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Strategic Moves and Organizational Survival in Turbulent Environments: The Case of Spanish Banks (1983-1997)[†]

José David Vicente Lorente
José Angel Zúñiga Vicente
Universidad de Salamanca

ABSTRACT: The main purpose of this paper is to examine the effect of ‘strategic moves’ (or strategic change) on the likelihood of organizational survival in a population of firms which has undergone radical transformations in its environment. To this end, we propose and test two competitive hypotheses which are the result of two other theoretical perspectives about the consequences of strategic change: the adaptation view (classic strategic management and dynamic capabilities) and the ecological approach. While from the former, in general, it is assumed that strategic change has a positive effect on the likelihood of organizational survival, from the ecological approach, it is frequently argued that attempts at reorganization in general and strategic change in particular tend to be associated with an increase in the likelihood of organizational extinction. The sample used to test the two proposed hypotheses is the Spanish bank population over the period 1983-1997. The results confirm the positive and significant effect of strategic moves (or strategic change) on the likelihood of organizational survival, in line with the conclusions of the adaptive perspective and other empirical research carried out in different settings. This paper introduces two important methodological innovations: (a) the definition and measurement of ‘strategic moves’ (or strategic change) by using a new cluster algorithm, the MCLUST; and (b) the control of the non-observable heterogeneity using panel data models for ‘probit’ regression.

Key words: strategic change, organizational survival and extinction, Spanish banking, MCLUST, ‘probit’ model

Universidad de Salamanca
Departamento de Administración y
Economía de la Empresa
Campus “Miguel de Unamuno”, s/n
37007 Salamanca
Tfno: (0034) 923 294400, Ext. 3502
Fax: (0034) 923 294715
E-mail: josvic@aida.usal.es
zunigavi@gugu.usal.es

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INTRODUCTION

In the last twenty years most of the industries in developed countries have been undergoing drastic transformations in their environments. Industries currently in the throes of these upheavals include telecommunications, airline and trucking transportation, health care, chemicals and pharmaceuticals, and financial services in general. In each of these settings rapid and radical environmental changes are restructuring industries, relocating their boundaries, and changing the bases of competition. In particular, the influence of technological, socio-economic and regulatory changes and the subsequent globalization process has been a threshold in the evolution of competitive structure in these industries in relation to previous decades, mainly in the 1950s, 1960s, and the greater part of the 1970s. Throughout the previous period of relative environmental stability, the interest of scholars and businessmen was dominated by a focus on the potential explanatory factors of organizational success and growth (e.g., Penrose, 1959; Peters and Waterman, 1982; Starbuck, 1965). However, environmental conditions have changed substantially since the end of the 1970s. As a result of these drastic environmental changes, the main challenge which is currently faced by scholars and businessmen is trying to identify those factors associated with organizational survival and extinction (e.g., Daily, 1994; Sutton, 1987, 1990; Whetten, 1980, 1987). Furthermore, in these highly turbulent environments, traditionally in organizational literature it has frequently been argued that an organization's survival depends increasingly on devising new competitive strategic responses (e.g., Hambrick and

D'Aveni, 1988; Meyer et al., 1990; Porter, 1991; Weitzel and Jonsson, 1989), although at the moment there is still no agreement among researchers on the regular effect of strategic change on organizational survival. In fact, researchers seem to vary greatly in the extent to which they adopt an adaptive or inertial view of strategic change on organizational survival and extinction. At one extreme, those who support the predominance of strategic adaptation emphasize the role that managers play in monitoring environmental changes and modifying organizational strategy to better match new environmental contingencies (Boeker, 1997, p. 153; Child, 1972). The most important finding from the adaptive perspective is that strategic change generally benefits survival chances if it occurs in response to a profound shift of environmental conditions (Haveman, 1992; Miles and Snow, 1994; Smith and Grimm, 1987; Zajac et al., 2000). At the other extreme, theorists adopting a more inertial view of strategy propose that although adaptive strategic change is not impossible, it is severely constrained due to a great variety of internal and external forces. Furthermore, given that the process of attempting strategic reorganization tends to lower the reliability of performance (Hannan and Freeman, 1984, p. 159), it is frequently argued that it may finally turn out to be detrimental to survival chances as a result of the high vulnerability of organizations undergoing this strategic change to environmental shocks (Carroll, 1984a; Hannan and Freeman, 1977, 1984, 1989).

The main purpose of this paper is to analyse the effect of 'strategic mobility' on the likelihood of organizational survival when it occurs as a response to relevant

changes in the environmental conditions. We examine this question in the light of the available evidence of the Spanish bank population, which has experienced very important technological, economic and regulatory shifts over a 15-year period (from 1983 to 1997). Thus, this paper adds to the line of research investigating the occurrence of strategic changes in organizational populations and their consequences on organizational survival (e.g., Amburgey et al., 1993; Delacroix and Swaminathan, 1991; Haveman, 1992; Kelly and Amburgey, 1991; Ruef, 1997; Sheppard, 1994; Singh et al., 1986; Stoeberl et al., 1998; Zajac and Kraatz, 1993; Zajac et al., 2000) and it contributes in three major aspects. First, we add new non-trivial evidence to the available studies since the Spanish banking system, as is the case with most European Union (EU) countries, differs widely in its institutional and regulatory issues from the U.S. case. In this context, it is usual to distinguish between two banking systems (e.g., Gardener, 1992): bank-based systems (such as those found in Spain, Germany, France, Italy, the Netherlands, Belgium or Japan) and more market-based systems (as in the U.S. and U.K., the so-called ‘Anglo-Saxon systems’). In the first category, banks have been traditionally more strongly oriented towards the corporate sector. In addition, the public sector has played a very important role in the building process of the financial system (this is what has occurred in Spain, France or Italy). On the other hand, in market-based systems the most open capital markets have been more important sources of long-term corporate funding and the role of the government has been less important than in the bank-based systems. Second, we propose the concept of strategic mobility to

quantitatively approximate the event of strategic change in order to gain objectivity and to benefit from the advantages of the recent developments in qualitative response models for panel data analysis. Third, the length of the period examined captures an outstanding example of successive and transcendental environmental changes at regulatory, technological and economic level. From mid-eighties to late nineties, Spanish banks have witnessed the entry of Spain into the former EEC, the rise and spread of IT innovations in the banking industry and the ongoing globalization of financial markets.

The paper is organized as follows: In the next section, the extant theoretical and empirical literature on the relationship between strategic change and organizational survival is briefly reviewed in order to propose two alternative hypotheses according to divergent theoretical approaches about the effect of strategic change on the probability of organizational extinction. We describe the sample and provide a new research methodology for testing the hypotheses in the third section. The results are presented in the fourth section. In the last section, we discuss the conclusions, implications, and shortcomings of our study and we suggest possible avenues for future research.

THEORY AND HYPOTHESES

The Adaptation View: Classic Strategic Management and Dynamic Capabilities

Prior to the late 1970s, almost all researchers examined strategy and strategic change under the common belief that top managers could implement rational strategies in a relatively quick and flexible way even when facing substantial environmental changes (Andrews, 1971; Child, 1972). Furthermore, this change in organizational strategy was considered as an essential condition to ensure organizational survival over time. Nowadays, there are two basic approaches that share these same concerns regarding the consequences and effects of strategic change on organizational survival: classic strategic management and dynamic capabilities. Other theoretical approaches traditionally interested in exploring in a tacit or explicit way the potential benefits of an adaptive behaviour are the contingency approach (Lawrence and Lorsch, 1967; Thompson, 1967), the resource dependence theory (Aldrich and Pfeffer, 1976; Pfeffer and Salancik, 1978) and the institutional theory (DiMaggio and Powell, 1983; Meyer and Rowan, 1977; Zucker, 1987)¹.

The central tenet of classic strategic management (Andrews, 1971; Ansoff, 1965; Chandler, 1962; Porter, 1980, 1985) is that strategic change is considered as a frequent event and, what is more, it happens in a relatively quick and flexible way. Organizations must maintain a proper alignment with their institutional and industrial environments. In this sense, to the extent that top managers can

accurately enact the transformations in organizational environmental conditions, they should act by changing the strategies of the organizations which they manage (Andrews, 1971; Child, 1972; Smith and Grimm, 1987). The main theoretical reason for justifying this behaviour of top managers is that relevant environmental shifts may result in misalignments between an organization and its environment, reducing the effectiveness of its current strategy. Generally, this lack of organizational effectiveness forces top managers to improve alignment (Friesen and Miller, 1986; Ginsberg, 1988).

On the other hand, the dynamic capabilities approach (Teece and Pisano, 1994; Teece et al., 1990, 1997) explicitly reckons that undertaking relevant strategic and structural changes is constrained because of the ‘path-dependent’ process of capabilities creation and deployment. A firm’s strategy is rooted in competences and capabilities which must be internally built and, therefore, may simultaneously be sources of change and rigidity in organizations (Leonard-Barton, 1992; Teece et al., 1997). However, it is usually assumed that the costs and limitations coupled with strategic change do not preclude successful adaptation when adopting best practices through a constant surveillance of different market segments. This should necessarily force internal adjustments to quickly accomplish strategic reconfiguration and transformation ahead of the competition (Teece et al., 1997, p. 521). Essentially, from this approach, the environment is viewed as a trigger of strategic change but also as a selection device that precludes the survival of

organizations lacking the required resources and capabilities to face the new environmental conditions (Teece et al., 1990, p. 18).

