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ASSESSING THE STRUCTURAL CHANGE OF STRATEGIC MOBILITY

DETERMINANTS UNDER HYPERCOMPETITIVE ENVIRONMENTS

ABSTRACT

The primary purpose of this exploratory empirical study is to examine the structural stability of a limited number of alternative explanatory factors of strategic change. On the basis of theoretical arguments and prior empirical evidence from two traditional perspectives, we propose an original empirical framework to analyse whether these potential explanatory factors have remained stable over time in a highly turbulent environment. This original question is explored in a particular setting: the population of Spanish private banks. The firms of this industry have experienced a high level of strategic mobility as a consequence of fundamental changes undergone in their environmental conditions over the last two decades (mainly changes related to the new banking and financial regulation process). Our results consistently support that the effect of most explanatory factors of strategic mobility considered did not remain stable over the whole period of analysis. From this point of view, the study sheds new light on major debates and dilemmas in the field of strategy regarding why firms change their competitive patterns over time and, hence, to what extent the 'context-dependency' of alternative views of strategic change as their relative validation can vary over time for a given population. Methodologically, this research makes two major contributions to the study of potential determinants of strategic change. First, the definition and measurement of strategic change employing a new grouping method, the Model-based Cluster Method or MCLUST. Second, in order to asses the possible effect of determinants of strategic mobility we have controlled the non-observable heterogeneity using logistic regression models for panel data.

Key words: strategic mobility, dynamic analysis, structural change, hypercompetitive environments, MCLUST, 'logit' model with panel data.

1. INTRODUCTION

During the last two or three decades companies in almost every sector of economy are coping as best as they can to the continuous and dramatic environmental changes. As a direct result of these environmental revolutions a large number of organizations have disappeared, while other companies have emerged and many others are continuously engaged in massive strategic reorientations. In fact, strategic change is frequently considered both by managers and scholars as one of the primary forces which can help organizations to continue surviving in these new types of environments, recently described by some researchers as 'hypercompetitive environments' (Ilinitch et al., 1996). Therefore, in this context the knowledge of potential determinants of strategic change in organizations and their implications seem today more needed than ever.

Since late 1970s a large body of theoretical and empirical literature has been devoted to understand the different factors motivating and constraining strategic change in organizations (Kelly & Amburgey, 1991). However, after more than two decades of research on this issue a set of contradictory findings continue emerging. Several theoretical and methodological differences are usually used to explain these ambiguous results (Ginsberg, 1989; Lewin & Volverda, 1999; Rajagopalan & Spreitzer, 1996). From a strictly theoretical point of view, a primary difference is based on "the extent to which researchers adopt an adaptive or inertial view of strategic change" (Boeker, 1997: 152). Theorists who argue for the predominance of strategic adaptation frequently emphasize the important role that managers play in monitoring environmental shifts and modifying organizational strategy to better match new environmental conditions (Andrews, 1971; Ansoff, 1965; Chandler, 1962; Child, 1972; Miles & Snow, 1978; Thompson, 1967). More recently, from this research stream it is also explicitly recognised the role that certain internal factors –resources– can play in the strategic adaptation process (Barney, 1991; Teece et al., 1990, 1997; Wernerfelt, 1984, 1989). Proponents of inertial perspective of strategy, in contrast, usually argue that firms can be constrained in their ability to adapt to new environmental conditions, that the managers' role in the adaptation process is not relevant, and that it is the general tendency for strategy to be preserved rather

than radically changed depending on certain organizational factors such as firm size, age and structural complexity (Hannan & Freeman, 1984, 1989). From a methodological view, researchers have used different methods –in terms of samples of firms, time periods of study, variables and measures of variables, cross-sectional or longitudinal and dynamic character of study, statistic analysis applied, etc– in order to test what are the main factors for and against strategic change. This also explains why results across different studies are contradictory. Notwithstanding theoretical and methodological differences, most of empirical research carried out until now has been conducted under the explicit or tacit assumption that empirical models are stable over the period analysed. We test this particular premise by assessing the structural stability of a number of models in a scenario characterised by very relevant environmental transformations.

On the other hand, empirical insights on outcomes of strategic change in highly volatile environments are commonly claimed to be a favoured scenario because of the common belief that strategic change among relevant actors increase. However, as noted above the great majority of conventional longitudinal models used to find empirical regularities heavily rely on the assumption that statistical and distributional properties of each model are stable over time. Under our view this can reflect a clear methodological inconsistency. Since profound changes in environmental conditions can significantly alter market boundaries, technological choices, organizational structures and competitive strategies, we think that after more than three decades of contradictory findings this is the moment to formulate the following question: Does it make sense to assume that the effect of potential factors for and against strategic change remains stable over time under rapidly changing environmental conditions?

Although, in some way, there are several case histories which have offered descriptive support about the instability of determinants of strategic change, to date, no quantitative empirical research has explicitly tested this important issue yet. Therefore, this exploratory study offers one of the first empirical attempts to fill this important gap in the literature on strategic change. After revising the premises of some of the most popular theories on strategic change, we develop a dynamic and additive

framework that may represent a promising beginning toward building a new theory of strategic change, where time dimension or 'context' should play a crucial role. Indeed, this framework can help researchers to assess the temporary validity of each theory and provide an alternative way to see to what extent both adaptation and inertia must be really considered as complementary or 'context-dependent' views to analyse strategic change. We looked for an answer to the above question in a setting characterized by very relevant changes in their environmental conditions for a long time period as a direct consequence of the deregulation process undergone: the Spanish private banks during the years 1983-1997.

The paper has four main sections. In a second section, the theoretical and empirical literature on the antecedents of strategic change is briefly reviewed. The research methodology is developed in the third section to answer the question above. The results are presented in the fourth section. In the fifth and final section, we discuss the most important conclusions and implications of our study and consider possible avenues for future research in this field.

2. THEORY AND EMPIRICAL EVIDENCE OF STRATEGIC CHANGE DETERMINANTS

2.1. The adaptation perspective

Historically, the dominant view in the study of strategic change has been an adaptation perspective (Singh et al., 1986: 587). Although the contingency approach (Lawrence & Lorsch, 1967; Thompson, 1967), the institutional theory (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Zucker, 1989) and the resource dependence theory (Aldrich & Pfeffer, 1976; Pfeffer & Salancik, 1978) have also been interested in examining the main facilitating and inhibiting factors of strategic change, it is an essential subject in the classic strategic management approach (Andrews, 1971; Ansoff, 1965; Chandler, 1962; Porter, 1980), the strategic choice theory (Bourgeois, 1984; Child, 1972, 1997; Miles & Snow, 1978, 1994) and, more recently, in the resource-based view (Barney, 1991; Peteraf, 1993; Wernerfelt, 1984) and the dynamic capabilities approach (Hamel & Prahalad, 1994; Teece & Pisano, 1994; Teece et al., 1990, 1997).

A central tenet of the last four approaches is that organization managers can renew firm competitive strategy if the environment is undergoing dramatic transformations. However, from the classic strategic management and the strategic choice theory it is frequently recognised that change in the competitive strategy can occur in a relatively rapid and flexible way when managers notice a misalignment between the organization which they run and its environment. Meanwhile, from the resource-based view and the dynamic capabilities approach changes in strategy can just take place slowly and gradually because strategy is rooted in some internal factors –resources– which must be internally built and, therefore, they may simultaneously be sources of change and rigidity in organizations (Leonard-Barton, 1992; Teece et al., 1990, 1997). In summary, in these four theoretical approaches the main potential factors for and against change in competitive strategy are associated with the following category of factors: environmental characteristics, managerial factors and a number of firm-specific resources.

