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Competitive analysis with strategic groups: Application to the Spanish insurance sector, 2000-2005

Análisis competitivo mediante grupos estratégicos: aplicación al sector asegurador español, 2000-2005

ABSTRACT

The main goal of this paper is to increase the knowledge of the behavior of strategic groups through time. Given that, the dynamic evolution of a sample of Spanish insurance institutions during the 2000-2005 period has been analyzed. This paper concretely studies: the methodology of identification of generic strategies within the sector, the application of a two-step process for identifying strategic groups and the temporal evolution of strategies and groups. The results of this research indicate that the temporal analysis of both strategies and groups increases the knowledge of the strategic behavior of a sector.

Key words: strategic groups, dynamic analysis, Spanish insurance sector, strategic change.

JEL Classification: G22, L22, L25 and M31.

RESUMEN

El objetivo principal de este trabajo es profundizar en el conocimiento del comportamiento de los grupos estratégicos a lo largo del tiempo. Así, se ha analizado la evolución dinámica de una muestra de entidades aseguradoras españolas durante el quinquenio comprendido entre 2000 y 2005. En concreto se estudia: la metodología de identificación de las estrategias genéricas, la aplicación de un proceso bietápico para la formación de los grupos estratégicos y la evolución

temporal tanto de las estrategias como de los grupos. Los resultados del mismo indican que el análisis de la evolución temporal de ambas entidades mejora el conocimiento del comportamiento estratégico de un sector.

Palabras clave: grupos estratégicos, análisis dinámico, sector asegurador español, cambio estratégico.

Clasificación JEL: G22, L22, L25 y M31.

1. INTRODUCTION

The importance of the strategic group concept within the competitive analysis of an industry or of a sector is undoubtedly high. The existence of a vast body of academic literature, based on this paradigm since the mid -70s up to the present day, confers it both theoretical and empirical interest. The main research lines within this field are related to the methodology of identification of the groups, the analysis of the relationship between strategy and results, and the study of the dynamic stability of them. At the same time, the Spanish Insurance Sector has gone through a series of legal and increasing competitiveness changes, which have promoted deep variations within the environment and therefore in the ways of competing. Within this new context, it is possible to develop a strategic group analysis of the Spanish Insurance Sector to increase understanding of the strategies followed by the firms, the strategic groups that constitute the sector, and to assess the association between the fact that a firm is a member of a certain strategic group and its results. To conclude, this paper is divided as follows: Firstly, we conduct a literature review of both strategic group theory and the Spanish Insurance Sector for the last two decades. Following, we present the objectives and research hypotheses. The fourth section contains a detailed description of the applied methodology. The fifth and sixth sections are the results presentation and discussion respectively. Penultimately, we give a comprehensive summary of conclusions and managerial implications. Finally, we provide an analysis of the main limitations of this research, which can serve as potential future fields of study.

2. LITERATURE REVIEW

2.1. Strategic group theory

The paradigm of strategic group is used as a fundamental tool for defining the competitive strategy and is basic for resource allocation decisions. Within this context, it is possible to define the competitive strategy of a firm as the way in which it competes, its objectives and the policies that it employs to reach such objectives. The strategy is, therefore, the combination of goals that a firm wants to achieve and the means that it uses for reaching them (Porter, 1982). The strategic group concept was initially used by Hunt in 1972. Since then, the concept has been widely used for either theoretical or empirical investigation. In that way, Porter (1979)

defined strategic group as a group of firms that follow similar strategies in terms of their key success variables. The success of employing strategic groups for studying the positioning of a firm is based on their intrinsic features. For that reason, strategic groups can serve: i) as an intermediate level of analysis between the firm and the sector (Johnson & Scholes, 1997), ii) for studying the relationship between the chosen strategy and managerial outcomes obtained – potential predictive validity (Cool & Schendel, 1987; McGee & Thomas, 1986), and iii) for investigating simultaneously a group of firms and to assess their strategic actions jointly.
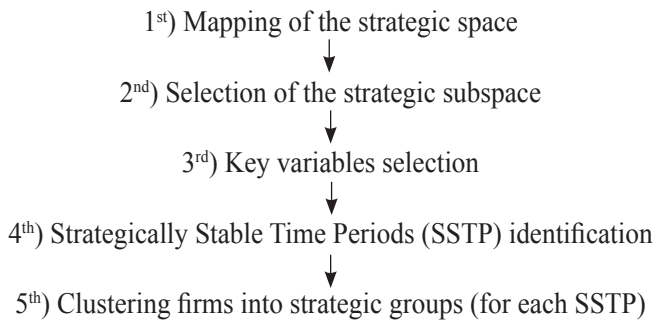
The academic research on strategic groups is mainly centred in three research lines, which are: i) the methodology of group identification, ii) the analysis of result/outcome differences among groups, iii) the dynamic (temporal) stability of the group structures.

(i) Strategic groups' identification process

This issue is the foundation of every research based on the strategic group paradigm. There are several methodological approaches and their application depends on the research objectives. The most used are the multivariate and the cognitive approaches.