The results of different longitudinal empirical studies made over the last fifteen years seem to support the existence of a positive and significant relationship between the strategic change process and organizational survival when organizations face substantial environmental shifts. In this vein, Smith and Grimm (1987), on a sample of 27 U.S. railroads, found that those firms that changed their strategies in response to environmental variation (deregulation) out-performed those that did not. Zajac and Kraatz (1993) corroborated that restructuring is a performance-enhancing response to changing environmental conditions in the US higher education system. Singh et al., (1986), on a population of voluntary social service organizations that came into existence in metropolitan Toronto, Canada, during the period 1970-1980, and Amburgey et al., (1993), on a population of 1,001 Finnish newspaper organizations over 193 years, found that strategic changes generally caused a decrease in the hazard of organizational failure. More specifically focused on the banking industry, the U.S. evidence of Haveman (1992) and Zajac et al., (2000) concluded that strategic changes of savings and loans institutions frequently enhanced financial performance and simultaneously diminished failure rates if they occurred in response to drastic environmental shifts.

Consequently, according to the above arguments we formulate the following statement:

***Hypothesis 1:** Strategic moves in organizations will imply an increase in the likelihood of organizational survival under relevant shifts of environmental conditions.*

The Ecological Approach: The Structural Inertia Model

This stream of research for studying organizational behaviour emerged in the late 1970s (Aldrich, 1979; Hannan and Freeman, 1977) and is generally characterised by a quite ‘pessimistic’ view of the organizational change process in comparison to the ‘optimistic’ perspective that underlies the adaptation perspective (Narayanan and Nath, 1993, p. 142; Montgomery, 1995, p. 251). Hannan and Freeman (1984) set up the bases of their structural inertial model in their seminal paper ‘Structural Inertia and Organizational Change’. Their main thesis is that organizations are highly inert because of two kinds of competences: organizational reliability and accountability (Hannan and Freeman, 1984, p. 153). Organizational strategy –a core feature of organizations– is seen as fixed at its inception and as unchanging over time (Freeman and Boeker, 1984, p. 71). Once it is fixed no further room is left for the top managers. In this sense, as McKelvey (1982) and others (Robbins, 1990, p. 166) suggest, “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 manage to change their strategies to fit with new environmental conditions, such reorientations are both rare and costly and seem to expose an organization to greatly increased risk of death. Furthermore, Haveman (1992, p.

48) claims that organizations may be obliged to divert resources from operating to reorganizing in case of strategic change, reducing the efficiency of organizational operations. Finally, this may render performance less reliable and thereby hurt survival chances². These theoretical arguments have been supported by several longitudinal empirical studies during the last decade. For example, Parnell's (1998) study on a sample of 110 firms in the department store industry in the US. found that strategic change is no more likely to improve performance than strategic consistency. Also Sheppard (1994), using a sample composed of firms from different US industries, and Ruef (1997) with a population of US hospitals, corroborated a significant and negative relationship between strategic change and the likelihood of organizational survival. In summary, and according to all these arguments and findings, we can state the following hypothesis:

Hypothesis 2: *Strategic moves in organizations will imply a decrease in the likelihood of organizational survival under relevant shifts of environmental conditions.*

METHODS

Sample Selection and Data Collection

The sample used for empirical testing is the total population of Spanish banks from 1983 to 1997. The most important reasons for this choice were the following. Firstly, previous empirical studies carried out on the Spanish banking system have found heterogeneous strategic patterns evolving over time (e.g., Azofra and Fuente, 1987; Más, 1998; Vives, 1990) but none of them have examined the

potential effect of changes in these patterns on the likelihood of banking survival as has been done in other countries. In this sense, it can be claimed that the institutional peculiarities of the Spanish economy may pose some caveats to comparative analysis with available evidence in other countries (e.g., Haveman, 1992; Pettigrew and Whipp, 1991; Zajac et al., 2000). Nonetheless, it is also true that our resulting evidence can contribute to assessing the impact of institutional differences in our research object. Available evidence on the impact of deregulation and liberalization in medium-size developed economies such as the Spanish one is scarce despite its interest as a privileged scenario for analysing strategic change. As is to be expected, large and highly developed economies like that of the US are likely to exhibit more consolidated institutional contexts and more experienced economic actors capable of accomplishing adaptation to a changing environment. However, the impact of market liberalization on medium-size economies in terms of strategic behaviour is more uncertain as organizations can adopt a broader range of strategies depending upon their perception of the deregulation process: as a threat or as an opportunity. Secondly, the financial services industry plays a major role in market economies. Nowadays, its degree of complexity and effectiveness is usually considered a good indicator of economic development. In addition, the banking sector is profoundly interlinked with other industries not only because of its role as financial dealer, channelling funds from the last savers to the last borrowers, but also owing to their function as an active shareholder in ‘bank-oriented’ economies such as those of most countries of

western continental Europe. From this point of view, the strategic behaviour and the survival or disappearance of several firms of this industry may have important consequences for the remaining sectors of economic activity in every country. Thirdly, after a long period of relative environmental stability, in the early 1980s this scenario changed because very relevant shifts started to occur in the Spanish financial services industry and particularly, in the population of banking institutions. Before the 1980s, the Spanish banking system was closed, heavily regulated in terms of interest rates, entry, branching, investments and reserve requirements as well as characterized by a low concern with innovation. Many of these regulations put different constraints on different financial services institutions such as saving and loans institutions and foreign banks, for example. Although the deregulation and liberalization process in Spain advanced significantly in the 1970s, it has recently accelerated, mainly after joining the European Community in 1986. From this date many legal restrictions were progressively suppressed. Furthermore, financial agents and markets have been involved in concurrent phenomena that have substantially disrupted the competitive structure of this industry, such as the increasing globalization of financial markets, the disintermediation process, the emergence of new competition from other activity sectors, the rapid spread of new information technologies, and finally the increasing level of rivalry among the different providers of financial products and services. Table 1 summarizes some of the most important environmental changes between 1983 and 1997.

Insert Table 1 about here

The combination of all the environmental changes undergone by the Spanish financial system has made it very difficult for the specific population of Spanish banks to achieve high profits and, finally, to continue surviving by sticking to their traditional competitive strategies. Banks have engaged in continuous efforts to launch new financial products and services for their traditional market segments without abandoning the search for opportunities in new market segments. All these shifts have resulted in an increasing competitive rivalry among banks, saving banks, foreign banks and other financial services firms that have recently emerged owing to the new opportunities arising from the deregulation process. Consequently, as competition increased, all the above environmental shifts created more pressure for the strategic restructuring of the financial services sector in general and for the strategic transformation of banking in particular. In fact, a very high number of firms have disappeared (liquidated, merged or acquired) over the whole period under analysis (about a third of the total number of banks). Therefore, it makes sense to find out to what extent strategic change has increased or decreased the likelihood of organizational survival in this population of firms.

Our database contains information of yearly distributed data for 134 different banks spanning the period from 1983 to 1997. These banks represented the complete population of Spanish banks during this period. The resulting data panel includes longitudinal economic and financial indicators as well as other

organizational characteristics of these financial institutions. The total sample size comprised 1,257 observations³.

Data used in our empirical study has been taken mainly from the yearly reports published by the Higher Council of Banking (CSB) and the Spanish Banking Association (AEB). These reports provide detailed balance sheet data from 1983 to 1997, the dates of mergers and takeovers and the dates of dissolutions/liquidations. All data referred to the end of the corresponding year.

Variables

The test of our alternative hypotheses requires the assessment of the effect of strategic change on the likelihood of organizational survival. Thus, our two variables of interest are the dependent one, which is representative of organizational extinction, and an independent variable representing the strategic change. We also consider as controls additional explanatory factors that have been suggested in previous empirical research regarding both the inertia and adaptation perspectives. These variables were linked to some specific environmental characteristics of Spanish banks, firm-specific factors, and certain managerial dimensions.

Variables of Interest

Organizational Extinction: The dependent variable indicates the event of organizational extinction. This dichotomous variable is valued 1 if one of the three following conditions is satisfied: (a) a bank went into liquidation; (b) a bank is no

longer operative; and (c) there was a merger or takeover with another bank⁴. It takes a value of 0 otherwise.

Strategic Change: The explanatory variable of interest in this research signals the strategic change as a discrete variable that we define as ‘strategic move’. This indicator takes a value of 1 for a given bank when it moves from one strategic group to another between consecutive ‘Strategic Stable Periods’, (SSTP hereafter) as they are defined by Fiegenbaum and Thomas (1990). To compute this variable, first we had to choose the variables which reasonably captured the competitive banking strategy, and then to identify strategic groups in each SSTP.