Over the last decades many empirical studies carried out in different settings have been very interested in assessing the impact of these different types of factors on strategic change. In particular, we found several empirical studies where the relationship between some environmental variables (munificence, uncertainty, and specific shifts such as deregulation) and changes in firm strategies (in terms of magnitude, likelihood and direction) was positive such as is suggested by the four theoretical approaches above. These results are found both in quantitative cross-sectional and longitudinal or dynamic studies (Amburgey & Dancin, 1994; Birnbaum, 1984; Lant et al., 1992; Miller, 1993; Montgomery & Hariharan, 1991; Wiersema & Bantel, 1993; Zajac et al., 2000; Zajac & Shortell, 1989). Similar findings are claimed from case studies where it is assumed that strategic change occurs when changes in environmental conditions are accompanied by major changes in top managers' cognitions (Eisenhardt, 1989; Grinyer & McKiernan, 1991; Meyer et al., 1990; Pettigrew, 1985, 1987; Pettigrew & Whipp, 1991; Yetton et al., 1994). Although most researchers have found a positive relationship between changes in environmental conditions and strategic change, there are also some empirical works with mixed findings. Thus, while in some cases it has found a negative relationship

(Goodstein & Boeker, 1991; Zajac & Kraatz, 1993) in others it is not significant (Hambrick et al., 1993).

A positive effect of certain managerial characteristics (mainly in terms of Chief Executive succession) on strategic change (in terms of magnitude, likelihood and direction) is a common pattern supported by many quantitative cross-sectional and longitudinal empirical studies (Barker & Duhaime, 1997; Goodstein & Boeker, 1991; Lant et al., 1992; Miller, 1993; Osborn et al., 1981; Wiersema, 1992) and several case studies (Barr et al., 1992; Greiner & Bhambri, 1989; Johnson, 1992; Nadler & Tushman, 1990; Pettigrew, 1985, 1987; Pettigrew & Whipp, 1991; Pitcher et al., 2000; Tushman et al., 1986). Overall, the results of all these studies indicate that CEO succession is usually accompanied by changes in firm strategies. However, there is also empirical research where the effects of CEO succession on strategic change are not significant (Boeker, 1997; Osborn et al., 1981; Sakano & Lewin, 1999). As we will see below, these findings seem to be more in line with the theoretical arguments proposed from the inertial perspective.

More recently, several empirical works have focused on the relationship between firm resources and capabilities and strategic change (in terms of likelihood and direction). According to theoretical arguments of the resource-based view and the dynamic capabilities approach most cross-sectional and longitudinal studies (Chatterjee & Wernerfelt, 1991; Helfat, 1998; Mitchell, 1989; Montgomery & Hariharan, 1991; Silverman, 1999; Teece et al., 1994; Zajac et al., 2000) and some case studies carried out in large companies (Aaker, 1989, 1994; Collis & Montgomery, 1998; Leonard-Barton, 1992; Mascarenhas et al., 1998; Stalk et al., 1992) have found that resources and core capabilities usually play a critical role in the strategic change process, with some resources and capabilities promoting strategic change process and others inhibiting it.

2.2. The inertial perspective

This stream of research appeared in the late 1970s (Aldrich, 1979; Hannan & Freeman, 1977) as reaction to an excessively optimistic view about strategic change such as it was viewed from the adaptation perspective. Initially, it was much more focused on studying changes in populations of

organizations (organizational births and deaths). Nonetheless, the publication in 1984 of Hannan and Freeman's "Structural Inertia and Organizational Change" allowed for exploring change in single organizations. In this paper, Hannan and Freeman presented the structural inertia model. In this model, they suggested that strategy is one of the most important 'core characteristics' of an organization.

The main assumption of this model is that organizations are highly inert over time because they have two important kinds of competences: organizational reliability and accountability (Hannan & Freeman, 1984: 153). Organization strategy is seen as fixed at its inception and as relatively stable over time (Freeman & Boeker, 1984: 71). Moreover, once it is fixed no further room is left for the organization's manager. As Robbins (1990: 166) notes, "Managers are perceived as impotent observers. If there is a shift in the environmental niche that the organization occupies, there is little that management can do". And although companies sometimes accomplish changes in their competitive strategies as a response to dramatic environmental shifts, such reorientations are both rare and costly and seem to expose an organization to greatly increased risk of extinction. However, according to Hannan and Freeman (1984, 1989) strategic inertia will depend on certain organizational characteristics such as firm size, age and structural complexity degree. Specifically, this perspective suggests that strategic change should be positively connected with environmental factors and negatively with some organizational factors, such as firm size, age and structural complexity. Moreover, managers should play an irrelevant role in the strategic change process.

In our review of empirical literature on the inertial theory we firstly examined the relationship between some environmental variables (density and specific shifts such as deregulation) and strategic change (measured in terms of likelihood, magnitude and direction). Similar ambiguous effects to the adaptation perspective were also evident for these environmental variables. Regarding density, we can observe a positive relationship with different constructs of strategic change in some research (Baum & Korn, 1996), a negative one in many others (Haveman, 1993; Mitchell, 1989; Ruef, 1997), no significant effect in others (Aldrich et al., 1994; Delacroix and Swaminathan, 1991; Stoeberl et al., 1998; Tucker et al., 1990; Wholey & Burns, 1993) or even contradictory findings, as in the study by

Amburgey et al., (1993). Similar contradictions are shown in the findings on effect of deregulation process. Some studies have found a positive effect (Amburgey et al., 1993; Ginsberg & Baum, 1994; Ginsberg & Buchholtz, 1990) although others researchers have found a negative impact (Kelly & Amburgey, 1991; Ruef, 1997). Finally, others have not found significant effects (Aldrich et al., 1994; Tucker et al., 1990) or have found contradictory results (Baum & Korn, 1996; Haveman, 1993).

Few consistent results were also found for firm size. According to several studies firm size was negatively related to strategic change (Delacroix & Swaminathan, 1991; Fombrum & Ginsberg, 1990; Ruef, 1997; Stoeberl et al., 1998) such as Hannan and Freeman noted in their structural inertial theory. But, in other studies it had a positive effect (Boeker, 1997; Zajac & Kraatz, 1993; Zajac et al., 2000). Still other researchers found no effects (Aldrich et al, 1994; Kelly & Amburgey, 1991; Mitchell, 1989; Tucker et al., 1990; Wholey & Burns, 1993), whereas in others it has shown contradictory results (Baum, 1990; Baum & Korn, 1994; Ginsberg & Buchholtz, 1990; Haveman, 1993).

Similar ambiguous effects were also evident for firm age. Age can be both positively (Baum, 1990; Boeker, 1989) and negatively (Amburgey et al., 1993; Delacroix & Swaminathan, 1991; Ginsberg & Buchholtz, 1990; Kelly & Amburgey, 1991; Ruef, 1997) related to strategic change. Others researchers have found no effects of age (Aldrich et al., 1994; Boeker, 1997; Haveman, 1993; Miller, 1993; Stoeberl et al., 1998) and some of them have found mixed effects (Baum & Korn, 1996; Ginsberg & Baum, 1994; Wholey & Burns, 1993; Zajac & Kraatz, 1993).

