

**THE LONG RUN CONSEQUENCES OF M&A:  
AN EMPIRICAL APPLICATION**

**Cristina Bernad  
Lucio Fuentelsaz  
Jaime Gómez**

De conformidad con la base quinta de la convocatoria del Programa de Estímulo a la Investigación, este trabajo ha sido sometido a evaluación externa anónima de especialistas cualificados a fin de contrastar su nivel técnico.

ISBN: 84-89116-07-5

La serie **DOCUMENTOS DE TRABAJO** incluye avances y resultados de investigaciones dentro de los programas de la Fundación de las Cajas de Ahorros.  
Las opiniones son responsabilidad de los autores.

# THE LONG RUN CONSEQUENCES OF M&A: AN EMPIRICAL APPLICATION\*

*Cristina Bernad, Lucio Fuentelsaz, Jaime Gómez*

*Universidad de Zaragoza*

Dpto. Economía y Dirección de Empresas

Gran Vía 2 • 50005 Zaragoza

Phone: 976 761000 / Fax: 976 761767

E-mail: bernadc@unizar.es, lfuentes@unizar.es, jaime.gomez@unizar.es

## *Abstract:*

Mergers and acquisitions are frequently justified in terms of value creation or efficiency improvements. Nevertheless, the evidence is not consistent with the existence of benefits in terms of the costs, productivity, profitability or market value of the firms involved. A distinguishing feature of extant research is that it focuses on the assessment of the consequences of mergers around the time in which the operation takes place, limiting the possibility of observing a complete integration between the merged firms. In this context, the objective of this paper is to evaluate the effects of mergers and acquisitions on the long-run productivity of Spanish Savings Banks. Our results show that productivity improvements are found when we consider a long observation window.

*Keywords:* mergers, acquisitions, productivity, banks, Savings Banks

*JEL codes:* G21, G34

---

\*We acknowledge financial support from the Spanish Ministry of Science and Technology and FEDER (project SEJ2005-01856) and the *Regional Government of Aragón* (projects S09/2006-0670). We also acknowledge the comments and suggestions of J. Manuel Campa, Francisco J. Forcadell, Natalia Martín and José Angel Zúñiga, as well as the participants in the 2006 Academy of Management Conference, the XV Congreso Nacional de ACEDE and a seminar held at Universidad Rey Juan Carlos de Madrid.

# **THE LONG RUN CONSEQUENCES OF M&A: AN EMPIRICAL APPLICATION**

## **1. INTRODUCTION**

A key concern in strategic management is to explain performance differences between firms (Hawawini, Subramanian and Verdin, 2003). Not surprisingly, research has concentrated on the analysis of the strategic actions undertaken by firms in order to create economic value. Within this context, growth decisions have received special attention. Researchers have been concerned with the effects of the different directions of growth (diversification, product expansion, market expansion) on firm performance (see, for example, Rumelt, 1982). But, they have also shown a great interest in the mode of growth chosen, with a particularly important emphasis on mergers and acquisitions.

It can be suspected that the reason why acquisitions have received such overwhelming attention in the literature is, at least, twofold. First, these operations have been very frequent, both in the past and in recent years. Thus, despite the wave of restructuring that took place in the eighties (Markides, 1995) and later periods of low activity, recent years have witnessed an unprecedented number of mergers and acquisitions. In 2006, the volume of world M&A operations reached a record of \$3.8 trillion, an increase of 37.9% over last year's volume, amounting to a total of 36,958 transactions (Thompson Financial, 2007). Second, researchers have been attracted by the divergence of conclusions found both across and within the different fields from which their analyses have been undertaken, namely, strategic management, industrial organization and finance. A global assessment of the available evidence provided by numerous studies would lead us to the following stylised fact: Although the ex ante valuation of acquisitions tends to show positive returns (mainly received by the

stockholders of the acquired firms) the ex post assessments point in the opposite direction, with mergers having, on average, a negative effect (Caves, 1989).

The need to conciliate the occurrence of mergers with the conflicting empirical evidence has directed the attention of the literature on strategy towards the analysis of the role played by the acquisition and the integration processes. The introduction of this element is conceptually important, given that it provides an explanation for performance differences that is compatible with more traditional views (economic rationality, managers' optimism,...) but also offers an additional perspective to explain them. Indeed, how post-merger activities are designed and managed both at strategic and organizational levels should be critical for explaining performance differences between resulting firms. Furthermore, the relevance of the integration process should also be present in empirical work. The substantial redeployment of resources associated with mergers and acquisitions and the complexity of the activities involved would suggest that their evaluation should take a longitudinal perspective, focusing on their consequences in the long run.

Our objective in this research is twofold. Our first aim is to present a conception of mergers and acquisitions that implicitly attributes an important role to the integration process and extracts relevant implications for empirical designs. Borrowing from Jemison and Sitkin (1986), the paper starts by elaborating on the current explanation of performance differences from the point of view of strategic management. Then, we introduce the concepts of *potential* and *effective fit* and focus our attention on the integration process as an important driver of performance differences. Finally, we dedicate the last part of this discussion to critically assessing the empirical evidence and suggesting implications in terms of empirical work.

The second part of the paper implements some of the suggestions for empirical research. To achieve this, we focus on the long-run evaluation of the consequences of mergers and acquisitions in banking. As with research in other sectors of activity, the empirical evidence is far from conclusive. In a recent review of the international evidence for the financial sector, Amel, Barnes, Panetta, and Salleo (2004) conclude that, in general, mergers do not have positive effects on cost or profit efficiency and their effect in terms of value creation is scarcely important.

A reason that may justify the extant evidence is the specificities of the samples used in the analysis. If it is true that some of the beneficial effects from mergers have a general nature, it is also possible that some of those advantages show a local component (Amel et al., 2004). This would advise the development of national studies to capture the peculiarities of each market. Furthermore, existing research tends to assess the effect of these operations in short periods of time around the merger.<sup>1</sup> Nevertheless, the integration problems associated with the merging of culturally and structurally different firms (see, for example, Chatterjee et al., 1992) make the appearance of short-run positive effects highly unlikely, suggesting the convenience of considering their consequences in the long run. In contrast to the short-run analysis that predominates in the literature, and with the aim of assessing their long-run effects, we take advantage of the fact that the majority of mergers and acquisitions took place more than a decade ago. Importantly, we take a longitudinal view, which allows us to consider the changes in performance over time.

We focus on the effects of the mergers in the Spanish Banking sector, paying special attention to the ones involving Savings Banks. The study focuses on the detection of productivity improvements associated with these processes. The sample

---

<sup>1</sup> See, for example, Grifell-Tatjé and Lovell (1996).

used in the analysis has the advantage of being formed by relatively homogeneous firms in terms of activities or culture and it provides us with a sufficiently long observation window. In agreement with the strategies used by Murray and Witte (1980) or Haynes and Thompson (1999), our approach takes the Cobb-Douglas production function as its departure point. This approach has been frequently used in similar papers that deal with growth in output in relation to a series of inputs (see, for example, Brynjolfsson and Hitt, 1996). The methodology has the advantage of being simple and, having been used previously, of making our results comparable.

## **2. MERGERS AND ACQUISITIONS: EXPLANATION OF PERFORMANCE DIFFERENCES AND IMPLICATIONS FOR EMPIRICAL RESEARCH**

### **Strategic fit, organizational fit and the acquisition process**

A very large stream of literature has been devoted to studying the consequences of mergers and acquisitions. These operations are frequently justified in terms of shareholder value creation or efficiency improvements. Nevertheless, despite the magnitude of these organizational events, both in terms of the volume of resources and the number of operations, the differences in performance detected in the studies has puzzled researchers in various fields, who have developed alternative explanations. From the point of view of one of the prevalent conceptions in strategic management, the outcome of these processes may depend on three elements: the complementarities between the firms involved (strategic fit), the degree of compatibility in management systems and culture (organizational fit) and the development of the acquisition process (Jemison and Sitkin, 1986).

The first element, *strategic fit*, is defined “as the degree to which the target firm augments or complements the parent’s strategy and thus makes identifiable

contributions to the financial and nonfinancial goals of the parent” (Jemison and Sitkin, 1986: 146). The concept of strategic fit has mainly been associated with the idea of synergies and with the possibility for the resulting firm of obtaining relevant economies of scale and scope that reduce the firm’s average costs. Thus, for example, Penrose (1959) argues that organizational growth allows sharing quasi-public assets among different activities and products. According to Lubatkin (1983), these synergies may be of different types. Technical economies arise from an increase in productivity as a result of changes in the physical process of production that lead to a reduction of costs and an increase in market share or profitability. A second type, pecuniary economies, stem from market power. This is the case when a merger or an acquisition increases market concentration. The resulting firm could also limit rivalry through the increase in multimarket contact (Edwards, 1955; Bernheim and Whinston, 1990; Spagnolo, 1999). A final source of synergies arises from risk reduction as diversification proceeds. For example, more diversified firms could take advantage of the dispersion of their activities in order to use the profits obtained in one market to compete in another.