The multivariate methodology is based on the fact that firms which present similar values in their strategic variables are grouped together. Fiegenbaum & Thomas (1990a) developed the most widely used multivariate process and it is composed of a series of linked stages. A summary of this process is presented in Table 1.

Table 1
Identification process Fiegenbaum & Thomas (1990a).

1st) Mapping of the strategic space

↓

2nd) Selection of the strategic subspace

↓

3rd) Key variables selection

↓

4th) Strategically Stable Time Periods (SSTP) identification

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5th) Clustering firms into strategic groups (for each SSTP)

Source: adapted from Fiegenbaum & Thomas (1990a).

The other way for identifying strategic groups is the cognitive approach. It is based on the fact that individual actions are based on external perceptions of reality, filtered by their own systems (Reger & Huff, 1993). In this way, managers (individually) or the board of directors (collectively) shape simplified depictions of mental models or cognitive mapping of their competitive markets, of rivalry and of strategic grouping itself. The research of Porac, Thomas, Wilson, Paton & Kanfer, (1995), Reger & Huff (1993) and Nath & Gruca (1997) are interesting examples of this view.

To conclude this overall revision, it is worth highlighting the importance of Nath & Gruca (1997) paper. This article intends to evaluate the convergence between the previously described methods of strategic groups' structure identification. Initially, they identify strategic groups with a multivariate approach[1]. Afterwards, they apply a scale to measure managers' perceptions, using for this task the specific attributes of the sector under scrutiny, multivariate cognitive approach. Thirdly, they also employ managers' direct competition perception of the firms that struggle within the industry, direct cognitive approach. To conclude, this research supports the convergence among strategic groups structure either implementing multivariate or cognitive approaches.

ii) Strategic groups and firm performance

This branch of research studies the association between the performance of a firm and the fact that it belongs to a specific strategic group. In this way, Mascarenhas & Aaker (1989) considered that the importance of the strategic group resides in being a useful tool for explaining performance differences among firms. Therefore, on the one hand, there is a lot of research analyzing the performance differences between groups. This approach is based on the existence of mobility barriers between groups, which are the main cause for the existence of prevalent performance differences between strategic groups (Porter, 1979).

The potential performance differences among firms within a group is another aspect analyzed within this line of research. This approach is based on the idea that members of the same group, implementing similar strategies in terms of strategic variables, are obtaining different outcomes. It is based on the idea that firms consider as direct competitors those firms that are close to them, within the same group, and try to exploit as much as possible their differences on resource allocation to develop isolation mechanisms (Cool & Schendel, 1988; Lewis & Thomas, 1990). The objective of any firm is, therefore, to maintain these differences for outperforming their competitors.

(iii) Strategic groups structure stability

The last line of research is centered in analyzing the structure of strategic groups from a dynamic viewpoint and hence to assess the temporal evolution of firm mobility among groups. The importance of identifying periods of strategic stability, in competitive analysis, is valuable. This fact is shown by Fiegembaum & Thomas (1990a, 1990b), Cool & Schendel (1988), Sudharshan, Thomas & Fiegenbaum (1991) and Más (1999). However, there are several academic papers which identify strategic groups for only one economic year. This fact is an important limitation when trying to analyze the competitive evolution of a sector. Examples of it can be found in Lee, Lee & Rho (2002), Mcnamara, Deephouse & Luce (2003), Nath & Gruca (1997) and Reger & Huff (1993).

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[1] The statistical techniques implemented were factorial analysis and cluster analysis.

2.2. The insurance sector

The main contribution of the Insurance Sector to the Economy is to offer several types of risk protection. This sort of activity is essential within a Market Economy. The importance of studying the Insurance Sector rests on the fact that its degree of development is one of the better indicators of the economic standard of a country (Pinillos y Martin, 1998). In this way, the main indicators to measure the development and evolution of this sector are the penetration ratio[2] and the insurance density indicator[3]. The study of such indicators for the Spanish Insurance Sector, during the eighties and nineties, indicates a continuous increase of the relevance of this sector within the Spanish Economy. This growth was caused by both regulatory changes[4] in the sector and the entrance of new entities to the Insurance Business[5] (Pinillos y Martin, 1998). Both, the legislative change and the increasing of competence generated a deep change within the structure of the Spanish Insurance Sector. They drove the sector from a high dispersion level and ruled by Spanish Insurance firms, at the beginning of the eighties, into a sector characterized by a high specialization degree where both traditional Financial Entities (Banks and Saving Banks) and Multinational Insurance Groups have achieved a leading position (Pinillos & Martin, 1998). In addition, since 2003 there is a complex process in the Spanish Insurance sector to adopt the Solvency Project[6], which is the new European regulatory framework. It aims to reach a unified set of general principles, which overcome existing differences within the European Union countries. This new framework has forced the competing firms to adapt their strategies to be consistent with the new conditions. Concretely, and given that the present article deals with the analysis of the competitive context during the 2000-2005 period, the main indicators of the relevance of the Spanish Insurance Sector are shown in Table 2.

