LOGIT MODELS IN MERGERS AND ACQUISITIONS IN THE FINANCIAL SECTOR

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Abstract

In the nineties in the financial sector there was a process of mergers and acquisitions across Europe. This trend started in the United States in the eighties, extending to the European continent. The liberalization of the sector in Spain has led to a disproportionate growth of the financial sector throughout the country, which has led to an expansion without regard to profitability and a competition that has led to grant loans without the necessary guarantees, and lowering the scoring level of financial institutions to undesirable levels. The crisis has demonstrated the need for a healthy, competitive and robust financial system to facilitate intermediation between holders of financial resources and those in need of investment. This study provides an analysis of the variables that have a marginal effect on the probability of participating in a financial restructuring process. Used models with categorical endogenous variable to represent the different situations of absorption considered. In the modeling process there have been used the econometric techniques of selecting variable, and the interpretability of these financial.

Key words: absorbent, absorbed, marginal effects, merged, nationalized

JEL Code: C13, G21, G34

Introduction

In the nineties, in the financial sector there was an unprecedented process of mergers and acquisitions in Europe. This trend started in the US in the eighties, quickly spreading to Europe. The main causes of mergers and acquisitions are the economies of scale achieved with new technologies, the entry of financial institutions on the Internet, deregulation and liberalization of the financial sector, reducing barriers for mergers (Hernando et al., 2009). The liberalization of the sector in Spain has led to a disproportionate growth of the financial sector throughout the country, which has led to an expansion regardless of profitability and competition has led to lend without the necessary guarantees, and lowering the scoring desirable level of financial institutions to unsavory dimensions. The new international

regulation aspects of prudential supervision is going oriented initially reduce the chances of default (PD). The new regulation on bank resolution is primarily aimed at reducing losses once the failed (LGD) and strict control of larger entities takes place. The political will of the European governments and supervisory bodies hospitalizations seem to be oriented banking regulation towards a clear goal, bank concentration, why are identified in this article banking and financial restructuring (policy and oversight bodies will) with mergers and acquisitions. Mergers and acquisitions have occurred prior to the international financial crisis we are experiencing, in many cases responding to strategic objectives, sector responses against new technological challenges or market internationalization, but mergers and acquisitions of financial institutions that happened in Spain after the first years of the crisis. It occurred as a result of national and international policy development, producing a "bank orderly restructuring" will of the Spanish government and the supervisory bodies. The demand for new capital over total risk-weighted assets (RWA) from 2013 to 2020, involves the intervention of entities from the state (nationalization), or mergers equal between similar entities (SIP) and the acquisition of entities (merger). The crisis has highlighted the need for a healthy, competitive and sound financial system that facilitates intermediation among holders of financial resources and those in need of investment.

In the international framework are trying to address the shortcomings of the international financial market in two ways. On one side stand measures to prevent future crises of the financial system in the whole economy. Strengthening the international financial architecture; strengthening supervision and adoption of new capital requirements in quality and in quantity. On the other hand, include measures to support the financial system, in which the States individually or jointly taken to restore confidence and mitigate liquidity pressures. The loss of confidence and consequent difficulties of access to international markets adopting new measures allowing ensure completion of the progress already made in the last year and a half in restructuring savings, through such measures as were necessary creation of the FROB[1] (Fund for Orderly Bank Restructuring) in the summer of 2009, and the publication of the results of the stress tests, the Reformation of the Banks Act in July 2010, as well as to reinforce the solvency of financial institutions February 2011, the restructuring of the financial sector in February 2012, the sanitation and sale of real estate assets in the financial

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[1]The Fund for Orderly Bank Restructuring (FROB) is a fund established by Royal Decree-Law 9/2009 of 26 June on bank restructuring and strengthening the resources of credit institutions, which has two main objectives: a) manage the restructuring of credit institutions and, b) to reinforce their own resources integration processes

sector May 2012 and finally the restructuring and resolution of credit institutions in August this year.

This study contributes to the literature devoted to econometric analysis using a bivariate logistic model with a focus on financial institutions internal variables. The case of Spanish banks is especially relevant, as it happens to have 45 banks and 11 entities, assuming a 75% reduction of the entities considered.

The aim of this paper is to analyze the marginal effects of internal variables provided by Bankscope Data Base of Spanish banks in the period 2004-2010, thus the data of financial institutions are studied before the crisis, in crisis and the policy response by national and international bodies such financial crises.