The concept of *organizational fit* refers to “the match between administrative practices, cultural practices, and personnel characteristics of the target and parent firms and may directly affect how the firms can be integrated with respect to day-to-day operations once an acquisition has been made” (Jemison and Sitkin, 1986: 146). Contrarily to the idea of strategic fit, which has focused on the positive effects of mergers and acquisitions, the concept of organizational fit centres on the possible disruptions caused by, for example, a clash between different cultures or management systems. In fact, the influence of cultural differences (or similarities) on the performance of mergers and acquisitions is receiving increasing attention in the



literature (see, for example, Nahavandi and Malekzadeh, 1988 or, more recently, Teerikangas and Very, 2006).

Jemison and Sitkin (1986) add a third element to their explanation of organizational differences in merger performance. They contend that the characteristics of the *acquisition process* also influence the success of the combination of different firms. By the acquisition process, they understand “the process of analysing, negotiating with, and acquiring another firm” (1986: 148). Four impediments account for the failures that may arise at this stage. First, the complexity of the analyses (industry or competitor analysis, financial analysis, ...) and the prevalence of traditional methods lead to a poor integration and an excessive emphasis on strategic fit over organizational issues. Second, once the acquisition process has started, the factors leading to a completion of the process are stronger than those restraining it, even if, as new information is unveiled, doubts arise about the convenience of the operation. Third, although some ambiguity may be convenient in the first stages of the acquisition, the lack of concrete agreements may transfer some of the problems to latter stages. Finally, a fourth influence on the acquisition process stems from a misapplication of management systems by the parent firm.

### **Potential fit, effective fit and the integration process**

The consideration of the concepts of strategic and organizational fit has clear implications for the explanation of performance differences in mergers and their evaluation. To understand them, we first refine the idea of fit and go to underline the relevance of the integration process.

First, we suggest a distinction between the *potential* fit that could be achieved and the fit *effectively* delivered. By potential fit we understand the optimum level of

integration that should be accomplished between the parent and the target firms in their strategic activities, resources and capabilities. The concept of potential fit cannot be considered in isolation, but essentially depends on the characteristics of the firms involved in the merger and the markets in which they operate. Importantly, it is associated with a maximum level of value creation, mainly obtained through the different types of synergies described at the beginning of this section. In contrast, by effective fit we understand the level of integration *actually* achieved after the integration process has finished. It is associated with a creation of value that will not exceed, but may be lower than, the maximum.

Aside from the effects of the acquisition process, the prevailing conceptualization in the literature tends to attribute the differences between maximum and effective value creation to the degree of organizational fit between the firms involved. At first sight, organizational fit would seem to depend on the differences (or similarities) between the merged firms. Therefore, we would expect that a higher compatibility (in terms of administrative practices, culture or personnel characteristics) would reduce the number and importance of disruptions in the integration process and increase the probability of a successful implementation.

Second, and more important, the distinction between potential and effective fit focuses attention on the relevance of the *integration process*. By the integration process we understand the group of activities designed to obtain the maximum degree of strategic and organizational fit. It starts when the acquisition has finished and ends when the consequences of all the conscious efforts directed to achieving the optimum fit have ceased having an effect on the new organization. This process, that develops in two different levels - *strategic and organizational* - is complex in nature and, more

importantly, its consequences may have an impact on performance over long periods of time.

From a *strategic* point of view, the literature on strategic management has stressed the role of acquisitions as a way of reconfiguring firm resources and as a means of achieving business change (see, for example, Capron, Dussauge and Mitchell, 1998 or, more recently, Karim and Mitchell, 2000).<sup>2</sup> Reconfiguring may proceed through restructuring (the “buying or selling of businesses within an organization”, Karim and Mitchell, 2000: 1066) or through redeployment (the “use by a target or acquiring business of the other business’ resources”, Capron, Dussauge and Mitchell, 1998: 635). So, the activities carried out in the integration process involve the reallocation, recombination, selling or buying of different resources. These may include managerial expertise, supplier skills, manufacturing know-how, financial resources, innovation capabilities, brand names, marketing expertise or sales and distribution networks (Capron and Mitchell, 1998a). Capron and Mitchell (1998a, 1998b) provide evidence that this process is especially important in target firms, which tend to suffer a more extensive restructuring than acquirers. Nevertheless, they also conclude that a bilateral redeployment of resources is common, that is, resources are transferred both from the acquirer to the target and from the target to the acquirer.

Reconfiguration constitutes as a central process in the integration stage. Through it, firms take advantage of the opportunities for augmenting or complementing the parent’s strategy and create synergies. Moreover, the research by Capron and Mitchell (1998b) suggests that, in order to improve their capabilities, firms’ reconfiguration must be substantial. In their analysis of 253 mergers and acquisitions undertaken by firms in North America and the European Community, high bilateral resource redeployment was

---

<sup>2</sup> This view is also supported by the data. For example, Karim and Mitchell (2000) show how acquiring firms changed more product lines than non-acquirers and were also more prone to the introduction of new product lines.

associated with improved capabilities in the majority of the cases. Moderate bilateral redeployment and unilateral redeployment presented a lower impact.

The integration process also proceeds at the *organizational* level. From this perspective, organizational fit is achieved through the process of acculturation. Acculturation is defined as “changes induced in (two cultural) systems as a result of the diffusion of cultural elements in both directions” (Berry, 1980: 215). The literature on psychology recognises that acculturation takes place through three different stages: contact, conflict and adaptation (Berry, 1983). In the context of mergers and acquisitions, contact occurs when the cultures of the merging firms interact. Conflict may arise as a consequence of the resistance of one of the firms (or all) to assume the cultural or administrative practices of the other(s). Finally, adaptation is seen as the outcome of the previous steps and could result in adjustment, reaction or withdrawal (Berry, 1980).

The conceptualization of acquisitions reviewed in the previous paragraphs has implications for the explanation of performance differences in mergers and their evaluation. Firstly, the concepts of potential and effective fit and the importance attributed to the integration process should lead us to recognise that, even assuming value-maximising behaviour, not all mergers and acquisitions will render positive results. On the one hand, negative performance could arise from an incorrect evaluation of the potential strategic fit that could be achieved. For instance, managers could be overoptimistic in terms of the synergies that could be delivered by the resulting firm (Roll, 1986) or they could find unexpected values in the acquired firm.<sup>3</sup> The resource-based view of the firm (Wernerfelt, 1984; Barney, 1991) has emphasised the invisibility (and ambiguity) of firm resources and capabilities, and this could be aggravated by the

---

<sup>3</sup> This is what Lubatkin (1983) calls the “manager make mistakes” explanation.

ambiguity that frequently affects the acquisition process (Jemison and Sitkin, 1986). On the other, the integration process could play a critical role in the reduction of the distance between maximum and effective value creation. From a strategic point of view, the substantial reconfiguration of firm resources and activities associated with mergers and acquisitions suggests that, in order to reduce the distance between potential and effective fit, firms must engage in complex activities whose consequences may be indeterminate. In fact, the performance of the resulting firm could be negatively affected by the processes of redeployment and divesting (Capron, 1999). Similarly, the complexity surrounding concepts such as organizational culture would bring us to close conclusions from an organizational perspective.

Second, the temporal pattern of the benefits attributed to mergers and acquisitions would critically depend on a potentially long-lasting integration process, whose indeterminate consequences may only be visible after long periods of time. As Karim and Mitchell (2000: 1065) point out "... post acquisition activities and implications will tend to take place over periods of years." For example, their evidence suggests that the elimination of product lines is more visible in the long term. Strategically, the temporal pattern will typically depend on several factors such as the type of integration or the kind of resources and activities reconfigured. In the first case, the literature has largely recognised the differences associated with related and unrelated diversification, with the former not only presenting a higher potential for synergies, but also requiring a more intense (and potentially longer) process of integration than the latter. In the second it seems clear that some resources (financial, for example) are more easily transferable than others (e.g.: product innovation capabilities).