More consistent findings have been found for the effect of structural complexity. Especially, in one empirical study Gresov et al., (1993), on a sample of U.S. savings and loans, demonstrated that financial institutions with many branch offices find it more difficult to implement strategic change than entities with few branch offices.

2.3. General conclusions from the adaptation and inertial perspectives

The large number of empirical studies grounded in the adaptation and inertial perspectives bring particular weaknesses to researchers' understanding of potential determinants of strategic change

because of theoretical and methodological problems. From a theoretical point of view, the contradictions may stem from considering underspecified models. In this sense, we can see that many studies try to test independently the propositions of each theory without considering alternative explanations from other approaches (Aldrich et al., 1994; Amburgey et al., 1993; Baum & Korn, 1994; Delacroix & Swaminathan, 1991; Kelly & Amburgey, 1991; Stoeberl et al., 1998; Wiersema, 1992; Wiersema & Bantel, 1993). However, in several studies which analyse the possible antecedents of strategic change from a holistic and integrated perspective researchers continue showing equivocal findings as well (Barker & Duhaime, 1997; Fombrun & Ginsberg, 1990; Ginsberg & Buchhlotz, 1990; Goodstein & Boeker, 1991; Lant et al., 1992; Mitchell, 1989; Zajac & Kraatz, 1993; Zajac et al., 2000). In our opinion, these contradictory results may be due to the existence of the following paradox. Theoretically, it is frequently assumed that firms can change their strategies over time as a result of fundamental environmental shifts but potential factors promoting and inhibiting strategic change (strategic stability) always must have a similar effect on it under these specific environmental conditions. This theoretical paradox is clearly reflected in the empirical analysis.

We claim two methodological caveats in most of empirical studies on the determinants of strategic change. First, in many aspects, we completely agree with the remark of several researchers (e.g., Ginsberg, 1989; Miller & Friesen 1982; Rajagopalan & Spreitzer, 1996) that the equivocal effects of antecedents of strategic change can be attributed to different definitions of key research constructs and operationalizations of changes in competitive patterns (in terms of likelihood, magnitude and direction) or the environmental, organizational, and managerial antecedents. Furthermore, there are large differences regarding the research design (quantitative cross-sectional and longitudinal studies, qualitative case studies) and analysis techniques employed. Most of them are built on the premise that empirical regularities can be captured even when they are tested in a turbulent (or 'hypercompetitive') context. However, this methodological strategy reveals, to some extent, an internal inconsistency because turbulent contexts can undoubtedly favour strategic mobility but also

can impose 'structural breakdowns' in the usual way in which organizations react to the hypothesised determinants of strategic change.

To summarize, many researchers have argued that contradictory findings are due to different theoretical and empirical frameworks used in each empirical study, although they have explained them under the assumption of stability in the determinants of strategic change over time. We propose a test of this assumption as an attempt to provide an answer to the following question: Does it make sense to assume that the effect of potential factors for and against strategic change remains stable over time under this type of rapidly changing environment?

3. METHODS

3.1. Research setting: The Spanish private bank population

The financial services industry in general and the Spanish private bank industry in particular, provide an excellent setting for looking into the above question. The Spanish banking industry was traditionally a closed system, heavily regulated (in terms of interest rates, foreign bank entry, branching, and investment and reserve requirements), protected from external competition, very conservative in terms of innovations and controlled by the largest banks, which own substantial market shares (both in deposits and credits). However, during the last two decades the banking system in Spain has been involved in a continuous transformation process. The macro forces of change driving and contributing to this transition include, for example, socio-economic changes, advances in information technologies, and a major liberalization and the subsequent globalisation process of the financial markets. The outcome of all this is a changing sector that has provided new opportunities for Spanish private banks to change their traditional activities and to expand into new domains. This situation has been also typical in banking systems in other developed countries (the United States, Canada, Japan, European Union countries and other Western countries) and more recently in developing countries (in Latin America, Asia and Eastern countries). Next, we summarize the main environmental events in the Spanish bank industry during the period 1983-1997.

Although liberalization process in Spanish banking advanced significantly in the 1970s it accelerated since the 1980s, mainly after joining the European Community (EC) in 1986. From this date many legal restrictions were progressively suppressed, especially those conditions associated with the European banks. Before this date they were subjected to three restrictions. First, they could not obtain financing (through deposits, for example) in Spain for more than 40 per cent of the credits given to Spanish residents (the inter-bank market was excluded from this restriction). Second, they could not open more than three branch offices, including the main office. Third, their portfolio of securities had to be of government issues.

In 1987 all interest rates and service charges were liberalized. Since 1988 geographical limits imposed on savings banks to expand theirs number of branch offices were totally removed. This meant a major competition between this type of entities and private banks. From this date, the Spanish government introduced legal changes that allowed banks to drastically lower their reserve coefficient, because maintaining high percentages would jeopardize the competitive position of Spanish banks in relation to the other European countries.

In 1989 a remarkable change in the policy environment took place: the complete liberalization of capital flows, in the context of the entry (June, 1989) of the Spanish currency (peseta) into the exchange mechanism of the European Monetary System (EMS). In addition, an open price war broke out between the major Spanish banks. The period 1989-1992 witnessed several important mergers among the major Spanish banks, as well as some minor operations involving a large number of small savings banks. Important changes in behaviour of the clientele also started to occur.

Another very important institutional change in the evolution of the European Union countries' banking system was connected to the establishment of the Single European Market, in 1993. Since 1st January 1993 Spanish authorities had to authorize any bank, Spanish or EU, as long as the candidate satisfied the given legal conditions, and their discretionary power was abolished. The period 1992-1995 witnessed the last important economic crisis in Spain and other industrialised countries. As

previous economic crisis, it seriously affected banking institutions owing to the restrictive monetary policy carried out by the Spanish government and especially by the European monetary authorities.

Although over the 1970s and 1980s technological innovation was very significant it accelerated rapidly from the mid 1990s as a direct result of the introduction of the Internet in the banking business. Lastly, this important technological revolution has significantly increased competition by lowering entry barriers among different industries in the financial services sector. It has increased the speed of information processing, the complexity and the launching of new financial products and services.

Consequently, under these relevant regulatory, socio-economic and technological changes, it seems reasonable to infer a high strategic mobility in Spanish private banks since all of them have increased the level of competitive rivalry. The final purpose of this strategic reorientation process is to achieve a suitable fit with this new type of hypercompetitive environment in order to continue surviving. Thus, the population of Spanish private banks is an excellent research arena for studying whether the potential promoting and inhibiting factors of strategic change have remained stable over time under highly turbulent environments.

3.2. Data collection

Data used in our empirical study has been mostly taken from the yearly reports published by the Higher Council of Banking and the Spanish Banking Association. These reports provided detailed balance data and other supplementary information from 1983 to 1997. All data referred to the end of the corresponding year. Our resultant data set contained 1264 observations of 134 different banks over the 15-year period considered[1].

3.3. Variable Measures

Dependent Variable: The dependent variable of interest in this research signalled the event of a strategic change or strategic move. We followed a three-stage procedure for operationally defining this variable. First, we chose the variables which best captured the competitive banking strategy. Next, we

identified strategic groups for defining, in the last stage, the representative variable of a strategic move (see Figure 1).

