine for the years 2010 to 2013, noting when a particular ad was first introduced and how many times and for how many weeks it was used. Market share was calculated from individual and aggregated sales information. I also included advertising expenditure in *Semana* magazine for each car model, as well as country-wide advertising expenditure for each car model. After the creation of this first dataset, I made important changes in order to suit the study's needs and moved to the second stage, which I began by changing the data structure from one observation per brand-reference-market to one observation per parent-market-week. Data have to be consolidated at the parent level and at the market level to test the hypotheses I outlined in Chapter three. In light of that, I created a

new variable – parent, because a number of the brands I identified in the first stage were owned by other brands at the moment the dataset was being created. Table 4.3 shows the procedure I followed in the statistical package in order to group those brands owned by other brands into parent brands.

Insert Table 5 about here

While creating the dataset in the second stage, I had to limit the sample to one observation per parent-market-week, which mainly made me focus on two large changes. First, I identified that there was some advertising that was brand advertising instead of car reference advertising, causing problems because it was not targeted at any market at all. Thus, in order to overcome this problem I replicated the ad across all markets that the brand, not the parent, operates in and weighted each at 1/the number of markets the brand operates in. Second, I also experienced some trouble because a small handful of parent-market-weeks involved more than 1 advertisement for that parent-market-week; thus, I finally ended up with 1081 ads that resulted in a single ad per parent-week, 37 with 2 ads and 5 with 3 ads.

The original dataset from stage one had 205 weeks covered. However, I needed to collect data to use for control variables, for which I concentrated on sales and advertising in Colombian Pesos. The approach I used was to capture 10-week moving sums of units sold, both for the parent-market and for the parent overall as well, and for Colombian Pesos invested in marketing for the parent-market and Colombian Pesos invested in marketing for the parent overall. I ended up with two datasets with the lagged

variables and starting in week 11. I will explain these two datasets in the section titled Measures.

4.3 Procedures

To test the six hypotheses stated in this dissertation, I used different approaches as described in the following paragraphs.

For testing hypothesis H1a, which states that when a firm launches a new ad, its multimarket rivals are more likely than its single-market rivals to launch new ads too, I will structure the dataset as an event-history dataset. Every time any firm in a given market launches an ad, I'll create one observation per week for each rival in the market. The outcome variable will be "response" – a zero-one variable that is coded zero for each week that a rival does not launch an ad, and one for the week in which a rival launches an ad. When any rival launches an ad, it will end the entire set of initiator-respondent pairs and then will create a new set of observations with the responding ad as initiator and all other firms in the market as responders. The previous information suggests a survival approach, thus, a Cox survival analysis is going to be used. I will test this hypothesis following five different approaches. The first one without discriminating whether ads are new or repeated. The second one keeping new ads from the initiator and considering either response (new or old ad). The third keeping only new ads from the initiator and new ads from the responder. The fourth one keeping new ads from initiators and only old ads as responses from responders. Finally, I will use a competing risk model that considers both new and old ads as responses. In order to make the distributions of the control variables more normal, I will make log transformations calculating the logarithm

of the addition of 1 and the variable and use the result to replace the original score of the variable.

Hypothesis H1b states that when a firm changes its ad complexity, its multimarket rivals are more likely than its single-market rivals to change their ad complexity in the same direction. Since changes in ad complexity do not occur randomly, in fact, they are consciously intended, I will use a two-stage Heckman Selection Model, where the first stage models the likelihood of response and the second stage models, given a response, what the characteristics of the response might be. As with the previous hypothesis, in order to make the distributions of the control variables more normal, I will make log transformations calculating the logarithm of the addition of 1 and the variable and use the result to replace the original score of the variable. Then, I will create a complexity distance measure first squaring the difference between ad complexity of the initiator and ad complexity of the responder, and second calculating the square root of that squared term in order to have positive values between 0 and 1.

Hypothesis 1c predicts that when multimarket contact is high, a firm's advertising is likely to emphasize features that it shares with its multimarket rivals. Similar to the case of H1b, for testing this Hypothesis, I will use a Heckman Selection Model, but prior to running any test I will make log transformations of the control variables in order to make their distributions more normal, calculating the logarithm of the addition of 1 and the variable and using the result to replace the original score of the variable. I will create an advertisement distance measure by first creating four variables squaring the differences between the price, product, place and complexity of the initiator and the responder. I will then create a fifth variable which is the sum of the previous four

variables and a sixth variable, which is the square root of the fifth. This sixth variable will be used as advertisement distance measure and the other variables will be discarded.

Hypothesis 1d states that when multimarket contact is high, a firm's advertising is less likely to emphasize price and more likely to emphasize product and/or place. For testing this Hypothesis, I will use OLS regressions in three different relationships: first, using multimarket contact as a predictor of price; second, using it as a predictor of place; and third, using it as a predictor of product. For acquiring more clarity about the relationship stated in the hypothesis, I am going to run an additional regression where multimarket contact plays the role of predictor of brand.

The last two hypotheses, H2a and H2b, which state that the relationship between the level of multimarket contact and the focal firm's ad placement duration (H2a) and complexity (H2b) will be positive; will be tested using OLS regressions.

4.4 Sample

Parents, brands and car models included in the study are those that advertise in *Semana* Magazine, which is the entire range of standardized commercial brands intended for individual purchase that were sold in Colombia during the years 2010, 2011, 2012, and 2013.

Since some car models are introduced and withdrawn from the market at a very fast pace, year selection was intentionally set as the last four years to aid the stability of information. This is because in these four years there was a reduced number of model withdrawals.

4.5 Measures

In what follows, I am going to present the measures I am using in this study and, later and for some cases where needed, to explain the building process to create them.

4.5.1 Independent variables

- Multimarket contact: number of multimarket rivals that the parent meets in the market divided by the number of rivals that the parent meets in the market.
- New ad:

4.5.2 Dependent variables

- Complexity: percentage of elements present in ad piece according to survey.
- Price: percentage of elements present in ad piece according to survey.
- Place: percentage of elements present in ad piece according to survey.
- Product: percentage of elements present in ad piece according to survey.
- Brand: 1 if 1/ the number of markets the brand competes in < 1. Otherwise 0.
- Duration: the week of the observation, ranging from 1 to 205.

4.5.3 Control variables

- Total number of units sold by the initiator in the market during previous 10 weeks: the sum across brands and references.
- Number of units sold by the initiator across all markets during the past 10 weeks: the sum across brands and references.
- Sum of Colombian Pesos invested in *Semana* by the INITIATOR in the market during the previous 10 weeks: ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.

- Sum of Colombian Pesos invested in *Semana* by the INITIATOR across all markets during the previous 10 weeks: ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
- Total number of units sold by the responderin the market during previous 10 weeks: the sum across brands and references.
- Number of units sold by the responder across all markets during the past 10 weeks: the sum across brands and references.
- Colombian Pesos invested in *Semana* by the RESPONDER in the market during the current week: ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
- Sum of Colombian Pesos invested in *Semana* by the RESPONDER across all markets during the previous 10 weeks: ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.

I started with the creation of a dataset that includes the full 205 weeks covered by the selected issues of *Semana*. I named this dataset as PMW and the level of analysis included in this dataset is the parent-market-week, and the variables and their measures are presented in Table 4.4.

Insert Table 6 about here

Next, I created a dataset based on the previous one, named PMW2, but covering the last 195 weeks of the previous dataset and having the level of analysis of the parent-market-week. The only difference between this dataset and the previous one is that this one has lagged control variables and therefore only includes 195 weeks as the first 10

weeks are used only to estimate control variables – sums of ad expenditures and units sold. Table 4.5 presents the list of variables and measures for PMW2.

Insert Table 7 about here

I also created a dataset that I called PROMOTION, covering the entire 205 weeks of the dataset, and it has the level of analysis of the advertisement run in *Semana*, with one observation per time the ad was run in *Semana*. Table 4.6 presents the list of variables and measures for PROMOTION.

Insert Table 8 about here

Additionally I created a dataset to report multimarket contact, which is a constant across all weeks in the dataset. The level of analysis is the parent-market. It was named MMC, and it is shown in Table 4.7.

Insert Table 9 about here

I needed to create a dataset with only a single observation representing the matrix of data used to generate measures of MMC. It is accessed as a vector, but structured as an array with 11 columns (one column for each market, plus an additional column (11) for the total number of markets the firm operates in). It also has 24 rows, one per parent company plus one (24) for the total number of firms operating in the market. Using the formula pm(((p-1)*11)+m) where p is the parent and m is the market, I determined whether or not the parent operates in the market. MMC will be 1 if the parent competes in the market and zero otherwise.

Finally, I created the dataset that I used the most: the event history dataset – EVENTHIST. Following, I present a step-by-step description of the creation of the EVENTHIST dataset:

1. The PROMOTION dataset was collapsed by market parent week.
    a. The maximum values of place, price, product, complexity, and brand were retained
    b. The minimum value of week_ (the number of times the ad was run, at this running) was retained.
    c. The data was merged by parent-market-week.
    d. The original variable names were retained
2. The PMW dataset was sorted by market-week-parent.
    a. The data was set by market-week.
    b. A 23-unit retained vector was generated, coding whether or not the parent ran an ad that week. Missing values for all firms not in the market were inserted. This is meant to be the attack vector. Additionally, ATTACKWEEK was retained to indicate the week that the vector represents. If at the end of the first week of data no ad has been run, the vector continues on to the second week and so forth until at least one firm runs an ad for that market.
    c. A 23-unit response vector with missing values for all parents not in the market was created. It was coded for the response observations with 1 for firms that run ads and zero otherwise.
        i. Variables market_, parent_, and week were retained to later add data for both, initiator and target.

ii. Finally, the attack and response vectors were jointly processed.

1. Variables market and week were retained as they are in PMW, and ATTACKWEEK was maintained as a retained value.
2. The response vector was checked to see if any firm responded that week; if yes, the order was to wait until all observations have been processed and then code newresponse=1 and otherwise zero.
3. For each attack one response observation was created including r_parents that also ran ads in attackweek.If r_parent responded with an ad in week, it was coded with a 1, zero otherwise.
4. Time was calculated as week-attackweek, and the observation was set as output
5. After processing, if any firm ran an ad, newresponse=1 was set and the attack vector was replaced with the response vector. If no firm ran an ad, newresponse=0 was set, the attack vector and attackweek were retained and then proceeded directly to the next week, replacing the response vector.

d. The variables i_parent, market_, and week in the EVENTHIST dataset were used, and information about the attacks and responses was added (the initiator and responder advertising variables).

e. I needed a unique identifier for response panels. That is, the observations have to be linked with an identification. I generated such an ID by sorting the data by market_, i_parent, parent, and week. I set the data by market_,

i_parent, parent, and week. If newresponse=1, the sequence ID was increased by 1.

3. Given the dataset above, I set the PROMOTION dataset established first and renamed all of its variables to i_ (initiator), including i_parent. I renamed week to attackweek. Then I merged it with the dataset above by market_, i_parent_, and attackweek.
4. I replicated step 3 for responders by renaming the advertising variables to r_ (responder) but parent and week were kept as they are. Then, I merged it with the dataset above by market, parent, and week.

Table 4.8 presents the list of variables and measures for EVENTHIST.

Insert Table 10 about here

Ad complexity is a central part of this study and is a central part of the variables of the previous datasets. Following is a detailed description of the way the variable was obtained:

First I created a questionnaire that was sent to 33 marketing experts in different Colombian universities. Taking into consideration that the ad, per se, is about the promotion part of the marketing mix, the experts were asked what elements of a car advertisement reflect product, price and place. I used three simple multiple-response questions regarding each of the three variables. As response options, I include the most common elements that could be observed during the construction of the advertisement listing from *Semana* magazine, for product, I included options such as the whole car, a detailed part of the car, car accessories, explicitly written technical characteristics and

adjectives such as comfort and elegance. For price, I provided options such as price, amount of initial payment, discounts, payment plans (with no rates) and financing plans (with rates).. For place I captured and provided detailed information about dealer addresses, cities where the car is distributed, explicit invitation to visit a dealer, contact information, and number of dealers.

Second, I calculated percentages for each response option for each marketing mix variable with SPSS frequency tables, which I then used for reviewing each of the advertisements and checked for presence of the elements asked for in the survey, assigning to each element the percentage obtained from the frequency tables in a way that an advertisement that has all the elements referring to product will receive a 100% (1) in that variable and the one that has none will have a 0% (0). The same was done with the other marketing mix variables, then, at the end of this process, I had three different percentages each representing product, price and place respectively.

Third, I surveyed 350 people at car dealers from all the brands present in the database about the importance that each of the marketing mix variables, excluding promotion, has on their buying decision process. For 46% of surveyed people, product and all its features was the key variable on their buying decision process, followed by price with 36%, and finally place with 18%.