Table 2
Evolution of indicators: Spanish Insurance Sector.

	2000	2001	2002	2003	2004
Penetration ratio	6.23%	6.08%	6.52%	5.25%	5.30%
Insurance density (€)	970.26	1006.02	1135.68	959.86	1027.50

Source: own elaboration from data of INE and ICEA[7].

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[2] Penetration ratio = Total premium generated by the Insurance Sector / Gross Domestic Product.

[3] Density indicator = Total premium generated by the Insurance Sector / country inhabitants.

[4] The Law of Private Insurance Arrangement, 1984 (LOSP –Ley de Ordenación del Seguro Privado) and the Law of Supervision and Arrangement of Private Insurance 1995 (LOSSP –Ley de Ordenación y Supervisión del Seguro Privado-)

[5] Bank-assurance: entrance of Banks and Saving Banks to the sector since mid eighties.

[6] Proyecto Solvencia II, Ministerio de Economía y Hacienda. Available at www.dgsfp.meh.es/sector/solvencia2.asp

[7] INE (Instituto Nacional de Estadística de España) and ICEA (Investigación Cooperativa entre Entidades Aseguradoras)

Therefore, a detailed strategic analysis of the Spanish Insurance Sector is justified by: i) the strong association between the Insurance Sector and the overall economic context, ii) the fact that the sector configuration has radically changed in recent years, iii) the Insurance Sector represents approximately 6% of the GDP of Spain, and iv) the average insurance premium (density), is around 1.000 euros per inhabitant yearly.

To conclude this part of the paper, it is worth quoting the applications of strategic group theory within the Insurance Sector of Fiegenbaum & Thomas (1990a, 1990b, 1995, and 2001); and, for the Spanish case, the research of Martinez (1995) and Pinillos & Martin (1998).

3. RESEARCH OBJECTIVES AND HYPOTHESES

The current paper intends to analyze the evolution of the Spanish Insurance Sector during the 2000-2005 period. This general analysis is focused in five main research objectives, which are:

(1) Identification of the generic competitive strategies followed by the firms that compose the Insurance Sector, based on their competitive variables (identification of underlying factors).
(2) Implementation of a descriptive analysis of the measured variables within each factor (factor characterization).
(3) Identification of the different strategic groups within the sector, based on the generic strategies identified at the first objective.
(4) Dynamic analysis of the generic strategies' evolution for the 2000-2005 period.
(5) Dynamic analysis of the strategic groups' evolution for the 2000-2005 period.

Most of these objectives have been widely studied in previous research (see section 2.1), thus it allows us to consider their transition into specific research hypotheses. The first, second and third objectives have a descriptive nature. Therefore, they will not have any hypothesis attached. However, the forth and fifth objectives will be focused on the following hypothesis:

H1:   In a changing environment, the generic strategies followed by the firms within a sector will evolve along time.
H2:   In a changing environment, the number of strategic groups will continuously change along time.
H3:   In a changing environment, the mobility rates of the firms among strategic groups will be high.

4. METHODS

4.1. Target group and information sources

The target population for this research is the set of Insurance entities, which constitute the Spanish Insurance Sector for the 2000-2005 period[8]. The chosen sample is composed of a number of firms that accounts, approximately, for 80% of the market share[9].

All the variables employed in this paper come from secondary sources. The Spanish Ministry of Economy regularly publishes this economic-accounting information, contained in the balance sheet and the profit and loss account[10]. The technical specifications of the present research are presented in Table 3.

Table 3
Technical Specifications.

Scope	Spain					
Universe	Insurance and Reinsurance firms					
	Operating in Spanish Territory					
Universe Size	200 in 2000	206 in 2001	217 in 2002	219 in 2003	203 in 2004	199 in 2005
Sample Size	59 in 2000	56 in 2001	48 in 2002	65 in 2003	50 in 2004	48 in 2005
Data collection method	Balance sheet and Profit & Loss account of firms					
	(Secondary data)					
Periods under scrutiny	2000-2005 (data at December 31st)					

Source: own elaboration.

4.2. Dimensions and measurement

One of the crucial and most complex processes when strategically analyzing a sector is the decision of what strategic dimensions to include and what variables to employ. This task demands an exhaustive knowledge of the sector under analysis[11].

The dimensions included in this paper can be divided into three categories: i) Scope, ii) Commitment, and iii) Result/outcome dimension (Cool & Schendel, 1987). These three dimensions can be measured within the Insurance Sector in the same way that Fiegenbaum & Thomas (1990a) and Pinillos & Martin (1998) do for the Spanish case[12].

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[8] The information of the sector composition comes from the ICEA databases.

[9] Market share is measured by volume of direct insurance premium.

[10] Source: DGSFP (Dirección General de Seguros y Fondos de Pensiones, Ministerio de Economía y Hacienda)

[11] Fiegenbaum & Thomas (1990a) and Cool & Schendel (1987), among others, employ interviews with managers, university teachers with experience within the field and professional consultants of the sector (external validity of the measures).