1   Theoretical Background

The operational synergies of a larger size are a common phenomenon in building operations (Sutton, 1980). By jointly produce more goods and services, merging firms can reduce unit costs by leveraging the advantages of economies of scale, from, for example, fixed costs, such as expenditures on central services and marketing are independent of the level of production (Fanjul and Maraval, 1985).

Another reason why historically been merged financial institutions is aiming to achieve a strong banking sector with great bodies and fewer entities controlled by the watchdog of them, leaving aside a fragmented sector and concentrated in few strong efforts and easier to control entities (Agoraki, M. et al., 2011). This concentration of financial institutions associated carries a problem of being "Too Big to Fail". This is for instance the case of Bankia in Spain (Carbó Valverde et al., 2013).

The role of banks in the financial system has changed substantially since the late 1970s onwards. The banking environment remained very stable regulation. The competition was kept to a minimum. In most developed countries during the 1980s, regulatory reform and innovation broke the barriers of financial markets and the high degree of segmentation is removed so far. The rapid pace of technological advances challenges the traditional approach to financial sector regulation. The 1990 is facing continuous demarcation of financial markets, which had begun in 1980, and banks face new risk management as a result of continuous disintermediation, innovation and increased competition, especially in the wholesale markets, where globalization has further eroded the barriers. The banks shift their business off balance, focusing his interest in business activities noninterest income. Because risk management has

expanded to include not only ALM[2]. But the management of off-balance sheet derivatives. Finally, Valverde et al. (2007) found economies of scale for Spanish savings banks in all size groups studied using different specifications of cost functions.

In this new situation, banks may raise the possibility of obtaining a larger scale through internal growth or external. While the former allows management control problems that arise with increasing size, it is too slow to take advantage in the short term, new advantages of a higher dimension. Mergers and acquisitions, however, by becoming a form of external growth, leading to a significant, while fast, enlarged, so charged special relevance in unstable environments with significant structural changes such as those suffered by the banking sector in recent years (Mitchell and Mulherin, 1996).

If we add all the international regulation since 1988, with the associated processes Basel I, II and III, the new capital requirements from Basel, CDSB (2010), the classification performed by the Financial Stability Board of entities systemic risk reserves countercyclical capital and reserves, and the regulatory change in Spain. In order to restructure and reorganize the Spanish financial system has led to a reduction in the number financial institutions in the country, either by melting equal or merger and institutions nationalized by the state, later sold to another which absorbs. From the perspective of the acquirer, the largest entities are those that have a greater ability to make a purchase or pay a higher premium being, in any case, greater cost reductions economies of scale unit when the acquired entity is part of a large, which could provide, for example, access to superior technology and better distribution channels (Cyree et al., 2000).

In the case of mergers, economies of scale would be relevant when entities are of small size (Sutton, 1980). In fact, mergers of banks with a large size, would rely more on other grounds such as: reducing costs through the close of business overlap geographically, achieve a better competitive position, or reduce inefficiencies. The objectives it is quantitatively analyze different scenarios, based on the Spanish market and estimate models generally participate in a merger, merge equal (SIP) and be nationalized by the state.

2   Data Sample Selection

The empirical analysis is conducted on a sample of banks in Spain during the period of 2004-2010 years. The accounting information required for this study comes from Bankscope data base. Based on the 309 selected entities, has carried out a purge eliminating those for which

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[2]ALM: Asset liability management, asset and liability management.

insufficient information is available, and separating the active entities of the dissolved entities dates before start of the study period. They have maintained data absorbent and companies acquired to date of the acquisition and subsequent integration of both data. Has not created any artificial variable that identifies the acquired entities which remains independent entity or merged with the acquirer, as the study examines only financial variables, and whether an entity is absorbed, although part of the financial market independent entity, it was considered that this entity as such disappears.