Finally, for calculating complexity, I used the final three percentages obtained in the second step – one for product, one for price, and one for place, and multiplied each one by the percentage each one received in terms of importance within the buying decision process in the third step and added the final numbers together to generate a

result between 0% (0) and 100% (1), indicating that the higher the number the more complex the advertisement piece.

CHAPTER 5

RESULTS

Table 5.1presents means, standard deviations, medians and ranges, while Table 5.2 shows correlations. The correlation matrix shows no high correlations between variables that might bias the estimates, suggesting that multicollinearity is unlikely to be of concern. For the case of *mmc_newad* and *i_newad* the correlation seems quite high (0.916), but it makes sense since *mmc_newad* is the interaction term between *mmc* and *i_newad* – level of multimarket contact and new ad on the part of the initiator respectively .

Insert Table 11 about here

Insert Table 12 about here

5.1 Hypothesis Tests

5.1.1 Expected behavior

Hypothesis 1a predicts that when a firm launches a new ad, its multimarket rivals are more likely than its single-market rivals to launch new ads too. The wording of the Hypothesis and the data itself suggest a survival approach, thus a Cox survival analysis was considered and implemented for testing this hypothesis. Different approaches were necessary to develop in testing H1a: the first one without discriminating whether ads are new or repeated; the second one keeping new ads from the initiator and considering either

response (new or old ad); the third keeping only new ads from the initiator and new ads from the responder; the fourth one keeping new ads from initiators and only old ads as responses from responders. Finally, I used a competing risk model that considered both new and old ads as responses.

Prior to Hypothesis testing I made log transformations of some control variables in order to make their distributions more normal. I calculated the logarithm of the addition of 1 and the variable and used the result to replace the original score of the variable.

As can be seen in Table 5.3, without discriminating whether ads are new or old, five of the ten control variables are not significant as follows: new ad on the part of the initiator, the interaction between multimarket contact and new ad on the part of the initiator, units sold by the parent initiator firm in the previous ten periods, Colombian pesos expended by the initiator firm in the previous ten periods, and Colombian pesos expended by the initiator parent firm in the previous ten periods. Multimarket contact is significant ($p < .05$) and has a hazard ratio of 0.736, which means that multimarket contact decreases the probability of non-single-market rivals to respond with ads by 26.38%. In the same line, number of units sold by the initiator in the previous ten weeks decreases the probability of non-single-market rivals to respond with ads by 4.74% because it has a hazard ratio of 0.952 ($p < .001$). The other four control variables were significant and all of them increase the hazard rate of response of a non-single market firm when a multimarket rival launches an ad. Such is the case of sold vehicles by responder in the previous ten weeks (HR = 1.060; $p < .001$); sold vehicles by parent firm responder in the previous ten weeks (HR = 1.149; $p < .001$); Colombian pesos expended

by responder in the previous ten weeks (HR = 1.071; p < .001); and Colombian pesos expended by parent firm responder in the previous ten weeks (HR =1.033; p < .001). Table 5.3 shows the results when not discriminating whether the response involves an ad that is new or old.

Insert Table 13 about here

As shown in Table 5.4, keeping new ads from initiator and modelling the response as any, whether old or new ad, multimarket contact becomes non-significant and the same three control variables from the previous model also become insignificant. Those variables are units sold by the parent initiator firm in the previous ten periods, Colombian pesos expended by the initiator firm in the previous ten periods, and Colombian pesos expended by the initiator parent firm in the previous ten periods. Number of units sold by the initiator in the previous ten weeks decreases the probability of non-single-market rivals to respond with any ad when attacked by a multimarket rival with a new one by 6.16% (HR=0.938; p < .01). The other four control variables were significant and all of them increase the hazard rate of response, with any type of ad, of a non-single market firm when a multimarket rival launches a new ad. Such is the case of sold vehicles by responder in the previous ten weeks (HR = 1.050; p < .01), sold vehicles by parent firm responder in the previous ten weeks (HR = 1.167; p < .001), Colombian pesos expended by responder in the previous ten weeks (HR = 1.072; p < .001); and Colombian pesos expended by parent firm responder in the previous ten weeks (HR = 1.038; p < .001). Table 5.4 shows the results when keeping new ads from the initiator and response as any ad (new or old).

Insert Table 14 about here

Table 5.5 shows that keeping new ads from initiators and new ads from responders, multimarket contact becomes non-significant and five control variables are not significant. These variables are new ads on the part of the initiator, the interaction between MMC and new ads on the part of the initiator, units sold by the parent initiator firm in the previous ten periods, Colombian pesos expended by the initiator firm in the previous ten periods, and Colombian pesos expended by the initiator parent firm in the previous ten periods. Number of units sold by the initiator in the previous ten weeks decreases the probability of non-single-market rivals to respond with new ads when attacked by a multimarket rival with a new one by 10.23% because it has a hazard ratio of 0.897 ($p < .001$). The other four control variables were significant and three of them increase the hazard rate of response with new ads, of a non-single market firm when a multimarket rival launches a new ad. For the case of sold vehicles by responder in the previous ten weeks it does it by 35.99% (HR = 1.359; $p < .001$); similarly, for the case of Colombian pesos expended by responder in the previous ten weeks, it does it by 4.91% (HR = 1.049; $p < .001$); and finally for the case of Colombian pesos expended by parent firm responder in the previous ten weeks it does it by 4.70% (HR = 1.047; $p < .001$). Sold vehicles by parent firm responder in the previous ten weeks decreases the probability of non-single-market rivals to respond with new ads when attacked by a multimarket rival with a new one by 18.56% because it has a hazard ratio of 0.814 ($p < .001$). Table 5.5 shows the results when keeping new ads from initiator and new ads from responders.

Insert Table 15 about here

As shown in Table 5.6, keeping new ads from initiators and old ads from responders, multimarket contact becomes significant at the 0.01 significance level and has a hazard ratio of 0.558 ($p < .01$), which means that multimarket contact decreases the probability of non-single-market rivals to respond with old ads to a multimarket rival that launches a new ad by 44.14%. Six control variables are non-significant; they are new ads on the part of the initiator, interaction between MMC and new ads on the part of the initiator, units sold by the initiator firm in the previous ten periods, units sold by the parent initiator firm in the previous ten periods, Colombian pesos expended by the initiator firm in the previous ten periods, and Colombian pesos expended by the initiator parent firm in the previous ten periods. Number of units sold by the responder in the previous ten weeks decreases the probability of non-single-market rivals to respond with old ads when a multimarket rival launches a new one by 4.84% because it has a hazard ratio of 0. 951 ($p < .001$). The other three control variables were significant and all of them increase the hazard rate of response with old ads, of a non-single market firm when a multimarket rival launches a new ad. For the case of sold vehicles by parent firm responder in the previous ten weeks it does it by 44.23% (HR = 1.442; $p < .001$); for the case of Colombian pesos expended by responder in the previous ten weeks it does it by 8.63% (HR = 1.086; $p < .001$); and for the case of Colombian pesos expended by parent firm responder in the previous ten weeks it does it by 2.79% (HR = 1.027; $p < .01$). Table 5.6 shows the results when keeping new ads from initiators and old ads from responders.

Insert Table 16 about here

Finally, the odds for a non-single market firm to respond to a new ad launched by a multimarket rival with an old ad, instead of not responding at all, are significant ($p < .01$), and multimarket contact has a decreasing effect on such odds ($b = -0.570$) given the control variables in the model. In contrast, the odds for a non-single market firm to respond to a new ad launched by a multimarket rival with a new ad, instead of not responding at all, are non-significant ($p = 0.868$), which in turn does not give support to Hypothesis H1a. Table 5.7 presents the results of the competing risk model considering both, new and old ads as responses.

Insert Table 17 about here

Hypothesis 1b predicts that when a firm changes its ad complexity, its multimarket rivals are more likely than its single-market rivals to change their ad complexity in the same direction. Prior to test this Hypothesis, I made log transformations of the control variables in order to make their distributions more normal. I calculated the logarithm of the addition of 1 and the variable and used the result to replace the original score of the variable. Then, I created a complexity distance measure: first I squared the difference between ad complexity of the initiator and ad complexity of the responder, and then calculated the square root of that squared term in order to have positive values between 0 and 1.

As stated in the Methods section, I decided to use the Heckman Selection Model to test this Hypothesis. Table 5.8 shows that the error terms have a very strong negative correlation ($rho = -1.000$), suggesting that firms that are less likely to have multimarket contact, are more likely to change their ad complexity in the same direction

than a firm that has changed its ad complexity. The result was just the opposite of what I was predicting, which, in turn, does not give support to Hypothesis 1b.

Insert Table 18 about here

Hypothesis 1c predicts that when multimarket contact is high, a firm's advertising is likely to emphasize features that it shares with its multimarket rivals. As in the previous Hypothesis, before testing H1c, I made log transformations of the control variables in order to make their distributions more normal. I calculated the logarithm of the addition of 1 and the variable and used the result to replace the original score of the variable. Then, I created an advertisement distance measure: first I created four variables squaring the differences between the price, product, place and complexity of the initiator and that of the responder. Then I created a fifth variable which is the sum of the previous four variables, followed by the creation of a sixth variable, which is the square root of the fifth. Finally I kept the sixth variable as the advertisement distance measure and discarded all other five.

Similar to the case of H1b, for testing this Hypothesis I used the Heckman Selection Model and the results are shown in Table 5.9. The error terms have a strong positive correlation (rho = 0.673), suggesting that firms that are more likely to have multimarket contact, are more likely to emphasize features that they share with their multimarket rivals, just as predicted by Hypothesis 1c, thus, giving support to it.

Insert Table 19 about here

Hypothesis 1d predicts that when multimarket contact is high, a firm's advertising is less likely to emphasize price and more likely to emphasize product and/or place. For testing this Hypothesis I ran three different OLS regressions: the first one using multimarket contact as a predictor of price; the second one using multimarket contact as a predictor of place; and the third one using multimarket contact as a predictor of product. I also ran an additional regression using multimarket contact as a predictor of brand.

As can be seen in Table 5.10, multimarket contact is non-significant (b= -0.057; ns) as a predictor of competitor's advertising emphasizing price. The following control variables were non-significant at the 0.05 significance level: total number of units sold by the parent in the market during previous 10 weeks (b = 0.000; ns), number of units sold by the parent across all markets during the past 10 weeks (b = -0.000; ns), and sum of Colombian Pesos invested in *Semana* by the parent across all markets during the previous 10 weeks (b = -0.001; ns); while sum of Colombian Pesos invested in *Semana* by the parent in the market during the previous 10 weeks was significant (b = 0.004; $p < .001$). This model explains 1.16% of the variance in competitor's advertising emphasizing price, and multimarket contact's contribution to that variance is not statistically significant as predicted in H1d, although this does not mean support for it.

Insert Table 20 about here

Table 5.11 shows that multimarket contact is non-significant at the 0.05 significance level (b = 0.068; p = 0.070) as a predictor of competitor's advertising emphasizing place. The following control variables were non-significant at the 0.05 level: total number of units sold by the parent in the market during previous 10 weeks (b =

0.001; ns), Colombian Pesos invested in *Semana* by the Parent in the market during the previous 10 weeks (b = 0.001; ns), and sum of Colombian Pesos invested in *Semana* by the Parent across all markets during the previous 10 weeks (b = 0.003; ns); while number of units sold by the parent across all markets during the past 10 weeks was significant (b = 0.078; p < .001). This model explains 18.70% of the variance in competitor's advertising emphasizing place, but multimarket contact's contribution to that variance is not statistically significant, even though it's not that far.

Insert Table 21 about here

As can be seen in table 5.12, multimarket contact is a significant predictor of competitor's advertising emphasizing product (b = -0.171; p < .001), but an increase in MMC actually reduces competitor's advertising emphasizing product, which is not what was predicted in H1d. In this scenario the only control variable that was not significant at the 0.05 significance level is total number of units sold by the parent in the market during previous 10 weeks (b = 0.003; ns), and the only significant one that seems to be adding positively to the model is sum of Colombian Pesos invested in *Semana* by the Parent across all markets during the previous 10 weeks (b = 0.003, p < .05). This model explains 3.74% of the variance in competitor's advertising emphasizing product.

Insert Table 22 about here

If a variant of the Hypothesis is included, *when multimarket contact is high, a firm's advertising is less likely to emphasize price and more likely to emphasize brand*, it still does not receive enough support, because the model explains 18.86% of the variance

in competitor's advertising emphasizing the brand but multimarket contact's contribution to that variance is not statistically significant (b = -0.031; ns) as predicted, which can be observed in Table 5.13. In line with the previous four analyses, Hypothesis H1d does not receive support.