[12] For a detailed explanation of the composition and meaning of the variables that compose each dimension, see appendix 1.

a)   Scope dimension of the firm

The set of variables included in this group try to reflect the firm's field of activity, the market segment where it is present, the kinds of products or services offered and its geographical coverage (Cool & Schendel, 1987). In the Insurance Sector it is possible to measure:

  A1. Life[13]/non-life[14] insurance proportion (measures product orientation),
  A2. Diversification index (measures economies of scope),
  A3. Size (measures economies of scale),

b)   Resource Commitment dimension of the firm

These variables aim to measure the resource distribution along the different functional areas of the firm (human resources, supplying, sales, etc.), being a key aspect to maintain a competitive advantage through time (Cool & Schendel, 1987). The variables included of this type are:

  B1. Expenses ratio = [management expenses / total premium volume]
  B2. Reinsurance protection (measures risk diversification)
  B3. Investment policy (as an additional income source)
  B4. Capital turnover = [net revenues / equity capital]
  B5. Coverage ratio = [net revenues / (equity capital + provisions)]

c)   Result/outcome dimension

The variables that compose this dimension measure the outcome of a generic Insurance firm. The whole set of included variables comes from the balance sheet and the profit & loss account. They try to reflect the multidimensional character of the results of a firm, being similar to those used by Fiegenbaum & Thomas (1990a) and Pinillos & Martin (1998).

  C1. Market share
  C2. Loss ratio = [accident rate / total premium volume]
  C3. Coverage of accident rate by equity capital = [Accident rate / equity capital]
  C4. Coverage of accident rate by *wide* equity capital = [Accident rate / equity capital + provisions]
  C5. Return on investment = [return of financial products / (investments + effective)]
  C6. Return on equity (ROE) = [Net revenues / equity capital]
  C7. Return on assets (ROA) = [pre taxes and interests profits/Net total assets]

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[13] *Life insurance branches*: risk, retirement, and other saving insurances.
[14] *Non-life insurance branches*: car, multi risk, health, casualty, public-liability insurance.

4.3. Data analysis

To reach the first objective, the strategy identification within the Insurance Sector, a principal components factorial analysis is applied on the previously defined strategic variables. This statistical method allows identifying the key success factors for the Insurance Sector. It finds, therefore, the underlying generic strategies of the firms and eliminates redundant information contained in the indicators. It also summarizes, in the minimum number of factors, the information contained in the initial variables, with the minimum loss of information (Hair, Anderson, Tatham & Black, 1999).

The second objective, the factor labeling, is done at the same time as the previous factorial. This is because their interpretation is directly associated with decisions related to the number of retained factors or the rotation method applied to the factorial loadings. This joint process will allow labeling the factors previously identified which will be used for subsequent analysis (Hair *et al.,* 1999).

In relation to the third objective, the firm clustering into homogeneous groups, a cluster analysis is applied. The main goal of this technique is to obtain a taxonomy of the firms that compose the Spanish Insurance Sector for each year, by means of a two-stage procedure. Firstly, a hierarchical cluster is applied, which serves to identify the potential number of strategic groups for each year. Secondly, a non-hierarchical cluster distributes them in an optimal way (Hair *et al.,* 1999). The fourth and fifth objectives, the dynamic analysis of the generic strategies and the strategic groups, are investigated by calculating univariate indicators between periods[15]. They aim to evaluate the temporal change in the features of the groups.

5. RESULTS

The first and second objectives are tested by means of a principal components factorial analysis on the original strategic variables (scope and resource commitment variables). However, the application of this kind of multivariate technique requires that the initial variables achieve several adequacy criteria. On the one hand, variables must be measured in interval or ratio scale, being of this type the ones employed in this paper. On the other hand, the variables must show high colinearity among them. Table 4 shows the KMO statistic, which indicates that the present sample presents *acceptable* levels for every year (KMO ≈ 0.6). It also shows the rejection of Bartlett's null hypothesis of Sphericity for every case. The same conclusion is drawn from the fact that the determinant of that correlation matrix is close to zero for every year. This fact confirms the existence of correlation among the variables under study.

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[15] Example of it is the mobility ratio stated by Sudharshan, Thomas & Fiegenbaum (1991) and used at the Spanish context by Mas (1996). For a detailed explanation see appendix 2.

Table 4

Adequacy criteria for applying Exploratory Factor Analysis (EFA).

		2000	2001	2002	2003	2004	2005
Kaiser-Meyer-Olkin sample adequacy measure		0,599	0,555	0,579	0,519	0,581	0,559
Bartlett's Sphericity Test	χ² approx.	279,141	153,147	147,019	182,753	183,270	226,232
	dof	28	28	28	28	28	28
	Sig.	0,000	0,000	0,000	0,000	0,000	0,000
Correlation matrix determinant		0,002	0,045	0,034	0,042	0,019	0,006

Source: own elaboration.