The sample consists of banks and savings as rural by having different capital requirements have not been considered boxes. Finally, we have a sample of 71 entities, including the most representative. The database has 482 variables for the balance sheet and the profit and loss account as well as various profitability ratios, delinquency rates of financial assets, etc. For models of entities involved in the process of bank restructuring, participate in a merger on equal terms and be nationalized tests were conducted with 93 variables which are part definitively models 24 variables: Time, Loans, Gross Loans, Total customer deposits, Impaired loans, Profit before tax, Tier 1 capital, Total Interest Expense, Margen intermediation, Benefit / Risk-weighted assets%, Income / Risk-weighted assets%, Impaired Loans / Gross Loans%, Impaired loans + foreclosed assets / Gross Loans + Foreclosed Assets%, Ratio of capital, Return on average assets (ROAA), Return on average equity (ROAE), Efficiency ratio, AF / AT, Personal expenses / Profit, Result / Number of employees, Result / No. Branches, Turnover / No. of employees.

Fig. 1: Evolution of financial restructuring operations
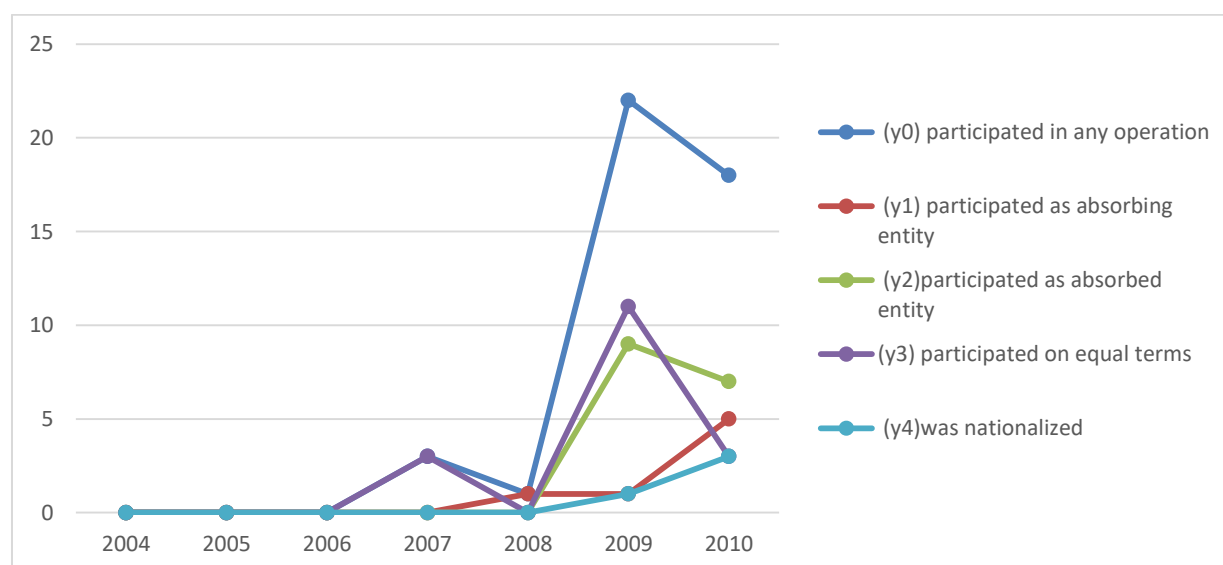
Source: Authors

To identify mergers, takeovers and nationalizations during the period 2004-2010, we resort to the Bank of Spain, and registration of relevant facts of the Nacional Commission of market values. 44 entities involved in a financial restructuring operation 7 absorbers entities, 16 absorbed, merged into 17 equal statuses and four nationalized identified. Evolution of financial restructuring operations in Spain is shown in Fig. 1. The number of financial restructuring operations increased significantly in 2009 and 2010.

3   Specification of the Models and Empirical Results

In order to fulfill declared aim of this paper, we evaluate the extent to which financial institutions are likely to engage in restructuring operations, if absorbent bodies, to be absorbed, to participate in a merger on equal terms and to be nationalized. For this categorical models with endogenous variable are used to represent different situations, merger or considered restructuring. According to empirical evidence of Thompson (1997), Worthington (2004) and Cyree, K. B., & Spurlin, W. P. (2012). the probability that an entity behaves as purchaser, acquired part of a merger on an equal footing or be nationalized depends on a number of features including compliance with capital requirements, profit per employee, profit per branch, size, and others, as discussed in the proposed models is included.