Again, the implications would be similar when considering the consequences of the integration process from an organizational perspective. Teerikangas and Very (2006:

S39) point out that managers' efforts to take into account cultural differences during the process "should be seen in a long-term and dynamic perspective". Organizationally, the timing would depend on whether firms are able to achieve congruence or not. Congruence would come when both organizations agree on the preferred mode of acculturation (Nahavandi and Malekzadeh, 1988). This tends to happen, for example, in related diversifications in which the members of the acquired firm are willing to adopt the culture and organizational practices of the acquirer and the acquirer values uniculturalism in an attempt to achieve synergies. In contrast, differences between the preferred modes of acculturation between the partners would lead to disruptions and acculturative stress (Nahavandi and Malekzadeh, 1988), reducing value creation or delaying performance benefits. The fact that, in approximately three quarter of the cases, the managerial capabilities of the acquirer (reporting systems, planning tools, financial expertise, ...) are transferred to the acquired (Capron and Mitchell, 1998b) may clarify why employee resistance may constitute an obstacle to integration.

### **Implications in terms of empirical designs**

Research on the effects of mergers and acquisitions on performance has taken place in many fields, including finance, industrial organization and strategic management. Nevertheless, the empirical research has largely been dominated by the use of the event studies methodology popularized by finance scholars. Simply stated, this method is based on the idea that financial markets are able to offer a correct valuation of the expected returns coming from any share traded on the stock exchange. Researchers using this methodology assess the impact of the announcement of the acquisition on the (abnormal) returns of the target and bidder firms. In order to obtain a measure of abnormal returns, the method compares the observed return of the share

around the announcement date with the performance of the market. A positive value of the difference between both measures provides grounds for affirming that the operation has created value.

Despite its popularity, this methodology may be criticised on a number of grounds. First, the need to make use of financial market data tends to restrict the samples used in the analyses to large firms. This is surprising, given that we would expect the potential for scale or scope economies to be higher in small and less diversified businesses. This fact should condition our interpretation of existing evidence as generally limited to big firms.

Second, and more important, although the foundations of this methodology are well grounded, they critically depend on an assumption of perfect foresight that is at odds with the conception of the integration process detailed in the previous subsections. The complexities of the integration process in both dimensions, strategic and organizational, would create strong doubts about the ability of financial markets to correctly predict outcomes. Even assuming that the analysts had the appropriate methods, it would be possible for them to approximate their valuations to those corresponding to potential fit. They would have more difficulties to predict all the organizational and strategic events that condition effective fit. The reasons for expecting bias in the estimation of gains associated with acquisitions would be aggravated by the fact that evaluation methods do not tend to be suited to the assessment of the organizational dimension (Jemison and Sitkin, 1986) and by the unexpected values revealed during the integration process.

Interestingly, this criticism is consistent with research that compares ex-ante (finance based) and ex-post (industrial organization or strategic management based) evaluations of performance and resembles an old discussion in the industrial

organization literature about the virtues of hindsight versus foresight (Caves, 1989). The comparison of the two types of measures leads to a clear conclusion: whereas financial methods tend to attribute consistent gains to acquisitions (especially to the acquired firm), the ex-post assessments tend to reach the opposite conclusion. The most recent evidence confirms that ex ante and ex post evaluations of acquisitions are poorly correlated. For example, Schoenberg (2006) finds no statistically significant relationship between the abnormal returns obtained in 61 British acquisitions of European firms and subjective assessments of managers and experts. This author contends that the lack of correlation could be due to the difficulties of investors and managers to predict the outcomes of the integration process (Larsson and Finkelstein, 1999; Very and Schweiger, 2001).

Third, and related to the previous point, the importance of the integration process not only makes forecasting a difficult task, but also suggests that, whichever the method used, the performance effects of mergers and acquisitions can only be valued in the long run. This has not been the approach followed by the literature on mergers and acquisitions, which has generally tended to analyse the reaction of financial markets around the announcement of these operations. For example, Campa and Hernando (2004), in a review of the empirical literature on finance, show how researchers tend to use observation windows whose maximum size usually ranges from 3 months before to 3 months after the announcement. Although the ex post evaluation of performance usually considers longer periods of time, this tends to be limited to the three years after the operation (see, for example Rhoades, 1998). In the light of the aforementioned arguments, this window might not be wide enough to capture the consequences of the integration process.<sup>4</sup>

---

<sup>4</sup> Of course, the duration of the integration process could be different depending on factors such as the industry analysed, the firms involved or the type of integration pursued.



Furthermore, research has frequently neglected the longitudinal dimension, with the consequence that mergers and acquisitions are assessed at a unique point in time after announcement or completion. This fact has probably hidden important information about the timing and the sign of performance effects. Managers and researchers would be surely interested in knowing the time pattern of those effects. For example, the likely disruptions caused by acquisitions could be followed by an initial reduction in value creation, later converted into positive performance as integration proceeds and the resulting firm captures the forecasted synergies.

In conclusion, the arguments developed in the previous paragraphs lead us to propose that a more dynamic view should be considered in the assessment of the consequences of mergers and acquisitions.<sup>5</sup> The relevance attributed in the literature to the integration process and the complexities surrounding it suggest that, whichever the method used, the consequences should be evaluated in the long run and taking the longitudinal dimension into account. Although it is true that papers adopting an ex post view tend to use longer windows, the bulk of the literature focuses on a very short period after announcement or completion, which may not be enough for the effects of the integration process to be unveiled.

### **3. THE CONSEQUENCES OF MERGERS AND ACQUISITIONS IN THE BANKING SECTOR**

#### **Empirical evidence**

In order to offer a long-run analysis of performance effects that incorporates the longitudinal dimension, we have chosen the banking sector. The empirical evidence on the consequences of mergers and acquisitions in banking is relatively important, but no

---

<sup>5</sup> Note, that we are not saying that mergers and acquisitions will show positive performance effects in the long run. In fact, the distinction between potential and effective fit attempts to recognise that some value could be destroyed.

conclusive. There are many articles that show a positive effects of mergers on the resulting firms (Halpern, 1983; Berger and Humphrey, 1991; Shaffer, 1993; Fixler and Zieschang, 1993; Resti, 1998; Rhoades, 1998; Haynes and Thompson, 1999; Humphrey and Vale, 2002), but we can also find numerous studies obtaining no evidence of such improvements (Berger and Humphrey, 1992; Srinivasin and Wall, 1992; Srinivasin, 1992; Linder and Crane, 1992; Rhoades, 1990, 1993; and Vander Venet, 1996).

There is no doubt that some of the reasons provided above may justify the absence of consensus among the different studies. Nevertheless, we may find additional reasons arising from the specificities of the samples used or the periods considered in the analyses. On the one hand, some papers assess the effect of mergers in a regulated context. In this situation, the restrictions introduced by regulation could have constituted an impediment to the full achievement of scale or scope economies. The process of deregulation that took place in the majority of developed countries should have increased the freedom of banking firms to engage in these operations, with the only restriction of economic viability. Therefore, in a deregulated context, we should expect an increase in the probability of finding significant effects on efficiency. On the other hand, the differences in regulation and the specificities of the financial markets of each country do not allow a direct comparison between them (Amel et al., 2004).

The evidence on the Spanish banking sector concludes that mergers and acquisitions do not have significant effects on the different performance measures used. Raymond (1994) focuses on Savings Banks, without reaching a clear conclusion on the net effect of mergers on costs. In a similar vein, the results of Fuentes and Sastre (1999) are also ambiguous in terms of the consequences on efficiency levels or the capacity to generate profits. In a more general study, Grifell-Tatjé and Lovell (1996) examine the

effects of deregulation on productivity, paying attention to the consequences of mergers between Savings Banks. From their analysis we may conclude that unequivocal efficiency improvements are only found in those cases in which integration takes place between efficient firms. Interestingly, the resulting firms show a decline in productivity once consolidation takes place.

More recently, Carbó, Humphrey and Rodríguez (2003) analyse the mergers that took place between Savings Banks in the period 1986-1999. Their results show that the merged firms experienced a higher increase in average costs than the rest of the industry. Nevertheless, their results are not significant when they analyse differences in average return on credits and loans or return on assets. Finally, Carbó and Humphrey (2004) analyse the effects of mergers between Savings Banks in the period 1986-2000. Even though, on average, these authors find that merged firms were able to reduce average costs, the individual analysis of the operations leads to the conclusion that this was only true in approximately one third of the cases.

### **Model specification**

To evaluate the consequences of mergers and acquisitions, the literature usually tries to find some indicator of gains in efficiency or value creation. The alternatives used include the calculation of the distance from the firm to the efficient frontier (Vander Vennet, 1996), changes in productivity (Haynes and Thompson, 1999) and the development of event analyses that compare the prices of the firm's shares before and after the merger (Siems, 1996).