Insert Figure 1 about here

In a first stage, we identified the dimensions on which banking strategy is defined. We believe, as do Cool and Schendel (1987: 1109), Fiegenbaum et al., (1990: 136) and Fiegenbaum and Thomas (1990: 198), that the specification of strategy variables normally depends on the industry under investigation and it requires a clear and thorough understanding of industry economics and the range of competitive strategies adopted by competing firms. For the population selected in this study, the competitive strategy is usually associated with three different kinds of decisions: (a) the financial products and services offered by these banking firms; (b) the customers served; and (c) the scope commitments. Finally, according to Caminal et al., (1993) these decisions make up the competitive strategy of these financial entities in relation to their market segments. In view of the fact that in this work we only include Spanish private banks, the basic determinants of their competitive strategies will be decisions linked to the financial products and services offered and the main market segments served.

The final selection of competitive strategy dimensions was carefully identified in two phases (see Figure 1). In a first phase, we carried out a detailed revision of the literature existing in Spain and other countries on the banking industry. In a second phase, after discussion with several industry executives and experts we chose the specific strategic variables which might best represent the strategic behaviour followed by Spanish financial institutions. These dimensions –which were summarized in seven key variables at a business level–, were collected from the balance of these financial organizations. Here, our main assumption, in the line of prior research on the banking industry (e.g., Amel & Rhoades, 1988; Caminal et al., 1993; Más, 1999; Mehra, 1996; Passmore, 1986) is that the balance composition of each bank can be an accurate representation of the different

[1] We employed the following criteria for selecting these yearly observations: number of employees, staff expenditures and

financial products and services offered in its market segments. This has been a traditional way of defining and measuring the competitive strategy in the banking sector. In Table 1 we show the strategic variables chosen and their relationship to the major market segment and banking strategy performed.

Insert Table 1 about here

By observing the three former strategic variables (V_1, V_2 and V_3) we can distinguish among three different types of Spanish financial institutions according to their capacity to provide financial funds. The first ones have a clear commercial inclination and their target segment is usually made up of households and different types of firms (*Commercial Banking*, which is associated with a large percentage of commercial loans: V_1). The second ones appear to be industry-oriented since they have significant investment in securities and their main target segment may be characterized by transactions in the stock markets (*Investment Banking*, which is related to a high proportion of securities portfolios: V_2). The last ones have an institutional calling and their main target segments are the financial markets in general (*Institutional Banking*, which is associated with a high percentage in treasury: V_3). On the other hand, the four remaining strategic variables (V_4, V_5, V_6 and V_7) allow us to distinguish among three different types of banking activities according to the means selected for obtaining their financial resources. In this sense, there are banks that have firms and households as primary market targets for accessing funds. Their basic services consist of issuing low-yield and stable liabilities which do not require intensive commercial or design efforts (*Traditional Banking*, which is associated with a great percentage of savings and deposits accounts: V_4), or issuing liabilities which require larger resource investment in their sale and design (*Innovative Banking*, which is related to a high proportion of current accounts, but especially to other accounts: V_5 and V_6). Conversely, other Spanish private banks heavily rely on the inter-bank market for obtaining funds (*Credit-Debt Position* in the financial system: V_7). This variable can take both positive and negatives values. If it takes positive values it

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number of branch offices in each bank had to be greater than zero for each year under study.

means that a bank has a credit position, while if it takes negative values it means that a bank has a debt position in the financial market.

In a second stage, we identified strategic groups in the population of Spanish private banks. For this, we used a procedure similar to that of Cool and Schendel (1987), Fiegenbaum et al., (1990), Fiegenbaum and Thomas (1990, 1993), Más (1999) (see Figure 1). Firstly, it was necessary to identify the periods of homogeneity (Stable Strategic Time Periods, SSTPs hereafter). Next, we clustered banks into strategic groups for each SSTP. The procedure to identify strategic groups is based on the proposition that banks having a similar strategic positioning (in terms of the seven key strategic variables), will be clustered in the same strategic group. In this case, we employed a new grouping method –the Model-based Cluster Method or MCLUST (Banfield and Raftery, 1993; Fraley and Raftery, 1998a). In a third step, we interpreted and characterized the strategic groups over time to try to discover the specific competitive strategy followed by each banking entity in every SSTP, between 1983 and 1997.

In the last stage, we assessed whether a bank had changed it competitive strategy over the period of study (see Figure 1). We assumed that a bank experienced a strategic move if it changed its competitive position from one strategic group to another between two successive SSTPs. This follow-up of each bank over the period of study was used to calculate the dependent variable of interest in our study, strategic move or strategic change. It was coded as a categorical variable that took a value of 1 in case of strategic move across strategic groups, and 0 otherwise. In other words, a bank with a value of 0 for a given year has undergone no moves across strategic groups regarding the preceding SSTP.

Independent Variables

Given the exploratory purpose of this research we do not make 'a priori' support for the adaptation or inertial perspectives. Conversely, we formulate an additive framework. Mainly, our empirical models include the following four groups of factors for assessing their potential effect on the Spanish private banks' strategic mobility: environmental characteristics, organizational and firm-specific factors, and finally some managerial characteristics such as the CEO succession event.

Environmental Characteristics: In accordance with previous empirical studies (e.g., Baum & Korn, 1996; Delacroix & Swaminathan, 1991; Ruef, 1997; Tucker et al., 1990; Wholey & Burns, 1993) we introduced two specific environmental factors to capture the competitive rivalry existing in the Spanish private banks. These factors were related to the industrial environment of this industry: concentration and density. Herfindahl concentration index, i.e. the sum of squares of market shares of banks, in terms of its credits, was used as a measure of concentration. Density was measured as the count of Spanish private banks, foreign banks and savings banks. We considered the linear and quadratic term of density for exploring the form of relationship between this variable and strategic change. All these variables were calculated in the previous year to a bank's strategic move.

Organizational Variables: Three organizational variables were included as possible promoting and inhibiting factors of Spanish private banks' strategic change: bank age, size and structural complexity. Following prior empirical works (e.g., Baum & Korn, 1996; Kelly & Amburgey, 1991; Stoeberl et al., 1998; Zajac & Kraatz, 1993), we measured bank age as the number of years since founding. As in other research (e.g., Haveman, 1993; Kelly & Amburgey, 1991) we used the natural logarithm of banking assets as an indicator of the bank size. Finally, we measured structural complexity in terms of number of branch offices, such as Gresov et al., (1993: 197) posit. All these variables were measured for the previous year to a bank's strategic move.

Firm-Specific Variables: Among this type of variables we distinguish between variables associated with economic performance and management skills, and variables linked to other internal factors. Within the former we included four indicators which have been usually used within the banking sector: leverage, return on assets, labour costs per employee, degree of employee qualification and number of liability accounts managed per employee. Leverage was defined as the bank debt to its capital equity. We measured return on assets as the ratio of net income to total assets. Labour cost per employee and the number of liability accounts managed per employee were usual measures for banking efficiency and productivity (e.g., Berger & Mester, 1997; DeYoung & Hasan, 1998; Grifell-Tatjé & Knox, 1996). We employed the ratio of number of executives and graduates to the total

number of employees as an indicator of degree of employee qualification. Finally, within other internal and idiosyncratic factors we introduced the ratio of fixed assets to the number of branch offices as an indicator of a bank's productive capacity, and other two variables to capture the importance of several resources related to a bank's reputation: customer loyalty and brand loyalty. We defined the first variable as the ratio of time deposits to the total deposits. The second one was defined as the number of years that the bank has maintained its trademark divided by its age. These eight firm-specific variables were measured for the previous year to a bank's strategic move.