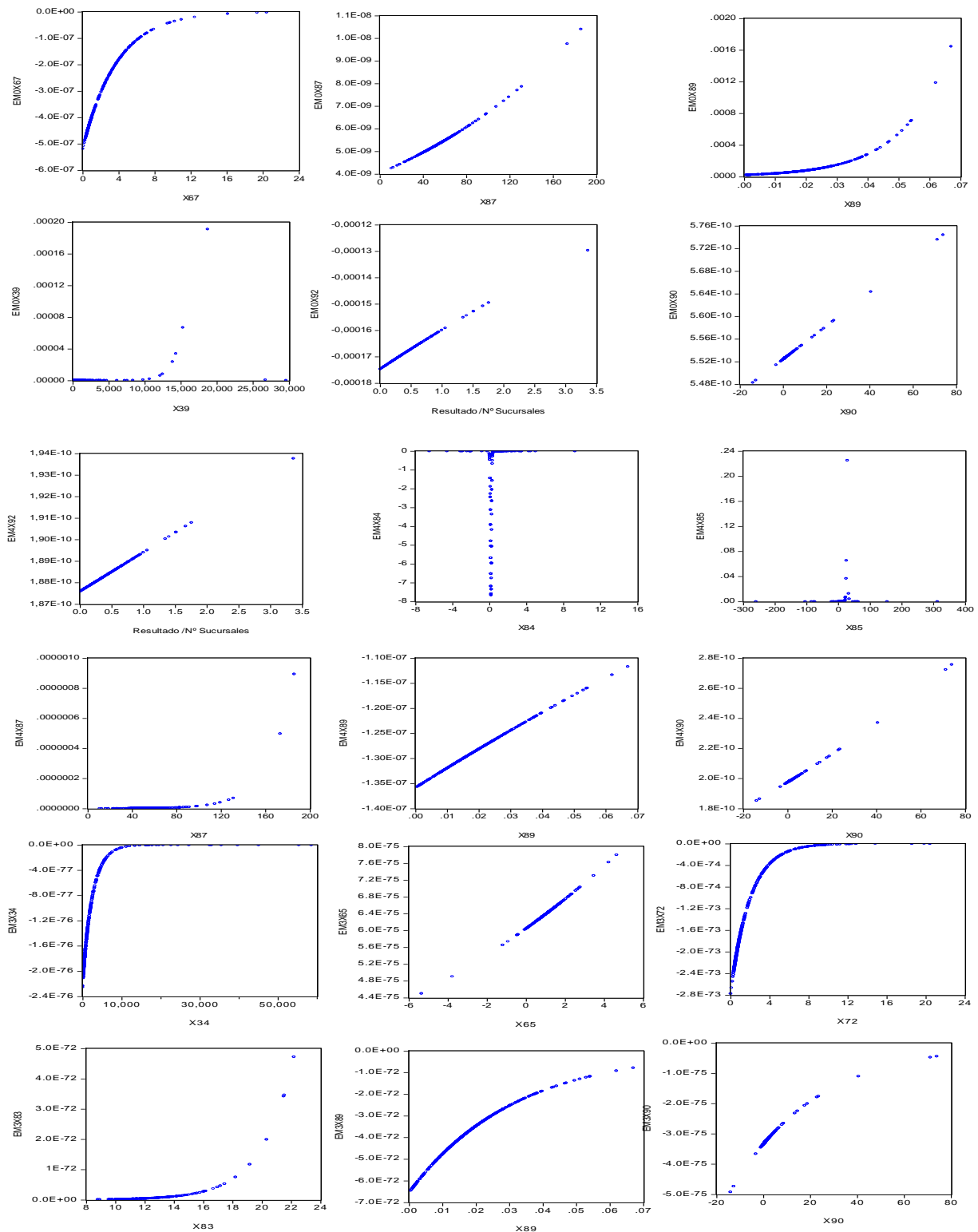### 3.1   Endogenous and Exogenous Variables

To study the process of participating in a process of financial restructuring, defined a binary variable, (Y0), which identifies whether an entity participates (1) or not (0). This variable was modeled based on different causal factors, and the model evaluates the probability for a particular entity, belonging to each of these two groups. Similarly, another artificial binary variable, (Y3) is defined for determining whether an entity has merged equal (1) or not (0). Finally, the binary dummy variable is defined, (Y4) to determine whether the entity has but nationalized by the state. The process of selection of explanatory variables was developed from information available in the database used. In the modeling process we have used the usual econometric techniques variable selection, and financial interpretability of these.