The approach followed in this paper centers on the analysis of productivity. We estimate a Cobb-Douglas production function in which labor and capital constitute the two main inputs. This procedure has the advantage of being relatively simple to

implement and, given that it has been used previously in the analysis of mergers, we can compare our results to the ones obtained in previous research. The output ( $Q$ ) of a financial intermediary  $i$  at moment  $t$  can be expressed as:

$$Q_{it} = A L_{it}^{\alpha} K_{it}^{\beta} \quad (1)$$

where  $L$  represents the amount of labor,  $K$  stands for capital,  $A$  is a parameter and  $\alpha$  and  $\beta$  are coefficients that indicate the importance of the effect of the different factors on total output. To estimate the model, it has to be transformed into its linear specification, taking logarithms in (1), as follows:

$$\ln(Q_{it}) = \ln(A) + \alpha \ln(L_{it}) + \beta \ln(K_{it}) \quad (2)$$

One advantage of acting in this way is that the model can be augmented to incorporate the effect of technological change or mergers on productivity. In the latter case, their impact can be measured through the introduction of dummy variables for each merger. Thus, we can compare productivity before and after consolidation. With the introduction of the dummy variables, model (2) can be expressed as:

$$\ln(Q_{it}) = \ln(A) + \alpha \ln(L_{it}) + \beta \ln(K_{it}) + \sum_t \delta \text{merger}_{i,t-s-1} \quad (3)$$

where the  $(t-s-1)$  “merger” dummy variables equal one in the (first, second, third, ...) year after firm  $i$  has been involved in a merger or acquisition process and zero otherwise.

Model (3) can be easily estimated through the usual regression methods. Given that the presence of non-observable variables is usual in strategic management (Godfrey and Hill, 1995), our estimation includes firm-fixed effects with the aim of including their possible influence on productivity. So, the final model takes the following form:

$$\ln(Q_{it}) = \ln(A) + \alpha \ln(L_{it}) + \beta \ln(K_{it}) + \sum_t \delta \text{merger}_{i,t-s-1} + \varepsilon_{it} + \gamma_i \quad (4)$$

where  $\varepsilon_{it}$  is an error term,  $\gamma_i$  is the firm-fixed effect and the other variables have been previously defined.

### **Sample and variables**

The sample used in the analysis covers the whole population of Savings Banks that were operating in Spain between 1986 and 2004. During that period, there were a total of 20<sup>6</sup> mergers and acquisitions, with the subsequent reduction in the number of firms (77 Savings Banks in 1986, 46 in 2004). In the last two decades, the Spanish banking sector has undergone important changes. Firstly, competition was tightly regulated until the final decades of the last century. A clear consequence of this was that banks were not allowed to use competitive variables usually employed in other industries, such as prices or location. In the case of the Savings Banks, the elimination of branching restrictions took place in 1989. In the three first years after deregulation (1990, 1991 and 1992), the number of firms dropped from 76 to 53. Secondly, the diffusion of new technologies has substantially changed how firms compete. The investment needed to acquire technology and the necessity to reach a relatively large size in order to produce efficiently may have constituted additional reasons for firms to grow.

At this point, it is important to highlight that our sample presents several advantages for carrying out the type of analysis presented in this research. On the one hand, we would expect the entities included in our sample to be more homogeneous than the ones usually considered in other merger and acquisition studies. Therefore, as we have previously argued, a greater similarity in terms of resources, management

---

<sup>6</sup> The actual number of M&A is 24. However, we only consider that an acquisition takes place when the assets of the acquired firm represent, at least, a five percent of the total assets of the resulting firm. Therefore, the number of mergers and acquisitions used in the empirical analysis is 20.

philosophy or firm culture should increase the probability of the success of the merger and ensure positive performance. On the other hand, the fact that most of the mergers and acquisitions took place at the beginning of our observation window allows us to observe the consequences of consolidation on productivity in the long run.

The data needed to estimate our model is provided by the Spanish Savings Banks Association (CECA). More precisely, in the majority of the cases the variables have been constructed from information available on the balance sheet for each bank. To select the variables, we have followed the intermediation approach (Sealey and Lindley, 1977). As a consequence, our dependent variable (total output,  $Q$ ) includes the value of loans and investments for each firm (Haynes and Thompson, 1999). Labor ( $L$ ) is proxied by the number of full-time employees. Finally, capital is measured in two complementary ways. The first considers the value of fixed assets in each year ( $K1$ ). The second captures the liquid assets of the firm ( $K2$ ).<sup>7,8</sup>

In relation to the effect of mergers on productivity, our approach is to define a dummy variable representing the resulting firm. In this context, an important question is the identification of the moment from which the effect of the merger has an impact on productivity. Given that the literature does not offer clear indications about this issue, researchers have considered different observation windows to assess the consequences of mergers. For instance, Rhoades (1993) compares the performance of the resulting firms during four years after the merger, while Fixler and Zieschang (1993) only consider the following year. Haynes and Thompson (1999) assess the evolution of the production function in the year in which the merger takes place and five years after the

---

<sup>7</sup> All the monetary variables are expressed in constant prices.

<sup>8</sup> A detailed definition of the variables can be found in the Appendix.

merger. In general, in all these cases, the consequences of the merger are evaluated in the short or medium term, but their long-term effects are not considered.<sup>9</sup>

Our hypothesis is that, although it is true that some effects can be observed in the short run (mainly those due to the elimination of redundant branches or overhead costs), there are other effects that should only be observable in the long run. As we have commented, one advantage of our sample is that most of the mergers take place during the first years of the observation period. Therefore, we have enough time to evaluate their consequences. In order to take this possibility into account, our augmented production function includes 12 dummy variables. The first one, “*merger t*” equals one the year in which the merger takes place. In a similar vein, we define 10 additional dummy variables (*merger t+1... merger t+10*) for each of the 10 years after the merger. An additional dummy variable (*merger final period*) is defined for those periods after the tenth.

Finally, Savings Banks’ productivity may have been affected by other factors not considered in our model, including variations in the economic cycle, interest rates or other aspects that change over time. With the aim of including these factors in the estimation, the model includes 18 yearly dummy variables.

#### **4. RESULTS**

Table 1 shows the results of the estimation of the augmented Cobb-Douglas function presented in Section 3. All the models are estimated over the 1,062 available observations. Models 1 to 3 are estimated using traditional OLS, whereas models 4 to 6 present the results of a fixed effects estimation. In order to account for

---

<sup>9</sup> In Spain, Carbó, Rodríguez, and Humphrey (2003) analyze the consequences of the mergers comparing the results three years before and three years after the merger (they allow a two-year period either side of the merger). Fuentes and Sastre (1999) consider two four-year periods before and after the merger. Similarly, Carbó and Humphrey (2004) analyze average costs one year after the merger and the second year after it.

heteroscedasticity, all the standard errors have been calculated with the method proposed by White (1980). As it is shown, all of them are globally significant, presenting a high value of the adjusted R-squared statistic.

The first column in Table 1 only includes the three explanatory variables considered in equation [2]. All of them show a positive sign and are statistically significant. Labor is the main determinant of production, confirming the importance of the human factor in banking activities (its elasticity is directly derived from the sign of the coefficient of the variable), while the relative importance of fixed and especially liquid assets is lower (although positive), in line with previous research (Haynes and Thompson, 1999). We can also observe that the sum of the coefficients that accompany the different variables is about 1.12 which, according to the properties of the Cobb-Douglas function, means that the technology presents increasing returns to scale (given that the sum is greater than unity).

The second column includes a yearly dummy variables (with 1986 as the base year) to control for the effect of financial or economic circumstances that change from year to year. Model 2 is preferred to model 1 in terms of explanatory power, as shown by the increase in the value of the Adjusted R-squared and the significance of the F-test that compares both models. It can be seen that the coefficients of these variables -and, thus, total production- has steadily increased over time (the only exception are the years 1989 and 1990). This trend implies that savings banks' productivity has progressively grown, with independence of the evolution of the other variables. The sign of the coefficients of the rest of explanatory variables remains positive and the only change with respect to the previous estimation is an increase in the elasticity of the liquid assets and a slight reduction in the other two coefficients.



Finally, model 3 adds the *merger* variables in order to account for the effects of mergers and acquisitions among savings banks. Model 3 is, again, slightly preferred to model 2 in terms of global fit. The merger variables present a negative sign in the years following the operation. More precisely, their negative effect is significant up to six years after the merger or acquisition has taken place, being not significant after that period. Therefore, our results suggest that mergers and acquisitions do have negative effects on productivity in the few years following the operation. However, the negative impact disappears over time.

The models presented in the first three columns of Table 1 do not account for the fact that the savings banks included in our sample could be heterogeneous in non-observable firm specific characteristics. If this were the case, all the three first models could suffer from specification problems. In order to take into account this possibility, models 4, 5 and 6 replicate the estimations of models 1, 2 and 3 including firm fixed effects to capture firm specific characteristics such as managerial talent or differences in organizational structure. Given that the review of the literature has shown that mergers and acquisitions frequently result in a bilateral redeployment of resources, a new fixed effect is assigned every time a merger (or acquisition) takes place (we later relax this assumption).