Insert Table 23 about here

5.1.2 Advertising characteristics

Hypothesis 2a predicts that the relationship between the level of multimarket contact and the focal firm's ad placement duration will be positive, and was tested running an OLS regression. As it can be observed in Table 5.14, this model explains 15.30% of the variance observed in ad duration, but multimarket contact, even though significant (b = -2.162; $p < .001$), appears to have a negative relationship with ad duration, suggesting that for every unit of increment of multimarket contact, ad duration is reduced by 2.162 units, thus, leaving Hypothesis 2a without enough support. Increases in ad duration are better explained by number of units sold by the initiator parent across all markets during the past 10 weeks (b = 0.398; $p < .001$).

Insert Table 24 about here

Hypothesis 2b predicts that the relationship between the level of multimarket contact and the focal firm's ad complexity will be positive. As H2a, this hypothesis was tested using an OLS regression, and its results, presented in Table 5.15, show that this model explains 4.55% of the variance observed in ad complexity with none of the control variables being significant; but multimarket contact, even though significant (b = -0.111; $p< .01$), appears

to have a negative relationship with ad complexity, suggesting that for every unit of increment of multimarket contact, ad complexity is reduced by 0.111 units, thus, not giving enough support to Hypothesis 2b.

Insert Table 25 about here

CHAPTER 6

CONCLUSIONS

Multimarket competition is a field that has received much attention (Chen, 1996; Gimeno & Woo, 1994, 1996; Jayachandran et al., 1999; Karnani & Wernerfelt, 1985) and has been studied from different perspectives: its antecedents (Baum & Korn, 1999; Fuentelsaz & Gómez, 2006; Gimeno, 2002; Gimeno & Woo, 1999; Henrich R. Greve, 2000; H. R. A. Greve, 2006; Helaine J. Korn & Baum, 1999; H.J. Korn & Rock, 2001; Varadarajan et al., 2001), its consequences (Feinberg, 1985; Heggestad & Rhoades, 1978; Hughes & Oughton, 1993; Kim & Singal, 1993; Scott, 1982; Yu & Cannella, 2013), and its measures and levels of analysis (Boeker et al., 1997; Chen, 1996; Evans & Kessides, 1994; Feinberg, 1985; Gimeno & Jeong, 2001; Hughes & Oughton, 1993; Jans & Rosenbaum, 1997; Scott, 1982; Singal, 1996). Although different approaches have been used to study multimarket competition, a view from a tactical perspective that reflects a more day to day rivalry has been lacking. Thus, I used such an approach in this dissertation, trying to analyze sets and sequences of actions as broad parts of tactical engagements among rivals, a marketing mix approach, in order to better understand the implications and characteristics of multimarket contact. In spite of the intentionality of the stated purpose, final results are not as pleasing as I wanted.

6.1 About the expected behavior

The first hypothesis on this set, H1a, states that when a firm launches a new ad, its multimarket rivals are more likely than its single-market rivals to launch new ads too. I

tested this hypothesis using different approaches as I described in the previous section of this dissertation. Without discriminating whether ads are new or old, results actually appear to support a relationship that works right in the opposite direction than the one I predicted, because multimarket contact decreases the probability of non-single-market rivals to respond with ads by 26.38%. Even though the rationale behind the hypothesis is strong enough to build the relationship I predicted, it also does make sense to find a relationship in the opposite direction, because it finally represents an expected behavior for a multimarket competitor according to multimarket competition theory, which is a reflection of the mutual forbearance hypothesis; because what I am finding here is a non-single-market firm that apparently does not want to engage in rivalry when another firm launches an ad and multimarket contact increases, in other words, intensity of competition lessens. Control variables related to responders such as units sold in the previous ten weeks, and Colombian pesos expended in the previous ten weeks, as well as the same two at the parent company level, increase the hazard rate of response of a non-single market firm when a multimarket rival launches an ad, which can be just a reflection of a firm acting in consequence to its own actions and their outcomes, instead of acting as a response to a rival. I found the same behavior across the two other approaches (keeping new ads from the initiator and response as any, and keeping new ads from the initiator and new ads from responders), reinforcing the possibility of firms acting as a response to the consequences of their own actions instead of responding to competitors' actions. Additionally to the previous cases, multimarket contact decreases the probability of non-single-market rivals to respond with old ads to a multimarket rival that launches a new ad by 44.14%, which taken in consideration with the results of the

third approach (keeping new ads from initiator and new ads from responders) does not give enough room to think about a firm responding at all to an ad launch from a multimarket rival, despite the type of ad. All these points appeared to be reinforced with the results of the competing risk model considering both, new and old ads as responses. The odds for a non-single market firm to respond to a new ad launched by a multimarket rival with an old ad, instead of not responding at all, are significant, and multimarket contact has a decreasing effect on such odds. This gives some room to think again that the new ad of the initiator has a deterrence effect that is causing the intensity of competition to lessen, with multimarket contact accentuating such effect, just like multimarket competition theory predicts.

Hypothesis 1b predicts that when a firm changes its ad complexity, its multimarket rivals are more likely than its single-market rivals to change their ad complexity in the same direction. Results suggest that firms that are less likely to have multimarket contact, are more likely to change their ad complexity in the same direction than a firm that has changed its ad complexity, just the opposite of what I predicted. Judiciously considering this results, a plausible explanation can be found to why firms that tend to have less multimarket contact actually follow others placing ads with the same orientation in terms of complexity. This is especially true if we refer to the rationale behind this hypothesis. When firms are multimarket competitors and they meet each other in product markets, they talk to the same audiences, they compete for the same audiences, and if they want to preserve a given equilibrium and not to disrupt it, they need to move their advertisings in the same directions, as predicted in the hypothesis (unfortunately without support). However, when another firm that does not meet those

other multimarket competing ones launches a new ad, it can actually start to differentiate in its market by emulating advertising tactics that others have successfully used in other markets, given that its audiences probably have not been exposed to that type of message yet. Another possible explanation is that given the competitive conditions faced by single-market firms or non-multimarket-competing firms, they feel the need to protect their only sphere of influence at any cost, which can mean following the steps of firms identified as leaders, including emulating their ad complexity.

Hypothesis 1c, the only one that received statistical support, predicts that when multimarket contact is high, a firm's advertising is likely to emphasize features that it shares with its multimarket rivals. This hypothesis captures a very interesting situation, because emulating competitors' moves can be perceived as being aggressive given that the effort of a firm to differentiate and build a competitive advantage is being torn apart. Thus, it would not be intelligent to act in such manner in a multimarket setting. Nevertheless, these results reinforce the suggestion that at a tactical level, such as the marketing mix level, competitive actions that appear to be aggressive and mutual-forbearance disrupters, are actually movements designed to preserve equilibrium while the firm appears to be active in the market in order to maintain its presence.

Hypothesis 1d predicts that when multimarket contact is high, a firm's advertising is less likely to emphasize price and more likely to emphasize product and/or place. Let us remember that for testing this hypothesis I ran four different OLS regressions: the first one using multimarket contact as a predictor of price; the second one using multimarket contact as a predictor of place, the third one using multimarket contact as a predictor of product, and, even though it was not necessary due to hypothesis scope, I also ran a

fourth regression using multimarket contact as a predictor of brand. In general this hypothesis did not receive support because statistical significance was lacking in three of the four regressions, and in addition, the amount of variance explained by the different models was considerably low. In the only regression that multimarket contact was statistically significant, which is the case of competitors' advertising emphasizing product, its effect was negative, reducing competitors' advertising emphasizing product. Even if I look only at the sizes and signs of the coefficients, I find that the relationship between multimarket contact and competitors' advertising emphasizing price is negative, which makes sense according to theory, but its size is smaller than the one for the relationship between multimarket contact and competitors' advertising emphasizing product, which additionally was significant; suggesting that for the industry I used in this dissertation price is a marketing variable that is not perceived as a source of threat. This last suggestion may sound counterintuitive, but since the approach of this dissertation is from the scope of tactical movements, instead of strategic ones, expected behavior according to the statements of multimarket theory may not be identical at tactical level as at strategic level. However, further research is needed in order to clarify this point.

6.2 About the adverting characteristics

The first hypothesis in this set, H2a, predicts that the relationship between the level of multimarket contact and the focal firm's ad placement duration will be positive. As with the previous one, I tested this hypothesis running an OLS regression obtaining the result that multimarket contact was significant but with a negative relationship with ad duration, which contrasts with the positive relationship that I predicted, which mainly is the result of firms wanting to maintain their advertising in order to preserve

equilibriums and keep mutual forbearance. Nevertheless, these results suggest that in order to maintain the equilibrium brought by mutual forbearance, multimarket competing firms actually tend to decrease the amount of time they maintain their ads without change, something that from a marketing perspective is a reflection of a firm willing to differentiate from others to increase sales, a contradiction. But this apparently contradicting result can possibly find a plausible explanation in the fact that car companies in this market tend to start selling their new-year models increasingly earlier in the previous year, forcing themselves to change their advertising in order to communicate the arrival of the new models, as well as to promote their old ones in varied ways to evacuate their inventory. Since this is a widely spread practice, all firms seem to be doing the same thing. Therefore, behaving in that way is not perceived as aggressive, making it not necessary to maintain advertising pieces for longer periods of time in order to preserve an equilibrium. Research in this direction can help to clarify this issue.

The last hypothesis, H2b, predicts that the relationship between the level of multimarket contact and the focal firm's ad complexity will be positive. This finding presents similar behavior as that in H2a, where I found statistical significance for a negative relationship. This inverse relationship suggests that as the level of multimarket contact increases, the complexity of ads decreases, and, in light of that, firms maintain equilibriums brought about by mutual forbearance with such behavior. If I combine this finding with the possible explanation that I formulated for the results of the previous hypothesis, I believe an explanation for this one can be constructed following the same logic. Since firms tend to change their advertising regularly to communicate their new-model arrivals and to evacuate old-model inventories, they need these advertising pieces

to be very explicit and punctual about a truly attractive characteristic, whether it be something related to price, to product, or to distribution channels. The condition for this to be true and to be an explanation of the results obtained for this hypothesis, is that multimarket-competing firms behave in the way described, not just one firm but many of them. But as noted before, research in this direction has to be conducted to be certain about this.

Finally, summarizing the findings of this dissertation and with knowledge that support for the hypotheses was almost completely absent, results reinforce what originally motivated me to follow the path I chose here. I still do not have an explanation for the behavior of marketing mix variables, which are tactics, in the presence of multimarket contact, but results for H1c tend to reinforce the suggestion that at a tactical level, such as the marketing mix, competitive actions that appear to be aggressive and mutual-forbearance disrupters are actually movements designed to preserve it. Thanks to the hope offered by this last finding, I have drawn here some plausible explanations for the lack of support for the hypotheses. This now becomes a new path to follow in a different research project.

- Even though firms increase their multimarket contact, can they be making tactical moves that are not a response to multimarket rivals, but instead just a reflection of themselves acting in consequence to their own actions and their outcomes?
- Are new ads, instead of causing a matching response or even a more aggressive one on the part of a multimarket competitor firm, truly deterrence mechanisms?
- If a firm that does not meet other firms because it just participates in one market launches a new ad, can it actually start to differentiate its offer in the market by

emulating advertising tactics that others have successfully used in other markets? If so, is the reason for it that its audiences probably have not been exposed to that type of message yet?

- Will a firm protect a single sphere of influence at any cost? In so doing, will it follow the steps of firms identified as leaders in other markets with actions such as emulating their ad complexity, either partially or as a whole?
- Is there a possibility in an industry such as the automobile one, that price becomes a marketing variable that is not perceived as a source of threat?
- If several firms start to “shake up” things in order to promote their incoming and outgoing models, and that is a regular practice in that industry, is that behavior perceived as not aggressive? Isn’t that defecting from an equilibrium? Isn’t that just a motive to deploy a deterrence tactic?

These, and surely some other questions that may come up from the results of this dissertation, represent material for further analysis in the same line of the topics I questioned and developed through this work. Alternatively other lines of discussion may result from the analyses leaving the door open for the further addition of knowledge to the field.

REFERENCES

Abbott, A. (1983). Sequences of social events: concepts and methods for the analysis of order in social processes. *Historical Methods, 16*(4), 129-146.

Abbott, A. (1990). A PRIMER ON SEQUENCE METHODS. *Organization Science, 1*(4), 375-392.

Abell, D. F. (1980). *Defining the business: The starting point of strategic planning*. Englewood Cliffs, N.J.: Prentice-Hall.

Aldrich, H. E. (1979). *Organizations and environments*. Englewood Cliffs, NJ: Prentice Hall.

Alexander, D. L. (1985). An empirical test of mutual forbearance hypothesis: The case of bank holding companies. *Southern Journal of Economics, 52,* 122-140.

Ansoff, H. I. (1984). *Implanting Strategic Management.* Englewoods Cliffs, NJ: Prentice-Hall.

Barnett, & Hansen. (1996). THE RED QUEEN IN ORGANIZATIONAL EVOLUTION. *Strategic Management Journal, 17,* 139-157.

Barnett, W. (1993). Strategic deterrence among multipoint competitors. *Industrial and Corporate Change, 2*, 249-278.