Chief Executive Succession: It was coded as a dummy variable which took value of 1 when a succession event occurred the previous year to a bank's strategic move and 0 otherwise.

3.4. Identifying the strategic positioning of Spanish private banks over time

As noted above for clustering banks into similar strategic groups in each of the potential SSTPs, we employed the MCLUST or Model-based Clustering, which has the following advantages over other clustering procedures. First, this technique has a statistical basis, which allows for inference. It is, for example, possible to derive uncertainty estimates for individual classifications as well as for the clustering as a whole. Second, several criteria can be used to assess the optimal number of clusters, a direct consequence of the statistical model used to describe the data. This is a large advantage compared to hierarchical clustering methods, for example, where a cut-off value must be chosen by the researcher. In most cases, no clear criteria exist for such a choice. Third, the clustering method can be selected according to the same criteria used for the choice of the number of clusters. As in the case of hierarchical clustering, several closely related clustering methods exist, and the one that fits the data best can be distinguished in an objective way. These properties of MCLUST are particularly useful for our research purpose. Traditional hierarchical clustering methods depend critically upon quite discretional parameters (e.g. the number of clusters and the type of distance between objects) which lack an '*a posteriori*' statistical validation. In our case, we must compute a total of 15 'clusterings' (one per year) and, therefore, the number of discretionary choices is large enough to induce arbitrary results in the number and composition of clusters. Alternatively, the MCLUST algorithm is free from

purely discretionary choices since a statistical criterion can consistently be applied for detecting the number of clusters as well as the distributional properties of objects in the sample. The model underlying MCLUST assumes that the analyst faces a heterogeneous number of objects that can be accurately represented by a mixture of normal (Gaussian) multivariate distributions. In our case, the value of the multidimensional vector of the proposed clustering variables (V_1 to V_7) for a given bank in period "t" is assumed to be the realization of a multivariate normal distribution $N(\mu_k,\Sigma_k)$, where μ_k and Σ_k are the mean vector and the covariance matrix respectively of cluster *k*. In the case of G clusters the likelihood function is given by:

$$L(\pi,\mu,\Sigma \mid x) = \prod_{i=1}^{n} \sum_{k=1}^{G} \pi_k \phi_k (x_i \mid \mu_k, \Sigma_k),$$

where π_k is the fraction of objects belonging to cluster k.

The problem is that the classes of the objects x_i are unknown. The Expectation-Maximization (EM) algorithm by Dempster et al., (1977) iteratively solves this problem. The first step in the EM algorithm for mixture models (McLachlan & Krishnan, 1997) is the calculation of p_{ik}, the conditional probability that object *i* belongs to class *k*, given an initial guess for parameters π, μ, Σ:

$$p_{ik} = \frac{\phi_k (x_i \mid \pi, \mu, \Sigma)}{\sum_{j=1}^{k} \phi_j (x_i \mid \pi, \mu, \Sigma)}$$

This is done for all objects and for all classes. This is the expectation step; the second step is the maximization step, in which the parameters π, μ, and Σ for the mixture model are estimated. The p_{ik} are used in this estimation, and therefore these parameters may differ from the initial estimates. The E- and M-steps alternate until convergence. Eventually, objects can be classified into the cluster with p_{ik} the highest value for that object: $\max_k (p_{ik})$. Usually, one does not start the EM algorithm with initial values for π, μ, and Σ, but with an initial partitioning and the M-step. Since the choice for an initial partitioning can influence the eventual classification significantly (McLachlan & Krishnan, 1997), most applications start from a number of different starting points and use the one leading to the best

clustering, or use another clustering method to obtain the initial classification. In this case, fast hierarchical methods are used for initialization. Because the data are described by a statistical model rather than a heuristic procedure, it is possible to choose the optimal number of clusters and the "best" clustering model. The likelihood of the classification is a first indicator, but it fails to incorporate the complexity of the model; more complex models will find it easier to fit the data well. Several measures that correct for this are available, of which Akaike's Information Criterion (AIC) and the Bayesian Information Criterion (BIC) are the most well known. The AIC (Akaike, 1974) is given by $AIC=-2\log L+2n_p$, where L is the likelihood and n_p the number of parameters in the model (here π, μ and Σ); the model that minimizes the AIC value is picked. The AIC tends to overestimate the number of clusters, but it is still often used in practice. Alternatively, the BIC (Schwarz, 1978) is given by $BIC=2\log L- n_p \log n$, where n is the number of objects. Compared to AIC, BIC will select models with fewer parameters, hence more parsimonious models (at least for cases where $n>8$). In the MCLUST software used in this study the BIC value permitted us to choose the optimal model and number of clusters. It should be noted that the "optimal model" and "optimal number of clusters" are used here in the sense of "best describing the data"; whether this is also optimal in terms of interpretation of the clustering should be assessed afterwards. Calculations in this research were performed by the MCLUST package for model-based clustering by Fraley and Raftery (1998b)[2].

3.5. Defining and measuring the effect of independent variables on strategic change

The empirical tool for testing the effects of different independent variables depends on the definition of the dependent variable. In this study, the frequency or probability of strategic change was assessed by logistic regression using panel data techniques. Conversely to the OLS regression, panel data estimators overcome inconsistency problems when there are observation-specific effects (i.e. bank-specific) on the dependent variable. This fact is likely to occur in our research object (strategic change) since some idiosyncratic factors are relatively stable through the period analysed and they

[2] The original program (http://www.stat.washington.edu/fraley/mclust/soft.html) is an add-on package for S-plus (http://www.insightful.com). A more complete account of currently available software for mixture modelling is given in McLachlan and Peel (2000).

may substantially affect the strategic change chances of the bank such as its property and governance structure. The control of these unknown and specific effects in logistic models is even more important than in linear models, as in the latter consistent estimates can be obtained if the unobservable effects and random perturbations are uncorrelated, while such a condition does not preserve consistency for non-linear specifications, e.g., the 'logit' model (Greene, 1997: 888).

Similarly to the linear case, logistic regression for panel data may lead to different specifications depending on the nature, random or deterministic, which is assumed for the firm-specific effects. A general specification of logistic regression for panel data can be expressed in the following way:

$Y_{it}^* = Vi + \beta' X_{it} + U_{it}$, where $Y_{it} = 1$ if $Y_{it}^* > 0$ and $Y_{it} = 0$ otherwise,

where Y_{it} is observable but not Y_{it}^*.

The idiosyncratic effect is denoted V_i and β represents the coefficients to be estimated. The random perturbation, U_{it}, follows a logistic distribution and the assumptions about V_i specify the model completely: the fixed-effects model considers V_i as a constant that differs for every individual. Alternatively, random-effects estimates are derived after assuming that $V_i = \varepsilon_{it}^* + \varepsilon_i$, where ε_{it}^* and ε_i are uncorrelated random variables.