The joint test of the fixed effects is significant, revealing that the estimations in columns 4 to 6 are preferred to the ones in columns 1 to 3. Furthermore, both the Hausman test that compares fixed and random effects estimations and the Breuch-Pagan statistic are also significant, leading us to conclude that models 4 to 6 are preferred to their random effects counterparts. In model 4, labor is positive and highly significant, while it can not be rejected that the coefficients that accompany the other two variables are different from zero. This situation changes when the yearly dummy variables are

included (model 5). Now, labor and fixed assets present a positive sign. Contrarily, the higher the level of liquid asset, the lower the productivity obtained by the firm. It is also important to highlight that model 5 presents a better global fit than model 4, as revealed by the F test that compares both models.

Finally, column 6, similarly to column 3, also includes the *merger* variables. The results are very similar to the ones presented in column 5 with the same sign and significance for the explanatory variables. The coefficients of the variables *merger t+n* are always non-significant. A preliminary look at this estimation would suggest that mergers do not have any effect on firm productivity. However, the coefficients of these variables can not be analyzed independently of the value of the coefficients of the fixed effect for each firm. In order to interpret our results correctly, we must take into account that, when a merger between two (or more) banks takes place, a new fixed effect was assigned to the resulting firm. Therefore, a significant difference in the coefficients identifying the firm specific effects before and after the merger would lead us to conclude that the operation is either beneficial or detrimental to productivity.

A comparison of these coefficients before and after the merger (not shown here) confirms that the value of the fixed effect always increases, except in four cases. It is important to clarify that in order to make this comparison possible, we perform the analysis by testing for statistical differences in the weighted (by the size of the dependent variable) coefficient of the fixed effects associated with the firms involved in the merger and the coefficient of the resulting firm.<sup>10</sup> In two of these mergers, the size of the acquired firm is too small (less than 15% of the total size of the resulting firm) to significantly affect the productivity of the acquiring bank. Thus, only in two mergers between firms of relatively similar size the fixed effect does not change significantly.

---

<sup>10</sup> We test the null hypothesis that the mean values of the coefficients are not different from one another.

**TABLE 1. ESTIMATION OF THE AUGMENTED COBB-DOUGLAS FUNCTION (ROBUST ESTIMATES, FULL SAMPLE)**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	4.18*** (25.58)	4.03*** (54.24)	3.97*** (54.09)	3.29*** (-7.45)	8.95*** (31.52)	8.9*** (31.01)
Ln K1	0.32*** (8.65)	0.24*** (13.41)	0.26*** (13.47)	-0.04 (-0.85)	0.04*** (2.65)	0.06*** (3.40)
Ln K2	0.06*** (2.16)	0.16*** (12.96)	0.15*** (11.76)	-0.01 (-0.42)	0.03*** (-2.83)	0.04** (-2.93)
Ln L	0.76*** (16.56)	0.64*** (29.17)	0.64*** (28.05)	2.57*** (33.16)	0.57*** (14.54)	0.56*** (13.77)
Dummy 1987	-	0.1*** (3.00)	0.1*** (2.98)	-	0.12*** (7.39)	0.12*** (7.37)
Dummy 1988	-	0.23*** (6.85)	0.23*** (6.80)	-	0.27*** (17.55)	0.27*** (17.49)
Dummy 1989	-	0.22*** (6.97)	0.22*** (6.91)	-	0.32*** (20.42)	0.32*** (20.34)
Dummy 1990	-	0.20*** (6.42)	0.20*** (6.61)	-	0.33*** (18.56)	0.33*** (18.61)
Dummy 1991	-	0.27*** (7.89)	0.28*** (8.26)	-	0.41*** (21.72)	0.41*** (21.62)
Dummy 1992	-	0.32*** (8.71)	0.34*** (9.12)	-	0.51*** (24.52)	0.51*** (24.18)
Dummy 1993	-	0.32*** (8.32)	0.34*** (8.73)	-	0.54*** (23.21)	0.54*** (22.92)
Dummy 1994	-	0.38*** (10.40)	0.4*** (10.86)	-	0.61*** (26.97)	0.62*** (26.81)
Dummy 1995	-	0.41*** (11.32)	0.44*** (12.02)	-	0.66*** (30.25)	0.67*** (30.07)
Dummy 1996	-	0.46*** (12.39)	0.48*** (12.96)	-	0.74*** (33.44)	0.74*** (33.38)
Dummy 1997	-	0.59*** (16.24)	0.6*** (16.70)	-	0.86*** (39.74)	0.86*** (39.32)
Dummy 1998	-	0.70*** (20.03)	0.71*** (20.25)	-	0.98*** (43.59)	0.98*** (43.16)
Dummy 1999	-	0.81*** (23.86)	0.82*** (24.25)	-	1.08*** (46.43)	1.08*** (45.70)
Dummy 2000	-	0.93*** (27.71)	0.94*** (27.18)	-	1.19*** (49.71)	1.18*** (48.58)
Dummy 2001	-	1.01*** (29.42)	1.02*** (29.14)	-	1.28*** (50.28)	1.27*** (49.62)
Dummy 2002	-	1.12*** (30.34)	1.13*** (29.32)	-	1.38*** (52.87)	1.37*** (51.15)
Dummy 2003	-	1.22*** (33.18)	1.22*** (31.50)	-	1.47*** (52.60)	1.47*** (50.45)
Dummy 2004	-	1.33*** (37.04)	1.33*** (35.06)	-	1.58*** (54.13)	1.58*** (52.58)
Merger t	-	-	0.08* (-1.89)	-	-	-0.01 (-0.14)
Merger t+1	-	-	0.08 (-1.58)	-	-	-0.01 (-0.24)
Merger t+2	-	-	-0.09* (-1.91)	-	-	-0.01 (-0.18)
Merger t+3	-	-	-0.09* (-1.91)	-	-	-0.02 (-0.65)
Merger t+4	-	-	-0.11** (-2.54)	-	-	-0.04 (-1.17)
Merger t+5	-	-	-0.11*** (-2.73)	-	-	-0.04 (-1.09)
Merger t+6	-	-	-0.11** (-2.24)	-	-	-0.03 (-0.93)
Merger t+7	-	-	-0.07 (-1.27)	-	-	-0.02 (-0.55)
Merger t+8	-	-	-0.06 (-1.14)	-	-	0.00 (0.02)
Merger t+9	-	-	-0.05 (-0.90)	-	-	0.02 (0.57)
Merger t+10	-	-	-0.02 (-0.39)	-	-	0.04 (0.96)
Merger final period	-	-	-0.02 (-0.51)	-	-	0.02 (0.65)
Fixed effects	-	-	-	Significant	Significant	Significant
Adjusted R <sup>2</sup>	0.9112	0.9822	0.9827	0.9676	0.9963	0.9963
F test vs (1) or (4)	---	232.76***	145.45***	---	302.43***	184.68***
F test vs (2) or (5)	---	---	2.57***	---	---	1.90**
Hausman	---	---	---	569.83***	1362.24***	196.11***
Breuch-Pagan	---	---	---	180.73***	2393.46***	2101.70***
Number of observations	1,062	1,062	1,062	1,062	1,062	1,062

\*\*\*, \*\*, \*: Variable statistically significant at the 1%, 5% or 10%, respectively. t-statistic in brackets.

In accordance with the literature, an alternative way of approaching to the consequences of mergers on productivity would be to assume that resource reallocations or recombinations are specially important for target firms. As mentioned above, Capron and Mitchell (1998a, 1998b) present evidence showing that target firms tend to suffer a more extensive restructuring than acquirers. In terms of our estimations, this would mean that the assumption that the unobservable firm specific characteristics of the resulting firm would be similar to those of the acquiring (i.e. a constant firm specific effect for the acquiring firm) is plausible. However, to implement this idea would imply distinguishing between target and acquiring firms. Unfortunately, in our sample this is only possible in the case of acquisitions, that is, in those cases in which the merger of two or more firms does not result in a completely new legal entity.

Table 2 replicates the estimations presented in models 4 to 6 (fixed effect estimations), excluding the firms that merge during our window period (i.e. we retain those observations belonging to acquiring, target and non-merging firms). As mentioned above, given that, in legal terms, the acquiring and the resulting firm are the same, we assign it the same fixed effect all along our time horizon. Model 3 in Table 2 shows that when we do not allow for a change in the fixed effect, the coefficients of the *merger* variables are almost always positive and significant, confirming that, on average, acquisitions increase productivity in the long-run.