Baum, J. A. C., & Korn, H. J. (1996). Competitive dynamics of interfirm rivalry. *Academy of Management Journal, 39*(2), 255-291.

Baum, J. A. C., & Korn, H. J. (1999). Dynamics of dyadic competitive interaction. *Strategic Management Journal, 20*(3), 251-278.

Bernheim, B. D., & Whinston, M. D. (1990). Multimarket contact and collusive behavior. *RAND Journal of Economics, 21*(1), 1-26.

Boeker, W., Goodstein, J., Stephan, J., & Murmann, J. P. (1997). Competition in a multimarket environment: The case of market exit. *Organization Science, 8*(2), 126-142.

Borden, N. H. (1984). The Concept of the Marketing Mix. *Journal of Advertising Research, 24*(4), 7-12.

Capon, N., & Hulbert, J. M. (2000). *Marketing in the 21st Century*: Pearson Education.

Carpenter, G. S., Glazer, R., & Nakamoto, K. (1994). Meaningful Brands from Meaningless Differentiation: The Dependence on Irrelevant Attributes. *Journal of Marketing Research, 31*(3), 339-350. doi:10.2307/3152221

Caves, R. E. (1984). Economic analysis and the quest for competitive advantage. *American Economic Review, 74*(2), 127.

Chen, M.-J. (1996). Competitor analysis and interfirm rivalry: Toward a theoretical integration. *Academy of Management Review, 21*(1), 100-134.

Chen, M.-J., Smith, K. G., & Grimm, C. M. (1992). Action characteristics as predictors of competitive responses. *Management Science, 38*(3), 439-455.

Constantinides, E. (2006). The Marketing Mix Revisited: Towards the 21st Century Marketing. *Journal of Marketing Management, 22*(3/4), 407-438.

Cotterill, R. W., & Haller, L. E. (1992). Barrier and queue effects: a study of leading US supermarket chain entry parttners. *Journal of Industrial Economics, 40*(4), 427-440.

Delacour, H., & Liarte, S. (2012). The Red Queen Effect: Principle, synthesis and implications for strategy. *Le Red Queen Effect : Principe, synthèse et implications pour la stratégie., 15*(3), 314-330.

Derfus, P., Maggitti, P., Grimm, C., & Smith, K. (2008). THE RED QUEEN EFFECT: COMPETITIVE ACTIONS AND FIRM PERFORMANCE. *Academy of Management, 51*(1), 61-80.

Dickson, P. R., & Ginter, J. L. (1987). Market Segmentation, Product Differentiation, and Marketing Strategy. *Journal of Marketing, 51*(2), 1-10.

Dutton, J. E., & Jackson, S. E. (1987). Categorizing Strategic Issues: Links to Organizational Action. *Academy of Management Review, 12*(1), 76-90. doi:10.5465/AMR.1987.4306483

Edwards, C. D. (1955). Conglomerate Bigness as a Source of Power. In U.-N. Bureau (Ed.), *Business Concentration and Price Policy* (pp. 331-352). Princeton, N.J.: Princeton University Press.

Evans, W. N., & Kessides, I. N. (1994). Living by the 'Golden Rule': Multimarket Contact in the U.S. Airline Industry. *Quarterly Journal of Economics, 109*(2), 341-366.

Feinberg, R. M. (1985). "Sales-at-Risk": A Test of the Mutual Forbearance Theory of Conglomerate Behavior. *Journal of Business, 58*(2), 225-241.

Fernandez, N., & Marin, P. L. (1998). Market Power and Multimarket Contact: Some Evidence from the Spanish Hotel Industry. *Journal of Industrial Economics, 46*(3), 301-315.

Ferrier, W. J. (2001). NAVIGATING THE COMPETITIVE LANDSCAPE: THE DRIVERS AND CONSEQUENCES OF COMPETITIVE AGGRESSIVENESS. *Academy of Management Journal, 44*(4), 858-877. doi:10.2307/3069419

Ferrier, W. J., Smith, K. G., & Grimm, C. M. (1999). THE ROLE OF COMPETITIVE ACTION IN MARKET SHARE EROSION AND INDUSTRY DETHRONEMENT: A STUDY OF INDUSTRY LEADERS AND CHALLENGERS. *Academy of Management Journal, 42*(4), 372-388. doi:10.2307/257009

Fuentelsaz, L., & Gómez, J. (2006). Multipoint competition, strategic similarity and entry into geographic markets. *Strategic Management Journal, 27*(5), 477-499.

Galbraith, J. R., & Kazanjian, R. K. (1986). *Strategy Implementation: Structure, Systems and Process*. St. Paul, MN: West Publishing.

Gimeno, J. (1999). Reciprocal threats in multimarket rivalry: Staking out `spheres of influence' in the U.S. airline. *Strategic Management Journal, 20*(2), 101.

Gimeno, J. (2002). The performance effects of unintended and purposive multimarket contact. *Managerial and Decision Economics, 23*(4-5), 209-224.

Gimeno, J., & Jeong, E. (2001). Multimarket Contact: Meaning and Measurement at Multiple Levels of Analysis. In J. A. C. Baum & H. R. Greve (Eds.), *Advances in Strategic Management: Multiunit Organization and Multimarket Strategy* (Vol. 18, pp. 357-408). Bingley, UK: Emerald.

Gimeno, J., & Woo, C. Y. (1994, 1994/08//). *MULTIPOINT COMPETITION, MARKET RIVALRY AND FIRM PERFORMANCE: A TEST OF THE COMPLETE MEDIATION MODEL*.

Gimeno, J., & Woo, C. Y. (1996). Hypercompetition in a multimarket environment: The role of strategic similarity and multimarket contact in competitive de-escalation. *Organization Science, 7*(3), 322-341.

Gimeno, J., & Woo, C. Y. (1999). Multimarket contact, economies of scope, and firm performance. *Academy of Management Journal, 42*(3), 239-259.

Golden, B. R., & Ma, H. (2003). MUTUAL FORBEARANCE: THE ROLE OF INTRAFIRM INTEGRATION AND REWARDS. *Academy of Management Review, 28*(3), 479-493.

Greve, H. R. (2000). MARKETING NICHE ENTRY DECISIONS: COMPETITION, LEARNING, AND STRATEGY IN TOKYO BANKING, 1894-1936. *Academy of Management Journal, 43*(5), 816-836.

Greve, H. R. (2008). Multimarket contact and sales growth: evidence from insurance. *Strategic Management Journal, 29*(3), 229-249.

Greve, H. R. A. (2006). The intent and extent of multimarket contact. *Strategic Organization, 4*(3), 249-274.

Gunther, R. E., & D'Aveni, R. A. (1994). *Hypercompetition: managing the dynamics of strategic maneuvering*: Free Press.

Hannan, M. T., & Freeman, J. (1977). The Population Ecology of Organizations. *The American Journal of Sociology, 82*(5), 929-964.

Hannan, M. T., & Freeman, J. (1989). *Organizational Ecology*. Cambridge, MA: Harvard University Press.

Haveman, H. A., & Nonnemaker, L. (2000). Competition in Multiple Geographic Markets: The Impact on Growth and Market Entry. *Administrative Science Quarterly, 45*(2), 232-267.

Heggestad, A. A., & Rhoades, S. A. (1978). Multimarket interdependence and local market competition in banking. *Review of Economics and Statistics, 60*, 523-532.

Heide, J. B., & Miner, A. S. (1992). THE SHADOW OF THE FUTURE: EFFECTS OF ANTICIPATED INTERACTION AND FREQUENCY OF CONTACT ON BUY-SELLER COOPERATION. *Academy of Management Journal, 35*(2), 265-291.

Hughes, K., & Oughton, C. (1993). Diversification, Multi-market Contact and Profitability. *Economica, 60*(238), 203-224.

Jans, I., & Rosenbaum, D. I. (1997). Multimarket contact and pricing: Evidence from the U.S. cement industry. *International Journal of Industrial Organization, 15*(3), 391-412.

Jayachandran, S., Gimeno, J., & Varadarajan, P. R. (1999). The theory of multimarket competition: A synthesis and implications for marketing strategy. *Journal of Marketing, 63*(3), 49-66.

Jobber, D. (2001). *Principles and Practice of Marketing* (Third ed.): McGraw Hill.

Kang, W., Bayus, B. L., & Balasubramanian, S. (2010). The strategic effects of multimarket contact: Mutual forbearance and competitive response in the personal computer industry. *Journal of Marketing Research, 47*(3), 415-427.

Karnani, A., & Wernerfelt, B. (1985). Multiple point competition. *Strategic Management Journal, 6*(1), 87-96.

Kerin, R. A., Hartley, S. W., & Rudelius, W. (2011). *The Core Marketing*.

Kim, E. H., & Singal, V. (1993). Mergers and market power: Evidence from the airline industry. *American Economic Review, 83*(3), 549.

Korn, H. J., & Baum, J. A. C. (1999). Chance, imitative, and strategic antecedents to multimarket contact. *Academy of Management Journal, 42*(2), 171-193.

Korn, H. J., & Rock, T. T. (2001). Beyond multimarket contact to mutual forbearance: Pursuit of multimarket strategy. In J. A. C. B. a. H. R. Greve (Ed.), *Advances in strategic management* (pp. 53-74). Oxford, UK: JAI.

Kotler, P. J., & Armstrong, G. M. (2010). *Principles of marketing*: Pearson Education.

Lawther, S., Hastings, G., & Lowry, R. (1997). De-marketing: Putting Kotler and levy's ideas into practice. *Journal of Marketing Management, 13*(4), 315-325.

Lee, H., Smith, K. G., Grimm, C. M., & Schomburg, A. (2000). Timing, order and durability of new product advantages with imitation. *Strategic Management Journal, 21*(1), 23.

Lewis, D., & Bridger, D. (2000). *The soul of the new consumer : authenticity - what we buy and why in the new economy*. London: Brealey.

Lovelock, C. (2011). *Services Marketing* (7 ed.): Pearson Education.

MacCrimmon, K. R. (1993). DO FIRM STRATEGIES EXIST? *Strategic Management Journal, 14*, 113-130.

Magrath, A. J. (1986). When Marketing Services, 4 Ps Are Not Enough. *Business Horizons, 29*(3), 44.

Mahajan, V., Varadarajan, P. R., & Kerin, R. A. (2011). *Metamorphosis in strategic market planning*: Marketing Classics Press.

Martinez, J. E. (1990). The linked oligopoly concept: Recent evidence from banking. *Journal of Economic Issues (Association for Evolutionary Economics), 24*(2), 589-595.

Matsushima, H. (2001). Multimarket contact, imperfect monitoring, and implicit collusion. *Journal of Economic Theory, 98*(1), 158-178.

McCarthy, J. (1978). *Basic marketing: a managerial approach*: RD Irwin.

McGrath, R. G., Chen, M.-J., & MacMillan, I. C. (1998). Multimarket maneuvering in uncertain spheres of influence: Resource diversion strategies. *Academy of Management Review, 23*(4), 724-740.

Mester, L. J. (1987). Multiple market contact between savings and loans: Note. *Journal of Money, Credit and Banking, 19*(4), 538-549.

Miller, D., & Chen, M.-J. (1996). The simplicity of competitive repertoires: An empirical analysis. *Strategic Management Journal, 17*(6), 419-439.

Nowlis, S. M., & Simonson, I. (1996). The Effect of New Product Features on Brand Choice. *Journal of Marketing Research (JMR), 33*(1), 36-46.

Parker, P. M., & Röller, L.-H. (1997). Collusive conduct in duopolies: Multimarket contact and cross-ownership in the mobile telephone industry. *RAND Journal of Economics, 28*(2), 304-322.

Porter, M. (1980). *Competitive strategy: Tecniques for analyzing industries and competitors*. New York, NY: Free Press.

Porter, M. (1985). *Competitive Advantage*. New York: The Free Press.

Prince, J. T., & Simon, D. H. (2009). MULTIMARKET CONTACT AND SERVICE QUALITY: EVIDENCE FROM ON-TIME PERFORMANCE IN THE U.S. AIRLINE INDUSTRY. *Academy of Management Journal*, *52*(2), 336-354.

Ramaprasad, A. (1992). The temporal dimension of strategy. *Time and Society, 1*(3), 359-377.

Rhoades, S. A. (1973). THE EFFECT OF DIVERSIFICATION ON INDUSTRY PROFIT PERFORMANCE IN 241 MANUFACTURING INDUSTRIES: 1963. *Review of Economics & Statistics*, *55*(2), 146.

Rhoades, S. A., & Heggestad, A. A. (1985). Multimarket interdependence and performance in banking: Two tests. *Antitrust Bulletin, 30*(4), 975-995.

Rizzo, M. J., & O'Driscoll, G. P. (1985). *The economics of time and ignorance*. United States of America: Blackwell.

Sandler, R. D. (1988). Market Share Instability in Commercial Airline Markets and the Impact of Deregulation. *Journal of Industrial Economics, 36*(3), 327-335.

