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ASYMMETRIC RIVALRY BETWEEN STRATEGIC GROUPS: RESPONSE, SPEED OF RESPONSE AND *EX ANTE* VS. *EX POST* COMPETITIVE INTERACTION IN THE SPANISH BANK DEPOSIT MARKET

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The objective of this study is to examine asymmetric rivalry between strategic groups in a given industry. Two research hypotheses argue for the existence of asymmetric rivalry in the sense that strategic groups of small companies have a greater degree of response but a slower speed of response to the actions of strategic groups of large companies, than vice versa. To test this, we use an ex post approach that examines the news releases published on the strategic actions and reactions of firms. A third hypothesis compares ex ante competitive expectations with ex post asymmetric rivalry between strategic groups. To test this, we compare ex post news on actions/reactions with an ex ante approach that estimates conjectural variations. The empirical application carried out on bank deposits in the Spanish market defines strategic groups in terms of size due to the historical and institutional conditions of the industry (deregulatory change). The results obtained show that rivalry patterns between strategic groups in terms of company size can be predicted as asymmetric in the sense that smaller bank strategic groups have a greater degree of response (Stackelberg 'leader–follower' competitive interaction), and a slower speed of response to the actions of larger bank strategic groups than is found the other way around. Moreover, ex ante expectations of aggressiveness on the part of larger strategic groups characterize greater ex post reactions from the smaller-size strategic groups. Therefore, the size distribution of strategic groups is valuable to research on complex industries with deregulation changes. Copyright © 2005 John Wiley & Sons, Ltd.

INTRODUCTION

The notion of a strategic group refers to a group of companies that use similar strategies to compete in a given industry, which is defined in the theoretical framework developed from scheme structure–conduct–performance of Industrial Economics. Caves and his disciples started the modification of the traditional theories of Mason (1939) and Bain (1956) on the structure and performance of industry. They incorporated the different positioning adopted by companies on an individual basis and used this to start research on strategic groups of companies. In particular, they used this concept to demonstrate intra-industry heterogeneity and the differences in performance produced. They also explained the competition observed.

Hunt (1972) first coined the term when trying to explain competition observed in a highly concentrated, but highly competitive industry. He corroborated the existence of behavioral differences among the companies of an industry, which impeded the development of a wide oligopolistic consensus, as predicted by the classic theory of Industrial Economics. Similarly, Newman

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(1978) demonstrated that the existence of strategic groups prejudices tacitly expected collusion between companies, which reduces the explanatory power of the traditional model of Industrial Economics. Porter (1979) and Caves and Porter (1977) demonstrated that the existence of groups impedes the ability to make inferences about the market power at an industry level. In summary, this early research considered strategic groups as a dimension of the structure of the industry, which could enrich the traditional models of Industrial Economics.

Over time, the literature on strategic groups has expanded on the aspects of rivalry and has produced a series of deductions on the competitive interaction of companies and their performance. In accordance with the above, the authors distinguish the nature of intra- and between-group rivalry,[1] along with the impact of factors such as the number and size distribution of groups, the distance between them and their interdependency in the market. However, there is no consensus with respect to the different propositions put forward with respect to intra- and between-strategic groups rivalry (see the next section).

Our study is centered on the observation that there is competition between strategic groups (Porter, 1985; Putsis and Dhar, 1998), with the aim of determining whether this inter-group competition could be structured in a systematic and predictive way in terms of asymmetry—an aspect of asymmetry which has been suggested by the following research areas: (1) the cognitive perspective (Reger and Huff, 1993), which indicates the need to enlarge the theory of strategic groups to include complex industries whose group structure muddies the characteristic idea of symmetry of strategic groups; and (2) the groups of reference approach (Fiegenbaum and Thomas, 1995), which demonstrates the need to find alternative points of reference for all the competitors, such as the market leader; particularly in markets with a dominant leader. To do this, we start with the work of Chen and Hambrick (1995), which analyzes asymmetric rivalry of companies according to size and proposes that the smallest companies show a lesser degree of response and greater speed of response to competitive actions than do their larger rivals. Our work, however, assumes the opposite (the next section presents the theoretical argumentation), that is, that small company strategic groups have a greater degree of response and a slower speed of response to competitive actions of large company groups than vice versa. Moreover, our work compares *ex ante* competitive expectations with *ex post* asymmetric rivalry among groups (see the next section).

Basically, our proposal is based on the identification of the strategic groups of an industry in terms of company size. Company size constitutes the *a priori* criterion used in the original research to define strategic groups. The work of Porter (1974, 1979), Lahti (1983), Primeaux (1985, 1987), and Caves and Pugel (1980) which identify leader and follower companies stands out. In fact, authors like Amit *et al*. (1988) justify this tradition, which derivates from Industrial Organization, insofar as the scope of companies constitutes the distinctive feature of an industry with a homogeneous product, and company size is an appropriate dimension of scope. However, it can be said that, in principle, the identification of strategic groups is always somewhat problematic and can even become arbitrary (Peteraf, 1993), so Cool and Schendel (1987) only allow a multidimensional approach to identify valid strategic groups, forming company groups according to differences in their scope and resources commitments.

Underlying all this is the existing debate in the literature of strategic groups in relation to the lack of any theory on their formation and evolution. Along this line, our paper follows the institutional/historical approach of the industry to support the definition of size-based strategic groups in Spanish banking. This is due to the following aspects:

1. One of the more widely accepted theoretical explanations for the formation of strategic groups is the history of the industry, originally proposed by Porter (1979). From the perspective of company resources, Barney

[1] Literature makes a distinction between the concept of inter-company 'rivalry,' which stresses the behavior of individual companies, and the general concept of 'competition,' which is centered on the properties of the industry or market structure (Baum and Korn, 1996; Caves, 1984; Hannan and Freeman, 1989; Jacobson, 1992; Chen, 1996). Our study uses the concept of rivalry, as it considers individual competitive movements as a unit of analysis, through the examination of the exchange of actions and responses (Caves, 1984; Porter, 1980; Smith, Grimm, and Gannon, 1992) and of the estimation of conjectural variations (Amit, Domowitz, and Fershtman, 1988)—defined as the degree to which companies perceive their interdependence and its use in the formulation of their actions (Bowley, 1924).

(1991) shows that, the unique historical conditions of an industry can generate resources which are not perfectly imitable. Peteraf and Shanley (1997) propose that historical factors let us know initial company endowments, the path which describes the accumulation of its assets, and the development of its capabilities. They also propose that institutional analysis gives a complementary perspective of the evolution of the structure of the industry, as this evolution is understood as being a socially constructed process which, over time, creates norms of behavior that affect competition. At an empirical level, a large number of studies, most importantly those of Smith and Grimm (1987), Corsi and Grimm (1989), Corsi *et al*. (1991), Zajac and Shortell (1989), and Peteraf (1993), among others, follow this institutional/historical approach and analyze the impact of deregulation on company strategy and/or performance.

2. Following this institutional/historical approach, various authors recommend the use of *a priori* theoretical criteria in the identification of strategic groups in an industry. Dranove, Peteraf, and Shanley (1998) recommend that researchers identify groups *a priori* based on a deep institutional knowledge of the industry, which would allow them to search for barriers to mobility and define the limits of the groups in a temporal period. Peteraf (1993) accepts that if the industry's legal regulations lead to a certain strategic group structure it will be possible, following an *a priori* theoretical approach, to identify different company classes that are sufficiently different in their scope, resources, and strategic profile to constitute separate strategic groups (Thomas and Venkatraman, 1988).
3. In the case of the Spanish banking industry, it has been subject to very significant structural changes in the period 1989–92 (Mañas, 1992; Gual, 1992, 1993) in response to the processes of deregulation and European integration which it has faced (historical conditions are further detailed in the section 'Sample, data and variables') and which have influenced the configuration of strategic groups. These regulatory changes have brought about strong restructuring characterized by a process of mergers and acquisitions, which has affected competition. In particular, mergers and acquisitions are due to a desire to increase size in order to compete in the European market and preserve market power, or to solve the problems of savings banks relating to: (a) the freedom of geographical implantation through expansion enjoyed by the large saving banks and the smaller saving banks, which defend themselves by forming geographical groups; and (b) internal problems deriving from lack of resources or from the type of activities developed (Gual and Vives, 1991). Consequently, size constitutes a fundamental dimension in the Spanish banking industry, which explains why it has been used to identify strategic groups (Espitia, Polo, and Salas, 1991b).

The proposal of this study is to test asymmetric rivalry between size-defined strategic groups of an industry. Two research hypotheses argue for the existence of asymmetric rivalry in the sense that small company groups have a greater degree of response and a slower speed of response to the actions of large company groups than vice versa. To test this, we use an *ex post* approach that examines the competitive actions and responses of the members of the group (Porter, 1980) found in newspapers and specialist magazines (Smith, Grimm, and Wally, 1997). A third hypothesis compares *ex ante* competitive expectations with *ex post* asymmetric rivalry between strategic groups. To test this, we compare *ex post* news on actions/reactions with an *ex ante* approach that estimates conjectural variations (Amit *et al*., 1988). The empirical application is carried out on the Spanish bank deposit market in 1994, based on the identification of banking strategic groups in terms of company size, given their historical and institutional conditions.

The paper is organized in the following way: first, we offer a panorama of rivalry in the theory of strategic groups, and propose research hypotheses on asymmetric rivalry between groups; second, we revise the empirical work undertaken in the financial sector on this topic; third, we justify the proposed methodology; fourth, we define sample, data collection, and variables; fifth, we present the results, and finally we make our conclusions.

RIVALRY IN THE FIELD OF STRATEGIC GROUPS AND RESEARCH HYPOTHESES

The existence of strategic groups has direct implications on the behavior of companies and their

competitive interaction. These implications are discussed in the literature, which defines the nature of intra- and between-strategic group rivalry (Porter, 1976, 1979; Peteraf, 1993; Cool and Dierickx, 1993) and the influence of diverse factors (Porter, 1980).

It is suggested that intra-group rivalry is rare because a group's members are able to recognize their mutual dependency with greater ease. They steer their competitive behavior towards activities which create mobility barriers and respond in a similar way to environmental changes (Porter, 1979). This proposition is supported by the theory of resources, in the sense that the members of a group have similar allocations of resources, and therefore act and respond in a similar way to environmental discontinuities. Members can even have common suppliers and clients, something which facilitates greater communication and coordination in the industry (Peteraf, 1993).

It is also suggested that the high level of rivalry between groups, due to the fact that differences between groups imply the existence of heterogeneous resources and different competitive behavior patterns, makes it difficult to predict and coordinate the actions of rivals through the groups (Porter, 1980). This argument, along with that of intra-group mutual dependency, implies that rivalry between groups is greater than that of intra-group. This has been shown empirically by Peteraf (1993) and Porac *et al*. (1995). Even Nohria and García-Pont (1991) point out that strategic alliances between companies are more probable within a group and less probable between groups.

However, the literature criticizes some previous approaches, holding that intra-group rivalry can be greater than between-group rivalry. This proposition is put forward by Cool and Dierickx (1993), who show that, through time, rivalry can pass from being intra-group to being between-group. In this way, the following arguments are put forward.

First, the requisite for mutual dependency is hard to find as it is difficult to establish and maintain agreements between companies in a group, especially when they are of a similar size (Kwoka and Ravenscraft, 1986; Porac *et al*., 1995), when they increase their numbers (Scherer and Ross, 1990; Barney and Hoskisson, 1990), when there is a lack of history or leadership among members (Scherer and Ross, 1990), and when there is high interdependency in the market (Duysters and Hagedoorn, 1995). If the implicit agreements of a group are broken, members of a group can invade the market segments of companies of the same group (Cool and Dierickx, 1993). Therefore, a company in the group can worry the other group members more than outside companies. According to the theory of resources, greater intra-group rivalry can be derived from the homogeneity of resources of its members (McGee and Thomas, 1992; Bogner and Thomas, 1994), because they are all trying for the same objectives but they do not have the resources or unique isolating mechanisms to give them a competitive advantage.