From a strictly theoretical perspective, the choice of one of the above specifications over the other (Fixed vs. Random) depends on the likelihood of the assumptions for each particular case[3]. Obviously, this question is very important when the estimates differ widely between the two models. Nevertheless, there are some methodological peculiarities of logistic panel data models that favour random effects estimation due to sample characteristics. Maximum likelihood estimation of a fixed effects model is unaffected by observations in the sample with 'time-invariant' response. In other words, the estimation procedure of a fixed-effects model excludes all observations with 'ones' or 'zeros' for every year. This would lead, in our case, to an important reduction in the sample size and, thus, comparative analysis among estimates can lead to misinterpretation. Then, after evaluating this

methodological trade-off, we only provided the results of random-effects model since they benefited from a larger sample size. The statistical package STATA 7.0 was employed for estimating different logistic models.

As we previously discussed, the period examined involves continuous and drastic changes in environmental conditions. In order to explore the structural stability of the model above, we performed a χ^2 test using an instrumental regression in which the "null hypothesis" assumes that coefficients are 'time-invariant' between two sub-periods, 1983-1987 and 1988-1997 (see Appendix 1). This test was used to analyse whether the effect of different determinants of strategic change were stable over time.

4. RESEARCH RESULTS

We did not find any SSTP over the 15-year period under analysis. Therefore, we clustered banks into similar strategic groups for each year after using the MCLUST algorithm. Table 2 shows the most relevant results about the strategic groups (SGs, hereafter) identified in each year and their evolution between 1983 and 1997. The number of SGs appears to increase roughly until 1990 (11 SGs) and decrease moderately from 1995 until the end of the period. The proportion of banks moving across SGs exhibits a more erratic trend with minima around 29 percent (year 1997) and two noticeable maximum in 1985 (90 percent) and 1991 (77 percent). During the period of study, the cumulative percentage of banks undergoing moves across different SGs, and therefore strategic reorientations is about 90 percent. In others words, according to these findings we can assert that almost all banks have been engaged in continuous strategic change events over the 15-year period.

Insert Table 2 about here

Table 3 summarizes means, standard deviation, and minimum and maximum values for the dependent and all independent variables included in the study.

[3] The fixed-effects model is viewed as one in which researcher makes inferences based on the effects that there are in the sample. The random-effects model is viewed as one in which the researcher makes unconditional inferences with respect to a larger population.

Insert Table 3 about here

In Table 4, we present the effects of the independent variables on the likelihood of strategic move across SGs (strategic change) in two alternative ways. Firstly, we show the estimates of the logistic model with random effects for the whole period of study (Basic Model). This is the traditional way to examine the effect of different groups of variables on strategic change in all longitudinal empirical studies carried out until now. On the other hand, in the following two columns we explored the structural stability of our model between two sub-periods, 1983-1987 (Year<1988) and 1998-1993 (Year≥1988). We explored the structural stability of our model considering other potential sub-periods without incurring in severe asymmetries among diverse sub-sample sizes since this weakens the power of the test. Alternative thresholds for possible longitudinal breakdowns led to not reject structural breakdowns but models for sub-samples also experimented drastic losses of goodness of fit.

Insert Table 4 about here

As shown by the 'χ^2 goodness of fit' test, the basic model is significant at the usual confidence levels (concretely at 99 percent). Results shown under this model indicated that the effect of some environmental variables (density and the quadratic term of density), one organizational variable (size), some firm-specific factors (productive capacity, return on assets and liability accounts per employee) and CEO succession were significant. In particular, density, productive capacity and chief executive succession all had a positive and significant relationship with the likelihood of strategic move across SGs or strategic change. Nonetheless, the quadratic term of density, bank size, and liability accounts managed per employee all had a negative and significant relationship with the probability of strategic change. Moreover, as stated above the bank's choice to change its competitive strategy might also be influenced by other idiosyncratic and unmeasured features of every bank. This finding could be inferred from the χ^2 test which did not reject individual random effects at the 90 percent confidence level.

However, our interest in this study was in verifying whether the effect of each of the significant variables remained stable over time such as theoretically is suggested from each perspective. In this sense, the results of the structural stability test of the model (see Appendix 1) confirmed that changes in coefficients for the logistic regression during the whole period of study cannot be rejected at 99 percent of confidence (see last row of Table 4). According to this result we found a strong support for inferring instability over time in the joint effect of different independent variables included in this study on the likelihood of strategic change. Consequently, we estimated the logistic model again using each sub-period as a separate sample (see last two columns of Table 4). As shown by the 'χ^2 goodness of fit' test, both models (Year<1988 and Year≥1988) were significant at the usual confidence levels. Furthermore, as it can be seen in the first-period model there was no statistical relevance of individual unobservable effects at the traditional confidence levels. Contrary to this model, we found that in the second period the bank's choice to change its strategy could be also influenced by other idiosyncratic and unmeasured features of every bank. This finding could be inferred from the χ^2 test which did not reject individual random effects at the 95 percent confidence level.

The differences between these two models affected in some variables both the sign of significant estimates and their significance levels. Particularly, the initial period (1983-1987) revealed a positive and significant influence (at 99 percent of confidence) of concentration on the probability of strategic change, but this effect became negative and significant (at 90 percent of confidence) in the last period (1988-1997). In the basic model this variable was not significant. Conversely, there were two variables which kept the sign and their significance levels between the two periods: the quadratic term of density (negative and significant at 99 percent in each period) and the variable representative of productive capacity (positive and significant at 95 percent in each period). The positive and significant effect of the linear term of density and the negative and significant effect of the quadratic term of this same variable suggest the existence of a concave relationship between strategic change and density. These two explanatory variables had the same sign and significance levels as in the basic model. Thus,

we can state that these findings provide strong support for the effect of both variables on the probability of strategic change independently of time period considered.

Finally, we found mixed effects between both models for the remaining variables. While the bank size and liability accounts managed per employee had a negative and significant effect on the probability of strategic change in the first period (we found identical results in the basic model), they did not exhibit a significant effect in the second period. Return on assets and CEO succession had not a significant effect on the probability of strategic change in the first period, but this effect became significant (at 90 percent of confidence) in the second period. Both variables also were positively and significantly (at 90 percent of confidence) related to probability of strategic change in the basic model. Neither labour costs per employee, customer loyalty nor brand loyalty had a significant effect on probability of strategic change in the basic model. However, as it can be seen in the last two columns of Table 4 all these variables exhibited a significant influence on the probability of strategic change depending on the time period of analysis considered. Specifically, we found that labour cost per employee and brand loyalty had a negative and significant (both variables at 95 percent of confidence) relationship with strategic change in the first period but we found no effect in the second period. Similar results were also evident for customer loyalty, although this variable shown a positive effect in the first period.

5. DISCUSSION AND CONCLUSIONS

We began by noting that past research has devoted an increasing effort to examining the relative importance of potential determinants for firms to change their strategies over time. Traditionally, the wide diversity of theoretical approaches to this issue has made it quite difficult to summarize them into a consistent and comprehensive model because as stated above each perspective emphasizes a dominant role of different groups of factors on strategic change. Simultaneously, the large body of empirical studies have usually provided contradictory findings with respect to the effect of these factors on strategic change as a consequence of different methodologies used by each of them to analyse this question. The primary purpose of this paper was to explore an additive framework of

strategic change that took into account the effect of different groups of factors both from the adaptation perspective and inertial view in order to test to what extent their effects have remained stable over time in a rapidly changing environmental context.