Once assured of the adequacy of the data, the next step when applying a factorial technique is to decide the method for factor extraction. In this case, only those factors that have an Eigen value greater than one were retained. Under this logic, the first three components for each year were analyzed and they explain around 75% of the initial variance. These figures are higher than 60 %, which is considered as acceptable within social science research (Hair *et al.,* 1999). This is also supported by the Scree plots, where the slope of the curve diminishes suddenly after the third component for each year (The analysis are available and can be requested from the authors).

The communalities of the original variables with the factors indicate the representation level of the indicators on the retained factors. Table 5 shows that almost all of them are greater than 0.65, which indicates a good representation of the variables within the retained factors. An orthogonal rotation (Varimax) of the initial solution has been implemented in order to simplify the factor labeling process.

Table 5

Communalities.

	2000	2001	2002	2003	2004	2005
Life/non-life proportion	0,89	0,85	0,87	0,85	0,88	0,90
Diversification index	0,76	0,71	0,85	0,82	0,89	0,88
Size	0,79	0,57	0,71	0,66	0,69	0,65
Expenses ratio	0,97	0,82	0,74	0,79	0,81	0,89
Reinsurance protection	0,96	0,79	0,76	0,78	0,71	0,85
Investment policy	0,61	0,61	0,70	0,63	0,78	0,75
Capital turnover	0,51	0,59	0,63	0,65	0,55	0,58
Coverage ratio	0,78	0,66	0,70	0,57	0,81	0,85

Extraction method: Principal Components.
Source: own elaboration.

Once a check of the data adequacy and the proper representation of the variables are completed, the outcomes of the factorial analysis are presented and the factor labeling has been done annually. Table 6 presents the information related to this strategies labeling process.

Table 6
Generic strategies: Spanish Insurance Sector 2000-2005.

Year	Importance order	Generic strategy label	Descriptors
2000	1	Non-life business focused	High non-life proportion and diversification. Low financial investment policy and capital turnover.
	2	Differentiation	High management expenses ratio and reassurance protection.
	3	Cost leadership	Large size and low coverage ratio.
2001	1	Non-life business focused	High non-life business proportion. Low financial investment policy and capital turnover.
	2	Differentiation	Small size and high management expenses ratio and reassurance protection.
	3	Diversification	High diversification of product portfolio and low coverage ratio.
2002	1	Non-life business focused	High non-life business proportion and coverage ratio. Low financial investment policy and capital turnover.
	2	Differentiation	Small size and high expenses ratio and reassurance protection.
	3	Diversification	High diversification of product portfolio.
2003	1	Differentiation	High management expenses ratio and reassurance protection.
	2	Non-life business focused	High non-life business proportion and coverage ratio. Low financial investment policy.
	3	Cost leadership/diversified	Large size and highly diversified. High capital turnover
2004	1	Differentiation	Small business size. High management expenses ratio and reassurance protection.
	2	Non-life business focused	High non-life business proportion and coverage ratio. Low financial investment policy.
	3	Diversification	High diversification of product portfolio.
2005	1	Differentiation	Small business size. High management expenses ratio and reassurance protection.
	2	Diversification at non-life business	Highly diversified portfolio centred at the non-life business.
	3	Conservative	Low financial investment policy and high coverage ratio.

Source: own elaboration.

Given that the fourth objective of this study is the temporal evolution of the generic strategies for the 2000-2005 periods, there is not a detailed description of the labeling process for each year. The Rotated Component matrix, for each year, is depicted in Appendix 3. A more detailed explanation of the labeling process is presented in Murillo, Sancho & Vargas (2007).

In light of the information contained in Table 6, it is possible to highlight some ideas about the generic strategies followed by the Spanish insurance firms during the 2000-2005 periods. On the one hand, there are three underlying ways of competing for of all the years studied. However, when the factor composition is analyzed, it is possible to find important changes in the strategies for every period. A global overview for the whole period shows that the main strategies are the non-life business focused and the differentiated strategies, followed by a diversification strategy and, with a residual importance, a cost leadership strategy. The temporal analysis shows, on one hand, that the non-life business strategy, dominant in the first periods, has diminished in relative importance against the differentiation strategy. In that way, the differentiation strategy stands as the dominant strategy since 2003. On the other hand, the third underlying competitive strategy is less stable than the first two. This third factor, defined initially by a cost leadership strategy, has evolved to another more centered on diversification issues. To end up with the temporal analysis of the strategies, it is important to highlight that 2003 seems to be a critical year in terms of strategy. During this year, the relative importance of the generic strategies changed radically. This means that further analysis of the sector features is required for understanding these structural changes. For all those reasons, there is clear evidence in favor of the first research hypothesis, the generic strategies followed by the firms within a sector, would evolve over time. This continuous variation of the underlying strategies is the suitable scenario for studying the strategic clustering of firms and its temporal evolution.