**TABLE 2. ESTIMATION OF THE AUGMENTED COBB-DOUGLAS FUNCTION  
(ROBUST ESTIMATES, ACQUISITIONS ONLY)**

	Model 1		Model 2		Model 3	
	Coef.	t	Coef.	t	Coef.	t
Constant	-2,51***	(-6,34)	8,49***	(33,93)	9,06***	(28,19)
Ln K1	-0,02	(-0,37)	0,00	(0,17)	0,01	(0,62)
Ln K2	-0,03	(-0,92)	-0,02	(-1,47)	-0,03***	(-2,27)
Ln L	2,48***	(26,61)	0,66***	(14,25)	0,58***	(11,68)
Dummy 1987	-		0,10***	(4,21)	0,11***	(4,46)
Dummy 1988	-		0,25***	(10,18)	0,25***	(10,99)
Dummy 1989	-		0,28***	(12,53)	0,30***	(13,43)
Dummy 1990	-		0,29***	(13,13)	0,31***	(13,63)
Dummy 1991	-		0,38***	(16,88)	0,40***	(17,35)
Dummy 1992	-		0,48***	(19,85)	0,50***	(20,22)
Dummy 1993	-		0,51***	(18,93)	0,53***	(19,37)
Dummy 1994	-		0,58***	(22,15)	0,60***	(22,29)
Dummy 1995	-		0,64***	(24,28)	0,66***	(24,31)
Dummy 1996	-		0,71***	(26,88)	0,74***	(26,75)
Dummy 1997	-		0,84***	(32,20)	0,87***	(31,59)
Dummy 1998	-		0,95***	(35,68)	0,98***	(34,71)
Dummy 1999	-		1,05***	(37,41)	1,08***	(36,78)
Dummy 2000	-		1,15***	(39,20)	1,18***	(38,62)
Dummy 2001	-		1,24***	(40,56)	1,27***	(40,13)
Dummy 2002	-		1,34***	(43,10)	1,37***	(41,71)
Dummy 2003	-		1,44***	(42,93)	1,46***	(40,99)
Dummy 2004	-		1,55***	(44,31)	1,58***	(42,55)
Merger t	-		-		0,72**	(2,26)
Merger t+1	-		-		0,07***	(2,78)
Merger t+2	-		-		0,07***	(3,19)
Merger t+3	-		-		0,07***	(4,31)
Merger t+4	-		-		0,05**	(2,48)
Merger t+5	-		-		0,04	(1,43)
Merger t+6	-		-		0,04	(1,56)
Merger t+7	-		-		0,07**	(2,31)
Merger t+8	-		-		0,11***	(3,59)
Merger t+9	-		-		0,12***	(3,19)
Merger t+10	-		-		0,12**	(2,48)
Merger final period	-		-		0,12***	(3,29)
Fixed effects	Significant		Significant		Significant	
R2 corregido	0,9638		0,9956		0,9958	
F test vs (1)	---		242.87***		159.32***	
F test vs (3)	---		---		2.97***	
Hausman	627.60***		185.28***		177.65***	
Breuch-Pagan	77.37***		1718.66***		1618.94***	
Number of observations	784		784		784	

\*\*\*, \*\*, \*: Variable statistically significant at the 1%, 5% or 10%, respectively. t-statistic in brackets

As can be seen, the results obtained are really interesting, given that the conclusions on the effects of mergers vary depending on the length of the observation window. Mergers do have a positive effect on productivity. However, our conclusions would differ if we evaluate the consequences in short or long periods after the merger

takes place. If we only take a five-year period into account, we could conclude that their effect on productivity is negligible, given that the positive effect disappears around the fourth year. However, when we consider a longer period, the general conclusion would be that the merger has a positive effect on productivity, with an increase around 12% a decade after it takes place.

Therefore, considering the consequences of mergers in the first years after consolidation, would have led us to wrong conclusions. Our results show that, although the positive effects seem to disappear around the fifth year, the benefits of mergers are clearly observable a few years later. The variables *merger t+7* to *merger t+10* recover their positive sign and become highly significant. Although our analysis does not permit an explanation of why we observe this temporal pattern, it is possible to offer some conjectures. On the one hand, cost reductions derived from the elimination of redundant branches (some of the mergers take place between Savings Banks that operate in the same markets) or a better use of scale economies associated with technological or administrative expenses, could explain the initial improvements in productivity. On the other, once the merged firms obtain their first savings, the difficulty of integrating cultures or management systems may be responsible for the disappearance of the initial improvements. Importantly, our analysis shows that, considering a reasonable period of time, the productivity benefits of mergers rise again. Of course, the observation of positive results may have been favored by a greater strategic similarity (see, for instance, Ramaswamy, 1997) or a lower cultural distance between the Savings Banks included in our sample in comparison with the samples used in other studies. It is also important to note, that our comments on the pattern over time are only applicable to acquisitions, given that the results of the full sample, although revealing a positive impact, do not seem to show any significant effect on the *merger* variables.

## 5. DISCUSSION AND CONCLUSIONS

The theoretical and empirical arguments developed in this paper tend to confirm our view that the performance effects of mergers and acquisitions should be evaluated in the long run. Our empirical results show that productivity improvements are very significant when a long observation window is considered. This conclusion would have been very different had we chosen a shorter period of time, at least when we restrict our analysis to acquisitions. In this sample, when we limit our assessment to a five-year horizon, we find that acquisitions did not have any impact on our dependent variable. Interestingly, the evaluation of productivity improvements on a year by year basis after deregulation allows us to extract relevant conclusions from the point of view of the temporal pattern of these effects. In our sample of acquisitions, this pattern clearly takes a U-shape form, with Savings Banks initially benefiting from the decision to engage in the operation, then steadily losing their “productivity premium” and, finally, profiting from it.

Although it is not easy to identify the reasons that justify this pattern, we have offered some conjectures on the mechanisms at work, at least in the case of the banking sector. Perhaps the most visible source of savings in a bank merger comes from the initial elimination of branches. Bank branches are an important dimension of the quality of service offered by a financial intermediary. When two banks with overlapping networks merge, they frequently start a process of restructuring that leads to an elimination of redundant branches and a reduction of overhead costs, which could explain the strong initial improvement in productivity. The literature reviewed in this paper suggests that this first stage could be followed by another period in which the potential problems associated with the processes of acculturation and redeployment

show their negative effects. It is important to underline that, in accordance with our data, the disruptions associated with the integration process could offset the positive results of a merger if the integration process were mis-managed. Firms in our sample seem to have been successful in managing it, given the increase in productivity at the end of our observation window.

From the point of view of the available evidence, our findings are difficult to integrate into the review carried out by Amel et al. (2004) for the banking sector, who find little empirical evidence for the positive effects of consolidation. The reason for this discrepancy could have to do with the specificities of the different samples, which may make cross-country comparisons difficult. Another explanation may be the differences in the methodologies used. While some articles focus on efficiency, others analyze profits or use event analysis. Our results match those obtained by Haynes and Thompson (1999) in the United Kingdom, using a similar approach and technique. However, it is important to highlight that the increase in productivity in the Spanish Savings Banks is more important than that obtained in the United Kingdom.

This second explanation leads us to think that, although mergers or acquisitions can be an effective way to increase productivity, we can not directly transfer this result to other variables, such as profitability. In a deregulated context –such as the Spanish one-, some mergers may have been used to increase the levels of efficiency, given the expected increase in competition. Other mergers, however, may have been used to enter new markets, once restrictions were eliminated. Fuentes and Sastre (1999) seem to support this argument, finding that improvements concentrate on one only dimension (efficiency or increase in earnings) at the expense of the others.

A third (given our results) obvious explanation focuses on the temporal pattern of the consequences of mergers. Given that the periods of time in which the effects of



these processes are assessed tend to be shorter than the ones considered here, we cannot discard the hypothesis that, in other studies, positive effects could have been observed in the long run. Previous papers have mentioned this caveat when describing the results of their short-run analyses (Raymond, 1994, Grifell and Lovell, 1996).

The results of this paper also have implications for future empirical work on strategy. On the one hand, whatever the method used to analyze the consequences of mergers, it seems clear that research should take a long-run perspective. In fact, this approach to empirical work has been suggested from related areas of strategic management. Markides (1995), for instance, shows that the effect of restructuring is better observed when we have information over a long time window. Similarly, Bergh (1995: 1696) suggests that the “*relationship between diversification and performance is longitudinal and may take years to be realized fully*”. However, it is necessary to admit that, the farther the point in time at which we assess performance, the more risky it would be to attribute the observed consequences to the M&A operation. Nevertheless, empirical work in other areas of strategy might suffer from the same risk. A correct specification of the determinants of the performance variable should be sufficient to make sure that mergers are the source of the observed differences.