The results of this study about the stability of potential determinants of strategic change in the population of Spanish private banks suggest that, in general: (1) a very large number and proportion of banks have been engaged in continuous strategic moves in response to rapidly changing environmental conditions; (2) different factors associated with the adaptation and inertial perspectives have exerted a highly significant influence over the probability of strategic mobility of these particular financial institutions; and (3) most importantly, the effect of these factors did not remain stable over the whole period of analysis. The implications of each of these findings are briefly discussed below.

Consistent with many of the prior quantitative and dynamic empirical works (e.g., Amburgey & Dancin, 1994; Baum, 1990; Ginsberg & Buchholtz, 1990; Haveman, 1993; Smith & Grimm, 1987; Zajac & Kraatz, 1993; Zajac et al., 2000; Zajac & Shortell, 1989) we found that firms did undergo strategic change in significant numbers when environmental conditions experienced very relevant shifts. Interestingly, at first sight these results seem to be clearly in line with the pattern of organizational strategic behaviour predicted from the adaptation perspective. From this point of view, we could argue, following Zajac and Kraatz (1993: 99-100), that at the organizational level, the effect of 'need to change' pressures should dominate the 'ability to change' constraints and, hence, strategic change would represent a firm's attempt to continuously adapt to specific environmental forces. Nonetheless, as we will see below both factors from the adaptation perspective and factors from the inertial theory are necessary to explain appropriately that pattern of organizational strategic behaviour.

According to the theoretical predictions of the inertial perspective we found in this study that some specific environmental variables (density) were positively connected with the probability of strategic change. On the other hand, the quadratic term of density and one organizational variable (firm size) were negatively related to the probability of strategic change, such as this theory suggests.

In a similar way, we found some support for some predictions of the adaptation view regarding the role of some firm-specific factors and organizations' managers. Specifically, our results demonstrated that several internal factors (bank's productive capacity and return on assets) might be sources of strategic change whereas others (liability accounts per employee) might be sources of strategic rigidity. These findings appeared to be roughly consistent with more recent empirical research focused on the relationship between firm resources and capabilities and strategic change (e.g., Chatterjee & Wernerfelt, 1991; Helfat, 1998; Mitchell, 1989; Montgomery & Hariharan, 1991; Zajac et al., 2000). Finally, as in prior empirical studies (e.g., Barker & Duhaime, 1997; Goodstein & Boeker, 1991; Pettigrew, 1985, 1987; Tushman et al., 1986; Wiersema, 1992) our results indicated that the role of managerial intentionality in the organizational strategic adaptation process is also relevant.

However, all these findings should be considered very cautiously because the effect of most of independent variables considered was not robust over time. This is the major theoretical and empirical contribution of our study to the literature on the determinants of strategic change. Specifically, we found that just two variables: (the quadratic term of density and bank's productive capacity) kept their effect on the probability of strategic change over time. Apart from these two variables the effect of the remaining ones depended on the period analysed. From this point of view, our results suggest the need of considering factors both from the adaptation perspective and inertial theory to adequately explain the strategic mobility under rapidly changing environments, although some factors may be much more important in a concrete period and other different groups of factors in another period. For example, we found that bank's CEOs might play a relevant role in the strategic change process during some years (this finding is roughly consistent with the adaptation perspective) but not in others (this finding is in line with some theoretical arguments of the inertial theory). Similar conclusions are evident for the remaining factors (some organizational factors, such as bank size, and several firm-specific variables, such as return on assets, labour cost per employee, liability accounts managed per employee, customer and brand loyalty) which are unstable over time. Therefore, this study opens a new debate in the literature about the temporal validity of predictions of different theoretical approaches to explain the

strategic change process when the environmental conditions are experiencing dramatic transformations. In others terms, the findings of this exploratory study suggest that the "context-dependency' of alternative or competitive explanatory theories of strategy change as their relative validation can significantly vary over time for a given population of firms.

From a strictly methodological point of view, this work makes two major contributions to the study of determinants of strategic change. Firstly, we have benefited from the great potential of the MCLUST grouping algorithm used to determine the strategic groups as a previous step for defining the dependent variable of interest: strategic move or strategic change of firms. The basics of this grouping method allow researchers to determine critical outcomes from cluster analysis in a more objective mode, i.e. the number of the resulting groups. Secondly, regarding the regression analysis, we also propose the use of panel data formulations in order to control effectively unobservable firm-specific effects likely to distort estimates when they are not controlled as occurs when employing traditional cross-sectional models of logistic regression.

Three primary extensions for future research on the stability of determinants of strategic change can be exposed. Firstly, our collection of potential determinants of strategic change is far from being detailed and additional factors should be explored. In this sense, we are aware that our review may be comprised by a limited identification of the possible determinants of strategic change. Hopefully, it would be very interesting to investigate in future research the influence of other potential determinants not included in this study. Secondly, additional empirical evidence in different industries or environmental conditions would help to assess the robustness or generalization of our findings. Finally, we recognize that, perhaps, the most important contribution of this study is empirical since it has been designed as an exploratory research. Nonetheless, we believe that with this study we take a very important step forward in the understanding of strategic change by outlining the need of formulating new theories which explicitly consider the context-dependency of different factors included both theoretically and methodologically through the design of appropriate empirical frameworks.

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APPENDIX 1

Time-invariancy of a "logit" model for panel data can be tested by means of the following specification:

$Y_{it}^* = Vi + \beta' X_{it} + d\,(\phi' X_{it}) + U_{it}$, where $Y_{it} = 1$ if $Y_{it}^* > 0$ and $Y_{it} = 0$ otherwise,

where Y_{it}, the dependent variable, is observable but not Y_{it}^*, Vi denotes the idiosyncratic effect, β and ϕ are the coefficients to be estimated, U_{it} is the random perturbation, and *d* is an artificial variable which takes value 1 if t = 1983, 1984, 1985, 1986 or 1987 and value 0 if t = 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996 or 1997.

The change of any coefficient of the model between periods can be tested by performing the following test in the above model:

H0: $\phi j = 0$ for all *j* (time-invariant coefficients).
H1: $\phi j \neq 0$ for any *j* (period-dependent coefficients).

The change of a single coefficient of the model between periods can be tested by performing the following test in the above model:

H0: $\phi j = 0$ for all *j* (time-invariant coefficient of variable j).
H1: $\phi j \neq 0$ for all *j* (period-dependent coefficient of variable j).

TABLE 1

STRATEGIC VARIABLES: DEFINITION, MARKET SEGMENT AND BUSINESS BANKING STRATEGY

Strategic variables	**Definition**	**Market Segment** ***(Business Banking Strategy)***
V_1	Commercial Loans / Financial Investments	Lending Market *(Commercial Banking)*
V_2	Portfolio of Securities / Financial Investments	Lending Market *(Investment Banking)*
V_3	Treasury / Financial Investments	Lending Market *(Institutional Banking)*
V_4	Savings and Deposits Accounts / Borrowed Capital	Instrument Saving Market *(Traditional Banking)*
V_5	Current Accounts / Borrowed Capital	Instrument Saving Market *(Innovative Banking)*
V_6	Other Accounts / Borrowed Capital	Instrument Saving Market *(Innovative Banking)*
V_7	Net Position in Financial Markets / Total Liabilities	Inter-bank Market *(Creditor-Debtor Position)*