The third research objective deals with the classification of firms into homogeneous groups. To achieve this aim, a clustering analysis is implemented over the variables that compose the three dimensions[16] defined at the methodology section. The included dimensions are: scope dimension, resource commitment dimension and result/outcome dimension of the firm. We undertook a two-step clustering process to define the groups and to distribute the firms into them in an optimal way. It is based on the joint application of a hierarchical and a non-hierarchical cluster. The hierarchical technique is used to determine the number of optimal groups for each year. Afterwards, and employing the previous number of groups, we apply a non-hierarchical K-means clustering method to obtain the optimal composition of the groups. The application of a non-hierarchical technique is necessary because the hierarchical ones are not very robust due to their sequential nature (Hair *et al.,* 1999).

The outcome of the hierarchical cluster suggests the existence of four strategic groups for the 2000-2005 years. The evidence for such a statement comes from the analysis of the dendograms depicted for each year (see Appendix 4). After this first step is completed, we undertake a non-hierarchical process to provide the optimal distribution of the firms given a

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[16] These variables are analogous to those employed by Fiegenbaum & Thomas (1990a) and Pinillos & Martin (1998).

number of clusters. In this way, a K-means cluster analysis is implemented to determine the composition of each group. Based on these results, of this two-stage process, it is possible to distribute the firms within the sample into four strategic groups for each year. Table 7 summarizes the results of the hierarchical and non-hierarchical analysis. In addition, it presents the mobility rate of the firms from one year to the next and also shows information about the absorptions, mergers and incoming firms within the sector.

Table 7
Cluster results and sector structure information.

	2000				**2001**				**2002**				**2003**				**2004**				**2005**			
Number of clusters *	4				4				4				4				4				4			
Number of firms per cluster **	20	18	9	3	31	20	2	1	21	12	9	6	20	19	12	11	22	13	12	4	27	13	5	3
Percentage of firms per cluster (%)	40	36	18	6	62	37	4	2	44	25	19	13	32	30	20	17	43	25	23	8	56	27	10	6
Mobility Ratio	nc				0,442				0,470				0,509				0,531				0,707			
Mergers and absorptions in the sample +	nc				na				2				6				12				10			
New firms in the sample +	nc				20				7				15				4				3			

nc = not computable, na = not available.
* derived form the hierarchical cluster.
** derived form the k-means cluster.
+ *sources*: ICEA, DGSFP.

The analysis of Table 7 allows us to assess the temporal evolution of the strategic groups for the period under study[17]. There are four groups for each year and this figure seems to be stable for the whole period. The distribution of firms among the groups suggests that there are two principal strategic groups that include 75 per cent of the firms of the sample, on average. There are also two minor groups that include the rest of firms within the sample. However, the most interesting issue is the analysis of the evolution of the mobility ratio and the mergers and absorption figures for the period. On one hand, the mobility ratio suggests that the structure of the sector has not been stable. It also indicates that the transition of firms from one group to another has continuously increased from 2000 until 2005. In the same way, the information related to mergers, absorptions and incoming firms indicates that the structure of the sector is continuously evolving over time.

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[17] Given that the fifth objective of this study is the temporal evolution of the strategic groups for the 2000-2005 periods, there is not a detailed description of the group characterization. For further details on this issue see Murillo, Sancho & Vargas (2007).

In the light of this empirical evidence, it is possible to draw some conclusions about the structure of the Spanish Insurance sector for the 2000-2005 periods. On one hand, the number of groups is relatively stable through time, rejecting the second research hypothesis, which stated that in a changing environment the number of strategic groups would change over time. However, the number of firms contained in each group presents a peculiar pattern. There are two large groups, which stand out for the whole period, but when analyzing them in detail it is possible to observe high group mobility among firms between periods. This evidence supports the third research hypothesis, which indicated that in a changing environment the mobility ratio of the firms within the strategic groups would be high. Additionally, during the research period (2000-2005), there has been a large number of mergers and absorptions[18] that increase this mobility among groups.

6. DISCUSSION AND CONCLUSIONS

This section aims to be a critical commentary of the results obtained from preceding sections, in the same way as to locate these results within the strategic group research literature. The outcomes related to the first objective of the paper, the generic strategies identification, are interesting. The application of a factorial analysis, principal components analysis with Varimax rotation, allows us to study the different competing strategies for each year (Objectives 1 and 2). It also gives a very approximate idea of their temporal evolution (Objective 4).

The process of group composition allows us to obtain robust results. This is a consequence of the implementation of a two-stage clustering method. In the first stage, a hierarchical cluster analysis has served to determine the number of strategic groups for each year. Secondly, a K-means cluster analysis has been used to obtain the group composition. The last stage of this group analysis is related to the temporal evolution of the groups (Objective 5) for the 2000-2005 periods. It allows us to show, restricted to the chosen sample, the evolution of both the number of strategic groups and their composition. It is also interesting to highlight the importance of the dynamic analysis for the strategic management of a firm. Examples of this approach can be found in Mascarenhas & Aaker (1989), Fiegenbaum & Thomas (1990a) and for the Spanish case Mas (1998, 1999) and Flavian & Polo (1999).

Most of the results achieved by this research are useful for both general strategic analysis and for the Insurance Sector in particular. On one hand, the managerial level of the firms to simplify the competitive space where they operate can apply the strategic identification methodology. On the other hand, the identification of a group structure for a specific sector can help in the optimal strategy selection process.