Schelling, T. C. (1960). *The Strategy of Conflict*. Cambridge, MA.: Harvard University Press.

Scherer, F. M., & Ross, S. (1990). *Industrial market structure and economic performance* (3rd ed.). Boston, MA: Houghton Mifflin.

Schumann, D. W., Petty, R. E., & Clemons, D. S. (1990). Predicting the effectiveness of different strategies of advertising variation: A test of the repetition-variation hypotheses. *Journal of Consumer Research, 17*(2), 192-202.

Schumpeter, J. A. (1989). Creative destruction: the essence of capitalism. *excerpts from Capitalism, socialism and democracy*, *6*, 10-11.

Scott, J. T. (1982). Multimarket contact and economic performance. *Review of Economics & Statistics, 64*(3), 368-375.

Scott, J. T. (1991). Multimarket Contact among Diversified Oligopolists. *International Journal of Industrial Organization, 9*(2), 225-238.

Shankar, V. (1999). New Product Introduction and Incumbent Response Strategies: Their Interrelationship and the Role of Mutlimarket Contact. *Journal of Marketing Research (JMR), 36*(3), 327-344.

Simonson, I., Carmon, Z., & O'Curry, S. (1994). EXPERIMENTAL EVIDENCE ON THE NEGATIVE EFFECT OF PRODUCT FEATURES AND SALES PROMOTIONS ON BRAND CHOICE. *Marketing Science, 13*(1), 23.

Singal, V. (1996). Airline Mergers and Multimarket Contact. *Managerial and Decision Economics, 17*(6), 559-574.

Smith, K. G., Ferrier, W., & Ndofor, H. (2001). Competitive Dynamics Research: Critique and future Directions. In M. Hitt, R. Freeman, & J. Harrison (Eds.), *Handbook of Strategic Management* (pp. 315-361). London: Blackwell Publishers.

Smith, W. R. (1956). PRODUCT DIFFERENTIATION AND MARKET SEGMENTATION AS ALTERNATIVE MARKETING STRATEGIES. *Journal of Marketing, 21*(1), 3-8.

Spagnolo, G. (1999). On Interdependent Supergames: Multimarket Contact, Concavity, and Collusion. *Journal of Economic Theory, 89*(1), 127-139.

Strickland, A. D. (1985). Conglomerate Mergers, Mutual Forbearance Behavior and Price Competition. *Managerial & Decision Economics, 6*(3), 153-159.

Thompson, D. V., Hamilton, R. W., & Roland, T. R. (2005). Feature Fatigue: When Product Capabilities Become Too Much of a Good Thing. *Journal of Marketing Research, 42*(4), 431-442.

Tirole, J. (1988). *The theory of industrial organization*. Cambridge, MA: MIT Press.

Varadarajan, P. R., Jayachandran, S., & White, J. C. (2001). Strategic Interdependence in Organizations: Deconglomeration and Marketing Strategy. *Journal of Marketing, 65*(1), 15-28.

Voelpel, S., Leibold, M., Tekie, E., & Von Krogh, G. (2005). Escaping the Red Queen Effect in Competitive Strategy: Sense-testing Business Models. *European Management Journal, 23*(1), 37-49.

Vonortas, N. S. (2000). Technology policy in the United States and the European Union: Shifting orientation towards technology users. *Science and Public Policy, 27*(2), 97-108.

Waldfogel, J., & Wulf, J. (2006). Measuring the Effect of Multimarket Contact on Competition: Evidence from Mergers Following Radio Broadcast Ownership Deregulation. *B.E. Journal of Economic Analysis & Policy: Contributions to Economic Analysis & Policy, 5*(1), 1-25.

Waterschoot, W. v., & Bulte, C. v. d. (1992). The 4P Classification of the Marketing Mix Revisited. *Journal of Marketing, 56*(4), 83-93.

Young, G., Smith, K. G., & Grimm, C. M. (1996). "Austrian" and industrial organization perspectives on firm-level competitive activity and performance. *Organization Science, 7*(3), 243-254.

Young, G., Smith, K. G., Grimm, C. M., & Simon, D. (2000). Multimarket contact and resource dissimilarity: A competitive dynamics perspective. *Journal of Management, 26*(6), 1217-1236.

Yu, T., & Cannella, A. A., Jr. (2007). Rivalry between multinational enterprises: An event history approach. *Academy of Management Journal, 50*(3), 663-684.

Yu, T., & Cannella, A. A., Jr. (2013). A comprehensive review of multimarket competition research. *Journal of Management, 39*(1), 76-109.

TABLES

Table 1 – Markets (Colombian car segments)

Market (segment)	Description	Car models
I1	Compact vehicle, entry level (Hatchback)	**BYD:** F-Zero. **Chevrolet:** Spark. **Fiat:** Uno. **Hyundai:** i10. **Kia:** Picanto. **Peugeot:** 107. **Renault:** Twingo. **Suzuki:** Celerio.
I2	Small sports vehicle, 1.6L (Hatchback)	**Chevrolet:** Sonic. **Citroën:** C3. **Fiat:** 500, Palio, Punto. **Honda:** Fit. **Hyundai:** Getz. **Mazda:** 2. **Morris Garages:** MG3. **Nissan:** March. **Peugeot:** 206, 207, 208. **Renault:** Clio, Sandero, Stepway. **Seat:** Ibiza. **Skoda:** Fabia. **Suzuki:** Jimny, Swift. **Volkswagen:** Gol.
M1BM	Small sedan vehicle between 1.4L and 1.6L (Sedan)	**Chevrolet:** Aveo, Chevy, Cobalt, Sail**. Fiat:** Siena. **Hyundai:** Accent, i25. **Kia:** Rio. **Nissan:** Versa. **Renault:** Logan, Symbol, Megane.
M1A	Medium vehicle between 1.6L and 1.8L (Hatchback-Sedan)	**Citroën:** C4. **Ford:** Fiesta. **Hyundai:** i30, i35. **Kia:** Cerato Forte. **Mazda:** 3. **Mitsubishi:** Lancer. **Morris Garages:** MG350, MG550. **Nissan:** Tiida. **Peugeot:** 301, 308. **Renault:** Megane 2, Scala. **Seat:** Leon. **Suzuki:** SX4. **Volkswagen:** Jetta, New Beetle
M1MV	Mini personal van / station wagon	**Fiat:** Idea. **Kia:** Sedona, Soul. **Seat:** Altea. **SsangYong:** Rodius, Stavic **Volkswagen:** Crossfox.
M2	Large medium vehicle (Coupe-Hatchback-Sedan)	**Chevrolet:** Cruze, Optra. **Ford:** Focus. **Honda:** Civic. **Hyundai:** i40, i45, Veloster. **Morris Garages:** MG6. **Nissan:** Altima, Sentra. **Peugeot:** 408. **Renault:** Megane 3, Fluence. **Skoda:** Octavia. **Suzuki:** Kizashi. **Toyota:** Corolla. **Volkswagen:** New Jetta.
S	Sophisticated premium vehicle (Coupe-Hatchback-Sedan)	**Alfa Romeo: Mito**, 159, Giulietta. **Audi:** A1, A3, A4, A5, A6, A7, TT. **BMW:** I8**,** Serie 1, Serie 3, Serie 4, Serie 5, Z4. **Chevrolet:** Camaro. **Citroën:** C5. **Ford:** Fusion, Mustang. **Honda:** Accord. **Hyundai:** Azera, Genesis. **Kia:** Cadenza, Optima. **Mahindra:** XUV. **Mazda:** 6. **Mercedes-Benz:** Clase C, Clase B, Clase E. **Mini:** Mini Cooper. **Mitsubishi:** Eclipse. **Nissan:** Juke. **Peugeot:** 508. **Porsche:** Boxster, Cayman, Panamera. **Toyota:** Camry **Volkswagen:** Bora. **Volvo:** S40, S60, V40.

Market (segment)	Description	Car models
SUV	Suburban vehicle	**BYD: S6. Chery:** Tiggo. **Chevrolet:** Captiva, Grand Vitara, Orlando, Tahoe, Tracker, Traverse. **Citroën:** DS3. **Dodge:** Durango, Journey. **Fiat:** Locker. **Ford:** Ecosport, Escape. **Honda:** CR-V, Pilot, Odyssey. **Hyundai:** Santa Fe, Tucson, Veracruz. **Jeep:** Compass, Wrangler, Cherokee. **Kia:** Carens, Sorento, Sportage, Mohave. **Mazda:** CX-5**,** CX-7, CX-9. **Mitsubishi:** ASX, Nativa, Montero, New Montero, Outlander. **Nissan:** Patrol, X-Trail, Qasqhai. **Peugeot:** 3008. **Renault:** Koleos, Duster. **Skoda:** Yeti. **SsangYong:** Actyon, Korando, Kyron, Rexton. **Subaru:** Outback, Forester, XV. **Suzuki:** Vitara, Grand Vitara. **Toyota:** Fortuner, Land Cruiser, 4Runner, Prado, RAV4. **Volkswagen:** Tiguan. **Zotye:** Duna.
PU	Pick Up	**Chevrolet:** D-Max, Silverado. **Dodge:** RAM. **Ford:** Ranger. **Mazda:** BT-50. **Mitsubishi:** L200, Sportero. **Nissan:** Frontier. **Toyota:** Hilux. **Volkswagen:** Amarok.
S/SUV	Sophisticated suburban vehicle	**Audi:** Q3, Q5, Q7 **BMW:** X1, X3, X5, X6. **Chevrolet:** Trail Blazer. **Ford:** Edge, Explorer. **Jeep:** Grand Cherokee. **Land Rover:** Discovery, Freelander, Range Rover. **Mercedes-Benz:** GLK. **Nissan:** Murano, Pathfinder. **Subaru:** Tribeca. **Toyota:** FJ Cruiser. **Volkswagen:** Touareg. **Volvo:** XC60, XC90.

Table 2 – The marketing mix

VARIABLE	MEANING
Product	Everything, tangible or intangible offered to a market for purchase, use or consumption that can satisfy a need or a desire. Almost everything, material goods, people, ideas, services, places, and organizations are products. A good example of a mass-produced object is a motor car. All products have a life cycle, which comprise at least four phases: introduction, growth, maturity and decline. The decisions concerning the cycle include the formulation and presentation of the product, specific brand development, and characteristics of the packaging, labeling, and container among others as the product move through the cycle, plus decisions related with other elements or variables of the marketing mix. Another consideration of the product variable is the product mix, because marketing decision makers can vary the current product mix by increasing or decreasing a certain product line's depth or by increasing or decreasing the number of product lines. In this sense, key decisions are how to position the product, what to do with the brand, how to configure the product mix so that each product complements the other, and what product development strategies will be followed.
Price	Is the monetary amount associated with the transaction exchange, even though sometimes goods and services are also paid with time and effort. It includes payment mode, credit type, prompt payment discounts, volume, surcharges, etc. The price variable is defined after a previous market research that will help to define the price to enter the market. The price is the only element of the marketing mix that provides income, as the other components only produce costs. Price decisions have a profound impact on the marketing strategy because, depending on the price elasticity of the product, it will positively or negatively affect the demand and, thereof, sales. Since positioning is affected by decisions at the marketing mix level, price setting must complement the other elements of the marketing mix since price impacts customer perceived value for the product.
Place (distribution)	Where to market the product or service being offered, which is essential for the product to be at consumer reach for purposes of convenience and positioning. This element considers the effective management of the distribution channel, which implies that the product reaches the right place at the right time and in the right conditions, which can be done through intensive distribution, selective distribution or exclusive distribution in accordance with the other marketing mix variables and positioning decisions.
Promotion (communications)	All the methods to communicate, to inform and to persuade customers and other stakeholders about the company, its products, and offerings to pursue organizational objectives. The promotional mix is conformed by sales promotion, personal selling, advertising, public relations, direct marketing, mailing, emailing, catalogs, web pages, etc. The variable promotion usually is the tip of the marketing iceberg, because, in consumer markets such as motor vehicles, is what is most visible of all the marketing strategy for customers.