We agree with Cool and Schendel (1987, p. 1109), Fiegenbaum et al., (1990, p. 136) and Fiegenbaum and Thomas (1990, p. 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 may be 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. We reviewed previous research on banking and also interviewed banking executives in order to select the specific strategic variables. These dimensions are summarized in seven key

variables at a business level that were collected from the balance sheets. Here, our main assumption, in the line of previous research (e.g., Amel and Rhoades, 1988; Caminal et al., 1993; Más, 1998; Mehra, 1996; Passmore, 1986) is that the assets and liabilities composition of each bank can reasonably represent the different financial products and services offered in its market segments. Table 2 provides a summary of the strategic variables chosen and their interpretation in terms of strategic orientation.

Insert Table 2 about here

By observing the three strategic variables of assets (V_1 , V_2 and V_3) we can distinguish between 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 kind appear to be industry-oriented since they have significant investments 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 types 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 strategic variables of liability (V_4 , V_5 , V_6 and V_7) allow us to distinguish between 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 banks heavily rely on the inter-bank market for obtaining funds (*Credit-Debt Position* in the financial system: V_7). This takes positive values when a bank has a credit position and negative if it has a debt position in the inter-bank market.

After selecting the above set of indicators as clustering variables, we followed the procedure of Cool and Schendel (1987), Fiegenbaum et al., (1990), Fiegenbaum and Thomas (1990, 1993), and Más (1998) to identify strategic groups when longitudinal -time series- data are available. This required us to identify the periods of strategic homogeneity (SSTPs) in order to aggregate longitudinal data of individual banks within each SSTP. This method attempts to minimize the risk of aggregating “irregular” or heterogeneous observations at a longitudinal level. After identifying the SSTPs, we cluster the data within each SSTP into strategic groups . In this stage, we employed a recently developed technique, the Model-Based Clustering Method (MCLUST hereafter), as a grouping device (Banfield and

Raftery, 1993; Fraley and Raftery, 1998a). Although we provide further detail of this method further on, we will now advance some of the reasons that led us to this choice.

The characteristics of our data and clustering variables will make it more likely to find a higher strategic instability (shorter SSTPs) than similar empirical studies for two main reasons. First, as the number of banks to be grouped increases, the potential number of strategic configurations also becomes greater. Our data base includes the whole population of Spanish banks over a 15-year period and thus, cross-sectional and longitudinal strategic variation is more likely in our research than in other studies with more restricted empirical samples, which would be expected to favour higher inter-firm homogeneity (e.g. Cool and Schendel, 1987; Fiengenbaum and Thomas, 1990, 1993; Más, 1998). Second, the set of clustering variables that we propose may reasonably capture the characterization of each bank in terms of its market positioning rather than other strategic dimensions such as those representing their goals, forms of authority, or technology. These ‘core characteristics’ (Hannan and Freeman, 1984) would eventually be more stable over time and should exhibit a lower cross-sectional variation than functional or competitive strategies such as those captured by our set of clustering variables. On the other hand, the longitudinal analysis of strategic change through conventional clustering methods becomes complicated by the fact that the position of a given strategic group as a whole can follow distinctive paths over time in the strategy space (i.e. the centroids of each SG are time-dependent). Although we could bind

the aggregate level of strategic mobility by considering some sub-samples of the total bank population, we discarded this procedure because of the potential ‘selection sample bias’, which could severely distort the interpretation of the causal models of organizational extinction (i.e. conditional distributions of organizational survival can vary substantially depending upon the sample selected). Instead, we count on the advantages of MCLUST for identifying meaningful individual strategic repositioning by controlling the effect of the ‘aggregated’ strategic volatility. Under this approach, we would only consider that a bank exhibits a ‘strategic move’ (or strategic change) when its individual drift ‘departs’ substantially from its former SG of reference over the strategy space.

With this method, we control the effect of the joint movement of the SG as a whole when assessing the likelihood of strategy change for an individual bank. This procedure has quite useful properties, especially in a dynamic context in which a homogeneous (even though rapid) displacement of centroids of some SGs might be viewed as a regular pattern within the SG. Specifically, our method attempts to discriminate between two kinds of strategic displacements: (a) the joint movement over time of banks in the same SG; and (b) the significant departure of one or more banks from their former SG. We only consider as ‘strategic moves’ the latter one since the former represent a dimension of the regular pattern of strategic behaviour of banks within a given SG and, hence, it can be viewed as an inherent feature of SGs rather than an individual strategy attributable to a given bank. In this context, we assumed that a bank experienced a ‘strategic move’ if it

changed its position from one SG to another between two successive SSTPs. This follow-up of each bank over the period of study was used to calculate the independent variable of interest in our study, the strategic move (or strategic change).

Still, the definition of ‘strategic move’ in a turbulent context in which both SGs and individual firms are moving over the strategy space is problematic. The MCLUST procedure provides a less discretionary basis than conventional clustering methods to approach this question by objectively determining the number and composition of clusters for each period. Unfortunately, the MCLUST fails to offer objective rules to find longitudinal links between the clustering results of consecutive periods. We addressed this shortcoming by examining the similarity among SGs from consecutive periods. Particularly, we identified two consecutive SGs as the same one when the Euclidean distance between their centroids was the lowest among all available SGs from successive periods. Nonetheless, this technical solution could still be viewed as an ‘ad hoc’ criterion that may obscure the straightforward interpretation of a ‘strategic move’ (or strategic change) as a construct. We have at least devoted some effort in the ‘result’ section to providing evidence about the stylized facts that occur in the strategy space.

Control Variables

Specific Environmental Characteristics: In accordance with several ecological studies (e.g., Baum and Korn, 1996; Carroll and Delacroix, 1982;

Carroll and Hannan, 1989a; Delacroix and Swaminathan, 1991; Delacroix et al., 1989; Haveman, 1992; Ruef, 1997) we introduced two specific environmental factors which were related to the industrial environment of Spanish banks: banking concentration and density. Both variables are indicative of the degree of competitive pressure existing among these financial institutions. We also included the quadratic term of density as an additional control variable. Moreover, according to prior empirical research from the ecological view (e.g., Carroll and Hannan, 1989a, 1989b; Delacroix et al., 1989; Hannan and Freeman, 1977, 1989; Hannan et al., 1995; Petersen and Koput, 1991), the estimated effects of density and squared density would offer an assessment of the role played by the legitimation and competition processes in the organizational evolution of Spanish banks. We used the Herfindahl concentration index, i.e. the sum of squares of market shares of banks, in terms of its credits, as a measure of concentration. Density was measured as the count of Spanish commercial banks, foreign banks plus savings banks for each year.

Organizational Variables: Consistent with a great deal of theoretical and empirical ecological research and given the lack of conclusive findings, we included three organizational variables as possible determinants of Spanish banks' survival: the linear and quadratic term of age, size and structural complexity. We include the linear and quadratic term of age in order to test the form of relationship between organizational age and extinction following the suggestions of prior

theoretical and empirical studies (e.g., Freeman et al., 1983; Hannan and Freeman, 1984; Stinchcombe, 1965). Our interest was in verifying whether, as it is theoretically argued, the likelihood of organizational extinction decreases with age and to what extent the ‘liability of newness’ hypothesis may be corroborated in the population of firms under study. Following prior empirical ecological works (e.g., Baum and Korn, 1996; Haveman, 1992; Kelly and Amburgey, 1991; Singh et al., 1986; Stoeberl et al., 1998), we measured organizational age as the number of years since founding. We used the available data on total banking assets, but as in other ecological studies (e.g., Haveman, 1992; Kelly and 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 Hannan and Freeman (1984, p. 162) and Gresov et al., (1993, p. 197) posit.

Firm-Specific Variables: Among these variables we suggest differentiating between variables associated with economic performance and management skills and variables linked to other types of internal factors. Traditionally, all these firm-specific variables have been considered as potential determinants of organizational performance and survival. Within the economic and management skills indicators we include the five following variables: return on assets, labour costs per employee, net profit per employee, degree of employee qualification and number of liability accounts managed per employee. We measured return on assets as the ratio of net income to total assets. Labour cost per employee, net profit per

employee and the number of liability accounts managed per employee are usual measures for banking efficiency and productivity (e.g., Berger and Mester, 1997; DeYoung and Hasan, 1998; Grifell-Tatjé and Knox, 1996; Steinherr and Huveneers, 1994). We used the ratio of number of non-university graduates plus number of executives to the total number of employees as an indicator of degree of employee qualification. Finally, we also included two variables to capture the effect of resources related to a bank's reputation: customer loyalty, as the ratio of time deposits to the total deposits, and brand loyalty, as the number of years that the bank has maintained its trademark divided by its age.