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[18] Examples of it are: the absorption of PLUS ULTRA SEGUROS GENERALES by GROUPAMA in 2003, the absorption of MUSINI VIDA and MUSINI by GRUPO MAPFRE at the end of 2003, the absorption of ATLÁNTICO VIDA by BANSABADELL in 2004 or the merger during the same year of CASER, ECUADOR, LE MANS, and MAAF Y SUD AMÉRICA to the GRUPO CASER.

7. LIMITATIONS AND FUTURE RESEARCH LINES

The last section of this paper aims to discuss the potential limitations in the same way as identifying future research lines. Among the limitations, it is worthy to note:

i) The sample used was made up of around 50 firms (of an approximate universe of 200) for each year, accounting for approximately 80% of the business volume of the sector. Therefore, there exists a clear bias against smaller firms. For that reason, caution is advised when interpreting the static and dynamic results. However, it is easy to overcome this bias because there is statistical information for the whole sector.

ii) The variables selection, which aims to reflect the strategic and result dimensions, is exclusively based on the literature review. It would be interesting to undertake personal interviews to professional managers and researchers with expertise in the sector to develop better indicators and validate the existing ones.

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Appendix 1
Strategic and result variables.

A) Scope variables

A1.Life/non-life proportion,

It tries to quantify the product orientation of a firm and it is the ratio between total net non-life premium and the total net premium.

A2.Diversification index,

It indicates the degree of business diversification of the firm. It is measured by means of the ratio of the actual number of branches in which the firm operates and the maximum number of branches in each year.

A3.Size =Ln (total premium),

It aims to measure the size-volume of a firm and is operationalized by the neperian logarithm of the total net premium.

B) Resource commitment variables

B1.Expenses Ratio,

It is the ratio between the management expenses (internal and external) and the total net premium. It intends to measure the resource usage productivity.

B2.Reinsurance protection,

It is the ratio between the total reinsurance between the total net premiums. It is an instrument used for increasing the insurance capacity of a firm (risk reduction).

B3.Investment Policy,

It indicates the proportion of total investment that is financial investment. Decisions related to it can represent a source of additional income of insurance firms.

B4.Capital turnover,

It is the ratio between the net revenues and the equity capital of a firm.

Appendix 1 (*Continued*)
Strategic and result variables.

B5. Coverage ratio,

It is the ratio between the net revenues and the equity capital plus the technical provisions.

C) Result-outcome variables

C1. Market share,
C2. Loss ratio, it is measured by the ratio between accident rate and total net premium.
C3. Coverage of accident rate by equity capital,
C4. Coverage of accident rate by wide equity capital (equity capital and provisions),
C5. Return of investment, return on financial products divided by total investments and effective.
C6. Return on equity (ROE), net revenues divided by equity capital.
C7. Return on assets (ROA), pre taxes and interest profits divided by net total assets.

Appendix 2
Mobility Ratio (adapted from Mas, 1996).

In general, the comparison between the strategic groups of two time periods $T1$ and $T2$ follows these steps:
1) Each group of period one is associated with a number (1, 2, ...,m) in an arbitrary way.
2) Each of the n groups of $T2$ period is compared with the ones obtained in $T1$ and they receive the number of identification of the $T1$ group with higher overlapping level.
3) Comparison among the strategic groups of both periods and calculation of the mobility ratio.

$$RM = \frac{\sum_{i=1}^{min\ (m,\ n)} c_{i,i}}{\frac{1}{2}\left(\sum_{i=1}^{m} N_{1i} + \sum_{j=1}^{n} N_{2j}\right)} \quad \text{cuando } (m \geq n)$$

Where:

Cij = number of firms which belong to group i at $T1$ period and to group j at $T2$ period.
$N1i$ = total number of firms which belongs to group i at $T1$ period.
$N2j$ = total number of firms which belongs to group j at $T2$ period.

Appendix 3
Exploratory factor analysis: Rotated component matrix.

Rotated Component Matrix 2000

	Components		
	1	**2**	**3**
Life/non-life proportion	0,89	0,22	-0,22
Diversification index	0,79	0,00	0,37
Size	0,02	-0,15	0,87
Expenses ratio	0,12	0,98	-0,05
Reinsurance protection	0,14	0,97	0,07
Investment policy	-0,78	0,01	0,09
Capital turnover	-0,63	-0,26	0,20
Coverage ratio	0,20	-0,18	-0,84

Rotated Component Matrix 2001

	Components		
	1	**2**	**3**
Life/non-life proportion	0,91	0,12	-0,07
Diversification index	0,55	-0,02	0,64
Size	0,06	-0,69	0,31
Expenses ratio	0,32	0,77	0,35
Reinsurance protection	0,08	0,81	0,37
Investment policy	-0,78	-0,06	-0,02
Capital turnover	-0,54	-0,51	0,19
Coverage ratio	0,29	-0,12	-0,75