Table 3 – List of competitors

No.	
1	BMW
2	BYD
3	Chery
4	Chevrolet
5	Chrysler
6	Fiat
7	Ford
8	Honda
9	Hyundai
10	Mahindra
11	Mercedes B
12	Mitsubishi
13	Morris Gar
14	Peugeot
15	Renault
16	SsangYong
17	Subaru
18	Suzuki
19	Tata
20	Toyota
21	Volkswagen
22	Volvo
23	Zotye

Table 4 – Brand presence per market

	I1	I2	M1A	M1BM	M1MV	M2	PU	S	S/SUV	SUV
BMW	0	0	0	0	0	0	0	7	4	0
BYD	1	0	0	0	0	0	0	0	0	1
Chery	0	0	0	0	0	0	0	0	0	1
Chevrolet	1	1	1	4	0	1	2	1	1	6
Chrysler	0	0	0	0	0	0	1	0	2	4
Fiat	1	3	0	1	1	0	0	3	0	1
Ford	0	1	3	0	0	1	2	3	2	4
Honda	0	1	0	0	0	1	0	1	0	3
Hyundai	1	2	4	2	2	3	0	4	0	7
Mahindra	0	0	0	0	0	0	0	0	0	1
Mercedes B	0	0	0	0	0	0	0	3	1	0
Mitsubishi	0	0	1	0	0	0	2	1	0	5
Morris Gar	0	1	2	0	0	1	0	0	0	0
Peugeot	1	5	3	0	0	1	0	2	0	1
Renault	1	4	3	3	0	5	1	1	2	5
SsangYong	0	0	0	0	2	0	0	0	0	4
Subaru	0	0	0	0	0	0	0	0	1	3
Suzuki	1	2	1	0	0	1	0	0	0	2
Tata	0	0	0	0	0	0	0	0	3	0
Toyota	0	0	0	0	0	1	1	1	1	5
Volkswagen	0	3	3	0	2	2	1	11	4	2
Volvo	0	0	0	0	0	0	0	3	2	0
Zotye	0	0	0	0	0	0	0	0	0	1

Table 5 – Procedure to group brands into parent brands

```
parent=brand;
if (parent="Alfa Romeo") then parent="Fiat";
if (parent="Audi") then parent="Volkswagen";
if (parent="Citroen") then parent="Peugeot";
if (parent="Dodge") then parent="Chrysler";
if (parent="Jeep") then parent="Chrysler";
if (parent="Kia") then parent="Hyundai";
if (parent="Land Rover") then parent="Tata";
if (parent="Mazda") then parent="Ford";
if (parent="Mercedez benz") then parent="Mercedes Benz";
if (parent="Mini") then parent="BMW";
if (parent="Nissan") then parent="Renault";
if (parent="Peugeout") then parent="Peugeot";
if (parent="Porche") then parent="Volkswagen";
if (parent="Sang Yong") then parent="SsangYong";
if (parent="Seat") then parent="Volkswagen";
if (parent="Skoda") then parent="Volkswagen";
```

Table 6 – PMW dataset

Variable	Description / Measure
Adexp	The Colombian Pesos invested in Semana by the Parent in the market during the current week. Ad expenses are only incurred when the company runs an ad. Weeks without an ad have ad expenses of zero.
adweight	Regular ads are weighted at 1. Ads with "Brand" as the reference are weighted as 1/ the number of markets the brand competes in. This variable is a sum of individual ad weights across the parent-market-week.
complexity complexity2 complexity3	For weeks in which an ad is run, this vector holds the complexity measure. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three.
Market	The 5-character text abbreviation for market.
market_	The number equivalent for the market (ranging from 1 to 10), used to reference the market in a vector.
n_models_pm	The count of models that the parent sells in the given market.
n_models_pt	The count of models that the parent sells across all markets.
n_ads	The count of ads (unweighted) run by the parent in the market that week
Parent	The 14-character text variable indicating the parent's name.
parent_	The number equivalent of the parent's name.
place place2 place3	For weeks in which an ad is run, this vector holds the place measure. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three.
price price2 price3	For weeks in which an ad is run, this vector holds the price measure. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three.
product product2 product3	For weeks in which an ad is run, this vector holds the product measure. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three.
promotion promotion2 promotion3	For weeks in which an ad is run, this vector holds the number linked to the specific ad. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three.
reference reference2 reference3	For weeks in which an ad is run, this vector holds the text (14 characters) indicating the reference (model) of the car advertised.
Sold	Number of units sold by the parent (the sum across brands and references) in the market during the week.
Week	The week of the observation, ranging from 1 to 205.

Table 7 – PMW 2 Dataset

Variable	Description / Measure
Adexp	The Colombian Pesos invested in Semana by the Parent in the market during the current week. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
adexp_10	The sum of Colombian Pesos invested in Semana by the Parent in the market during the previous 10 weeks. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
adexp_pt	The Colombian Pesos invested in Semana by the Parent across all markets during the current week. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
adexp_pt10	The sum of Colombian Pesos invested in Semana by the Parent across all markets during the previous 10 weeks. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
adweight	Regular ads are weighted at 1. Ads with "Brand" as the reference are weighted as 1/ the number of markets the brand competes in. This variable is a sum of individual ad weights across the parent-market-week.
complexity complexity2 complexity3	For weeks in which an ad is run, this vector holds the complexity measure. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three.
Market	The 5-character text abbreviation for market.
market_	The number equivalent for the market (ranging from 1 to 10), used to reference the market in a vector.
n_ads	The count of ads (unweighted) run by the parent in the market that week.
n_models_pm	The count of models that the parent sells in the given market.
n_models_pt	The count of models that the parent sells across all markets.
Parent	The 14-character text variable indicating the parent's name.
parent_	The number equivalent of the parent's name.
place place2 place3	For weeks in which an ad is run, this vector holds the place measure. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three.
price price2 price3	For weeks in which an ad is run, this vector holds the price measure. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three.
product product2 product3	For weeks in which an ad is run, this vector holds the product measure. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three.
promotion promotion2 promotion3	For weeks in which an ad is run, this vector holds the number linked to the specific ad. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three.
reference reference2 reference3	For weeks in which an ad is run, this vector holds the text (14 characters) indicating the reference (model) of the car advertised.
Sold	Number of units sold by the parent (the sum across brands and references) in the market during the week.
sold_10	The total number of units sold by the parent (the sum across brands and references) in the market during previous 10 weeks.
sold_pt	Number of units sold by the parent (the sum across brands and references) across all markets during the week.
sold_pt10	Number of units sold by the parent (the sum across brands and references) across all markets during the past 10 weeks.
Week_	The week of the observation, ranging from 1 to 205.

Table 8 – PROMOTION Dataset

Variable	Description /Measure
brand	A dummy variable indicating whether or not the advertisement is about the brand overall. When brand=1, complexity, place, price, and product are missing.
complexity	The complexity score for the ad.
market	The 5-character text abbreviation for market.
market_	The market reference number, 1-10.
mmc	The multimarket contact of the parent in the market.
n_weeks	The total number of weeks the ad ran. Note that these are not necessarily adjacent weeks, as sometimes (often) ads skip weeks and then reappear.
parent	The 14-character text variable indicating the parent's name.
parent_	The parent reference number, 1-23.
place	The place score for the ad.
price	The price score for the ad.
product	The product score for the ad.
promotion	The number representing the specific ad.
reference	The text (14 characters) indicating the reference (model) of the car advertised. .
week	The week of the observation, ranging from 1 to 205.
week_	The week of the specific advertisement, starting at 1 for the first week it is run and then incrementing at 1 for the duration of the ad.

Table 9 – MMC Database

Variable	Description / Measure
market	The 5-character text abbreviation for market.
market_	The numeric equivalent for the market (1-10).
mmc	The proportion of rivals that the parent meets in this market and also meets in at least one other market.
parent	The 14-character text variable indicating the parent's name.
parent_	The number equivalent for the parent.
n_mkts	The number of markets the parent competes in.
n_mmrivals	The number of the parent's rivals in this market that the parent also meets in at least one other market.
n_rivals	The number of rivals in the market, not counting the parent.

Table 10 – EVENTHIST Dataset

Variable	Description / Measure
Adexp	The Colombian Pesos invested in Semana by the RESPONDER (parent) in the market during the current week. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
adexp_10	The sum of Colombian Pesos invested in Semana by the RESPONDER (parent) in the market during the previous 10 weeks. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
adexp_pt	The Colombian Pesos invested in Semana by the RESPONDER (parent) across all markets during the current week. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
adexp_pt10	The sum of Colombian Pesos invested in Semana by the RESPONDER (parent) across all markets during the previous 10 weeks. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
attackweek	The week in which the attacker (INITIATOR) ran the ad that we treat as an attack.
i_adexp	The Colombian Pesos invested in Semana by the INITIATOR (parent) in the market during the current week. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
i_adexp_10	The sum of Colombian Pesos invested in Semana by the INITIATOR (parent)in the market during the previous 10 weeks. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
i_adexp_pt	The Colombian Pesos invested in Semana by the INITIATOR (parent)across all markets during the current week. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
i_adexp_pt10	The sum of Colombian Pesos invested in Semana by the INITIATOR (parent)across all markets during the previous 10 weeks. Ad expenses are only incurred when the parent runs an ad. Weeks without an ad have ad expenses of zero.
i_brand	A dummy variable indicating whether or not the initiator's ad is a "brand" ad – that is, an advertisement targeted at growing the brand, not a specific model.
i_complexity	The initiator's ad complexity. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three. In these cases, I use the maximum.
i_lag_complexity	The initiator's ad complexity for its previous ad. Used to estimate change in ad complexity.
i_mmc	The multimarket contact of the initiator. Calculated as the number of multimarket rivals that the initiator meets in the market divided by the number of rivals that the initiator meets in the market.
i_n_ads	The count of ads (unweighted) run by the initiator in the market that created the observation.
i_n_models_pm	The count of models that the initiator sells in the given market.
i_n_models_pt	The count of models that the initiator sells across all markets.
i_parent	The 14-character text variable indicating the initiator's name.
i_parent_	The number equivalent of the initiator's name.
i_place	The place measure for the initiator's ad. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three. If more than 1 ad is run by the initiator, I code the maximum value in i_place.
i_price	The place measure for the initiator's ad. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three. If more than 1 ad is run by the initiator, I code the maximum value in i_place.

Variable	Description / Measure
i_product	The product measure for the initiator's ad. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three. If more than 1 ad is run by the initiator, I code the maximum value in i_product.
i_sold	Number of units sold by the initiator (the sum across brands and references) in the market during the week.
i_sold10	The total number of units sold by the initiator (the sum across brands and references) in the market during previous 10 weeks.
i_sold_pt	Number of units sold by the initiator (the sum across brands and references) across all markets during the week.
i_sold_pt10	Number of units sold by the initiator (the sum across brands and references) across all markets during the past 10 weeks.
i_week_	Number of times the initiator ran this particular ad, to date. This is used to identify new ads (i_week_=1). If i_week_>1, the ad has been run in the past.
lagattack	A dummy variable indicating whether or not the responder also ran an ad in attackweek.
market	The 5-character text abbreviation for market, original.
market_	The number equivalent for the market variable.
Mmc	The multimarket contact of the RESPONDER (parent). Calculated as the number of multimarket rivals that the parent meets in the market divided by the number of rivals that the parent meets in the market.
n_models_pm	The number of models that the RESPONDER (parent) has in the specific market.
n_models_pt	The number of models that the RESPONDER (parent) has across all markets.
newresponse	Whether or not the observation represents the start of a new sequence for the event-history analysis.
Parent	The 14-character text variable indicating the responder's name.
parent_	The number equivalent of the responder's name.
r_brand	A dummy variable indicating whether or not the responder's ad is a "brand" ad – that is, an advertisement targeted at growing the brand, not a specific model. Available only when the responder runs an ad.
r_complexity	The responder's ad complexity. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three. In these cases, I use the maximum. Available only when the responder runs an ad.
r_lag_complexity	The responder's ad complexity for its previous ad. Used to capture change in ad complexity. Available only when the responder runs an ad.
r_place	If the parent responds, this variable codes the place variable. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three. If more than 1 ad is run by the responder, I code the maximum value in r_place. Available only when the responder runs an ad.
r_price	If the parent responds, this variable codes the price variable. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three. If more than 1 ad is run by the responder, I code the maximum value in r_price. Available only when the responder runs an ad.
r_product	If the parent responds, this variable codes the product variable. Most of the time, only one ad is run, but for 107 parent-market-weeks there are 2 ads and for 5 there are three. If more than 1 ad is run by the responder, I code the maximum value in r_place. Available only when the responder runs an ad.
r_week_	For the responder's ad, this is the number of weeks (times) the ad has been run in total. If r_week_=1, this is the first week for the ad. If r_week_>1, it means that the initiator's ad isn't a new one, and has been run before. This variable is only available when the responder responds with an ad.
response	A dummy variable indicating whether or not the responder responded with an ad. 1=yes, 0=no.
sequence_id	The sequence number, used to group observations into sequences by Stata for event-history analysis.

Variable	Description / Measure
Sold	Number of units sold by the responder (the sum across brands and references) in the market during the week.
sold_10	The total number of units sold by the responder (the sum across brands and references) in the market during previous 10 weeks.
sold_pt	Number of units sold by the responder (the sum across brands and references) across all markets during the week.
sold_pt10	Number of units sold by the responder (the sum across brands and references) across all markets during the past 10 weeks.
Time	The number of weeks since the initiator ran its ad.
Week	The week of the observation, ranging from 1 to 205.