3.2   Estimated Results

To calculate the marginal effects of the exogenous variables on the endogenous variable, we have taken all values of the regressor variable from which you want to calculate the marginal effect, and other explanatory variables has remained constant. Then we calculated the

marginal effect on the dependent variable in each of the selected models.[3] Results are shown in Fig. 2.

Fig. 2: Marginal effects

Source: Authors

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[3] There have been over 70 models combining 94 exogenous variables.

Conclusion

Calculated values of marginal effects and odds ratios may lead to the following conclusions:

1. The time variable influences models participate in a process of financial restructuring and participating in a merger on equal terms; as we approached temporarily at both national and international policy development, the greater the probability of participating in a process of bank restructuring and merging equal. Which indicates that such entities are proactive to changes such as the creation of the FROB in 2009, the Reformation of the Banks Act in 2010 and the reinforcement of the solvency of financial institutions in 2011 and financial sector sanitation, sanitation and sale of real estate assets and financial sector restructuring and resolution of credit institutions in 2012.

2. Ratio of capital, has marginal effect for all values being positive to participate in a process of financial restructuring and to participate in merging equal, and negative for being an entity participating nationalized by the state. The major positive marginal effects are for values higher than 14%, which represents 30.53% of the observations. The major negative marginal effects are for values below 12% which represents 48.85% of the observations. Pasiouras et al. (2011) that stands in his study of the rules that lead to acquisitions in the banking industry, which acquirers are more profitable and more capitalized.

3. The return on average assets and average equity (ROAE-ROAA) have reverse marginal effect:

    a) For near zero marginal effect is negative for the return of assets and positive values in the range of 18% to 60% of participating in an overall process of financial restructuring.

    b) For values greater than 0.65% marginal effect is positive for the return of assets and negative values lower than 10% return on capital to participate in a merger on equal terms.

    c) For near zero return on asset values, the marginal effect is negative and for values in the range 20% to 47% return on capital marginal effect is positive.

4. Impaired Loans / Gross Loans +% and foreclosed assets Impaired loans / Gross Loans + Foreclosures% had marginal effects inverse:

    a) Participate in financial restructuring processes generally impaired Loans / Gross Loans% have negative marginal effects near zero, for values greater marginal effect is close to zero. Has positive marginal effects for values higher than 13%, accounting for 2.96% of the observations.

b) Engage in mergers equal impaired Loans / Gross Loans% has positive marginal effects for values higher than 16%, accounting for 0.99% of the observations. Impaired Loans + foreclosed assets / Gross Loans + Foreclosures% have negative marginal effects for values less than 8%, representing 85.20% of the observations; for values greater than 8% marginal effects are close to zero, representing 14.80% of the observations. Serrano (2013) already indicated in his study that only good quality management of assets which gets lower risk weighted assets is the only parameter that increases solvency.

5. The efficiency ratio, to participate in a restructuring process in general all values are positive marginal effect, to participate in an equal merger has positive effect on values higher than 73% of the observed values 8.02% are above 70%, indicating that the marginal effect is unrepresentative of the observed entities to be nationalized has positive marginal effect values higher than 39% of efficiency ratio of the observed values the 86.53% have values between 39% and 70%. The marginalizing effect is greater in areas pr1 to be nationalized entities.

6. The ratio of fixed assets to total assets, to participate in financial restructuring processes generally marginal effect is positive for all values being higher the marginal effect for values greater than 0.04 for mergers equal the marginal effect is negative, with higher values for the negative and near zero values greater negative marginal effects marginal effect; for entities nationalized the marginal effect is negative for all values. Conclusion matching in their study of the restructuring of the Spanish banking system after the crisis and solvency of banks, and the consequence for savings, which emphasizes that larger entities greater solvency, proposed by the Bank of Spain to increase the size of financial institutions through mergers in order to increase the solvency target.

7. Personal Cats / Benefit, the marginal effect is increasing for all values to be nationalized and negative to participate in mergers equal, is positive for near-zero values to be nationalized. Result / No. Branches, is negative to participate in a process of financial restructuring in general in all its values, is positive with very low marginal effects for participating in a merger equal and it is good to be nationalized, being for most near zero observations. This fact was concluded by Hernando et al. (2009) in his analysis of the determinants of purchases of national and transnational banks.

Acknowledgment

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