Second, between-group rivalry can be affected by three factors (Porter, 1980):

1. Interdependency in the market or the degree to which groups compete for the same clients or for clients in very different market segments. Behavioral differences between groups will not have important consequences on rivalry, except when the interdependency of the groups in the market is pronounced.
2. The number and relative size of the groups. In situations where there are a great number of groups of equal size, a greater strategic asymmetry facilitates rivalry between the groups. The inverse applies when a group constitutes an important portion of an industry, with another group having only a small portion. In this case, strategic asymmetry has very little impact on the rivalry between the two groups given the slight influence of the smaller over the larger group.
3. Strategic distance. If behavioral asymmetry grows, mutual dependency cannot be easily found and greater rivalry is found between strategic groups. If behavioral asymmetry decreases, the opposite applies (Porter, 1979). Dooley, Fowler, and Miller (1996) even consider that there are three levels in the relationship between strategic distance and rivalry: a reduced strategic distance (homogeneity) implies the development of mutual dependence, whereas when strategic differentiation is so great that markets are not contestable by members of another group (heterogeneity) the companies in the groups distance themselves from the competitive struggle (Hatten and Hatten, 1987). An intermediate situation somewhere between homogeneity and heterogeneity, defined as a

moderate increase in strategic distance, carries with it an increase in between-group rivalry, which supersedes intra-group rivalry.

However, Hatten and Hatten (1987) suggest that it is difficult to conclude that a decrease in strategic distance diminishes between-group rivalry. On the contrary, a decrease in asymmetry of resources would bring about a situation in which product/market positions could be more contestable. Companies with similar resources are more capable of contesting for the market/product positions of others than companies in other situations. This implies that potential rivalry increases as strategic distance decreases.

To sum up, although the existence of strategic groups has direct implications on the conduct of companies and their competitive interactions, there is no consensus with respect to the different propositions put forward with respect to intra- and between-strategic groups rivalry. Alternatively, Smith *et al*. (1997) consider that the fundamental question may not be the comparison of intra- and between-group rivalry, as suggested by literature on strategic groups, but the way in which groups act competitively with each other. Along these lines, our study is centered on the observation that there is competition between strategic groups (Porter, 1985; Putsis and Dhar, 1998), in order to determine whether this inter-group competition is structured systematically and predictably in terms of asymmetry.

Hypotheses of asymmetric rivalry between size-defined strategic groups

Originally, and from an individual human behavior point of view, Tversky (1977) challenged the basic hypothesis of underlying symmetry in all the theoretical treatments of similarity. This author empirically shows asymmetric similarities and argues theoretically that the similarity between two objects should not be treated as a symmetrical relationship.

Tversky's theory is equally applicable to competitive behavior at a company level (Chen, 1996), as a company's specific conceptualization of competitors suggests that the competitive relationship between a pair of companies can be asymmetric, depending on which competitor is under consideration. If A is the main competitor of B, it does not necessarily follow that B is the main competitor of A.

At a strategic group level,[2] the first references to asymmetric competition are made by Porter (1979) and Hatten and Hatten (1987) when they indicate that mobility barriers and the resulting patterns of rivalry may not be symmetrical. Recently, the literature has suggested competitive asymmetry in company groups defined by size or dominance. It should not be forgotten that the reference point theory considers that a company's strategic decisions can usually be compared to or take as a reference those of the industry leaders (Fiegenbaum and Thomas, 1995; Fiegenbaum, Hart, and Schendel, 1996). In this way, we propose the identification of asymmetric rivalry in the following contexts.

Asymmetric rivalry in term of competitive responses

Various studies propose that small companies show a lesser degree of response to the competitive actions of their larger rivals than vice versa (see Table 1). The theoretical argumentation of this proposal is the following.

The Game Theory of the Economy of Industrial Organization distinguishes asymmetric patterns in competitive interaction, among which 'dominant–fringe' behavior stands out. This concerns the case of the competitive strategies of companies which show the following opposing directions (Putsis and Dhar, 1998; Raju and Roy, 1997): a 'fringe' company behaves cooperatively, while a 'dominant' company competes in a non-cooperative fashion. In other words, a company simply follows the actions of a stronger rival. In this way, the weaker (or 'fringe') company might not want to compete directly with the dominant company, so it accommodates the competitive efforts of its larger rival. In return, companies with a dominant share position fiercely defend their market position, taking a non-cooperative stance. This type of interaction, which intensifies the advantage of large companies (large companies

[2] In industries characterized by companies with different combinations of scope and competitive assets, it could be unnecessary or impractical to consider the competitive reactions of all rivals. Thus the analysis could be centered on strategic groups or, in other words, on one of the competitors of each group that bases its business strategy on a similar competitive advantage (Amit *et al*., 1988).

Table 1. Theoretical basis of asymmetric rivalry between size-defined strategic groups in terms of responses

Perspective		Theoretical basis	Authors	Major findings
Small companies show less degree of response to competitive actions than their larger rivals	Industrial Economy (Game Theory)	Competitive interaction 'dominant–fringe'	Putsis and Dhar (1998)	37 asymmetric competitive interactions 'dominant–fringe' (of a total of 123 examined in the field of marketing instruments) between national brands and private labels
		Efficient companies enjoy cost advantages of exclusive production factors, or from economies of scale and scope linked to size and product range	Demsetz (1973) Baumol (1967)	
	Strategic Management	Large company slack resources facilitate their greater degree of response; large company reputation promotes their greater degree of response	Chen and Hambrick (1995)	U.S. small airlines between 1985 and 1986 were less responsive to competitive attacks than their larger rivals
Rivalry between size-defined strategic groups is asymmetric and of the 'leader–follower' type of Stackelberg, in the sense that the groups of smaller companies show a greater degree of response to the competitive actions of the groups of larger companies than vice versa (Hypothesis 1)	Industrial Economy (Game Theory)	Competitive interaction 'leader–follower' (Stackelberg)	Putsis and Dhar (1998)	The most common form of asymmetric competitive interaction (86 observations) between national brands and private labels (for each of 58 categories and four marketing instruments in 1992) is that of 'leader-follower'
		Small companies ('puppy dogs') are price aggressive in order to establish clients and large companies ('fat cats') exploit their client base	Farrell and Shapiro (1987)	Demonstrates that small companies have an incentive to behave aggressively in pricing in order to establish clientele, whereas large companies tend to exploit their client base

	Relaxing of legal barriers to entry affects the 'dominant–fringe' interaction, reducing the retaliations of the dominant over the fringe	Spiller and Favaro (1984)	The entry threat from new financial entities after the 1970s relaxation of entry barriers in the Uruguayan banking sector led the small bank group to expect no reaction from the large bank group
	Judo Economics: strategy (restricted capacity and low price) affects the 'dominant–fringe' interaction, making the dominants' retaliations expensive	Gelman and Salop (1983)	A fringe competitor partially offsets its demand disadvantage by engaging in capacity limitation and discount pricing. This strategy credibly reduces the threat posed to the dominant firm and makes retaliation more expensive.
Strategic Management	Judo strategy (leverage) turns a strong opponents own strength against itself and does not invite response	Yoffie and Cusumano (1999)	Leverage is a key element from judo strategy in the competition between Netscape (David) and Microsoft (Goliath). Leverage will make a dominant company hesitate to strike back
	Large companies do not recognize or disregard the threat of weaker opponents	Chen (1996)	There was myopia in some competitors in the U.S. aeronautic industry in 1989, who considered other players to be insignificant; although the latter considered the former to be their single most important competitor and, thus, their primary target of attack or counter-attack
	Slack resources of large companies foment their insularity and lack of response	Miller and Chen (1994)	No evidence in the U.S. aeronautic industry between 1979 and 1986 that competitive inertia (level of activity that a firm exhibits when altering its competitive stance in different areas) is positively related to company size

have the option of competing with small companies, but small companies cannot always reciprocate), is explained by the hypothesis of efficiency (Demsetz, 1973). The most efficient companies have cost advantages linked to the possession of exclusive productive factors (e.g., management talent) or the classic economies of scale and scope corresponding, respectively, to size and product range (Baumol, 1967).

Chen and Hambrick (1995), from Strategic Management, make their arguments through two factors: (1) slack resources—large companies generally have more slack resources, so they tend to respond with more probability; in contrast, the resource constraints of smaller companies prevent them from retaliating, even when they want to; (2) reputation—large companies have a better reputation and are sometimes propelled to respond to attacks in order to protect their reputations. Small companies, however, do not lose their credibility if they abstain from responding to their adversaries' actions.

Despite this, our study proposes that small/weak company strategic groups can respond with more vigor to large/advanced strategic groups than vice versa. At an empirical level and as examples of this type of competitive situation are the following: the gradual invasion of the global market by Japanese multinationals in recent decades, which gives us an excellent lesson on the potential threat of seemingly insignificant competitors (Hamel and Prahalad, 1990); The hard lesson learned by brand leaders in many consumer product markets after the substantial losses in market share inflicted on them by their private-label rivals (Glemet and Mira, 1993); the aggressive competition aimed at multinationals by small manufacturing companies from developing countries (Vachani, 1990; Cortes, Berry, and Ishaq, 1987; Little, Mazumdar, and Page, 1987).

At a theoretical level, this type of asymmetric behavior is based on the following argumentation (see Table 1): from the point of view of the Game Theory of Industrial Organization Economics, Putsis and Dhar (1998) and Raju and Roy (1997) highlight behavior known as 'leader–follower' (Stackelberg), which implies that a 'follower' company reacts to changes to the actions of its rivals, while a 'leader' company does not react. This means that a company that acts as a leader does not react to the actions of its rival whereas its rival follows the strategic behavior changes of the leader. Farrell and Shapiro (1987) and Farrell and Klemperer (2001) explain this interaction by arguing that small companies (called 'puppy dogs' by Fudenberg and Tirole, 1984) have an incentive to compete aggressively on prices in order to establish a client base, while large companies ('fat cats') do not compete aggressively as they tend to exploit their existing client base.

In the same way, certain legal changes, such as the relaxation of entry barriers (deregulation) to an industry, can affect competitive interaction of the 'dominant–fringe' type, reducing the retaliations that the fringe group expects from the dominant companies (Spiller and Favaro, 1984). This elimination of entry barriers to an industry affects 'dominant–fringe' competitive interaction in the sense that the entry threats of new companies constitute a greater worry for dominant companies, which implies that fringe companies expect fewer retaliations from dominant companies. Therefore, Spiller and Favaro (1984) are unable to reject the idea that the type of competitive interaction becomes that of Stackelberg ('leader–follower').

Within this field of 'dominant–fringe' strategic interaction, Judo Economics (Gelman and Salop, 1983) also describes a strategy which credibly reduces the threat posed to the dominant company and makes its retaliations more expensive (becoming a Stackelberg 'leader–follower' interaction). Basically, this strategy induces a large incumbent to accommodate the entry of a new player when the credibility of the new entrant's commitment to remaining small persuades the incumbent that it is not worth the effort to make retaliations. This entrant strategy is based on low price and limited capacity, which make the accommodation of the entrant more profitable than a retaliation from the dominant incumbent from the following two perspectives: (1) the capacity limitation of the entrant restricts the loss of market share suffered by the incumbent if it accommodates the entrant; and (2) the low price of the entrant would increase the losses of the incumbent if it adjusted its prices. Therefore, the small company uses the large size of its rival to its own advantage.