Table 11 – Mean, standard deviation, median, minimum and maximum for the variables of the study

Variable	Obs	Mean	Std. Dev.	Median	Min	Max
mmc	27946	.7842468	.2756596	.8888889	0	1
i_newad	27946	.4258212	.4944757	0	0	1
mmc_newad	27946	.3410674	.4322167	0	0	1
i_sold10	27946	5.286029	2.032871	5.538579	0	8.678345
i_sold_pt10	27946	7.797075	1.671583	8.041253	0	9.662339
i_adexp_10	27946	16.91362	1.65333	17.06178	0	19.36437
i_adexp_pt10	27946	2.971354	.0339773	2.979157	2.883653	3.040896
sold_10	27946	4.087207	2.324422	4.275674	0	8.746179
sold_pt10	27946	6.535043	2.335364	6.51547	0	9.662339
adexp_10	27946	7.272389	8.310066	0	0	19.32181
adexp_pt10	27946	13.46173	7.978627	17.87807	0	19.92398

Table 12 – Correlations

	mmc	i_newad	mmc_ne~d	i_sold10	i_so~t10	i_ad~_10	i_ad~t10
mmc	1.0000						
i_newad	0.0522	1.0000					
mmc_newad	0.2992	0.9163	1.0000				
i_sold10	-0.1593	0.1159	0.0919	1.0000			
i_sold_pt10	0.0956	-0.2678	-0.2163	0.2990	1.0000		
i_adexp_10	-0.1578	0.1818	0.1242	0.1620	-0.2197	1.0000	
i_adexp_pt10	0.1136	-0.0825	-0.0314	0.1597	0.4088	0.1464	1.0000
sold_10	0.1182	-0.0200	0.0127	0.1152	0.0222	-0.0073	-0.0583
sold_pt10	0.5187	0.0055	0.1352	-0.0834	-0.0371	-0.0163	0.0226
adexp_10	0.1229	-0.0194	0.0121	-0.0310	-0.0253	0.0642	0.0045
adexp_pt10	0.4318	-0.0116	0.0942	-0.0967	0.0057	-0.0168	0.0460

	sold_10	sold_p~0	adexp_10	adex~t10
sold_10	1.0000			
sold_pt10	0.5822	1.0000		
adexp_10	0.3281	0.3547	1.0000	
adexp_pt10	0.2837	0.5597	0.5334	1.0000

Table 13 – Cox regression for H1a without discriminating whether ads are new or old

No. of subjects =	18721		Number of obs	=	27946
No. of failures =	2584				
Time at risk =	27946				
			LR chi2(11)	=	1722.50
Log likelihood =	-23056.518		Prob > chi2	=	0.0000

_t	Haz. Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
mmc	.7361232	.1033641	-2.18	0.029	.5590202	.9693341
i_newad	.9518187	.1567145	-0.30	0.764	.6892965	1.314324
mmc_newad	1.055712	.2002382	0.29	0.775	.727942	1.531066
i_sold10	.9525618	.0105411	-4.39	0.000	.9321241	.9734477
i_sold_pt10	1.005804	.0158894	0.37	0.714	.9751381	1.037433
i_adexp_10	1.012964	.0248053	0.53	0.599	.9654951	1.062768
i_adexp_pt10	1.03179	.7656573	0.04	0.966	.240959	4.418143
sold_10	1.060619	.0117411	5.32	0.000	1.037854	1.083882
sold_pt10	1.149598	.0187977	8.53	0.000	1.11334	1.187038
adexp_10	1.071258	.0036786	20.05	0.000	1.064073	1.078492
adexp_pt10	1.033375	.0061953	5.48	0.000	1.021303	1.045589

Table 14 – Cox regression for H1a keeping new ads from initiator and response as any

```
No. of subjects =         7954                     Number of obs   =     11900
No. of failures =         1068
Time at risk    =        11900
                                                   LR chi2(9)      =    770.19
Log likelihood  =    -8568.823                     Prob > chi2     =    0.0000

------------------------------------------------------------------------------
          _t | Haz. Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         mmc |    .727276   .1412899    -1.64   0.101     .4969743    1.064301
    i_sold10 |   .9383275   .0210323    -2.84   0.005     .8979973    .9804689
 i_sold_pt10 |   1.025814   .0259507     1.01   0.314     .9761921    1.077959
  i_adexp_10 |   1.091781   .0504027     1.90   0.057     .9973312    1.195176
i_adexp_pt10 |   .6282431   .6929168    -0.42   0.673      .072327    5.457015
     sold_10 |    1.05015   .0173204     2.97   0.003     1.016745    1.084652
   sold_pt10 |   1.167811   .0290143     6.24   0.000     1.112307    1.226086
    adexp_10 |   1.072171   .0057343    13.03   0.000      1.06099    1.083469
  adexp_pt10 |   1.038189   .0098574     3.95   0.000     1.019047     1.05769
------------------------------------------------------------------------------
```

Table 15 – Cox regression for H1a keeping new ads from initiator and new ads from responders

```
No. of subjects =        18721                     Number of obs   =     27946
No. of failures =         1094
Time at risk    =        27946
                                                   LR chi2(11)     =    708.33
Log likelihood  =   -9809.2138                     Prob > chi2     =    0.0000

------------------------------------------------------------------------------
          _t | Haz. Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         mmc |   1.096858    .208908     0.49   0.627     .7551446    1.593201
     i_newad |   .9614758   .2106948    -0.18   0.858     .6257613    1.477298
   mmc_newad |   1.163228   .3017131     0.58   0.560     .6996551    1.933953
    i_sold10 |   .8976481   .0145623    -6.66   0.000     .8695556    .9266482
 i_sold_pt10 |   1.000699    .023697     0.03   0.976     .9553149    1.048239
  i_adexp_10 |   1.014021   .0380437     0.37   0.711     .9421322    1.091395
i_adexp_pt10 |   7.249857   8.232023     1.74   0.081     .7830914    67.11916
     sold_10 |   1.359853   .0307789    13.58   0.000     1.300846    1.421536
   sold_pt10 |   .8143376    .021039    -7.95   0.000     .7741286    .8566352
    adexp_10 |   1.049113   .0051488     9.77   0.000      1.03907    1.059253
  adexp_pt10 |   1.047046   .0083036     5.80   0.000     1.030897    1.063448
------------------------------------------------------------------------------
```

Table 16 – Cox regression for H1a keeping new ads from initiator and old ads from responders

```
No. of subjects =        18721                     Number of obs   =     27946
No. of failures =         1490
Time at risk    =        27946
                                                   LR chi2(11)     =   1446.53
Log likelihood  =   -13031.126                     Prob > chi2     =    0.0000

------------------------------------------------------------------------------
          _t | Haz. Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         mmc |   .5585063   .1153511    -2.82   0.005     .3725848    .8372034
     i_newad |   .9296601   .2308967    -0.29   0.769     .5713654    1.512636
   mmc_newad |   .9985572   .2801435    -0.01   0.996     .5761955    1.730518
    i_sold10 |   .9912195    .014981    -0.58   0.560     .9622878    1.021021
 i_sold_pt10 |   1.012778   .0215027     0.60   0.550      .971498    1.055811
  i_adexp_10 |   1.013819   .0326837     0.43   0.670     .9517422    1.079945
i_adexp_pt10 |   .2360067   .2306393    -1.48   0.140     .0347601    1.602387
     sold_10 |    .951535   .0124442    -3.80   0.000     .9274547    .9762404
   sold_pt10 |   1.442251   .0334682    15.78   0.000     1.378124    1.509362
    adexp_10 |   1.086278     .00528    17.03   0.000     1.075978    1.096676
  adexp_pt10 |   1.027863   .0096727     2.92   0.003     1.009079    1.046997
------------------------------------------------------------------------------
```

Table 17 – Competing risk model considering new and old ads as responses for H1a

```
oldad==1
newad==2

Multinomial logistic regression                 Number of obs   =      27946
                                                LR chi2(22)     =    2363.08
                                                Prob > chi2     =     0.0000
Log likelihood = -9192.1025                     Pseudo R2       =     0.1139
------------------------------------------------------------------------------
     outcome |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
0            |  (base outcome)
-------------+----------------------------------------------------------------
1            |
         mmc |  -.5703226   .2151268    -2.65   0.008    -.9919633   -.1486818
     i_newad |  -.0929652   .2587763    -0.36   0.719    -.6001575     .414227
   mmc_newad |   .0038248   .2932143     0.01   0.990    -.5708648    .5785143
    i_sold10 |  -.0188955    .015758    -1.20   0.230    -.0497806    .0119897
 i_sold_pt10 |     .01934   .0216094     0.89   0.371    -.0230137    .0616936
  i_adexp_10 |   .0374692   .0282018     1.33   0.184    -.0178053    .0927438
i_adexp_pt10 |  -1.916406   .9907195    -1.93   0.053    -3.858181    .0253686
     sold_10 |  -.0417547   .0140241    -2.98   0.003    -.0692415   -.0142679
   sold_pt10 |   .3887137   .0243919    15.94   0.000     .3409065    .4365209
    adexp_10 |   .0911057   .0049491    18.41   0.000     .0814057    .1008057
  adexp_pt10 |    .026036   .0095013     2.74   0.006     .0074138    .0446581
       _cons |  -1.413154   2.706739    -0.52   0.602    -6.718265    3.891958
-------------+----------------------------------------------------------------
2            |
         mmc |   .0324487   .1951693     0.17   0.868    -.3500762    .4149736
     i_newad |  -.0225313   .2251665    -0.10   0.920    -.4638495    .4187869
   mmc_newad |   .1434822   .2666869     0.54   0.591    -.3792146    .6661789
    i_sold10 |  -.1153125   .0164255    -7.02   0.000    -.1475058   -.0831191
 i_sold_pt10 |  -.0042473   .0229371    -0.19   0.853    -.0492031    .0407086
  i_adexp_10 |   .0035449   .0257911     0.14   0.891    -.0470046    .0540945
i_adexp_pt10 |   2.365496   1.093715     2.16   0.031     .2218544    4.509138
     sold_10 |   .3144043   .0232014    13.55   0.000     .2689303    .3598783
   sold_pt10 |  -.1904025   .0266465    -7.15   0.000    -.2426287   -.1381763
    adexp_10 |   .0564153   .0049853    11.32   0.000     .0466443    .0661862
  adexp_pt10 |   .0458973   .0080252     5.72   0.000     .0301683    .0616263
       _cons |  -11.09977   3.069476    -3.62   0.000    -17.11583   -5.083702
------------------------------------------------------------------------------
```

Table 18 – Heckman Selection Model for H1b

Heckman selection model -- two-step estimates (regression model with sample selection)

Number of obs	= 27946
Censored obs	= 25362
Uncensored obs	= 2584
Wald chi2(7)	= 2.72
Prob > chi2	= 0.9094

complexdistance	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
complexdistance						
mmc	.0626754	.1150561	0.54	0.586	-.1628305	.2881813
i_sold10	.0243421	.0198792	1.22	0.221	-.0146205	.0633046
i_sold_pt10	-.0048021	.0077194	-0.62	0.534	-.0199319	.0103277
sold_10	-.0284398	.0265823	-1.07	0.285	-.0805402	.0236605
sold_pt10	-.0648935	.0555896	-1.17	0.243	-.1738471	.0440602
adexp_10	-.0313526	.0278861	-1.12	0.261	-.0860083	.023303
adexp_pt10	-.0103777	.0099266	-1.05	0.296	-.0298334	.009078
_cons	2.882299	2.30283	1.25	0.211	-1.631165	7.395763
select						
mmc	-.1112021	.0632072	-1.76	0.079	-.2350859	.0126818
i_complexity	-.0441785	.0709148	-0.62	0.533	-.1831689	.0948118
i_sold10	-.0284853	.006078	-4.69	0.000	-.0403979	-.0165727
i_sold_pt10	.0016616	.0083325	0.20	0.842	-.0146698	.017993
i_adexp_10	.011074	.00927	1.19	0.232	-.0070948	.0292428
i_adexp_pt10	-.0560241	.3885688	-0.14	0.885	-.8176049	.7055568
sold_10	.0372324	.0062094	6.00	0.000	.0250622	.0494025
sold_pt10	.0750475	.0086107	8.72	0.000	.0581708	.0919243
adexp_10	.0388033	.0016968	22.87	0.000	.0354776	.042129
adexp_pt10	.012161	.0026054	4.67	0.000	.0070546	.0172674
_cons	-2.368535	1.084073	-2.18	0.029	-4.493279	-.2437915
mills						
lambda	-.9917247	.8615361	-1.15	0.250	-2.680304	.696855
rho	-1.00000					
sigma	.99172474					