Rotated Component Matrix 2002

	Components		
	1	**2**	**3**
Life/non-life proportion	0,85	0,26	0,29
Diversification index	0,22	0,14	0,88
Size	-0,22	-0,62	0,53
Expenses ratio	0,04	0,85	0,07
Reinsurance protection	-0,10	0,85	0,15
Investment policy	-0,79	0,09	-0,24
Capital turnover	-0,61	-0,51	0,07
Coverage ratio	0,73	-0,20	-0,35

Rotated Component Matrix 2003

	Components		
	1	**2**	**3**
Life/non-life proportion	0,29	0,86	0,17
Diversification index	0,34	0,41	0,74
Size	-0,32	0,02	0,75
Expenses ratio	0,87	0,07	-0,17
Reinsurance protection	0,88	-0,04	-0,05
Investment policy	0,04	-0,79	-0,10
Capital turnover	-0,38	-0,43	0,57
Coverage ratio	-0,35	0,62	-0,25

Rotated Component Matrix 2004

	Components		
	1	**2**	**3**
Life/non-life proportion	0,27	0,73	0,65
Diversification index	0,01	-0,08	0,94
Size	-0,75	-0,04	0,35
Expenses ratio	0,88	-0,01	0,18
Reinsurance protection	0,80	-0,16	0,19
Investment policy	0,06	-0,87	-0,17
Capital turnover	-0,52	-0,30	-0,44
Coverage ratio	-0,06	0,88	-0,17

Rotated Component Matrix 2005

	Components		
	1	**2**	**3**
Life/non-life proportion	0,20	0,80	0,48
Diversification index	-0,17	0,91	-0,17
Size	-0,79	0,17	-0,04
Expenses ratio	0,93	0,14	-0,03
Reinsurance protection	0,90	0,18	-0,10
Investment policy	-0,01	-0,45	-0,74
Capital turnover	-0,42	-0,59	-0,24
Coverage ratio	-0,09	-0,10	0,91

Appendix 4
Hierarchical clustering: Dendogram.
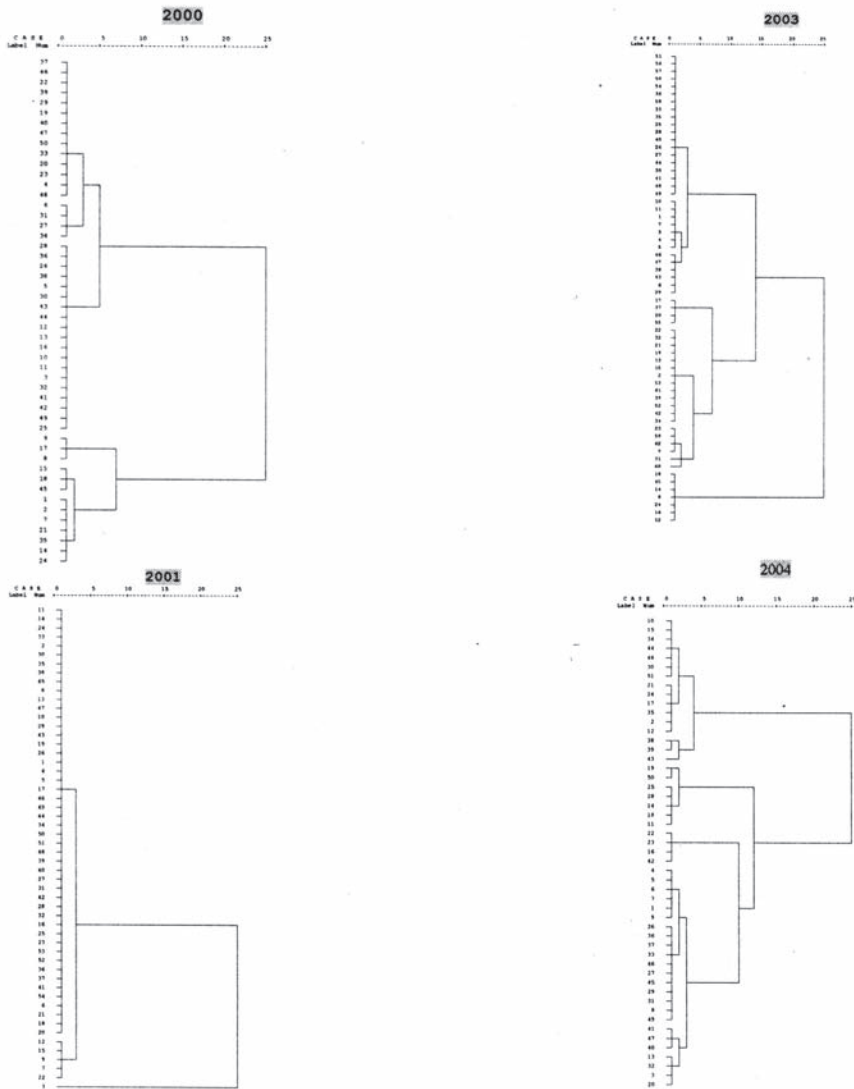
Appendix 4 (*Continued*)
Hierarchical clustering: Dendogram.