From the perspective of Strategic Management, Yoffie and Cusumano (1999) show that the judo strategy goes a step further: the judo strategy clearly threatens the dominant company but also supposes an incentive for large companies not to respond to the actions of smaller companies. In order to do this, the judo strategy has to find

sources of leverage to make a dominant company hesitate at the moment of responding to an attack by a smaller company. Among these leverage sources, which use an opponent's own strength and weight against itself, are any commitments and strategic investment of the opponent, as well as cooperation with other companies which have been threatened by the success of the opponents.

Finally, the Maryland school and the work of Chen and colleagues, aimed at competitive actions and responses, also put forward the following arguments that defend an asymmetric competition in which small companies show a greater degree of response to competitive actions than large companies do. First, Miller and Chen (1994), in line with Wright (1979), indicate that managers of large companies can come to believe that they are powerful enough to ignore threats from their weaker rivals. Thus, Chen (1996) shows that stronger companies can consider certain companies as non-key competitors to which they can concede a wide latitude of action without retaliation; and that stronger rivals could be unaware of threats from weaker opponents, while weaker companies consider powerful companies to be their main targets. Consequently, these weaker companies can be disregarded or not recognized despite the damage they could cause.

Second, Miller and Chen (1994) propose that size supposes a restriction to action, as March (1981) associates large size with an abundance of slack resources that buffer large companies from competition and promote insularity. Conversely, smaller, more vulnerable companies have to be constantly on the lookout for threats and opportunities (Aldrich and Auster, 1986), which prevents them from stagnating.

In the particular case of the Spanish banking industry, the specific conditions of the 1994 growth in market share of the large-size strategic group following the price war which came after the deregulatory change support the hypothesis of a greater reaction by small-size group than vice versa, in terms of the argumentation of exploitation of a large client database (Farrell and Shapiro, 1987) and of Judo Economics (Gelman and Salop, 1983). Gual and Vives (1991) indicate that, in 1989, at the moment of interest rate liberalization, but before the introduction of 'super accounts' by the large banks, there were the following main strategies. The large banks maintained a wide client base with low-yielding accounts and free services. High-interest deposits were only offered to important clients or to those who showed themselves to be well informed on market conditions. In contrast, medium and small-size banks, all with limited branch networks, openly promoted high-yielding accounts. Therefore, the large banks were 'fat cats' (Farrell and Shapiro, 1987; Fudenberg and Tirole, 1984): their wide client base made them non-aggressive in their deposit capturing, given that they were conscious that an open offer of high-yielding accounts would entail significant cost increases, from not only new accounts, but also as existing depositors would demand the same treatment. The medium and small-size banks offering these high-interest accounts were 'puppy dogs' as they maintained a limited capacity for deposit capturing and therefore did not pose a threat to the large institutions (Judo Economics).

The situation changes towards the end of 1989 with the introduction of the 'super accounts' by the large banks, which transforms them from 'fat cats' to 'top dogs.' The Banco de Santander, initially, and later the Banco BBV, launch themselves into the capture of new clients with a massive promotional campaign for a high-yielding account marketed as 'super account' ('Supercuenta'), which explicitly incites clients to change banks—a direct threat to the market share of the other large banks. Faced with this new strategy there was no place for the pacific attitude of a 'fat cat' and they had to assume the aggressive attitude of a 'top dog.' This was the response of the other financial entities that joined the price war. Of particular note was the strategy of attacking the traditional market segment of the savings banks (small and medium-size deposits of unsophisticated consumers) by the BBV, as it opened a new front in the competition for deposits by attempting to obtain the advantage of being the first; similarly the Banco de Santander with large deposits.

Thus, the 4-year period 1989–92 is characterized by an open battle for deposits (Freixas, 1996). However, once the most aggressive entities ('top dogs') had managed to substantially increase their deposit market share through the price war they began to have incentives to moderation, as they had 'fattened up'[3] and the cost of maintaining high interest rates would be very high (Gual and Vives,

[3] In the Spanish bank deposit market Freixas (1996) observes an increase in the market share of the large banks (banks and

1991). Therefore, we return to the initial situation where the large banks are 'fat cats' and the medium and small are 'puppy dogs.'

Given that in 1994 there was a return to the initial situation in which the large banks acted as 'fat cats' exploiting a large client base (Farrell and Shapiro, 1987), and that small company price and capacity limitation strategy reduces the threat of the dominant companies and makes their retaliations more expensive (Judo Economics), we propose the following hypothesis:

> *Hypothesis 1: Rivalry between size-defined strategic groups is asymmetric and of the leader/follower type of Stackelberg in the sense that strategic groups of smaller companies show a greater degree of response to the competitive actions of larger company strategic groups than vice versa.*

Asymmetric rivalry in term of speed of response

Another aspect which allows us to characterize asymmetric rivalry between size-defined strategic groups is response speed. Basically, the Strategic Management literature suggests that small firms will execute responses faster than their larger rivals, which can be explained in the following way (see Table 2).

First, judo strategy proposes rapid movements by small companies to new markets, avoiding head-to-head combat with large companies (Yoffie and Cusumano, 1999).

Second, Chen and Hambrick (1995), from the perspective of competitive actions and reactions, indicate that:

1. Small companies should be able to respond more quickly than large companies due to their flexibility, in order to maximize the impact of guerrilla counter-attacks (MacMillan, 1980). Conversely, the structural and information-processing complexities of the large companies restrict their execution speed (Galbraith, 1977).
2. Large companies often need to analyze and coordinate many markets to implement effective and coherent responses, whereas small companies are often niche players and do not need to use responses which affect the whole market of an industry (Porter, 1980).

However, our study proposes that small company strategic groups respond more slowly to large strategic groups than vice versa. This is defended in the following way:

1. Large size is associated with an abundance of slack resources (March, 1981), and firms with ample slack resources may instantly order overtime work to hasten an implementation (Smith *et al*., 1991). Conversely, firms without those resources may have to take time to develop a resource base to finance their response. Empirically, Meyer (1982) found that organizations with slack resources responded faster to environmental crisis than organizations with limited resources; and Chen, Smith, and Grimm (1992) support that an action which requires more effort (resources) to execute is associated with a longer response lag.
2. When competitors' key markets are strongly threatened, they tend to retaliate slowly (Chen and MacMillan, 1992). These competitors may respond cautiously to major threats for fear of precipitating escalation retaliation. Therefore, they will react decisively, but slowly, for fear of the initiator's retaliation. The fear may come from the fact that the initiator is a powerful or credible player, for example in terms of size, in the markets where the battle is engaged (Chen *et al*., 1992).

In the specific case of Spanish banking, the small and medium-size companies, apart from their limited resources, have a fundamentally local/regional operating area (see section 'Sample, data, and variables'), given the traditional restrictions to the geographical expansion of the savings banks (Gual and Vives, 1991). Therefore, it is possible that an attack from the large banks on these key local markets would generate a strong response from the small banks, which would be slower than a large bank to respond for fear of precipitating escalation retaliation. In virtue of the above mentioned, we propose the following hypothesis:

> *Hypothesis 2: Rivalry between size-defined strategic groups is asymmetric in the sense that groups of smaller companies show a slower*

savings banks) which is combined with a decrease in the share of the small and medium-size banks between 1990 and 1994.

Table 2. Theoretical basis of asymmetric rivalry between size-defined strategic groups in terms of speed of response

Perspective		Theoretical basis	Authors	Major findings
Small companies show a faster speed of response to competitive actions than their larger rivals	Strategic Management	Judo strategy suggests that smaller companies may move rapidly to new markets avoiding head-to-head combat	Yoffie and Cusumano (1999)	With speed and flexibility, Netscape (David) could compete successfully with Microsoft (Goliath)
		Small companies are more flexible and are niche players, whereas large companies have more structural complexity and trade in many markets	Chen and Hambrick (1995)	No evidence that the largest 28 U.S. aeronautic companies between 1985 and 1986 had a greater response speed than small companies to large company actions
Rivalry between size-defined strategic groups is asymmetric in the sense that smaller company groups show a slower speed of response to the competitive actions of the larger company strategic groups than vice versa (Hypothesis H2)	Strategic Management	Firms without ample slack resources need time to develop resources to finance their response.	Smith *et al.* (1991)	A weak negative relationship for the 32 largest U.S. aeronautical companies between slack resources and response lag
			Chen *et al.* (1992)	An action which requires more effort (resources) to execute is associated with a longer response lag
		When competitors are attacked in their key markets, they respond with caution (slowly), for fear of precipitating escalation retaliation from the powerful initiator (large size)	Chen *et al.* (1992)	A positive relationship for the 32 largest U.S. aeronautical companies between 1979 and 1986 between response lag of defender and size of the initiator in the markets where an action is taken

speed of response to the competitive actions of larger company strategic groups than vice versa.

Interaction between asymmetric rivalry ex ante and ex post

Some authors argue that the lack of consensus with respect to the propositions of intra- and between-strategic groups rivalry could be due to operational problems such as those derived from the heterogeneity of methods used to measure rivalry (Smith *et al*., 1997). Along this line, a series of studies follows a cognitive approach to estimate rivalry from a subjective point of view. As a starting point, they use the perceptions of decision-makers in the sector, whether they are of response strategies (Vachani, 1990), or of the company's direct competitors (Gripsrud and Gronhaug, 1985; Easton, 1988; Porac and Thomas, 1994; Porac *et al*., 1995; Lant and Baum, 1995).

Another current of research uses objective measurements of available data sources. Among these, we want to highlight, first, direct measurement of competitive interaction, which uses news items published in specialist publications and has a multidimensional character as it considers strategic company actions and responses (Smith *et al*., 1997). Second, indirect measurements, which usually employ one-dimensional indicators of rivalry, such as price/cost (Peteraf, 1993), Herfindahl index (Cool and Dierickx, 1993), conjectural variation (Amit *et al*., 1988), and the coefficient of interdependency in Gompertz models (Carroll and Swaminathan, 1992).

Faced with this lack of consensus on the most appropriate methodology for the measurement of rivalry, authors such as Reger and Huff (1993), Thomas and Venkatraman (1988), and Porac and Thomas (1994) defend the need to carry out multimethod confirmation studies to validate empirical results. Following this approach, our study applies two alternative methodologies: (1) the *ex post* approach, based on examination of the competitive actions and responses of members of the group (Porter, 1980) found in newspapers and specialist magazines (Smith *et al*., 1997); and (2) the *ex ante* expectations approach, based on the estimation of conjectural variations between strategic groups (Amit *et al*., 1988).

Basically, news reports on competitive actions and responses found in newspapers examine *ex post* whether or not the repositioning realized is affected by the actions of competitors (Smith *et al*., 1997). This methodology is centered (in the terminology of Caves, 1984) on the rivalry movements between the implicated companies. Rivalry can be defined as the interchange of competitive movements between the companies of a market (Porter, 1980), and Smith *et al*. (1997) propose the examination of competitive actions and responses as an alternative to the study of competitive interaction. It should not be forgotten that the way in which a company acts and responds in a market determines its performance (Porter, 1980). Smith *et al*. (1997) define (from Schumpeter, 1950) 'competitive actions' as specific and detectable competitive movements, such as price cuts, the introductions of new products, expansion into new markets, and special promotions, initiated by a company to defend or better its relative competitive position. A 'competitive response' is a discernible and observable competitive movement of counterattack (to an initial competitive action), undertaken by a company with respect to one or more competitors to defend or better its position (Porter, 1980).

For its part, conjectural variation constitutes an important *ex ante* element in the decision-making process of a company (Gollop and Roberts, 1979). Conjectural variation reflects the expectations that agents have of the different strategic behavior of entities, and are generated through time as a function of past experience through a process of adaptative expectations. Conjectural variation can be estimated for different strategic dimensions (Putsis and Dhar, 1998). For example, for the output capacity decision, the conjectural variation constitutes a subjective estimation by an agent of the effect of a 1 percent increase in the amount offered over the increase in the amount offered by another agent (Freixas, 1996).