Managerial Characteristics: We introduced three variables for controlling the effects of managerial features on organizational survival given the role delivered by the adaptation perspective to the chief executives: CEO succession, the interactive effect between CEO succession with strategic change and CEO tenure. In particular, the classical management theory emphasizes the moderating role that managers in general and CEOs in particular can play in organizational performance. Specifically, researchers have argued that change in the company's CEO is an important mechanism for affecting organizational performance and, therefore, the likelihood of organizational survival. In examining this linkage, several researchers have found support for the 'succession-crisis hypothesis' that CEO succession is a disruptive change and, therefore, it increases the likelihood of organizational mortality (e.g., Carroll, 1984b; Haveman, 1993). In addition, some

empirical research gives support to the ‘succession-adaptation hypothesis’ when concluding that CEO succession improves the likelihood of organizational survival by reducing conflict (e.g., Singh et al., 1986; Virany et al., 1992). Furthermore, under the classical management perspective, managerial and strategic variables are not independent since low performance favours the replacement of the CEO. Under these alternative predictions, we state no hypotheses about the impact on organizational extinction of CEO succession and its interaction with the change of strategy. CEO succession was measured as a dummy variable which takes a value of 1 when a succession event occurred and 0 otherwise. CEO tenure was measured as the number of years a bank’s current chief executive has been at the helm.

Identifying the Strategic Positioning of Spanish Banks: The Model-based Clustering

We employed ‘Model-based Clustering’ (MCLUST) for classifying banks into strategic groups. This procedure has the following advantages over alternative clustering methods. 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 great advantage compared to hierarchical clustering methods, for example, where a cut-off value must be chosen by the user. 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 discretionary 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 employs a single statistical criterion for both detecting the number of clusters and identifying 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.

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) tends to overestimate the

number of clusters, but it is still often used in practice. Alternatively, the BIC (Schwarz, 1978) 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 allowed 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)⁶.

Defining and Measuring the Effect of Strategic Change on Organizational Survival

The binary nature of our dependent variable (‘strategic move’ or strategic change) precludes the use of a linear regression model as an empirical tool because of the violation of some critical assumptions (Greene, 1993, p. 871). Instead, the discrete choice models are a better statistical representation of a binary response variable. Actually, panel data techniques can minimize risk of inconsistent estimators resulting from cross-sectional estimation when individual effects exist. This fact is likely to occur in our research object (organizational survival) given the number of potential idiosyncratic factors that could substantially affect the survival chances of the bank (property and governance structure, technology, organizational design, among others).

The most common options for characterizing a binary response model are the ‘logit’ and ‘probit’ specifications, which differ in the alternative assumption about the underlying distribution of the dependent variable (logistic in the logit model and Gaussian in the probit model). Similarly to the linear case, binary choice models for panel data may lead to different models depending on the nature - random or deterministic- assumed for the firm-specific effects.

From a purely methodological perspective, we cannot advocate an absolute advantage of one of the above specifications over the other (logit vs. probit, fixed vs. random). These models differ in terms of technical assumptions and properties. Fixed effects models provide consistent (asymptotically unbiased) estimators even though the individual effects are actually random, whilst the random effects specification leads to more efficient estimates but fails to be consistent when individual effects are correlated to the independent variables. Comparative validation between both specifications is available by means of the *Hausman test*.

In practice, there are some methodological peculiarities of binary response models for panel data that favour random effects estimation owing to the characteristics of our data. The estimation procedure of a fixed-effects model excludes all observations with ‘ones’ or ‘zeros’ for every year. In our case, this implies first, that the sample size of the fixed effects models decreases drastically and second, that the Hausman (fixed vs. random effects) test does not apply, given the disparity of sample sizes. In addition, the treatment of random effects in the logit model becomes more complicated than in the probit specification. Since the

random effects are assumed to be Gaussian, the likelihood function of a logit model incorporates the mix of Gaussian (random effects) and logistic (response variable) distributions. The resulting likelihood function cannot be computed in exact terms but only approximately (usually by means of the *Gauss-Hermitian method*). Conversely, the probit model with random effects provides a more easily computable likelihood function and therefore more accurate estimates (Greene, 1993, p. 897).

We finally chose the probit model with random-effects for presenting our results on the basis of its relative advantages (i.e. more degrees of freedom and the higher accuracy of the estimation procedure). In any case, there is always an unmeasurable risk of a potential misspecification since the ‘true’ underlying distribution is unknown and cannot be tested. At most, we can only minimize this hazard by assessing potential discrepancies between logit and probit estimates that could lead us to contradictory findings. Fortunately, we corroborated that both specifications, logit and probit, provide highly consistent results with no major differences in the signs and significance levels of the estimated effects. Unfortunately, we cannot provide even such indirect confirmatory evidence for assessing the accuracy of the random vs. fixed effects hypothesis given the small size of the relevant sample when fixed effects models are estimated.

A general specification of probit model with random effects can be expressed as follows:

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

where Y_{it} is observable but not Y_{it}^* . β represents the vector of coefficients to be estimated. The random perturbation, U_{it} , is assumed to be $\varepsilon_{it}^* + \varepsilon_i$, where ε_{it}^* and ε_i are normally distributed random perturbations.

RESULTS

Findings on the strategic mobility of Spanish banks

We did not find any SSTP over the 15-year period under analysis; thus, we ran the MCLUST procedure for grouping banks in each of the 15 years. Table 3 summarizes some basic information about the strategic groups identified in each year and their evolution through the period analysed.

Insert Table 3 about here

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 subject to moves from one SG to another offers a more erratic trend with minima around 29% (year 1997) and two noticeable maxima in 1985 (90%) and 1991 (77%). Actually, the cumulative proportion of banks subject to changes in their SG throughout the complete period is about 90%. This last figure suggests that almost all banks included in our study were engaged in some strategic move event between 1983 and 1997⁷. Although this finding appears to support the pattern of strategic behaviour predicted from the adaptation view, this interpretation could be misleading. As we advanced in the methodological section,

the aggregated assessment of strategic mobility could be eventually overestimated because of (a) the characteristics of our empirical setting, which includes the total population of the industry; and (b) our definition of the strategy space. Therefore, these findings should be cautiously interpreted when they are compared with other empirical evidence as an assessment of the aggregated strategic mobility.

Table 4 can provide additional insights on this issue. The total number of SGs identified throughout the whole fifteen-year period is 26. Among these groups, only 12 groups, which are considered in our study as the most stable ones, persisted more than five years. Given their short existence, the remaining 13 SGs seem to be more transition points or temporary structures rather than long term patterns of strategic behaviour (eleven groups disappeared after two years, one group after one year, another one after four years and last one after five years of existence)._Actually, these transitory or short-lived SGs can be interpreted as temporary strategic patterns that banks follow when moving between more stable strategic groups. Furthermore, banks following this path are more likely to survive over time when they definitely move to a more stable group. From this standpoint, these results offer some support for the logic that incremental strategic change is less hazardous than radical changes in strategy.

Clearly, the aggregate mobility of SGs would decrease substantially under the assumption that only long-lived SGs can properly represent the strategic behaviour of organizations. Thus the proliferation of SGs is conditioned by our methodological assumptions and only provides a weak support for the adaptation

approach when advocating that strategic change is not a rare and hazardous event. Yet, it is noticeable that both the strategic diversity (measured by the number of SGs) and the strategic mobility (i.e. the average displacement of SGs) roughly increased throughout the fifteen-year period: ‘early’ and stable SGs (I, II, III, and IV) appear to be less dynamic, measured by the average displacement of centroids, than ‘later’ and short-lived SGs (XXI, XXII and XXV) but, on the other hand, the highest mortality rate was verified in the middle of the period (12 out of 39 bank extinctions took place in 1993). To sum up, the strategic diversity increased at the end of the period but only after a substantial reduction in population size (95 banks in 1985, and 88 in 1997). Hence this preliminary evidence sheds little light to assess the impact of strategic mobility on organizational survival.

Insert Table 4 about here

Findings on the effect of strategic change on the likelihood of organizational extinction

Table 5 summarizes descriptive statistics and correlations for all variables used in this study and Table 6 presents the results from random-effects models estimates in order to assess the robustness of the estimated effect of strategic moves (or strategic change) on the probability of organizational extinction. The five models include as control variables two subsets of explanatory variables: (1) profitability (return on assets) and size and (2) other variables suggested by different theoretical views cited above as potential determinants of organizational extinction.

Insert Table 5 about here

Insert Table 6 about here

Model M1 is basically grounded in the ecological approach which poses that environmental conditions and structural inertia are major determinants of organizational failure. Thus, specific proxies for this model are concentration, the linear and quadratic terms of density, the linear and quadratic terms of organizational age, the total number of branch offices, size and return on assets. Model M2 explores potential effects of human resources related factors such as efficiency, qualification and costs of the work force and it includes as explanatory variables the labour costs per employee, net profit per employee, degree of employee qualification, and the number of liability accounts managed per employee. This model is clearly based on the adaptive approach of firm behaviour as is model M3, which considers managerial features (CEO succession, the interactive effect of CEO succession with strategic change and CEO tenure) as possible determinants of organizational failure. Also rooted in the adaptation perspective, model M4 states potential firm-idiosyncratic explanations of organizational extinction which are directly related to the banks' ability to design and implement stable and long-run strategies. Number of years with no changes in a bank's brand (brand loyalty) may reflect, to some extent, the relevance of long term relationships in consolidating absolute advantages of reputation resources based on the mutual loyalty between the bank and its clients. The ratio of time

deposits over total deposits can also be considered as a revealing indicator of banks' orientation to adapt the availability of funds to the needs that arise from long term planning, and not only an indicator of the degree of confidence of customers toward a bank (customer loyalty). Finally, the last column of Table 6 offers the estimates of a comprehensive specification (model M5) integrating the variables of models with the highest explanatory power (models M1, M2 and M3).