On the other hand, the temporal pattern found here seems to attribute an important role to the integration process. We suggest that the productivity of the merging firms in our sample is negatively affected by the processes of redeployment and divesting. Although this may truly be the result of the integration process, further research should study the underlying mechanisms more deeply and investigate whether this is the case and whether cultural or organizational motives may justify such a long period. Another extension of this work could be to evaluate the extent to which the positive effects we have obtained and the duration of the integration process are

conditioned by the compatibility between the firms or the characteristics of resources, capabilities and activities. Finally, it is necessary to admit that the concepts used here and the importance attributed to the integration process do not rule out other explanations for performance differences between merging firms, such as those traditionally used in the literature (see, for example, Marris, 1964, or Roll, 1986).

## 6. REFERENCES

- Amel, D., Barnes, C., Panetta, F. and Salleo, C. 2004. Consolidation and efficiency in the financial sector: a review of the international evidence. *Journal of Banking & Finance* 28, 2493-2519.
- Barney, J. 1991. Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), pp. 99-120.
- Bergh, D.D. 1995. “ Problems with repeated measures analysis: Demonstration with a study of the diversification and performance relationship”, *Academy of Management Journal*, 38: 1692- 1708.
- Berger, A.N. and Humphrey, D.B. 1991. The dominance of inefficiencies over scale and product mix economies in banking. *Journal of Monetary Economics* 28, 117-148.
- Berger, A. N., and Humphrey, D.B.1992. Megamergers in banking and the use of cost efficiency as an antitrust defense. *Antitrust Bulletin*, 37, 541-600.
- Bernheim, D & Whinston, M.D. 1990. Multimarket contact and collusive behavior. *RAND Journal of Economics*, 21, 1-26.
- Berry, J. W. 1980. Social and Cultural Change. in H. C. Triandis and R. W. Brislin (eds.), *Handbook of cross-cultural psychology* (vol. 5, pp. 211-279). Boston. Allyn & Bacon.
- Berry, J. W. 1983. Acculturation. A comparative analysis of alternative forms. in R.J. Samuda & S.L. Woods (eds.), *Perspectives in Immigrant and Minority Education* (pp. 66-77). Lanham, MD University Press of America.
- Brynjolfsson, E and Hitt, L. 1996. Paradox Lost? Firm level Evidence on the returns to Information Systems Spending. *Management Science*, April, 42, 4.

- Campa, JM and Hernando, I. 2004. "Shareholders value creation in European M&As", *European Financial Management*, 10(1), pp. 47-81.
- Capron, L (1999). The Long Term Performance of Horizontal Acquisitions. *Strategic Management Journal*, 20, pp. 987-1018.
- Capron, L, Dussauge, P. and Mitchell, W. 1998. Resource Deployment Following Horizontal Acquisitions in Europe and North America, 1988-1992. *Strategic Management Journal*, 19, 631-661.
- Capron, L and Mitchell, W. 1998a. The role of acquisitions in reshaping business capabilities in the international telecommunications industry. *Industrial and Corporate Change*, vol. 7(4), 715-730.
- Capron, L and Mitchell, W.1998b. Bilateral Resource Redeployment and Capabilities Improvement Following Horizontal Acquisitions. *Industrial and Corporate Change*, vol. 7(3), 453-484.
- Carbó, S, Humphrey, D.B and Rodríguez, F. 2003. Bank deregulation is better than mergers. *Journal of International Financial Markets, Institutions and Money*, 13, 429-449.
- Carbó, S. and Humphrey, D.B. 2004. Predicted and actual costs from individual bank mergers. *Journal of Economics and Business*, 56, 137-157.
- Caves, RE. 1989 Mergers, Takeovers, and Economic Efficiency: Foresight vs. Hindsight. *International Journal of Industrial Organization*, vol. 7 (March 1989), pp. 151-74.
- Chatterjee, S., Lubatkin, M. Schweiger, D.M. and Weber, Y. 1992. Cultural differences and shareholder value in related mergers: linking equity and human capital. *Strategic Management Journal*, 13, 319-344.
- Edwards, C.D. 1955. Conglomerate bigness as a source of power. *In National Bureau of Economic Research, Business Concentration and Price Policy*, Princeton University Press, Princeton, NJ, 331-359.
- Fixler, D.J and Zieschang, K.D. 1993. An index number approach to measuring bank efficiency: An application to mergers. *Journal of Banking and Finance*, 437-450.
- Fuentes, I. and Sastre, T. 1999. Mergers and acquisitions in the Spanish banking industry: Some empirical evidence. *Working Paper No. 9924. Madrid: Bank of Spain*.

- Godfrey, P.C. and Hill, C.W. 1995. The problem of unobservable in strategic management research. *Strategic Management Journal*, 16, 519-533.
- Grifell-Tatje, E., and Lovell, C.A.K. 1996. Deregulation and productivity decline: The case of Spanish Savings Banks. *European Economic Review*, vol. 40, 1281-1303.
- Halpern, P. 1983. Corporate Acquisitions: a Theory of Special Cases?. A review of Event Studies Applied to Acquisitions. *Journal of Finance*, 38, 297-317.
- Hawawini G, Subramanian V, Verdin P. 2003. Is performance driven by industry or firm-specific factors? A new look at the evidence. *Strategic Management Journal*, 24: 1-16
- Haynes, M and Thompson, S., 1999. The productivity effects of bank mergers: Evidence from the UK building societies. *Journal of Banking & Finance* 23 , 825-846.
- Humphrey, D.B and Vale, B., 2002. Scale economies, bank mergers, and electronic payments: A spline function approach. *Working Paper. Oslo: Norges Bank* (Central Bank of Norway).
- Jemison, D.B., and Sitkin, S.B. 1986. Corporate acquisitions: A process perspectives. *Academy of Management Review*, 11, 145-163.
- Karim, S. and Mitchell, W. 2000. Path Dependent and Path Breaking Change: Reconfiguring Business Resources Following Acquisitions in the US Medical Sector, 1978-1995. *Strategic Management Journal*, 21, pp. 1061-1081.
- Larsson, R., and Finkelstein, S. 1999. Integrating Strategic, Organizational and Human Resource Perspectives on Mergers and Acquisitions: A case Survey of Synergy Realization. *Organizational Science*, 10, 1-26.
- Linder, Jane C. and Dwight B. Crane. 1992. Bank Mergers: Integration and Profitability, *Journal of Financial Services Research*, 7, 35-55.
- Lubatkin. 1983. Merger and the Performance of the Acquiring Firm. *Academy of Management Review*, 8, pp.218-225.
- Markides, C. 1995. Diversification, Restructuring and Economic Performance. *Strategic Management Journal*, vol 16, 101-118.
- Marris, R. 1964. "The Economic Theory of 'Managerial'". Capitalism London: Macmillan.

- Murray, R.D., and White, R.W. 1980. Economies of scale and deposit taking institutions in Canada: A study of British Columbia Credit Unions. *Journal of Money, Credit and Banking* 12, 58-70.
- Nahavandi A. and Malekzadeh, AR. 1988. Acculturation in Mergers and Acquisitions. *Academy of Management Review*, 13 (1), 79-90.
- Nahavandi, A., and Malekzadeh, A.R. 1993. Organizational culture in the management of mergers. Westport, Ct: Quorum.
- Penrose, E.T. 1959. The theory of the Growth of the Firm. Blackwell, Oxford.
- Ramaswamy, K. 1997. The performance impact of strategic similarity in horizontal mergers: evidence from the U.S. banking industry. *Academy of Management Journal* 40, 3, 697-715.
- Raymond, J. L. 1994. Economías de Escala y Fusiones en el Sector de Cajas de Ahorros. *Papeles de Economía Española*, 58, 113–125.
- Resti, A. 1998. Regulation can foster mergers, can mergers foster efficiency?. The Italian case. *Journal of Economics and Business*, 50, 157-169.
- Rhoades, SA. 1990. Billion Dollar Bank Acquisitions: A Note on the Performance Effects. *Board of Governors of the Federal Reserve System*.
- Rhoades, S.A. 1993. Efficiency effects pf horizontal (in market) bank mergers. *Journal of Banking and Finance* 17, 411-422.
- Rhoades, S.A. 1998. The efficiency effects of bank mergers: An overview of case studies of nine mergers. *Journal of Banking and Finance*, 22, 273-291.
- Roll, R. 1986. The hubris hypothesis of corporate takeovers. *Journal of Business*, 69, 197-216.
- Rumelt, R.P. 1982. Diversification Strategy and Profitability. *Strategic Management Journal*, vol. 3, nº 4, págs. 359-369.
- Schoenberg, R. 2006. Measuring the Performance of Corporate Acquisitions: An Empirical Comparison of Alternative Metrics. *British Journal of Management*, vol. 17, pp. 1-10.
- Sealey, C. W and Lindley, J.T. 1977. Inputs, outputs and a theory of production and cost at depository financial institutions. *Journal of Finance*, Vol. 32, 1251-1266.
- Shaffer, S. 1993. Can megamergers improve bank efficiency. *Journal of Banking and Finance* 17, 423-436.