In this way, conjectural variation constitutes a measurement of the capabilities of a company from the point of view of a rival. This means that a company must examine its rival's decision-making process in order to find out the perception the rival has of the first company's response profile. This measure will be later incorporated into the profit-maximizing behavior of the rival, which in turn will be considered in the original company's decision making. In sum, conjectural variation itself may be viewed as a reflection of a strategic asset, namely the reputation of a firm. Reputation here relates exclusively to the aggressiveness of firms

in responding to changes in rivals' policies (output, prices, etc.). Therefore, the conjecture measures the aggressiveness of a company (Amit *et al*., 1988).

Our use of both *ex ante* and *ex post* approaches in this paper is due to the fact that their relationship or interaction is of great interest to the literature of strategic groups. In fact, Reger and Huff (1993) suggest the existence of interaction between *ex ante* expectations and *ex post* realizations, as expectations can influence subsequent competitive reactions (economic realities). As strategists scrutinize other firms within an industry and develop mental frameworks for interpreting what they see, they come to expect certain behavior and act on these expectations. Therefore, the result is to further homogenize the repertoire of strategic responses taken. Expectations, thus, are another force for channeling firms into a limited repertoire of behavior.

In general, the literature of strategic groups has paid little attention to the link between *ex ante* expectations and *ex post* rivalry behavior (see Table 3). One research thread defended by Amit *et al*. (1988) indicates that situations can arise in which a company believes that a competitor will be very aggressive in their response to a competitive action and that a further similar reaction could result in an undesirable war (*ex ante*), so it would not respond (*ex post*) to the original competitive action. Conversely, if it believes that the other company will be passive, it believes (*ex ante*) that the company will not start a war and will, therefore, respond (*ex post*) to the competitive action.

However, our paper proposes interaction between *ex ante* expectations and *ex post* actions/responses between strategic groups (size-defined) in the sense that expectations (*ex ante*) of aggressiveness in output quantity (bank deposits) of the large-size strategic group characterize *ex post* reactions from the small-size groups in terms of greater response to actions of the large-size group. This proposal is supported by the following argumentation.

Reger and Huff (1993) indicate that, if a firm is classified (*ex ante*) as aggressive, small changes in its strategy will be given increased importance and retaliatory responses (*ex post*) are more likely. Similar actions by another firm, perceived to be following a less aggressive path, will be taken less seriously. In fact, Amit *et al*. (1988) observe that the study of Gollop and Roberts (1979) obtains a negative parameter for the conjectural variation (output quantity) of the large-size strategic group; in other words, this group anticipates (*ex ante*) that aggregate output from all other firms will fall in response to a planned increase in its own output (larger size group). Consequently, these authors expect a relatively large response (*ex post*) of smaller-size strategic groups.

In the specific case of the Spanish banking industry, its conditions reveal that:

1. Output quantity decisions are of a strategic type (Gual and Vives, 1991) as shown by Chen *et al*. (1992) in that they involve significant investment in fixed assets and/or people/structure. In fact, competition in the area of deposit capture (output) is characteristic of the Spanish banking system in the 1980s (Gual and Vives, 1991) and the first half of the 1990s (Freixas, 1996); capture of deposits through competition in branches, in other words, through overinvestment in services and client/branch network proximity.
2. Traditional limitations to the geographical expansion of the saving banks have created a Spanish banking sector in which the entities (banks and saving banks) have an operating area that is either national, regional or local, as the limitations to the geographical expansion of the saving banks have made markets with local or regional character. Moreover, the geographical freedom enjoyed by the savings banks since 1989 has created an aggressive expansion policy on the part of the large entities that, in turn, has provoked a defensive movement by the smaller entities, which have formed geographical groupings (Gual and Vives, 1991). In this context, there are *ex ante* expectations of large entity aggression in terms of deposit quantities (strategic decision to expand branch network), and it can be assumed, following Reger and Huff (1993), that any action, either strategic (for example, mergers, market entries, agreements, and investments) or tactical (for example products and prices), of the large-size strategic group will be of great importance to the small-size groups as they affect their local and/or regional markets, which means that they will effect greater *ex post* competitive responses than vice versa.

Table 3. Theoretical basis of asymmetric rivalry between size-defined strategic groups in terms of interaction between *ex ante* expectations and *ex post* rivalry behavior

Perspective		Theoretical basis	Authors
Ex ante expectations of aggressiveness from one company characterize *ex post* reactions from another in terms of non-response to the competitive action of the former	Strategic Management	If a firm is classified as aggressive (*ex ante*), the actions of the other company could degenerate *ex ante* into war, meaning that the second company will not respond *ex post*	Amit *et al.* (1988)
Expectations influence *ex post* asymmetric rivalry between size-defined strategic groups, in the sense that the conjectural variations in aggressiveness in the output quantity of large-size groups characterize the *ex post* reactions of the small-size group in terms of greater response to large-size group actions than vice versa (Hypothesis 3)	Cognitive Strategic Management	If a firm is classified as aggressive (*ex ante*), small changes in its strategy will be given increased importance and retaliatory responses (*ex post*) are more likely	Reger and Huff (1993)

In virtue of the above, we propose the following hypothesis of interaction between *ex ante* expectations and *ex post* asymmetric rivalry between size-defined strategic groups:

> *Hypothesis 3: Expectations influence ex post asymmetric rivalry between size-defined strategic groups in the sense that the conjectural variations of aggressiveness in output quantity of the large size groups characterize the ex post reactions of the small-size groups in terms of greater response to actions of the large-size group than vice versa.*

PREVIOUS EMPIRICAL FINDINGS IN THE FINANCIAL SECTOR

Different analyses of rivalry in the financial industry have been carried out, in Spain as in other countries, from a strategic group perspective.

On an international level, we want to highlight a line of investigation that, using data from individual entities, analyzes the market power with oligopolistic models of competition with homogeneous product and estimates agents' output behavior parameters. This behavior is represented by conjectural variation at the level of strategic groups of banking entities defined by size. This means it is assumed that the conjectures of a company on the responses of another depend on their relative sizes in the market (Gollop and Roberts, 1979). In this line, we find the work of Spiller and Favaro (1984) in the Uruguayan credit market, and of Berg and Kim (1994) in the Norwegian credit and deposit market. However, only the work of Spiller and Favaro (1984) analyzes asymmetric rivalry, finding that the form of interaction known as 'dominant–fringe' becomes one of 'leader–follower' in a situation of deregulation.

Another current of research, defended by Burke (1990), analyzes the asymmetric rivalry between strategic groups in Californian banking. She defines strategic groups according to their scope (statewide, metropolitan, and local) as proxies for size. Burke uses a regression analysis to find the impact on performance and finds, in line with Strategic Management (Chen and Hambrick, 1995), that competitive influence flows downwards through the statewide–metropolitan–local hierarchy. In other words, a 'dominant–fringe' interaction.

Various empirical studies have been carried out on Spanish financial institutions, in which different approaches have been noted. One current of

research, from the perspective of conjectural variation, examines strategic interactions between entities in a disaggregated way.[4] Along these lines is the work of Coello (1994) who, based on the study of Spiller and Favaro (1984), presents a model of oligopolistic competition with product differentiation via quality of service in which conjectural variations are a function of entity size. However, he identifies groups[5] of entities by means of their legal differences (banks and savings banks) and analyzes their asymmetric interactions.

Another current of research analyzes intra- and between-strategic group rivalry using the methodology of Cool and Dierickx (1993), which measures rivalry with the Herfindahl index and defines strategic groups through the application of cluster analysis on multiple variables of strategy. Note the work of Céspedes (1996), who identified strategic groups in the Spanish bank in the period 1986–91 by considering 16 strategy dimensions and distinguishing between credit and deposit products.

In summary, the analyses of asymmetric rivalry undertaken in the financial sector in the field of size-defined strategic groups have been few—to be precise, those of Spiller and Favaro (1984) and Burke (1990). However, only the work of Spiller and Favaro (1984) dares not to reject the idea that the type of competitive interaction can become of the Stackelberg ('leader–follower') type in a situation of deregulation. Along this line, our work intends to expand on the 'leader–follower' type of interaction, with the research hypotheses presented in the previous section.

METHODOLOGY

The methodology developed in order to test the existence of asymmetric between-group rivalry in the Spanish deposit market is the following: Hypotheses 1 and 2 are tested with an *ex post* approach which examines news releases published on the strategic actions and reactions of firms. Hypothesis 3 is tested through the comparison of *ex post* news articles on actions/reactions with the estimated parameters of the conjectural variations (based on *ex ante* expectations).

The *ex post* measurement of between-strategic group rivalry is carried out through the analysis of the content of a collection of news items published in newspapers and specialist magazines, on the competitive actions and responses of the entities of the deposit market; news items were obtained from the Baratz database. Baratz gives a summary of news published in 28 national and regional publications of general or specialized nature. The method of operating in the database was initiated with the distinction between actions and responses. Identification of the competitive responses of the entities was effectuated by selecting news items which contained expressions such as 'in response to . . . ,' 'following . . . ,' 'under pressure from . . . ,' 'reacting to . . . ,' taking as a starting point the last day of the time period (December 31 1995). Next, we looked for the news of the initial action, to which each response referred, going back one day at a time until January 1, 1994. Finally, we identified the competitive actions to which no competitive response could be observed. This method allows us to identify the primary actors and all those that respond with a temporary order of response to an initial action. The examination of actions and responses is based on five measurements of competitive behavior—competitive activity, instigation of rivalry, propensity to launch new products, speed of response, and imitation (Smith *et al*., 1997)—shown in the section 'Sample, data, and variables.' The application of bivariant statistic analyses allows us to test *ex post* asymmetric rivalry between groups in terms of Hypotheses 1 and 2.

For its part, measurement of the *ex ante* expectations of rivalry is made through estimation of the parameters of conjectural variation for a benchmark entity for each strategic group. To this end, and for the first time, we propose a model which, first, incorporates certain product differentiation (through quality of service) into the original modelization of Gollop and Roberts (1979), which expresses the conjectures of an entity concerning the responses of competitors in terms of its position in the size distribution; and, second, adapts to the case of banking through consideration of the function of deposits costs and incomes put forward by Coello (1994). Basically, our model is

[4] Other studies in the Spanish banking industry followed an aggregate method, based on the approach of Bresnahan (1982), Lau (1982), Alexander (1988), Shaffer (1989, 1993), or Shaffer and Di Salvo (1994). It is possible to cite Gual and Ricart (1990), Lorences (1991), Sastre (1991), Gual (1992, 1993), and García, Polo, and Urquizu (1998).