Notwithstanding the model considered, the effect of strategic moves (or strategic change) remains unequivocally negative and significant, at least at a 95% confidence level. The robustness and statistical significance of the effect of strategic mobility strongly supports the positive impact of adaptive behaviour on the survival chances for Spanish banks. This finding backs Hypothesis 1, which states that strategic repositioning is a good practice even when the environmental conditions become unstable and volatile as they have been for banks in the period under study.

Much less robust are the estimated effects of control variables. Although there are no drastic changes in the sign of the estimates, we find some variation in their magnitude and significance among the proposed models. Regarding the common controls (return on assets and size), only profitability (return on assets) exhibited negative and significant estimates in almost every model (except models M2 and M5). These results are partially attributable to the endogenous nature of profitability with respect to other explanatory variables such as size, labour costs per employee and the degree of employee qualification⁸. Nevertheless, the function

of these control variables are to mainly minimize the bias by omitting relevant explanatory information and, therefore, no substantial gains are made by stating accurate specifications for control variables' interactions as they are peripheral to our research purpose. In any case, the comparative analysis of every estimated model may also serve as a comparative test of alternative explanations to organizational extinction by assessing the relative explanatory power of the corresponding control variables. In this vein, our findings provide mixed interpretations. The ecological-inertial approach underlying model M1 exhibits higher goodness of fit (see Wald test) than other adaptation-based models (models M2, M3 and M4). This fact favours the ecological-inertial approach as the best predictive theory of organizational extinction for the Spanish banks. In this view, the likelihood of bank survival is enhanced by the strategic repositioning and profitability. Conversely, number of branch offices, concentration and density would increase the probability of bank extinction. The negative and significant effect of the quadratic term of density suggests that the extinction rate is an inverted-U-shaped function of organizational density, according to predictions from the legitimation and competition model of organizational evolution. The linear and squared terms of age do not achieve statistical significance, mainly owing to the noticeable correlation (more than 0.9) between both terms (see Table 5). Thus, we do not find evidence for the 'liability of newness' hypothesis in our population. Other potential caveats due to approximate collinearity among

explanatory variables (size, concentration, and number of branch offices) have little impact as they become significant at the usual levels of confidence.

A noteworthy outcome is that the number of bank branches shows a positive and larger effect than the logarithm of assets. A number of empirical studies have used both variables as indicators of size but, in the light of our evidence the number of branch offices, as a proxy, adds non-redundant information on organizational extinction which is not completely captured by the amount of assets. This evidence validates the assumption of Gresov et al., (1993, p. 197) when stating that the number of branch offices may approximate the structural complexity in addition to bank size.

We examined the role of economic factors such as efficiency, productivity and management capabilities in organizational survival through the model M2. Although the model performance in terms of the Wald test is still far from the ecological-inertial model (M1) we corroborated that the high explanatory power is mostly attributable to the labour cost per employee⁹. Without abandoning the adaptation perspective, model M3 explores other idiosyncratic features of banks such as those coupled with CEO succession, CEO tenure and the interaction between CEO succession and strategic change. Although the two former variables fail to be individually significant at the usual confidence levels, the interaction term exhibits a positive and highly significant effect on the likelihood of organizational extinction. This finding suggests that banks which have undergone changes in their competitive strategies accompanied by CEO succession will be

more prone to extinction than banks which have undergone strategic changes without CEO succession. This means that although strategic change increases the likelihood of organizational survival, when it is accompanied by CEO succession this effect is reversed. As expected, this finding would entail that strategic change reduces the likelihood of organizational mortality when it is carried out by the current CEO of the company. Actually, excluding this interaction term in model M3 entails a substantial loss in the Wald test which changes from 18.85 (with a p-value of 0.004) to 10.48 (with a p-value of 0.06). Simultaneously, the individual effect of strategic change reveals a larger negative impact on the likelihood of organizational extinction than models without the aforementioned interaction.

We find the lowest Wald test value in model M4, which attempts to capture other firm-specific factors such as those related to the bank's ability to implement long term policies (customer and brand loyalty). This poor goodness of fit reveals that organizational survival, at least for the Spanish banks, is not affected by reputation resources. The deregulation process and the availability of new markets and competition modes can explain this fact. Lending and borrowing rates were rarely considered by banks as variables for competition in narrow and highly constrained financial markets. Prior to liberalization, mainly reputation and customized services were the cornerstones of the banking business in order to enlarge and maintain an increasing base of loyal customers. The extended arena for competition resulting from the deregulation process led to changes in the attributes of banking services that customers used to value and this gave rise to a more

competitive behaviour in terms of financial rates and fares. Obviously, measuring errors and/or the inability of the proposed variables for measuring reputation or commercial intangible resources can also explain the poor performance of model M4 in terms of goodness of fit. Finally model M5 includes as explanatory variables those with the highest explanatory power, which basically correspond to models M1, M2 and M3. Clearly, this model exhibits the best goodness of fit with a value of 38.43 for the Wald test. Again, the frequency of ‘strategic moves’ (or strategic change) remains as a significant and negative determinant of the likelihood of bank extinction. Regarding the control variables, this comprehensive model confirms the relevance of the number of branch offices and labour costs per employee in bank disappearance but the quadratic term of density and the interaction between CEO succession and strategic change are mostly responsible for the large gain in the Wald test of model M5 over the previous models.

Findings on the relationship between strategic behaviour of Spanish banks and organizational extinction

In view of the fact that in our study mobility through different strategic groups (strategic change) increased the likelihood of organizational survival, the next step led us to examine which kinds of strategies have to a great extent saved Spanish banks from extinction over the period under analysis and whether there has been a particular match between strategy and new environmental conditions over time. To

answer these two basic issues we use the information from Table 3 and Table 7, respectively.

Insert Table 7 about here

Table 7 shows the mean number of banks per year, the mean percentage of bank extinctions and the competitive pattern of the most stable groups identified between 1983 and 1997¹⁰. The most stable groups represented about 80 per cent of the total banks in the sample. Our findings suggest that there were five stable groups with the highest mean percentage of bank extinctions (groups II, IX, XVIII, XXI and XXV). The main strategic characteristics of banks belonging to these groups are summarized in the last column of this Table on the basis of the importance of each of the seven variables used in this study and another two supplementary variables (number of branch offices and type of customers). These characteristics are the following: Firstly, if we consider the classification of competitive strategy proposed by ecologists (that is, the distinction between specialist *versus* generalist strategies), we can point out that the banks of three of the five groups followed more generalist competitive strategies –commercial and/or universal banking in the lending market with a very broad customer base composed of households, and small, medium and large businesses. Secondly, although there were some exceptions (banks of groups IX and XXI), in general, they were much less innovative than the banks belonging to groups with a higher probability of surviving. Thirdly, it can be seen that the banks of three groups

which have followed more generalist strategies (groups II, IX and XVIII) had a weak creditor or balanced position in the inter-bank market and the banks with more specialized strategies (groups XXI and XXV) had a very strong debtor position in this particular market. Finally, banks in all these groups had a high or very high number of branch offices. On the contrary, the banks of the five groups with the lowest mean percentage of bank extinctions (groups VIII, X, XVI, XXII and XXIII) showed the following strategic characteristics (see Table 7): Firstly, banks belonging to four of these five groups followed a more specialized strategy (institutional banking or commercial banking in the lending market usually with a narrower customer base, e.g. large businesses) and they were basically composed of small banks, while the banks of group XXIII followed a more generalized strategy (Commercial and institutional banking) and was primarily composed of the largest banks of the population. Secondly, the banks of all these groups were highly or very highly innovative. Thirdly, in comparison to the banks of the groups with the highest probability of organizational extinction, we can see that the banks that followed more specialized strategies (groups X, XVI and XXII) had the strongest creditor position in the inter-bank market while the banks that followed a more generalized strategy (group XXIII) exhibited a strong debtor position in this kind of market. Finally, banks belonging to four of these five groups had a very low number of branch offices. Moreover, we have observed that although the mean number of banks per year was low in most of the groups, the number of new entrants increased over time. It would be very interesting to explore in future

research whether nowadays the level of stability of all these groups is maintained. In this context, we have also corroborated that banks have adopted more and more specialized and innovative competitive strategies over time. Specifically, we distinguished three periods in the evolution of the strategic behaviour of the population of firms analyzed (see Tables 3 and 7). The first period ranged from 1983 to 1987 (the year after Spain joined the EC) and it can be characterized, in general, as a period of low strategic diversity. The Spanish banking industry was still highly regulated at that moment despite the important environmental shifts which were beginning to take place. Banks were still limited in their ability to adopt new competitive patterns and introduce highly innovative financial products and services. On the contrary, the second period, between the years 1988 and 1992, can be characterized as a period of very high strategic diversity and instability. During this period, fundamental changes occurred in the environmental conditions; changes essentially associated with the banking and financial deregulation process (see Table 1). Banks started to adopt more innovative competitive strategies and specialize in particular market segments as a means of facing up to the strong competition from other financial institutions (mainly savings banks and foreign banks). Despite important environmental changes that also occurred in the third period (from 1992 to 1997), strategic diversity significantly decreased but banks were continuously interested in introducing new financial products and services for their different market segments as a direct result of the increasing rivalry. Banks

with more conservative strategies were almost non-existent at the end of this period.