Table 19 – Heckman Selection Model for H1c

```
Heckman selection model -- two-step estimates   Number of obs      =     27946
(regression model with sample selection)        Censored obs       =     25362
                                                Uncensored obs     =      2584

                                                Wald chi2(7)       =     14.92
                                                Prob > chi2        =    0.0370

------------------------------------------------------------------------------
    distance |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
distance     |
         mmc |  -.1264768   .0393293    -3.22   0.001     -.203561   -.0493927
    i_sold10 |  -.0051971    .005231    -0.99   0.320    -.0154496    .0050555
 i_sold_pt10 |    .005443   .0033771     1.61   0.107     -.001176     .012062
     sold_10 |   .0006917   .0067024     0.10   0.918    -.0124448    .0138282
   sold_pt10 |   .0260604   .0135652     1.92   0.055     -.000527    .0526478
    adexp_10 |   .0075212   .0066226     1.14   0.256    -.0054588    .0205012
  adexp_pt10 |   .0037194   .0026758     1.39   0.165     -.001525    .0089638
       _cons |  -.0025895   .5442259    -0.00   0.996    -1.069253    1.064074
-------------+----------------------------------------------------------------
select       |
         mmc |  -.1139438   .0633299    -1.80   0.072    -.2380681    .0101804
     i_price |   .0909962   .1293918     0.70   0.482    -.1626071    .3445996
     i_place |   .0242477   .0751295     0.32   0.747    -.1230034    .1714988
   i_product |  -.0735624   .1628522    -0.45   0.651    -.3927468     .245622
i_complexity |  -.0783759   .3479466    -0.23   0.822    -.7603387    .6035869
    i_sold10 |  -.0280315    .006088    -4.60   0.000    -.0399639   -.0160992
 i_sold_pt10 |   .0023526   .0088647     0.27   0.791    -.0150218    .0197271
  i_adexp_10 |    .012608   .0094539     1.33   0.182    -.0059213    .0311372
i_adexp_pt10 |  -.1219243   .3930676    -0.31   0.756    -.8923226    .6484741
     sold_10 |    .037507    .006261     5.99   0.000     .0252357    .0497782
   sold_pt10 |   .0752139   .0086317     8.71   0.000      .058296    .0921318
    adexp_10 |   .0387551   .0016971    22.84   0.000     .0354289    .0420813
  adexp_pt10 |   .0121729    .002608     4.67   0.000     .0070614    .0172845
       _cons |  -2.197062   1.091223    -2.01   0.044     -4.33582   -.0583045
-------------+----------------------------------------------------------------
mills        |
      lambda |   .2169123   .2030868     1.07   0.285    -.1811306    .6149552
-------------+----------------------------------------------------------------
         rho |    0.67301
       sigma |  .32230386
------------------------------------------------------------------------------
```

Table 20 – Regression for multimarket contact as a predictor of competitor's advertising emphasizing price (H1d)

Source	SS	df	MS	Number of obs =	1850
Model	1.49372249	5	.298744498	F(5, 1844) =	4.33
Residual	127.111013	1844	.06893222	Prob > F =	0.0006
Total	128.604735	1849	.06955367	R-squared =	0.0116
				Adj R-squared =	0.0089
				Root MSE =	.26255

price	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
mmc	-.057516	.0393062	-1.46	0.144	-.1346053	.0195734
sold_10	.0001778	.0031784	0.06	0.955	-.0060558	.0064115
sold_pt10	-.0004033	.0047221	-0.09	0.932	-.0096644	.0088579
adexp_10	.0040458	.0010596	3.82	0.000	.0019677	.0061239
adexp_pt10	-.0014268	.0019474	-0.73	0.464	-.0052461	.0023925
_cons	.3459728	.0396194	8.73	0.000	.2682693	.4236763

Table 21 – Regression for multimarket contact as a predictor of competitor's advertising emphasizing place (H1d)

Source	SS	df	MS	Number of obs =	1850
Model	26.7008729	5	5.34017459	F(5, 1844) =	84.83
Residual	116.083314	1844	.062951906	Prob > F =	0.0000
Total	142.784187	1849	.077222383	R-squared =	0.1870
				Adj R-squared =	0.1848
				Root MSE =	.2509

place	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
mmc	.0680611	.0375625	1.81	0.070	-.0056083	.1417306
sold_10	.0011397	.0030374	0.38	0.708	-.0048174	.0070968
sold_pt10	-.078289	.0045126	-17.35	0.000	-.0871393	-.0694387
adexp_10	-.0012397	.0010126	-1.22	0.221	-.0032257	.0007462
adexp_pt10	.0030223	.001861	1.62	0.105	-.0006275	.0066722
_cons	.9287344	.0378618	24.53	0.000	.854478	1.002991

Table 22 – Regression for multimarket contact as a predictor of competitor's advertising emphasizing product (H1d)

Source	SS	df	MS	Number of obs =	1850
Model	3.86729472	5	.773458944	F(5, 1844) =	14.32
Residual	99.6159256	1844	.054021652	Prob > F =	0.0000
Total	103.48322	1849	.055967128	R-squared =	0.0374
				Adj R-squared =	0.0348
				Root MSE =	.23243

product	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
mmc	-.1718009	.0347964	-4.94	0.000	-.2400453	-.1035564
sold_10	.0039431	.0028137	1.40	0.161	-.0015753	.0094615
sold_pt10	-.0134249	.0041803	-3.21	0.001	-.0216234	-.0052263
adexp_10	-.0021871	.000938	-2.33	0.020	-.0040268	-.0003474
adexp_pt10	.0035377	.0017239	2.05	0.040	.0001566	.0069188
_cons	.6659876	.0350736	18.99	0.000	.5971995	.7347758

Table 23 – Regression for multimarket contact as a predictor of competitor's advertising emphasizing brand (H1d)

```
      Source |       SS       df       MS              Number of obs =    1850
-------------+------------------------------           F(  5,  1844) =   85.73
       Model |   86.817545     5   17.363509           Prob > F      =  0.0000
    Residual |  373.468401  1844  .202531671           R-squared     =  0.1886
-------------+------------------------------           Adj R-squared =  0.1864
       Total |  460.285946  1849  .248937775           Root MSE      =  .45004

------------------------------------------------------------------------------
       brand |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         mmc |  -.0317398   .0673746    -0.47   0.638    -.1638784    .1003988
     sold_10 |  -.0472648   .0054481    -8.68   0.000    -.0579499   -.0365797
   sold_pt10 |   .1381248   .0080941    17.06   0.000     .1222503    .1539994
    adexp_10 |   -.005386   .0018162    -2.97   0.003    -.0089481   -.0018239
  adexp_pt10 |  -.0004713    .003338    -0.14   0.888    -.0070179    .0060754
       _cons |  -.1986455   .0679114    -2.93   0.003    -.3318369   -.0654542
------------------------------------------------------------------------------
```

Table 24 – Regression for H2a

Source	SS	df	MS	Number of obs =	751
Model	830.375148	5	166.07503	F(5, 745) =	26.92
Residual	4596.36786	745	6.16962129	Prob > F =	0.0000
Total	5426.74301	750	7.23565735	R-squared =	0.1530
				Adj R-squared =	0.1473
				Root MSE =	2.4839

duration	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
mmc	-2.162109	.5258036	-4.11	0.000	-3.194342	-1.129876
sold_10	.232007	.075311	3.08	0.002	.0841601	.379854
sold_pt10	.3987314	.0836976	4.76	0.000	.2344203	.5630426
adexp_10	.0265506	.0160046	1.66	0.098	-.0048689	.05797
adexp_pt10	-.0190478	.0258317	-0.74	0.461	-.0697594	.0316638
_cons	-.0464389	.5039605	-0.09	0.927	-1.035791	.9429128

Table 25 – Regression for H2b

```
      Source |       SS       df       MS              Number of obs =     751
-------------+------------------------------           F(  5,   745) =    7.11
       Model |  .974244125     5  .194848825           Prob > F      =  0.0000
    Residual |  20.4237499   745  .027414429           R-squared     =  0.0455
-------------+------------------------------           Adj R-squared =  0.0391
       Total |  21.3979941   750  .028530659           Root MSE      =  .16557

------------------------------------------------------------------------------
  complexity |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         mmc |  -.1116791   .0350497    -3.19   0.002     -.180487   -.0428712
     sold_10 |  -.0075219   .0050202    -1.50   0.134    -.0173773    .0023334
   sold_pt10 |  -.0082214   .0055792    -1.47   0.141    -.0191742    .0027315
    adexp_10 |   .0009244   .0010669     0.87   0.387      -.00117    .0030188
  adexp_pt10 |   .0008118   .0017219     0.47   0.637    -.0025686    .0041922
       _cons |   .5986923   .0335936    17.82   0.000     .5327429    .6646417
------------------------------------------------------------------------------
```

FIGURES

Figure 1- General model of multimarket competition

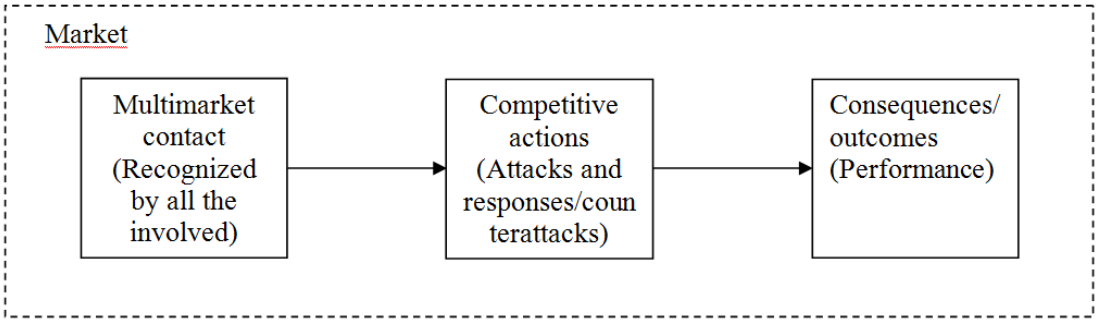
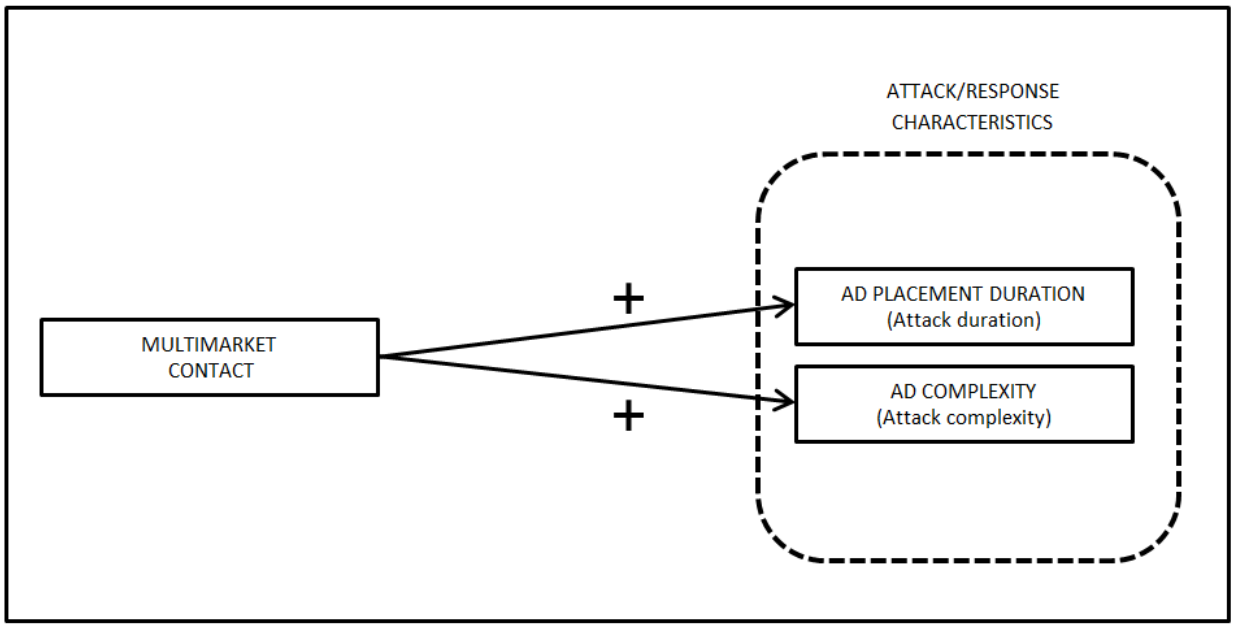


Figure 2- Theoretical model



BIOGRAPHY

Juan Manuel González Sánchez was born on October 9, 1979, in Popayán, Colombia. He attended Universidad Icesi in Cali – Colombia, and graduated with a Bachelor of Science degree in Business Administration in 2002. He obtained a Diploma in Marketing from Universidad Icesi in 2004, a Master in Business Administration with concentration in Entrepreneurship and Family Business from EAE Business School and Universitat Politècnica de Catalunya in Barcelona – Spain, in 2006, and a Master in Management from Tulane University in 2012. He started the Ph.D. in Management at A.B. Freeman School of Business at Tulane University in New Orleans – USA, in 2009.