[5] Other disaggregated studies, such as those of Espitia, Polo, and Salas (1991a) and Espitia and Santamaría (1994), do not identify strategic groups.

of oligopolistic competition with a homogeneous product and certain product differentiation through service quality. This model corresponds to one of monopolistic competition in which the strategic variable is quality of service, which is mainly determined by the branch network. This type of branch-level deposit capture rivalry (output) is typical of the situation of the Spanish banking system in the early 1990s (Freixas, 1996). Along this line, interpretation of the model that entities modify their deposit offers as a reaction to the actions of other entities is appropriate to reflect rivalry in this period, as entities competed in the opening of new branches in order to capture funds. In our case, the conjectural variation constitutes a subjective estimation by an agent (strategic group) of the effect of a 1 percent increase in the amount offered over the increase in the amount offered by another agent (strategic group) (Freixas, 1996). To be precise, the proposed model expresses the following first-order conditions of entity j whose size is found between those of benchmarks b_t and b_{t+1} (and whose theoretical development is shown in the Appendix):

$$\frac{R - r_{dj} - c_j}{r_{dj}} = \frac{S_j}{\varepsilon}\left[1 + \sum_{u=1}^{s}\left(\sum_{i\in u, i\neq j} y_i\right) \times (w_t\beta_{tu} + w_{t+1}\beta_{t+1,u})_{ju}\right] \times \left[1 + \frac{v_j}{r_{dj}}\right] \quad (1)$$

for the semi-logarithmic model of the conjectures ($j = 1, \ldots, n$ firms; $u = 1, \ldots, s$ strategic groups) and

$$\frac{R - r_{dj} - c_j}{r_{dj}} = \frac{S_j}{\varepsilon}\left[1 + \sum_{u=1}^{s}\left(\sum_{i\in u, i\neq j} y_i \Big/ y_j\right) \times (w_t\gamma_{tu} + w_{t+1}\gamma_{t+1,u})\right] \times \left[1 + \frac{v_j}{r_{dj}}\right] \quad (2)$$

for the logarithmic conjectural variation (elasticities). In these equations of behavior (1) and (2), R is the income for each unit of deposit; r_{dj} is the interest rate of deposit of entity j; c_j are operative costs of j; S_j is the market share of entity j; ε is the price elasticity of the aggregate function of demand for deposits of the market; y_j is the volume of deposits (output) offered by an entity j; $\beta_{tu} = \partial \ln(\Sigma_{i\in u, i\neq j} y_i)/\partial y_j$ is a conjectural variation of entity j with respect to the relative response of the entities of size strategic group u; $\gamma_{ju} = \partial \ln(\Sigma_{i\in u, i\neq j} y_i)/\partial \ln y_j$ is a conjectural variation defined with the conventional approach of elasticity; and v_j is the quality service of entity j. Furthermore, the coefficients w are the weights, determined by the output distances between entity j and the benchmark firms b_t and b_{t+1}, which, in this way, add up to 1. For $j = b_t$ (benchmark observation), $w_t = 1$ and $w_{t+1} = 0$, and Equations 1 and 2 are reduced to Equations 4 and 5 respectively (see Appendix). In general, the model only specifies parametrically the conjectures of the benchmark entities, and the conjectures of the non-benchmark entities are expressed as linear combinations of the conjectures of benchmark observations. The closer the size of entity j gets to the size of the benchmark company, the greater is its role in the estimation of the conjectural variations of the benchmark company. This framework explicitly incorporates the hypothesis, shown in the Appendix, that entities of a similar size will have a great probability of having a similar vector of conjectures across the s size classes.

The model to be estimated is synthesized in two systems of behavior equations, semi-logarithmic (1) and logarithmic (2), where each includes as many equations as there are size groups considered. Each system of non-linear equations (caused by price elasticity) presents 14 unknown parameters. In each equation, we introduce the error term e_j and we admit correlations between the disturbances of the entities. The systems are estimated for maximum likelihood. In order to select the specification (semi-logarithmic or logarithmic) more parsimoniously we use the criteria of Akaike. Finally, to ascertain the degree of expected competition (expected aggressiveness) of entity benchmark we bear in mind the estimated value of its conjectural elasticity, in such a way that if it is negative there is competition, and if it is positive it reflects collusion (both with reference to the Cournot situation). Testing diverse null hypotheses on the estimated conjectural variations allows us to examine the strategic difference between strategic groups and the Hypothesis 3.

SAMPLE, DATA, AND VARIABLES

The methodological process presented in the previous section will now be developed for the particular case of the Spanish banking industry—an interesting subject for the analysis of our objectives

insofar as it has experienced significant structural changes in response to the processes of deregulation and European integration (Mañas, 1992; Gual, 1992, 1993). This has influenced the configuration of the strategic groups.

The deregulation experienced by Spanish banking since the end of the 1970s has been a long and far-reaching process, which culminated in the period 1989–92 with the reform and reduction of the coefficient of obligatory reserves (which controls the volume of liquid assets of the banking system), and the growing liberalization towards the entry of foreign competitors. As a whole, the deregulatory measures have affected both the behavior of entities (liberalization of interest rates, commissions, etc.), and the structure of the sector (entry of new competitors, elimination of the artificial separation of the different subsectors—banks and savings banks—of the financial sector, etc.).

The integration of European banking markets was brought about by various community directives which affected the banking sector, but in particular by the liberalization of capital movements and by the Second Banking Directive, which introduced the principle of mutual recognition of financial entities. These measures, and their anticipation on the part of banking entities, have brought about the growing integration of European banking markets (Gual, 1993).

As a consequence of these two large regulatory changes (Spanish deregulation and European integration), the sector has been subjected to strong restructuring characterized by a process of mergers and acquisitions (Gual, 1993), which are due to a wish to increase size in order to compete in the European market and to preserve market power (Gual and Vives, 1991). To be precise, this restructuring of the sector comes down to certain tendencies (Gual, 1993). First, the concentration of the sector—mergers and acquisitions augment the degree of concentration, although the strong growth of medium-size entities and the entry of new competitors tend to diminish it. Second, restructuring has only involved Spanish entities, which have merged in order to find economic efficiency through national economies of scale. Moreover, this exclusive involvement of Spanish entities is understood from a political perspective, in that public authorities could have limited the entry of foreign entities in order to maintain national control over a 'strategic' sector. Third, restructuring allows a rationalization of the sector, in relation to networks (elimination of redundant offices once price competition begins) and to secondary brands (small entities of a functionally or geographically specialized character, which are controlled by large banks, are put up for sale, which often constitutes the entry or expansion vehicle for foreign entities moving into Spain). Fourth, there have not been any large transnational or Europe-wide mergers, but geographical expansion through the acquisition of small or medium-size entities in neighboring countries.

From the specific perspective of savings banks,[6] mergers and acquisitions—i.e., the objective of size—have also been used to solve some of the particular problems of these entities, such as those related to their scarce resources, their internal restrictions on types of activity, and their freedom of geographical movement. Basically, the freedom of geographical placement of the savings banks, in place since December 1988,[7] creates, on the one hand, an expansion policy on the part of the large savings banks through the acquisition of the commercial networks of other entities and, on the other hand, defensive action on the part of smaller savings banks, which begin to form geographical groups. This is achieved by an accelerated process of mergers and acquisitions, mainly by savings banks operating in the same markets (Gual and Vives, 1991).

Apart from the above, the traditional limitations to the geographical expansion of the savings banks has created a Spanish banking sector in which the entities (banks and savings banks) have an operating area which is either national, regional, or

[6] The Spanish banking system is made up of two entity types with different legal natures. Private banks, which must be limited companies; and savings banks, which, whether privately or publicly owned, are non-profit making and operate in the public interest. Despite their different legal nature, since 1977 the operative capacity of the savings banks has been equal to that of the banks. Before 1977, the savings banks could not make discount of drafts nor take part in foreign activity. Moreover, today banks and savings banks can carry out practically all the operations pertaining to the business of banking. In fact, in 1988 the prohibition was lifted that prevented banks and savings banks from leasing and issuing mortgage bonds, which has allowed both entity types to develop a model of universal banking (Gual and Vives, 1991).

[7] Before this date, the possibilities for savings banks to make strategic geographical choices were limited to a choice between regional or local markets, with national being excluded from the choice. For banks, however, the options regarding the geographical dimension of their market had no limits. In summary, the savings banks were incapable of competing with the banks by expanding beyond their limits (Espitia *et al*., 1991b).

local, as the previously mentioned limitations to the geographical expansion of the savings banks has made markets with local or regional characters. In fact, the operating of some banks is also fundamentally local and/or regional (Gual and Vives, 1991; Carbó, López, and Rodríguez, 2003). To be precise, the structure of the local or regional market[8] constitutes the differential characteristic of the Spanish banking sector of the 1990s (Pita, 1999; Pillof, 1999).

The Spanish banking industry, therefore, is composed of three, size-defined, strategic groups: large banks (national scope),[9] whose distinctive characteristic is their extensive branch network; medium-size banks (regional scope), which have a significant presence in a few local markets; and smaller banks which are to a greater or lesser extent functionally or geographically specialized in one local market. For the latter two, the relevant market is the Autonomous Community and the Province respectively (Gual and Vives, 1991).

To sum up, the extensive restructuring of the Spanish banking sector and, in particular, the big mergers, could be interpreted as a defensive reaction to profit losses caused by the new, more aggressive, behavior occasioned by deregulation and the entry of new competitors (Gual, 1993). Insofar as the processes of deregulation and European integration have changed the focus of banking strategy, transforming collusion in competitive behavior (Gual and Vives, 1991), it is useful to analyze the asymmetric competition existing between strategic groups.

Time period

The time horizon, which is considered in order to estimate conjectural variation, is of one year. In reality, conjectures vary over time and are certainly formed as a part of a process of adaptative expectations. However, we do not model that more general process. Instead, we follow Gollop and Roberts (1979), so our model characterizes rational producer behavior at a point of time. While the conjectures are certainly a function of past experience, we assume the firm has a given and fixed set of expectations at a particular point in time, and the firm maximizes its objective function subject to its expectations.

We selected the year 1994 (being after the period of deregulation 1998–92) as it marked a change in the economic cycle of the country with the start of a period of recovery, and therefore is a significant landmark for the Spanish banking system. This time-specific change is fundamental to the study of competition between financial intermediaries, as it allows us to identify the two determining factors of the strategies and performance of the sector: economic situation and competition. During periods of recession, both aspects influence margins in the same way. However, in periods of recovery, like that which started in 1994, situational aspects and competitive pressure have the opposite effect on margins, which allows us to better estimate the impact of competitive erosion and to obtain more precise results than those generated by previous analyses (Freixas, 1996). Moreover, the selection of the year 1994 allows us to make comparisons with the conclusions on rivalry obtained by Coello (1994) on the increase in competitive intensity in the deposit market for the time period immediately preceding (1990–93). We should bear in mind that the methodologies of both studies differ, although they share the majority of input variables.

In addition, the study of rivalry in the 1994 deposit market allows for a clearer distinction between competitive situational effects than a study of the credit market, given that the economic recovery of 1994 had different effects on these

[8] The different nature and complexity of the markets (and regions) where they compete and the greater or lesser presence of an entity in each territory configures a different financial context and market structure for each individual institution. Therefore, large-size financial intermediaries with offices in numerous regions face a different (and more diversified) competitive structure and socioeconomic reality than entities which operate in only one territory. In any case, technological advances in telecommunications and its relative cheapness in recent years have allowed the appearance and increased use of new distribution channels (telephone, Internet) which are reducing the relative importance of physical distance (Moore, 1998), although the weight of bank branches, their role as basic business units, and their geographical distribution are still very important in the banking industry and, therefore, the regional/local approach is still pertinent in the definition of the relevant market (Carbó *et al*., 2003).

[9] Boeker (1991) and Burke (1990) both illustrate the parallelism between company size and company classification according to geographical spread. In the case of banks, company size is correlated with geographical distribution (and the number of markets served) of a bank and with the combination of retail and commercial financial services offered (Burke, 1990). Statewide entities are usually larger than those with an intermediary scope, while these are usually larger than local entities. In summary, given the general correlation between size and geographical scope, the strategic groups identified through the examination of different-size companies should reflect inter-group differences in their geographical strategies (Burke, 1990).

markets, growth in saving in 1994 was greater than growth in investment, holding up the credit market and expanding the deposit market (Freixas, 1996). Consequently, our study analyzes if, in 1994, entities compete for market share in the deposit market by modifying the quantity of deposits solicited, and will make models of conjectures on the quantities of this output.

Finally, the time period considered in the analysis of news items on competitive actions and responses is delimited by the financial year 1994–95 with the aim of reflecting the *ex post* situation, where a company's market share will be affected, *ex post*, by the actions of its competitors. This is in contraposition to conjectural variation, which constitutes a significant *ex ante* element in the decision-making process of a company and whose modeling tries to characterize the rational behavior of the producer in 1994.