CONCLUSIONS

Our insight into the effects of strategic changes on organizational chances for survival is designed as a test of competing hypotheses derived from quite different theoretical backgrounds. This methodological approach has some remarkable advantages over empirical efforts based on testing a single theory or perspective since it is not only able to look into the absolute validity of a conceptual scheme but it also serves as a measurement of their relative validity as opposed to other alternative explanations of the available evidence. In this vein, we explored the effect of the strategic mobility (or strategic change) of Spanish banks on their probability of organizational extinction, along with the potential impact of other potential determinants proposed by theory and previous empirical research.

Our findings suggest that banks are able to change their competitive strategies in order to maximize their chances of survival. In general, this result clearly favours the adaptation perspective versus the ecological perspective, which frequently tends to view strategic change as a hazardous event. Consequently, our findings are in line with the longitudinal empirical research of Amburgey et al., (1993), Haveman (1992), Singh et al., (1986), Smith and Grimm (1987) and Zajac et al., (2000). Another conclusion of this research is that we have observed that banks with the highest probability of surviving are those which have decided to

focus on those activities where they find a solid competitive position and are continuously interested in innovating or offering new financial products and services for their particular market segments. Our analysis also suggests that the density-dependence processes of legitimation and competition can also play an important role in explaining organizational extinction. Also, we find that some other organizational characteristics (number of branch offices), strategic change when it is accompanied by CEO succession and certain efficiency indicators of banks (profitability and labour costs per employee) are meaningful forces in their proclivity to extinction.

From a methodological point of view, this work proposes two major contributions. 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 strategic move (or strategic change) of firms. The basics of this grouping method allow a more objective procedure to determine critical outcomes from cluster analysis, i.e. the number of the resulting groups. Moreover, this loss of discretionary control over the methodology does not weaken the robustness of our findings. Actually, the estimated effect of our variable of interest, –the strategic move–, is statistically significant and with few changes in all model specifications. Regarding the regression analysis, we also suggest panel data formulations in order to control effectively unobservable firm-specific effects likely to distort estimates when they are not controlled as occurs when using cross-sectional models of ‘probit’ regression.

Finally, we point out some limitations and future extensions of this work. First, we recognise that the results of our study need to be interpreted in the light of the major institutional and structural features of the Spanish banking system. As in other bank-based financial systems, the leading Spanish banks control huge industrial portfolios and the public sector has played a fundamental role in the building process of the financial system in general and the banking sector in particular. Furthermore, compared with the banking systems of other industrialised countries, the Spanish banking system at early stages of the period under study appeared, in general, oversized, sound, less open in terms of trade in banking services, overpriced, not very efficient and productive, with a small development level with respect to GNP but a very important weight in the financial system, a very extensive branch network, a highly concentrated ownership structure and a relatively high degree of market power (Caminal et al., 1993; Crespí, García-Cestona and Salas, 2004; Pastor, Pérez and Quesada, 1997). These peculiarities mean that some caution should be taken concerning the extrapolation of our findings to alternative empirical settings. On the other hand, the profitability and concentration levels of banks in Spain, the characteristics of the human and physical capital employed in the industry, the rate of technical progress in both the product and the process levels, the deregulation and liberalization process and the increasing concentration of the banking industry do not seem to be very different from the European norm. Therefore, it would be interesting to carry out empirical

studies on the same theme in other countries in order to assess to what extent our results may be affected by the institutional and structural differences considered.

Second, we are aware that our results can be sensitive to the variables selected for defining and identifying a strategic move (or strategic change) event as well as the method used for measuring this construct. In this vein, it would be interesting to find out if the positive link between strategic change and survival remains robust when choosing less ‘flexible’ dimensions of firms’ strategic behaviour, such as some ‘core characteristics’ of the organizational design. Third, assuming that the costs and risks of strategic change may differ substantially across industries, our results should be extrapolated with caution to other populations until new and more extensive empirical studies are available. The banking sector may be subject to higher competitive pressures than others with a more limited ability of firms to imitate competitors’ products or services such as, for example, the pharmaceutical or biotechnology industries. It is also clear that the choice of a time period with highly unstable environmental conditions enhances our expectation of finding higher mobility among strategic groups. A more comprehensive model of strategic change could include environmental factors (e.g. complexity and volatility) as additional parameters to explain organizational survival. This would help to clarify, from a dynamic perspective, the role of potential feedback effects between the level of strategic mobility and the stability of environmental conditions.

Finally, our characterization of ‘strategic move’ as a construct can be useful to identify and discriminate meaningful strategic drifts for a given individual

(banking firm) but it provides limited information useful for characterizing or quantifying the strategic change. To overcome this limitation, we should consider additional qualifying criteria able to offer a more detailed description of the nature or type of each strategic move, for instance, as a function of the features of both SGs involved in an individual strategic move (SG of ‘origin’ and SG of ‘arrival’). Longevity, stability, size, or intra-group homogeneity of SGs may pose distinctive patterns of change and survival. These extensions would contribute to enriching the analysis by exploring how and why strategic change affects the likelihood of organizational survival in a more fine-grained manner, and eventually, they might lead us to reconsider the empirical findings of this study.

NOTES

¹ However, in line with Boeker (1989, p. 490), it is also interesting to outline that strategy, from the adaptation perspective, can sometimes be characterized as relatively inertial and, therefore, organizations can be constrained in their ability to adapt their competitive strategies to new environmental conditions. This occurs under the following three conditions: (a) when organizations exhibit ‘strategic momentum’ (see Amburgey et al., 1993; Kelly and Amburgey, 1991; Miller and Friesen, 1984; Quinn, 1980); (b) when there are high ‘mobility barriers’ within an industry (see Porter, 1980, Hatten and Hatten, 1987) and; (c) when the access to ‘strategic factor markets’ is precluded or very costly and therefore firms need to accumulate those strategic resources internally by means of large and/or long term investments (see Barney, 1986; Teece et al., 1997).

² The other core features are: (1) its stated *goals*; (2) *forms of authority*; and (3) core *technology*. Hannan and Freeman (1984, p. 156) consider strategy as the fourth core characteristic. In their opinion, these four characteristics stand in a rough hierarchy, with stated goals usually subject to the strongest constraints and strategy the weakest. Thus, they argue that the likelihood of change declines as one proceeds up the hierarchy (1984, p. 156). Specifically, strategy research indicates that, while strategic inertia constrains organizations, it may also initiate substantial change in response to continuous and radical environmental shifts (Baum, 1996; Baum and Amburgey, 2002, p. 310). We recognize, as Baum and Amburgey (2002, p. 310) do, that strategic inertia cannot be necessarily harmful since it can sometimes keep organizations from responding too quickly and frequently to uncertain environmental change. In this context, as these authors state, “Ultimately, whether [strategic] inertia [is] adaptive depends on the *hazardousness* of change”. Taking into account all these ideas, in a prior empirical study Haveman (1992) supported that when environmental conditions undergo a sudden transformation, change in competitive strategies can prove beneficial to short-run performance and to long-run survival chances.

³ We employed the following criteria for selecting these yearly observations: the number of employees, staff expenditures and number of branch offices in each bank had to be greater than zero for each year.

⁴ Probably one of the most challenging issues in the literature about organizational survival is associated with the way of defining and considering the mergers and takeovers. See Carroll and Delacroix (1982, p. 170) and Wheelock and Wilson (2000) for a deep discussion on this subject.

⁵ See, for example, Carroll (1984b), Haveman (1993), Kesner and Seborá (1994) or Finkelstein and Hambrick (1996) for a comprehensive review of this topic.

⁶ 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). Additional information on MCLUST details and application can be found in Campbell et al., (1997), Celeux and Govaert (1995), Dasgupta and Raftery (1998) or Yeung et al., (2001).

⁷ Although we found no SSTPs larger than one year and there is a high level of cumulative strategic moves over the 15-year period, a detailed examination of the follow-up of each bank from 1983 to 1997 shows that the SGs as a whole experienced a quite steady evolution rather than an annual free-for-all transformation. Additional evidence can be obtained from the authors upon request.

⁸ This fact cannot be directly inferred from the correlation matrix (see Table5). However, auxiliary panel estimates (not displayed in the paper) showed significant coefficients of degree of employee qualification (positive), labour costs per employee (negative), and size (negative) over return on assets.

⁹ Estimates not presented in the paper offer strong support for this explanation. The value of the Wald test was 17.67 (with p-value of .0014) when excluding 'net profit per employee', 'employee qualification' and 'accounts per employee' in model M2, but it dropped to 10.72 (with p-value of .09) if 'labour cost per employee' was omitted.