TABLE 2

STRATEGIC GROUPS (SGs) OVER TIME

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Number of SGs	5	6	7	5	5	8	8	11	7	10	9	10	9	8	6
Number of new SGs	0	2	5	0	0	3	2	3	1	3	1	1	0	0	0
Number of SGs disappeared	0	1	4	2	0	0	2	0	5	0	2	0	1	1	2
Net change in number of SGs	0	1	1	-2	0	3	0	3	-4	3	-1	1	-1	-1	-2
Number of SGs that persist	0	4	2	5	5	5	6	8	6	7	8	9	9	8	6
Percentage of firms undergoing strategic change	0	0.41	0.90	0.62	0.31	0.44	0.55	0.51	0.77	0.55	0.45	0.41	0.32	0.4	0.29

TABLE 3

DESCRIPTIVE STATISTICS

Variables	Number of observations	Mean	Standard deviation	Minimun	Maximun
Strategic change	1264	0.50237	0.50019	0	1
Concentration	1264	0.07468	0.00989	0.05928	0.09013
Density	1264	210.1297	4.08100	203	219
$Density^2$	1264	44171.15	1719.651	41209	47961
Bank age	1264	59.27136	49.44264	0	279
Bank size	1264	11.46048	1.65515	7.23562	16.32363
Number of branch offices	1264	173.2342	417.2486	1	3493
Productive capacity	1264	92.7263	237.7792	0	3303.75
Leverage	1264	3.72569	26.16719	0	501.25
Return on assets	1264	0.00881	0.03079	-0.31421	0.49358
Labour costs per employee	1264	4.81197	2.68429	0.97	48.33333
Degree of employee qualification	1264	0.48004	0.13869	0.11111	1
Liability accounts per employee	1264	156.8808	135.6348	0	2027.074
Customer loyalty	1264	0.36562	0.24510	0	0.98433
Brand loyalty	1264	0.54087	0.40964	0	1
CEO succession	1264	0.17326	0.37862	0	1

TABLE 4

PANEL DATA ESTIMATES OF LOGIT MODEL WITH RANDOM EFFECTS

Independent variables	**Basic Model**	**Year < 1988**	**Year ≥ 1988**
Constant	-503.4573*** (166.1082)	105.7375*** (15.5216)	-537.76*** (180.4668)
Concentration	-15.2007 (12.8975)	131.8202*** (46.0899)	-55.4344* (31.9510)
Density	4.7626*** (1.5563)	-----	5.1587*** (1.6755)
$Density^2$	-0.0112*** (0.0037)	-0.0024*** (0.0004	-0.0122*** (0.0039)
Bank age	0.0006 (0.0016)	0.0003 (0.0029)	0.0002 (0.0020)
Bank size	-0.1146** (0.0542)	-0.2659** (0.1201)	-0.1017 (0.0676)
Number of branch offices	-0.0002 (0.0002)	-0.0007 (0.0006)	-0.00002 (0.0003)
Productive capacity	0.0008** (0.0003)	0.0041** (0.0019)	0.0007** (0.0003)
Leverage	-0.0033 (0.0026)	-0.0074 (0.0070)	-0.0010 (0.0027)
Return on assets	3.8078* (2.2703)	-3.5269 (7.1245)	4.5415* (2.6216)
Labour costs per employee	-0.0095 (0.0320)	-0.3539** (0.1616)	0.0046 (0.0341)
Degree of employee qualification	0.2469 (0.5511)	-0.9153 (1.2229)	0.5322 (0.6855)
Liability accounts per employee	-0.0012** (0.0006)	-0.0060*** (0.0014)	-0.0004 (0.0007)
Customer loyalty	-0.1351 (0.3049)	1.8296*** (0.6659)	-0.7143 (0.4464)
Brand loyalty	-0.2808 (0.1812)	-0.6755** (0.3910)	-0.0540 (0.2265)
CEO succession	0.2729* (0.1649)	0.1530 (0.3034)	0.4008* (0.2214)
Rho=0 χ^2 (1)[a]	2.40*	0.16	3.01**
Number of observations	1264	456	808
Number of banks	134	98	122
χ^2 test (d.f.) [b]	78.46*** (15)	70.30*** (15)	63.66*** (15)

Time-invariancy χ^2 test (d.f.)[c]	77.97*** (15)

[a] Test for individual effects equality (i.e. irrelevancy of individual effects).
[b] Test for goodness of fit.
[c] Performed in the auxiliary regression (see Appendix 1).
* *p*-value<0.1; ** *p*-value<0.05; *** *p*-value<0.01.

FIGURE 1

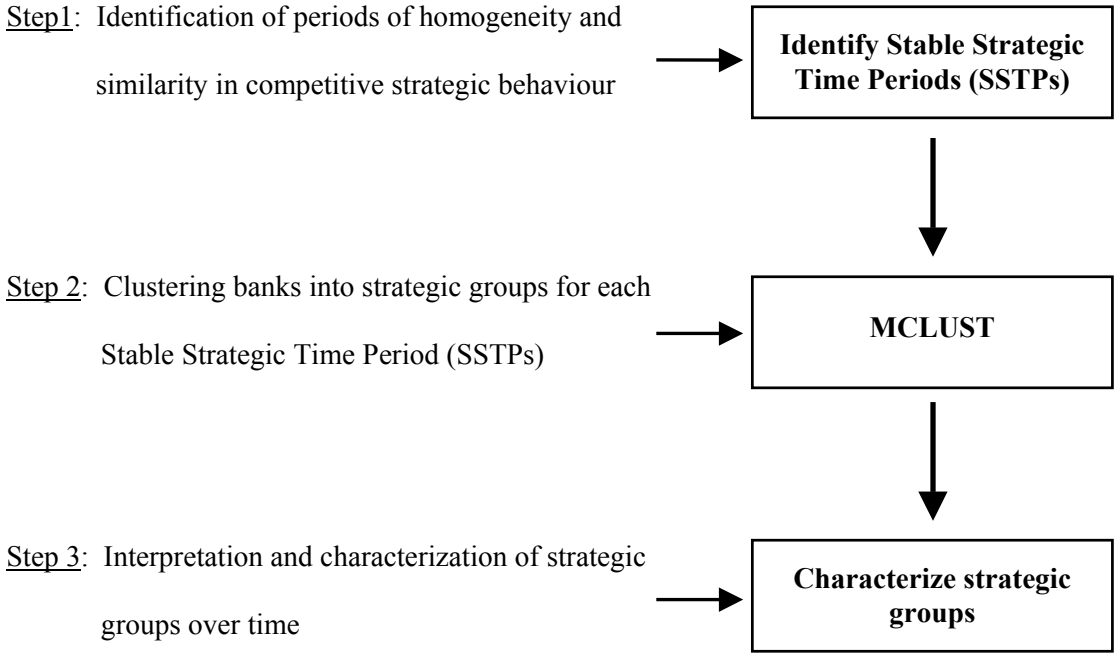
DYNAMIC FRAMEWORK FOR OBTAINING THE DEPENDENT VARIABLE: STRATEGIC CHANGE

STAGE 1: CHOOSE THE STRATEGIC VARIABLES

Phase 1: Revision of the literature about the banking industry

Phase 2: Discussion with several managers and experts in the Spanish banking sector

STAGE 2: IDENTIFY STRATEGIC GROUPS IN THE SPANISH PRIVATE BANK POPULATION BETWEEN 1983 AND 1997



STAGE 3: ASSESS WHETHER A BANK CHANGES ITS COMPETITIVE STRATEGY BETWEEN 1983 AND 1997

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