Sample

The study is centered exclusively on the deposit market, which is empirically possible because, of the three markets (inter-bank, deposits, and credits) of Spanish financial entities, the inter-bank market is in a situation of perfect competition (a single entity cannot influence the price of the market). This, along with an assumption of separable costs in the other two oligopolistic markets of credit and deposit, allows us to work in each one independently (Coello, 1994).

We have included 52 savings banks and 94 banks in 1994. The former constituted 99.9 percent of their market, while the latter represented 96 percent of the Spanish bank deposit market. We have included virtually all the entities in the sector, which facilitates analysis of the structure of the market. We have excluded credit cooperatives because of their residual participation, entities with abnormal values, and those in liquidation.

The consideration of banks and savings banks is because the significant transformations experienced by the Spanish banking industry through the development of the deregulation process have led to greater homogeneity in the competitive attitudes of both entity types. In fact, a good number of studies in Spain, in particular those of Pastor (1995), Pérez, Maudos, and Pastor (1998), Maudos, Pastor, and Pérez (2002), and Maudos and Pastor (2003), include banks and savings banks after verifying that a consideration of subsamples based on institutional differences is not adequate. The homogeneity produced in recent years in the specialization and regulation of the two types of institution indicates that they compete more and more with each other, in both credit and deposit product areas (Pastor, 1995).

In fact, the panorama of the Spanish deposit market has changed recently with the abolition of territorial restrictions to the expansion of savings banks and the liberalization of interest rates; moving from a situation of double segmentation (geographical, due to restrictions on territorial expansion, and functional, with savings banks centered exclusively on retail banking and the banks dedicated to retail and wholesale banking), to a situation where the division is not so clear. Therefore, the degree of competition between entities is potentially much greater and more homogeneous (Coello, 1994). Moreover, certain events that have occurred in retail banking, such as the 'deposit war,' in which certain savings banks actively participated, the taking over of small banks by certain savings banks, and the significant growth of the savings banks in the deposit market, show the necessity of including this new competitive reality between banks and savings banks in modeling the Spanish deposit market (Coello, 1994).

Variables

Variables can be classified as follows:

1. Defining variables of strategic groups. We apply the size of the company, defined as the volume of deposits at the end of 1994. In this study, as in others on the sector, the three aforesaid groups are considered (e.g., Freixas, 1996). The limits of separation are established with a view to finding a certain homogeneity of size in each category, which are as follows: large (deposits $>$ 2 billion pesetas), medium (415,000 million pesetas $<$ deposits $<$ 2 billion pesetas), and small (deposits $<$ 415,000 million pesetas).
2. Variables in the modeling of conjectural variation. Following Coello (1994), we have first considered variables related to income per deposit unit: the inter-bank interest rate (r_b) for 3-month operations, the average remuneration of the coefficient of obligatory reserves (r_r), and the legal level of the coefficient of obligatory

reserves (λ). These were obtained from statistical and economic bulletins from the Bank of Spain.

The interest rate r_{dj} paid by entity j for its deposits is estimated with an average deposit cost using financial costs and the volume of deposits. This is due to the lack of information about interest rates individualized by type of operation and entity. With the aim that the definition of deposit volume y_j is consistent with the measurement of r_{dj}, we use a wide concept of deposits,[10] which is defined as the sum of balance entries 'debits to clients,' 'debits represented by negotiable shares,' and 'other debits.' The marginal cost of exploitation is measured, assuming constant returns to scale, using operating costs (costs of personnel, other administrative costs including building costs and depreciation) reflected in the profit and loss account, calculated pro rata for the volume of current liability from the entity.

Finally, quality of service (v_j) brings together those characteristics of entity j whose combination represents the implicit interest rate that a depositor obtains by choosing the said entity. It is defined as a linear function ($v_j = \alpha_0 + \alpha_1 x_1 + \cdots + \alpha_n x_n$) dependent on the dimensions whose combination is more significant in the estimation of the system of equations. Among them are considered offices by km^2, employees per office, and deposits per office. These are taken from the annual statistics of the private banks and the confederated savings banks.

3. Variables representing *ex post* competitive behavior. These are obtained from news items on the actions and responses found in the Baratz database.

   (a) Competitive activity. This is defined by the number of competitive movements (including actions and responses) of an entity in one year.
   (b) Rivalry instigation. This is given by the ratio of 'number of primary movements of a company in a year/total number of movements it had' (it is assumed that a company does not instigate a competitive war when it does not make the first move, given that it acts as a follower). A high ratio would be an indicator of rivalry instigation, while a low ratio suggests that the company is a 'reactor.'
   (c) Propensity to launch new products. This shows if a company is inclined to introduce new products. It is measured as 'percentage of movements of new product launch (actions and responses)/total number of movements of an entity in a year,'
   (d) Speed of response. This indicates the time that a company takes to respond to the action of a competitor. It is defined as the average delay time, in days, of the responses of an entity to the actions of its competitors in a year. However, response time varies with the type of initial action (for example, complex, time-consuming actions tend to evoke complex, time-consuming responses). To control for these effects, Chen and Hambrick (1995) propose first regressed (OLS) response time on type of action for all years and companies. The resulting residual indicated how much a company's rating differed from the value we predicted on the basis of the action type. They then use the average residual of all a company's responses in a given year as that company's response time for that year.
   (e) Imitation of a response to an action. This reflects the degree of duplication implied in each response. It is measured with a dummy that assigns a 1 when both coincide and a 0 in the opposite case.

RESULTS AND DISCUSSION

Test of Hypothesis 1 of asymmetric rivalry between strategic groups in terms of response

To begin, it is convenient to characterize the strategic groups of financial entities in 1994. The first group (G.I) contains the big six, representing 41.04 percent of the total market. The second group (G.II) has 27 medium-size entities; it makes up 35.64 percent of the market. The 113 remaining make up the third group (G.III) of small entities, which account for 21.12 percent of the deposit market.

This section examines *ex post* asymmetric competitive behavior between strategic groups in the Spanish deposit market in the years 1994 and 1995, through the use of news items on the competitive

[10] In fact, the concept of deposits corresponds with the balance entrance of 'savings deposits.'

Table 4. Analysis of strategic behavior between strategic groups (standard errors in parentheses)

Variables of behavior	Mean	Correlations				Strategic groups			F
		CA	RI	PLNP	SR	G.I	G.II	G.III	
Competitive Activity (C.A.)	1.84 (2.99)					7.58 (5.61)	1.70 (2.07)	0.87 (1.08)	22.89*
Rivalry Instigation (R.I.)	0.39 (0.26)	0.35*				0.67 (0.18)	0.30 (0.24)	0.39 (0.26)	4.76**
Propensity to launch new products (P.L.N.P.)	0.08 (0.17)	0.25***	0.22***			0.10 (0.13)	0.10 (0.17)	0.06 (0.18)	0.41
Speed of response (S.R.)	269.14 (167.6)	−0.29***	−0.24	−0.31***		252.1 (136.4)	283.5 (188.0)	262.5 (168.6)	0.08
Imitation of a response to an action	0.72 (1.15)	0.92*	0.12	0.26**	−0.31***	2.91 (2.20)	0.79 (0.77)	0.28 (0.39)	24.07*
MANOVA									3.50*

* Prob. < 0.01; ** Prob. < 0.05; *** Prob. < 0.10

responses to the initial actions (Table 4) of the 146 financial entities of the sample. In any case, we carry out a preliminary analysis of the information obtained.

First, we detected 126 actions (38 of which provoked at least one response) and 82 responses.

Second, Table 4 shows the descriptive statistics and the relationship between the five variables of competitive behavior. It shows a certain degree of correlation between practically all of them and with the expected sign; in other words, positive correlation for all variables except speed of response. Therefore, a lower number of days before response (speed of response) is associated with greater competitive activity, rivalry instigation, propensity to launch new products, and imitation of a response to an action.

The MANOVA test (see Table 4) shows a significant F-statistic, which suggests that the patterns of competitive behavior or way of competing differ significantly between strategic groups. The univariate ANOVAs also show these significant relationships of strategic groups with respect to competitive activity (frequency of movements), degree of rivalry instigation (the first to move instigates rivalry), and the level of action/response imitation. In particular, the differences between the strategic groups of entities with respect to the variables of competitive behavior are manifested by the fact that large-sized companies (G.I) present higher levels of competitive action, rivalry instigation, and imitation of rivals from other groups. The group of small-sized companies (G.III) shows the least degree of competitive activity and imitation. The medium-sized entities (G.II) offer the lowest indicator of rivalry instigation. In addition, it should be pointed out that G.II and G.III are characterized by lower levels of rivalry instigation, which indicates that they are 'reactors.' However, the propensity to launch new products (in proportion to other types of movement) and the speed of response (response delay in days) do not differ significantly between the groups. Consequently, it can be indicated that the nature of competition varies significantly between the strategic groups because there is a significant difference in the way in which a company deals with one or the other at the moment of competing. In this sense, it is necessary to analyze asymmetric between-group competitive interaction.

Third, Table 5 classifies measurements corresponding to the news of action and response between entities and distinguishes the groups by size. Following Smith *et al*. (1997), we apply the χ^2 test in order to test whether between-group rivalry is greater than intra-group rivalry. The lack of significance in the results does not allow any conclusions on whether between-group rivalry is higher than intra-group; this suggests, in line with Smith *et al*. (1997), that the fundamental question may not be the comparison of the level of intra- and between-group rivalry, as suggested by the literature on strategic groups, but the way in which the different groups act competitively in relation to other groups. In line with this, our study is centered on between-group competition, in order to determine whether the responses can be systematically

Table 5. Measurement of asymmetric rivalry between strategic groups in terms of responses

Actions taken by the companies	Responses from the companies			
	G.I Large entities	G.II Medium entities	G.III Small entities	Total of rows
G.I Large entities	26	21	10	57
% rows	45.6%	36.8%	17.5%	69.5%
% columns	74.3%	75.0%	52.6%	
G.II Medium entities	3	3	4	10
% rows	30.0%	30.0%	40.0%	12.2%
% columns	8.6%	10.7%	21.1%	
G.III Small entities	6	4	5	15
% rows	40.0%	26.7%	33.3%	18.3%
% columns	17.1%	14.3%	26.3%	
Total of columns	35	28	19	82
% rows	42.7%	34.1%	23.2%	100.0%
χ^2				3.60

and predictably structured in terms of asymmetry (Hypothesis 1).

A detailed examination of the horizontal and vertical percentages of Table 5 allows clarification of the nature of the between-group competitive asymmetry assumed in Hypothesis 1. In principle, the low mobility barriers of any group when responding to the competitive actions of entities from other strategic groups suggests the importance of research into asymmetric between-group rivalry using entity responses to the competitive actions of entities from different strategic groups.

It is observed that three (30%) of the G.II actions are responded to by G.I, while 21 (36%) of the G.I actions are responded to by G.II. At a response level (percent vertical), there is a high percentage of G.II reaction (75%) to G.I actions as opposed to a low percentage (8%) of G.I reaction to G.II actions. In other words, it seems that G.II tends to respond with more ease to G.I than vice versa. These results would support Hypothesis 1 of greater reaction of small entities strategic groups to the competitive actions of large entities strategic groups than vice versa.

On the other hand, 40 percent of G.II actions are replicated by G.III, while 26 percent of G.III actions are counterattacked by G.II. With regard to responses (percent vertical), there is a high percentage of G.III reaction (21%) to G.II actions with a low percentage of G.II reaction (14%) to G.III actions. Therefore, G.III responds more to G.II than vice versa. This proves Hypothesis 1 of greater small company strategic groups reaction to large company strategic groups action than vice versa.