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TABLE 1
FUNDAMENTAL ENVIRONMENTAL CHANGES IN THE SPANISH BANKING
SYSTEM FROM 1983 TO 1997

YEARS	MAIN ENVIRONMENTAL EVENTS
1983-1984	A severe crisis experienced by the Spanish banking industry that started in 1978 comes to an end.
1985	Freedom of branching is complete except for foreign banks and for the geographical limits imposed on savings banks, which would be removed later. The Spanish government takes several measures in economic policy, such as a restrictive monetary policy, which continues until the late 1980s and early 1990s
1986	Spain joins the European Community (EC). From this moment, the Spanish government is obliged to adapt the Spanish banking legislation to European banking rules. In this context, it establishes a gradual adjustment schedule for the period 1986-92 to deregulate the number of branch offices that an EC bank can open and the composition of its liabilities
1987	All interest rates and service charges are liberalized
1988	The Spanish savings banks are allowed to expand their number of branch offices outside their own geographic region. This possibility of expansion induces a process of mergers and takeovers between savings banks which increases concentration in the sector and competitiveness in the Spanish banking system. Spanish banks and savings banks are also required to keep 18 per cent of a subset of their liabilities as deposits in the Bank of Spain. An 11.5 per cent share of these deposits receives a rate return of 7.75 per cent. The level of the coefficient as well as its return is changed quite frequently by the Bank of Spain. The Spanish government instigates a major reform of the stock market, reflected in the 1988 Reform Bill. As a direct result of this reform banking starts to play an essential role in the stock market
1989	The Spanish credit cooperatives and Spanish banks and savings banks start to compete under similar conditions. In January, the Spanish government commits itself to a gradual phasing out of the investment coefficients, and they disappear completely by January 1993. The Spanish currency (peseta) enters into the exchange mechanism of the EMS. An open price war breaks out between the major firms in the Spanish banking system. The period 1989-92 also witnesses several important mergers among the major Spanish banks, as well as some minor operations involving a large number of small savings banks. In addition, important changes in the behaviour of the clientele start to occur
1990	The Spanish government introduces legal changes that allow banks to drastically lower their reserve coefficient
1991	The complete liberalization of capital flows across EC countries occurs this year. As a consequence of the public bank reorganization a public conglomerate of a very significant size appears. The impact of this public bank reorganization in the loan market is considerable
1992	The Treaty of the European Union (EU) comes into effect. This Treaty represents an important impetus towards the definitive putting into circulation of the European Currency Unit in January 2002
1993	This year the European Single Market comes into effect. From 1993, Spanish authorities have to authorize any bank, Spanish or EU, as long as the candidate satisfies the given legal conditions, and their discretionary power is abolished. This event implies an important increase in the degree of competitive rivalry in this industry
1994	Spanish legislation regarding credit entities is adapted to the Second Community Directive of Bank Coordination, which fits Spanish legislation to the Community conception of right of establishment
1995	A new legal regime for the creation of banks is passed. This unleashes a real battle within the sector to massively incorporate the new information technologies to all kinds of financial products and services. This technological revolution entails a continuation of the one started in the 1960s and the 1970s, which was intensified during the 1980s
1996	The economic crisis period that began in 1992 finishes. A significant number of financial entities disappear during this time interval (1993-1996)
1997	A strong economic growth in the Spanish economy starts to occur

TABLE 2
STRATEGIC VARIABLES: DEFINITION, MARKET SEGMENT AND BUSINESS STRATEGY

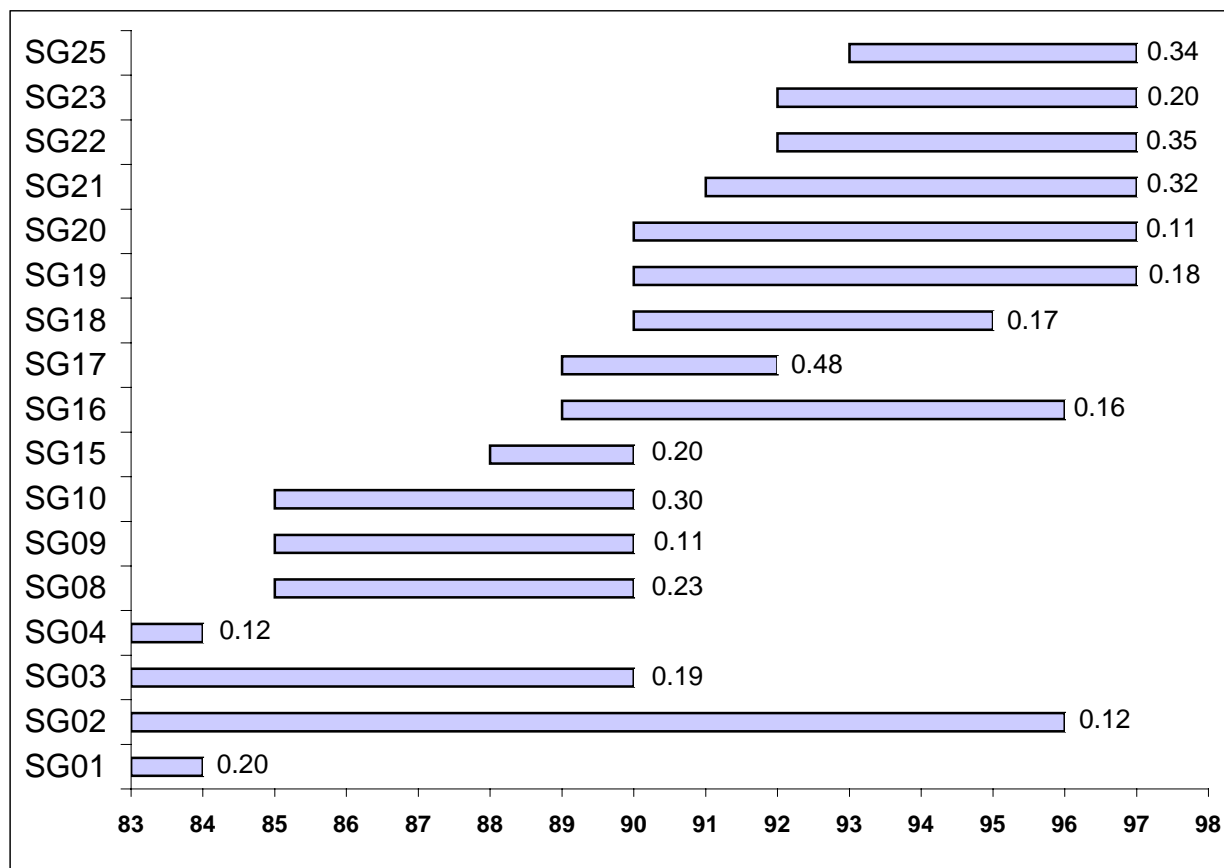
	Strategic variables	Definition	Market Segment (<i>Business Banking Strategy</i>)
ASSET	V ₁	Commercial Loans / Financial Investments	Lending Market (<i>Commercial Banking</i>)
	V ₂	Portfolio of Securities / Financial Investments	Lending Market (<i>Investment Banking</i>)
	V ₃	Treasury / Financial Investments	Lending Market (<i>Institutional Banking</i>)
LIABILITY	V ₄	Savings and Deposits Accounts / Borrowed Capital	Instrument Saving Market (<i>Traditional Banking</i>)
	V ₅	Current Accounts / Borrowed Capital	Instrument Saving Market (<i>Innovative Banking</i>)
	V ₆	Other Accounts / Borrowed Capital	Instrument Saving Market (<i>Innovative Banking</i>)
ASSET / LIABILITY	V ₇	Net Position in Financial Markets / Total Liabilities	Inter-bank Market (<i>Creditor-Debtor Position</i>)

TABLE 3
STRATEGIC GROUPS (SGs) OVER TIME

	YEARS														
	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 4

STRATEGIC GROUPS (SGs) AND AVERAGE DISPLACEMENT OF CENTROIDS



Chronogram of SGs with more than one year of existence. Figures beside the bars are computed as the average displacement of the Euclidean distance of the corresponding centroids.