Finally, 10 G.I actions are replicated by G.III, while only six G.III actions are counterattacked by G.I. In terms of responses (percent vertical), there is a high percentage of G.III reactions (52%) to G.I actions as opposed to a low percentage of G.I reactions (17%) to G.III actions. It seems that G.III tends to respond with more ease to G.I than vice versa, therefore continuing to support Hypothesis 1 of greater small entity strategic groups reaction to the competitive actions of large entities strategic groups than vice versa. All of this could indicate that asymmetric competitive interaction between strategic groups in the Spanish banking deposit market is characterized by the 'insularity' of the strongest companies (Miller and Chen, 1994), which consider small companies to be non-key competitors (Chen, 1996).

Gual and Vives (1991) indicate, in line with Farrell and Shapiro (1987) and Farrell and Klemperer (2001), that in Spanish banking small entities have an incentive to compete aggressively on price in order to gain clients, whereas large companies tend to exploit their existing client base. In other words, large banks invest in a large branch network to have a large stable client base (risk adverse), with few external opportunities, and to establish a reputation for solvency. This would allow them to be non-aggressive in terms of price ('fat cats') (Fudenberg and Tirole, 1984), and they would enjoy large margins. In contrast, small and medium-size banks opt for limited networks, aggressive pricing and working with less risk-adverse and better-informed clients. They act like 'puppy dogs' by promising to remain small (Gual and Vives, 1991). In fact, this small company price and capacity limitation strategy reduces the threat of the dominant companies and makes their retaliations more expensive, as predicted by the Judo Economics of Gelman and Salop (1983). This strategy, therefore, represents a source of leverage for the small banks that is based on the commitments and strategic investments of their stronger rivals, which are used against themselves (Yoffie and Cusumano, 1999).

Finally, it seems that small entities have also put into practice a judo strategy using other leverage sources that cause dominant companies to hesitate before responding to attacks from small companies. Among these leverage sources, which allow the use of an opponent's own strength and weight against itself, are cooperation with other companies that have been threatened by the success of the opponents (Yoffie and Cusumano, 1999). Thus, savings banks have developed many collaboration agreements that have allowed them to join with various entities with the object of achieving a joint size which gives access to banking and banking-related activities that would otherwise be impossible. This type of agreement has grouped geographically disperse entities and has been instrumented through the creation of shared companies (Gual and Vives, 1991).

In summary, the results obtained allow us to characterize the size-defined strategic groups of Spanish banking system as having a Stackelberg 'leader–follower' type of asymmetrical competitive interaction, following the classification of Putsis and Dhar (1998).

Test of Hypothesis 2 of asymmetric rivalry between strategic groups in terms of speed of response

This section examines asymmetric behavior between strategic groups in the Spanish deposit market in terms of speed of competitive responses of the financial entities of the sample. Table 6 classifies measurement of average speed of response of the companies of one group to the actions of competitor groups and distinguishes the groups by size.

An ANOVA[11] ($F = 5.045$; prob. $= 0.035$) allows us to infer the existence of significant differences in response speed at a level below 5 percent between strategic groups G.I and G.II. In other words, entities of G.II responded more slowly (259.1 days) to actions from G.I than the entities of G.I (224.6 days) to actions from G.II. This supports Hypothesis 2 that groups of smaller companies show a slower speed of response to the competitive actions of groups of larger companies than vice versa.

On the other hand, an ANOVA ($F = 1.265$; prob. $= 0.304$) shows that the speed of response does not differ significantly between groups II and III, leading to a rejection of Hypothesis 2 in this situation. In any case, Table 6 shows that the response speed of G.III (209.7 days) to G.II actions is slower than that of G.II (182.2 days) to G.III actions, although it is not significant. This implies that there is a certain tendency for small company groups to have a slower speed of response to the competitive actions of large company groups than vice versa.

Finally, an ANOVA ($F = 0.084$; prob. $= 0.776$) does not detect significant differences in response speeds between G.I and G.III, which rejects Hypothesis 2 in this situation. The actions of G.I are replicated more slowly by G.III (290.1 days) than those of G.III by G.I (212.5 days), although this is not significant. This result also reflects a certain tendency for small company groups to have a slower speed of response to the competitive actions of large company groups than vice versa.

This lack of significance of the differences in response speeds between groups G.I and G.III and between G.II and G.III can be explained, following Smith *et al.* (1991), by the fact that the relationship between slack resources and response speed is affected by absorbed and unabsorbed slack resources, as well as by the use given to absorbed resources (factors on which we have no information). In reality, with regard to absorbed and unabsorbed slack, we would only expect slow response from companies with a high level of absorbed slack as they have few extra resources with which to make a quick response. With regard to the factor of 'use given to absorbed resources,' firms may invest some absorbed slack in mechanisms that help them respond quickly by helping them obtain more and richer information.

In summary, the results obtained could indicate that asymmetric competitive interaction between strategic groups in the Spanish banking deposit market in terms of speed of response is only characteristic of G.I and G.II in the following way: an attack by the large entities (G.I) on the key local and/or regional markets of the medium-size entities (G.II) generates a decisive response which, however, is slower than vice versa, for fear of precipitating escalation retaliation (Chen and MacMillan, 1992; Chen *et al.*, 1992).

Test of Hypothesis 3 of interaction between *ex ante* and *ex post* asymmetric rivalry between strategic groups

This section examines the interaction between *ex ante* and *ex post* asymmetric rivalry between

[11] Mann–Whitney tests were also conducted, and the results were identical. The ANOVA and Mann–Whitney test are calculated with the residuals of the regressions (following the procedure detailed in the section 'Sample, data, and variables'), whereas the data in Tables 4 and 6 are shown in number of days as it is more intuitive.

Table 6. Measurement of asymmetric rivalry between strategic groups in terms of speed of response

Actions taken by the companies	Average speed of response from the companies		
	G.I Large entities	G.II Medium entities	G.III Small entities
G.I Large entities	216.6 (161.9)	259.1 (195.8)	290.1 (161.9)
G.II Medium entities	224.6 (77.2)	210.3 (183.7)	209.7 (221.4)
G.III Small entities	212.5 (177.3)	182.2 (164.5)	157.6 (74.8)

strategic groups. We analyze asymmetric competitive *ex ante* expectations between strategic groups in the Spanish deposit market in 1994 through the estimation for maximum likelihood of two systems, semi-logarithmic (1) and logarithmic (2), with three behavioral equations relative to the strategic groups and with respect to size. We consider reasonable the use of the exogenous estimation realized by Coello (1994) of the price elasticity of the aggregate demand function for deposits of $\varepsilon = 0.01$ for the 8-year period (1985–93) immediately before 1994. Table 7 shows the estimation of the parameters of the semi-logarithmic and logarithmic specifications of the system. By using the Akaike Information Criterion, the first is selected for later analysis (AIC = 353.1, for the semi-logarithmic; and AIC = 365.1, for the logarithmic), given its greater parsimony.

Starting with conjectures of the benchmark entities, we can evaluate the pattern of interdependency between them in the Spanish deposit market. The benchmark entities in each group, on which the conjectures are specified, include the entity of the greatest size in each group (observations 1, 7, and 34) and the smallest in the sample (observation 146), which represent 9.45 percent, 2.38 percent, 0.65 percent, and 0.00006 percent of total deposits respectively. To be precise, the system used shows the significance of the coefficients of rivalry between groups I and II. The quantitative level of the parameters β and γ determines the expected aggressiveness of each entity, and the later realization of statistical tests (test of the ratio of likelihood) allows us to demonstrate the existence of strategic differences (*ex ante*) between strategic groups.

The results obtained from comparing the agents of the two different groups show that the conjectural variation (−0.00025) that entities of large size (G.I) have over the medium-sized (G.II) is less than conjectural variation (−0.00004) that the medium-sized (G.II) have over the large-sized entities (G.I). This behavior can be collated with the test H_0: $\beta_{1,II} = \beta_{7,I}$, which is rejected ($\chi^2{}_{0.01}(2) = 56.9$; $p = 0.000$), suggesting that there is an intergroup strategic difference. In other words, the benchmark entity 1 in the largest size class (G.I) anticipates that aggregate output from all other firms in the medium-size class (G.II) will fall (−0.00025), largely in response to a planned increase in the output of company 1 rather than the fall in the output (−0.00004) of the large-size class (G.I) anticipated by the benchmark company 7 in GII from an increase in the output of company 7. We show, therefore, that the large-size strategic group G.I has a more aggressive attitude (*ex ante*) towards the medium-size group G.II than G.II has towards G.I.

When we compare this result of *ex ante* expectations of G.I aggressiveness in terms of deposit quantities (output) with that of the previous section, of greater *ex post* reaction of the small-size groups to G.I actions than vice versa, we accept Hypothesis 3. In other words, the expectations of aggressiveness in output quantity by the large-size group characterize the greater *ex post* reactions of the smaller-size groups to the actions of the large-size group than vice versa, in line with Reger and Huff (1993). Consequently, there would seem to be interaction between *ex ante* expectations and *ex post* behavior in the area of asymmetric rivalry between size-defined strategic groups.

In summary, these results could indicate that interaction between expectations and *ex post* behavior in the Spanish banking deposit market is manifested in the following way: decisions on output quantity are important because the capture of funds is made through competition around branches in the first half of the 1990s—competition which generates *ex ante* expectations of a more aggressive attitude on the part of the large entities due to the impulse they give to their expansion policy and the subsequent defensive movements of the smaller entities in their local and/or regional markets (Gual and Vives, 1991). These expectations lead to smaller entities giving great importance to any strategic or tactical action by large entities which affects their local/regional markets and they, therefore, make greater *ex post* responses than vice versa (Reger and Huff, 1993).

As far as the parameters of quality of service are concerned, both of them are significant. α_1 is positive, as in Coello (1994), which suggests that the depositors are bearing in mind the network of offices of entities when investing their funds in the deposit market; so they tend to minimize the costs of displacement incurred when they have to recover their funds. To sum up, we stress the idea that increases in the ratio offices/km^2 suppose increments in the quality of service, and the entity can reduce the interest rate it pays on its deposits. However, the intercept α_0 is negative, representing the elements that lower the quality of service of the depositors due to unobservable characteristics.

Table 7. Estimation of conjectural variations (*ex ante* expectations) in the system of equations of behavior. (standard errors in parentheses)

Semi-logarithmic specification						Logarithmic specification					
	Conjectural variations within group		Asymmetric conjectural variations between groups		Service quality		Conjectural variations within group		Asymmetric conjectural variations between groups		Service quality
$\beta_{1,I}$	0.00023* (0.1E-7)	$\beta_{1,II}$	−0.00025* (0.1E-7)	α_0	−0.003* (0.1E-5)	$\gamma_{1,I}$	1.092* (0.1E-6)	$\gamma_{1,II}$	−1.273* (0.1E-6)	α_0	−0.070* (0.5E-8)
$\beta_{7,II}$	−0.00009* (0.2E-8)	$\beta_{7,I}$	−0.00004* (0.6E-9)	α_1	0.084* (0.1E-4)	$\gamma_{7,II}$	−0.149* (0.1E-7)	$\gamma_{7,I}$	−0.049* (0.1E-7)	α_1	2.538* (0.1E-5)
Log-likelihood function = −158.59						Log-likelihood function = −164.59					

α_0 = intercept; α_1 = parameter of office/km^2.
Estimation of the coefficients of G.III is not possible because of singularity problems.
* Prob. < 0.01

CONCLUSIONS

The implication that between-strategic group competition in an industry can be structured systematically and predictably in terms of asymmetry in responses, speed of response, and *ex ante* vs. *ex post* competitive interaction has permitted an analysis of this phenomenon in the Spanish bank deposit market of 1994.

The hypotheses of asymmetric rivalry in the sense that strategic groups of small companies have a greater degree of response but a slower speed of response to groups of large companies than vice versa are tested through an *ex post* approach that examines the news releases published on the strategic actions and reactions of firms. The last hypothesis of interaction between *ex ante* and *ex post* asymmetric rivalry between groups is tested by comparing *ex post* news articles on actions/reactions with an *ex ante* approach that estimates conjectural variations.

The empirical application showed that there is asymmetric rivalry between size-defined strategic groups. In summary, smaller bank groups have greater but slower responses (competitive interaction of the 'leader–follower' type of Stackelberg) to the competitive actions of larger bank groups than vice versa. Likewise, the *ex ante* expectations of large-size group aggressiveness are linked with greater *ex post* reactions on the part of the smaller-size groups.

The implications to company management of these results of asymmetric competition between strategic groups are as follows.

First, and expanding the proposal of Chen (1996), managers should analyze their competitive environment from the point of view of each competitor group. A given group of competitors could appear to be insignificant from the point of view of a particular group, but the group itself could consider the other group to be its most important competitor and, therefore, its primary target of attack and counter-attack. In this way, the most important challenge for strategists would be to create a competitive asymmetry and use it to obtain advantage for their company (Chen, 1996).

Second, the findings should ultimately be valuable to practicing strategies. Following Chen *et al*. (1992), a key question for an initiator is whether an action can be designed so as to avoid the increase in the number of responses and/or delay responses. The attributes of size-defined groups may provide a useful frame of reference.

Third, with the object of evaluating the impact or effectiveness of a strategy change, managers should know the ultimate effect of any competitive action (Leeflang and Wittink, 1992), which would imply a consideration of a rival's probable response in terms of its size (Chen and Hambrick, 1995). Once the type of asymmetric competitive interaction occurring in an industry is known ('leader–follower' or 'dominant–fringe'), models can be applied to find the optimal strategic behavior and the optimal company reactions given the rival's most probable response (Putsis and Dhar, 1998).

As limitations of the study, we should point out, first, that although the analysis of news content allows a more complete panorama of Spanish banking as it covers all the groups in our study, it could be affected by the quantity of news items published on financial entities in the printed press—a quantity that falls as company size falls. Second, estimation of the parameters of the model of oligopolistic competition is restricted, in our case, to the first two groups, given the problems of singularity that prevented the estimation of the coefficients corresponding to G.III. Third, we do not consider the strategic importance of different markets to the industry's companies, which would influence rivalry through motivation (Bergen and Peteraf, 2002); nor do we consider the growth rates of the markets, which define their attractiveness and affect rivalry (Porter, 1979, 1980); nor a possible Spanish market segmentation into geographical zones, in line with Gual (1993). However, according to Coello (1994), the existence of national banks, competing throughout the national territory with no difference in interest rates according to geographical zone, is what provokes the transmission of indirect competition between entities operating in different regions, thus eliminating the need for market segmentation. In any case, this study constitutes an additional contribution to the study of asymmetric rivalry in the field of strategic groups.

Finally, among future research directions are, first, the characterization of multi-market competition (Gimeno and Woo, 1996, 1999; Gimeno, 1999) through the patterns of asymmetric interaction in terms of size; second, the inclusion in the modelization (which explains *ex ante* asymmetric rivalry between groups) of interdependence

among the groups, their number and relative size and strategic distance (Porter, 1980); and third, the distinction of asymmetric competitive interaction according to different instruments or strategies such as marketing (Putsis and Dhar, 1998). Finally, in line with Chen (1996), it would be useful for researchers to carry out longitudinal studies of behavior to develop a deeper understanding of asymmetric competition over time.

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APPENDIX

To be precise, the proposed model considers the deposit market to be made up of n banking entities which produce a homogeneous output, and is faced with an inverse demand function for deposits:

$$P = D(Y) = D\left(\sum_j y_j\right), j = 1, \ldots, n$$

with $D'(Y) > 0$; where P is the price, Y the market output (volume of deposits), and y_j the output of entity j. Along the lines of Coello (1994), the function $D(Y)$ represents the cost of opportunity of the deposits or the returns that the depositor can obtain in an alternative market of equal liquidity and risk (a secure financial asset market (national debt)).

In addition, certain output differentiation between the entities is quantified in monetary terms through the variable v_j, which is the quality of service and which brings together the individual characteristics of the entities, and represents the implicit interest rate obtained by the depositor when choosing entity j. Given a volume of deposits y_j offered by an entity j, its cost will be $r_{dj} = (D(Y) - v_j)$, where r_{dj} is the interest rate of the deposits. This relationship reflects the idea of substitutability between v_j and r_{dj}, because when an entity j has a financial product of greater quality, it can remunerate its deposits less as its depositors obtain the additional benefit of quality of service (Coello, 1994).

The profits of entity j are given by $\pi_j(y_j) = Py_j - c_j y_j = [R - r_{dj}]y_j - c_j y_j; \quad j = 1, \ldots, n,$ where R is the income for each unit of deposit. R consists of remuneration of obligatory reserves ($r_r\lambda$) and of the remuneration of the rest of the deposits in the inter-bank market ($r_b(1-\lambda)$); where r_r is the remuneration fixed for banking reserves, λ is the coefficient of obligatory reserves, and r_b is the inter-bank interest rate. Therefore, $R = r_r\lambda + r_b(1-\lambda)$, where r_r, λ, and r_b are exogenous variables for the banking entity. Likewise, quality of service v_j is considered as given and the entity only chooses the quantity of deposits desired (the analysis is short term) (Coello, 1994). Finally, with respect to operative costs, it is assumed that the entities have constant returns to scale, so that the average cost and the marginal cost coincide and are constant (c_j).

The first-order conditions for entity j can be expressed as follows:

$$\frac{\partial \pi_j}{\partial y_j} = P + y_j \frac{\partial p}{\partial Y}\left[1 + \sum_{i \neq j} \frac{\partial y_i}{\partial y_j}\right] - c_j = 0; \quad j = 1, \ldots, n \tag{3}$$

Operating this we arrive at the following expression, which relates the operational margin of the entity with variables of market structure and behavior:

$$\frac{P - c_j}{D(Y)} = \frac{S_j}{\varepsilon}\left[1 + \sum_{i \neq j} \frac{\partial y_i}{\partial y_j}\right]; j = 1, \ldots, n$$

where $S_j = (y_j/Y)$ is the market share of entity j, c_j is the operational marginal cost ($\partial C_j/\partial y_j$), ε is the price elasticity of the aggregate function of demand for deposits of the market ($\partial Y/\partial D(Y)$) ($D(Y)/Y$), and ($\partial y_i/\partial y_j$) is the conjectural variation of entity j or expectations that it has about the response of entity i to an initial change of output of entity j. It should be pointed out that if the financial sector is in a perfectly competitive situation, then $\lim_{n\to\infty}(y_j/Y) = 0$, $\lim_{n\to\infty}(\varepsilon_j) = \infty$, and $(\partial y_i/\partial y_j) = 0$, in which case the previous equation becomes the familiar condition of equality between value of output price and its marginal cost. If the sector were organized monopolistically, i.e., $n = 1$, then $y_j = Y$, $\varepsilon_j = \varepsilon$, and $(\partial y_i/\partial y_j)$ would be undefined. Therefore, only in an oligopolistic financial sector are the first-order conditions of each entity affected by conjectures as to the competitors' reactions.

If our objective was to test only for the existence of oligopolistic interdependence, it would be sufficient to estimate the aggregate output response of the remaining $n-1$ entities anticipated by company j $(\partial(\Sigma_{i\neq j} y_i)/\partial y_j)$ (Gollop and Roberts, 1979). Alternatively, the proposal of our study is to analyze the existing pattern of oligopolistic interdependence. Therefore, it is especially important to distinguish between the $n-1$ conjectures of entity j. However, estimation of the significant number of conjectural variations $(n-1)$ which, in the limit, any entity could have, would be affected by the availability of degrees of freedom. To avoid this, it is assumed that retaliations expected by companies in an oligopolistic market depend on the size of the rival (Spiller and Favaro, 1984). Consequently, the conjectures of an entity concerning the responses of competitors can be modeled in terms of the position of the competitors in the size distribution. Therefore, the n entities can be ranked by output size and, in accordance with Gollop and Roberts (1979), formed into s mutually exclusive groups with $T_s = u$ $(u = 1, \ldots, s)$ entities in each group—the number of companies (u) in each subgroup need not be equal; and the number of groups s and the members of each one are determined by a size distribution of the companies in the selected industry.

One of the objectives of the work is to test whether the conjectures of an entity vary across the size classes of its rivals. However, it is not intended to estimate differences in the expectations of a company based on pure size differentials in the productive capacity of rivals.[12] This means that we isolate discrepancies in conjectures which, although they are a function of size, are independent of any differences which are purely technical or of competitors' physical capacity to respond. This implies the following transformation of the first-order conditions to express the conjectures in relative terms:

$$\frac{P-c_j}{D(Y)} = \frac{S_j}{\varepsilon}\left[1+\sum_{u=1}^{s}\left(\sum_{i\in u, i\neq j} y_i\right)\beta_{ju}\right]; \quad j = 1, \ldots, n$$

where $\beta_{ju} = \partial \ln(\Sigma_{i\in u, i\neq j} y_i)/\partial y_j$ is defined as the conjectural variation of entity j with respect to relative response of the entities of size class u. Given that $r_{dj} = D(Y) - v_j$, the expression can be rewritten as follows:

$$\frac{R-r_{dj}-c_j}{r_{dj}} = \frac{S_j}{\varepsilon}\left[1+\sum_{u=1}^{s}\left(\sum_{i\in u, i\neq j} y_i\right)\beta_{ju}\right] \times \left[1+\frac{v_j}{r_{dj}}\right]; j = 1, \ldots, n \quad (4)$$

Likewise, the conjectures can be defined with the conventional approach of elasticity, which requires a transformation of the first-order conditions to the following:

$$\frac{R-r_{dj}-c_j}{r_{dj}} = \frac{S_j}{\varepsilon}\left[1+\sum_{u=1}^{s}\left(\sum_{i\in u, i\neq j} y_i \Big/ y_j\right)\gamma_{ju}\right] \times \left[1+\frac{v_j}{r_{dj}}\right]; j = 1, \ldots, n \quad (5)$$

where $\gamma_{ju} = \partial \ln(\Sigma_{i\in u, i\neq j} y_i)/\partial \ln y_j$.

In these formulations, the conjectural variations of a determinate entity j could vary across the size classes of its competitors, and the conjectures with respect to a response of a given size class can also vary across the n entities. However, the estimation of these parameters would still be affected by the availability of degrees of freedom. This can be avoided by considering that all the companies in a given size class have an identical vector of conjectures across size classes (Gollop and Roberts, 1979).

In any case, this scheme of working has the undesirable property that two companies of nearly equal size, but assigned to different size classes, would have conjectures more like those of the other members of their classes than those of each other. In other words, unless the size distribution of companies is unusually clustered around the s sizes of the companies, the previous hypothesis of homogeneity conflicts with the continuous nature of the data. A possible solution to this problem is to adopt a less restrictive algorithm, which entails choosing an arbitrary number r $(1 \leqslant r \leqslant n)$ of benchmark observations (companies) b_t $(t = 1, 2, \ldots, r)$ and expressing the equations of behavior of the n companies in terms of the conjectures of the neighboring benchmark companies (Gollop and Roberts, 1979). A requirement of Gollop

[12] Differences in conjectures due to variations in the productive capacity of rivals are found in a modelization of the conjectures specified as absolute responses: $\partial(\Sigma_{i\in u, i\neq j} y_i/\partial y_j)$ (Gollop and Roberts, 1979).

and Roberts (1979) is that the smallest and largest entities are included as benchmark observations. Moreover, r is limited in practice by the available degrees of freedom, in such a way that r increases by one as the number of conjectural parameters increases by the number of s size classes. Therefore, the first-order conditions of entity j whose size is found between those of benchmark b_t and b_{t+1}, are expressed as (1) and (2) (see 'Methodology' section).