TABLE 5
DESCRIPTIVE STATISTICS AND CORRELATION MATRIX (N= 1257 observations)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Mean	0.029	0.504	0.074	208.9	43647.3	60.50	6108.8	175.3	11.56	0.010	5.228	14.77	0.494	127.01	0.159	0.078	4.865	0.338	0.559
Standard Deviation	0.169	0.500	0.012	5.048	2098.9	49.50	10158.4	414.7	1.645	0.034	2.774	127.9	0.138	200.4	0.366	0.268	5.153	0.228	0.405
1. Organizational extinction																			
2. Strategic change	-0.062																		
3. Concentration	0.052	-0.085																	
4. Density	-0.016	0.113	-0.709																
5. Density²	-0.017	0.112	-0.708	0.999															
6. Age	-0.010	-0.037	-0.068	0.062	0.062														
7. Age²	-0.022	-0.048	-0.010	0.008	0.008	0.902													
8. Number of branch offices	0.071	-0.136	-0.003	0.002	0.002	0.019	0.022												
9. Size	0.012	-0.161	0.074	-0.076	-0.076	0.070	0.013	0.665											
10. Return on assets	-0.076	-0.008	-0.011	0.052	0.054	0.022	0.009	-0.010	-0.020										
11. Labour costs per employee	0.134	-0.044	0.562	-0.435	-0.433	-0.117	-0.086	-0.063	-0.007	-0.053									
12. Net profit per employee	-0.017	-0.028	0.067	-0.067	-0.066	-0.034	-0.031	-0.041	-0.061	0.604	0.074								
13. Degree of employee qualification	0.040	-0.040	0.358	-0.269	-0.267	-0.058	-0.068	-0.073	-0.002	0.057	0.486	0.103							
14. CEO succession	0.040	-0.012	-0.029	0.015	0.015	-0.001	-0.014	-0.039	-0.081	-0.094	0.052	-0.041	0.015						
15. CEO succession x strategic change	0.072	0.289	-0.044	0.063	0.063	-0.036	-0.048	-0.056	-0.102	-0.077	0.063	-0.031	0.003	0.669					
16. CEO tenure	-0.013	-0.028	0.055	-0.024	-0.024	0.221	0.189	0.095	0.239	0.058	-0.061	0.003	-0.110	-0.405	-0.275				
17. Customer loyalty	0.039	-0.131	-0.102	-0.029	-0.031	0.197	0.192	0.118	0.069	-0.078	-0.217	-0.133	-0.222	0.023	-0.035	0.090			
18. Brand loyalty	0.017	-0.078	0.016	-0.039	-0.040	-0.434	-0.317	0.267	0.210	0.051	-0.055	0.056	-0.128	-0.077	-0.064	0.114	0.006		
19. Liability accounts per employee	-0.010	-0.071	0.117	-0.140	-0.140	0.070	0.082	0.038	0.043	-0.012	0.075	0.026	0.139	-0.040	-0.067	0.043	0.235	-0.066	

TABLE 6
ESTIMATES OF PROBIT REGRESSION WITH RANDOM EFFECTS

Independent and control variables	M1	M2	M3	M4	M5
Constant	-591.36** (266.48)	-2.2569*** (0.6031)	-1.8268*** (0.5294)	-1.9602*** (0.5258)	-638.4** (275.4)
Strategic change	-0.3656** (0.1600)	-0.3184** (0.1547)	-0.6104*** (0.1922)	-0.2816** (0.1515)	-0.7024*** (0.2092)
Concentration	25.4973** (12.0854)				19.3210 (13.0305)
Density	5.5977** (2.5347)				6.0422** (2.6157)
Density ²	-0.0133** (0.0060)				-0.0143** (0.0062)
Age	0.0102 (0.0060)				0.0102 (0.0061)
Age ²	-0.00006 (0.00004)				-0.00006 (0.0002)
Number of branch offices	0.0005*** (0.0002)				0.0006*** (0.0002)
Labour costs per employee		0.0591*** (0.0220)			0.0598** (0.0255)
Net profit per employee		-0.0003 (0.0019)			
Degree of employee qualification		-0.0003 (0.0005)			
Liability accounts per employee		0.0213 (0.6222)			
CEO succession			-0.3496 (0.3188)		-0.3817 (0.3260)
CEO succession x Strategic change			1.2003*** (0.3958)		1.1657*** (0.4260)
CEO tenure			0.0012 (0.0162)		
Customer loyalty				0.3268 (0.3208)	
Brand loyalty				0.1036 (0.1881)	
Size (log. of bank assets)	-0.1091 (0.0628)	0.0176 (0.0437)	0.0107 (0.0449)	0.0030 (0.0437)	-0.1093 (0.0645)
Return on assets	-2.5895* (1.6958)	-2.0390 (2.1300)	-2.7391** (1.6846)	-3.2599*** (1.7313)	-1.0218 (1.6282)
Number of observations	1257	1257	1257	1257	1257
Number of banks	134	134	134	134	134
<i>Wald test</i> ^a (df ^b)	26.39***(9)	18.06***(7)	18.85***(6)	9.65*(5)	38.43***(12)

* p-value<0.1; ** p-value<0.05; *** p-value<0.01

^a *Wald test*: Significance of the whole model; ^b degrees of freedom

TABLE 7
STABLE SGs WITH THE HIGHEST AND LOWEST PERCENTAGE OF BANK
EXTINCTIONS

SGs	PERIOD	GENERAL STRATEGIC PATTERNS
II [15.29] ^(a) (39.25%) ^(b)	1983- 1996	<i>Lending Market:</i> COMMERCIAL and UNIVERSAL BANKING (High proportion of V ₁ , V ₂ and V ₃) <i>Instrument Saving Market:</i> TRADITIONAL BANKING (High proportion of V ₄) <i>Inter-Bank Market:</i> WEAK CREDITOR POSITION <i>Number of branch offices:</i> VERY HIGH <i>Type of customers:</i> FAMILIES, SMALL, MEDIUM and LARGE BUSINESS
IX [19.00] (26.32%)	1985- 1990	<i>Lending Market:</i> UNIVERSAL BANKING (High proportion of V ₂ , V ₁ and V ₃) <i>Instrument Saving Market:</i> INNOVATIVE BANKING (High proportion of V ₆) <i>Inter-Bank Market:</i> WEAK CREDITOR POSITION <i>Number of branch offices:</i> VERY HIGH <i>Type of customers:</i> FAMILIES, SMALL, MEDIUM and LARGE BUSINESS
XVIII [22.67] (39.71%)	1990- 1995	<i>Lending Market:</i> COMMERCIAL and UNIVERSAL BANKING (High proportion of V ₁ , V ₂ and V ₃) <i>Instrument Saving Market:</i> INNOVATIVE and TRADITIONAL BANKING (High proportion of V ₆ , V ₅ and V ₄) <i>Inter-Bank Market:</i> BALANCED POSITION <i>Number of branch offices:</i> VERY HIGH <i>Type of customers:</i> FAMILIES, SMALL, MEDIUM and LARGE BUSINESS
XXI [13.86] (36.08%)	1991- 1997	<i>Lending Market:</i> COMMERCIAL BANKING (High proportion of V ₁) <i>Instrument Saving Market:</i> INNOVATIVE BANKING (High proportion of V ₆ and V ₅) <i>Inter-Bank Market:</i> VERY STRONG DEBTOR POSITION <i>Number of branch offices:</i> HIGH <i>Type of customers:</i> LARGE BUSINESS
XXV [7.80] (38.46%)	1993- 1997	<i>Lending Market:</i> INSTITUTIONAL BANKING (Very high proportion of V ₃) <i>Instrument Saving Market:</i> TRADITIONAL AND INNOVATIVE BANKING (High proportion of V ₄ and V ₅) <i>Inter-Bank Market:</i> VERY STRONG DEBTOR POSITION <i>Number of branch offices:</i> VERY HIGH <i>Type of customers:</i> FAMILIES, SMALL MEDIUM and LARGE BUSINESS
VIII [10.00] (0%)	1985- 1990	<i>Lending Market:</i> COMMERCIAL BANKING (High proportion of V ₁) <i>Instrument Saving Market:</i> INNOVATIVE BANKING (High proportion of V ₆ and V ₅) <i>Inter-Bank Market:</i> STRONG DEBTOR POSITION <i>Number of branch offices:</i> VERY LOW <i>Type of customers:</i> FAMILIES, SMALL, MEDIUM and LARGE BUSINESS
X [11.83] (8.45%)	1985- 1990	<i>Lending Market:</i> INSTITUTIONAL BANKING (High proportion of V ₃) <i>Instrument Saving Market:</i> INNOVATIVE BANKING (High proportion of V ₆) <i>Inter-Bank Market:</i> STRONG CREDITOR POSITION <i>Number of branch offices:</i> VERY LOW <i>Type of customers:</i> LARGE BUSINESS
XVI [2.88] (0%)	1989- 1996	<i>Lending Market:</i> INSTITUTIONAL BANKING (High proportion of V ₃) <i>Instrument Saving Market:</i> HIGHLY INNOVATIVE BANKING (High proportion of V ₅) <i>Inter-Bank Market:</i> STRONG CREDITOR POSITION <i>Number of branch offices:</i> VERY LOW <i>Type of customers:</i> FAMILIES, SMALL, MEDIUM and LARGE BUSINESS
XXII [10.17] (9.84%)	1992- 1997	<i>Lending Market:</i> INSTITUTIONAL BANKING (High proportion of V ₃) <i>Instrument Saving Market:</i> HIGHLY INNOVATIVE BANKING (High proportion of V ₆) <i>Inter-Bank Market:</i> WEAK CREDITOR POSITION <i>Number of branch offices:</i> VERY LOW <i>Type of customers:</i> VERY LARGE BUSINESS
XXIII [17.17] (5.83%)	1992- 1997	<i>Lending Market:</i> COMMERCIAL and INSTITUTIONAL BANKING (High proportion of V ₁ and V ₃) <i>Instrument Saving Market:</i> HIGHLY INNOVATIVE BANKING (High proportion of V ₆ and V ₅) <i>Inter-Bank Market:</i> STRONG DEBTOR POSITION <i>Number of branch offices:</i> HIGH <i>Type of customers:</i> LARGE BUSINESS

^(a) Figures between brackets refer to the mean number of banks per year.

^(b) Figures between parentheses refer to the mean percentage of bank extinctions.