- Siems., T.F. 1996. Bank Mergers and Shareholder Wealth: Evidence from 1995's Megamerger Deals. *Federal Reserve Bank of Dallas*, Research Department, Financial Industry Studies.
- Spagnolo, G. 1999. On interdependent supergames: multimarket contact, concavity, and collusion. *Journal of Economic Theory*, 89, 127-139.
- Srinivasin, A. 1992. Are there cost savings from bank mergers?. *Federal Reserve Bank of Atlanta, Economic Review*, Mar/Apr 17-28.
- Srinivasin, A., and Wall, L.D. 1992. Cost savings associated with bank mergers. *Working Paper (Federal Reserve Bank of Atlanta)*.
- Teerikangas, S. and Very, P. 2006. The Culture-Performance Relationship in M&A: From Yes/No to How. *British Journal of Management*, vol. 17, S31-S48.
- Thompson Financial. 2007. Thompson Financial Worldwide M&A Financial Advisory. News Release.
- Vander Venet. 1996. The effect of mergers and acquisitions on the efficiency and profitability of EC credit institution. *Journal of Banking and Finance*, 20. 1531-1558.
- Very, P., Schweiger, D. 2001. The Acquisition Process as a Learning Process : Evidence from a Study of Critical Problems and Solutions in Domestic and Cross-Border Deals. *Journal of World Business*, 36(1). 11-31.
- Wernerfelt, B .1984. A resource based view of the firm. *Strategic Management Journal*, 5(2). 171-180.
- White, H. 1980."A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity". *Econometrica*, 48 (4), 817-838.

## APPENDIX. DESCRIPTION OF THE VARIABLES

The variables used in the empirical estimation are defined in the following lines. In 1992 there was a change in the presentation of financial statements that affected the savings banks. As a consequence, the headings were modified, which explains the differences in terminology before and after 1991. The data used in the analysis have been collected from the information published by the Spanish Association of Savings Banks (CECA). The monetary magnitudes are expressed in thousands euros of 1986.

- Total production ( $Q$ ): for period 1986-1991 it is calculated as the sum of *Credit Investments* and *Securities portfolio* of the balance, whereas for the rest of the period (1992-2004) it is the sum of *Loans*, *Obligations and Fixed-income securities*, *Securities and Shares*, *Participation* and *Group Participation*.
- Labor ( $L$ ): number of *full-time employees* of the savings bank  $i$  at moment  $t$ .
- Fixed assets ( $K1$ ): value of the (non-financial) fixed assets of the savings bank  $i$  at moment  $t$ . For the period 1986-1991 variable corresponds with the value of *Non-financial assets*. For the years 1992-2004 its value is the one of the *Physical Assets*.
- Liquid assets ( $K2$ ): For the first period its value corresponds to the sum of *Currency and Bank of Spain*, *Monetary Assets* and *Financial Intermediaries*. For the second one, it is the sum of *Cash and Deposits in Central Banks*, *Government Debt* and *Debt to other Banks*.
- *Merger  $t+n$* : dummy variable that equals one if the savings bank participates in a merger or acquisition and zero otherwise. We define a dummy variable for the year where the M&A takes place and 10 additional dummies for the following 10 years after the merger.
- *Merger final period*: dummy variable that equals one in those years after the tenth.
- *Dummy  $t$*  are yearly dummies from 1987 to 2004 (1986 is our base year).

# FUNDACIÓN DE LAS CAJAS DE AHORROS

---

## DOCUMENTOS DE TRABAJO

### Últimos números publicados

- 159/2000 Participación privada en la construcción y explotación de carreteras de peaje  
Ginés de Rus, Manuel Romero y Lourdes Trujillo
- 160/2000 Errores y posibles soluciones en la aplicación del *Value at Risk*  
Mariano González Sánchez
- 161/2000 Tax neutrality on saving assets. The spanish case before and after the tax reform  
Cristina Ruza y de Paz-Curbera
- 162/2000 Private rates of return to human capital in Spain: new evidence  
F. Barceinas, J. Oliver-Alonso, J.L. Raymond y J.L. Roig-Sabaté
- 163/2000 El control interno del riesgo. Una propuesta de sistema de límites  
riesgo neutral  
Mariano González Sánchez
- 164/2001 La evolución de las políticas de gasto de las Administraciones Públicas en los años 90  
Alfonso Utrilla de la Hoz y Carmen Pérez Esparrells
- 165/2001 Bank cost efficiency and output specification  
Emili Tortosa-Ausina
- 166/2001 Recent trends in Spanish income distribution: A robust picture of falling income inequality  
Josep Oliver-Alonso, Xavier Ramos y José Luis Raymond-Bara
- 167/2001 Efectos redistributivos y sobre el bienestar social del tratamiento de las cargas familiares en  
el nuevo IRPF  
Nuria Badenes Plá, Julio López Laborda, Jorge Onrubia Fernández
- 168/2001 The Effects of Bank Debt on Financial Structure of Small and Medium Firms in some Euro-  
pean Countries  
Mónica Melle-Hernández
- 169/2001 La política de cohesión de la UE ampliada: la perspectiva de España  
Ismael Sanz Labrador
- 170/2002 Riesgo de liquidez de Mercado  
Mariano González Sánchez
- 171/2002 Los costes de administración para el afiliado en los sistemas de pensiones basados en cuentas  
de capitalización individual: medida y comparación internacional.  
José Enrique Devesa Carpio, Rosa Rodríguez Barrera, Carlos Vidal Meliá
- 172/2002 La encuesta continua de presupuestos familiares (1985-1996): descripción, representatividad  
y propuestas de metodología para la explotación de la información de los ingresos y el gasto.  
Llorenç Pou, Joaquín Alegre
- 173/2002 Modelos paramétricos y no paramétricos en problemas de concesión de tarjetas de credito.  
Rosa Puertas, María Bonilla, Ignacio Olmeda



- 174/2002 Mercado único, comercio intra-industrial y costes de ajuste en las manufacturas españolas.  
José Vicente Blanes Cristóbal
- 175/2003 La Administración tributaria en España. Un análisis de la gestión a través de los ingresos y de los gastos.  
Juan de Dios Jiménez Aguilera, Pedro Enrique Barrilao González
- 176/2003 The Falling Share of Cash Payments in Spain.  
Santiago Carbó Valverde, Rafael López del Paso, David B. Humphrey  
Publicado en "Moneda y Crédito" nº 217, pags. 167-189.
- 177/2003 Effects of ATMs and Electronic Payments on Banking Costs: The Spanish Case.  
Santiago Carbó Valverde, Rafael López del Paso, David B. Humphrey
- 178/2003 Factors explaining the interest margin in the banking sectors of the European Union.  
Joaquín Maudos y Juan Fernández Guevara
- 179/2003 Los planes de stock options para directivos y consejeros y su valoración por el mercado de valores en España.  
Mónica Melle Hernández
- 180/2003 Ownership and Performance in Europe and US Banking – A comparison of Commercial, Co-operative & Savings Banks.  
Yener Altunbas, Santiago Carbó y Phil Molyneux
- 181/2003 The Euro effect on the integration of the European stock markets.  
Mónica Melle Hernández
- 182/2004 In search of complementarity in the innovation strategy: international R&D and external knowledge acquisition.  
Bruno Cassiman, Reinhilde Veugelers
- 183/2004 Fijación de precios en el sector público: una aplicación para el servicio municipal de suministro de agua.  
M<sup>a</sup> Ángeles García Valiñas
- 184/2004 Estimación de la economía sumergida en España: un modelo estructural de variables latentes.  
Ángel Alañón Pardo, Miguel Gómez de Antonio
- 185/2004 Causas políticas y consecuencias sociales de la corrupción.  
Joan Oriol Prats Cabrera
- 186/2004 Loan bankers' decisions and sensitivity to the audit report using the belief revision model.  
Andrés Guiral Contreras and José A. Gonzalo Angulo
- 187/2004 El modelo de Black, Derman y Toy en la práctica. Aplicación al mercado español.  
Marta Tolentino García-Abadillo y Antonio Díaz Pérez
- 188/2004 Does market competition make banks perform well?.  
Mónica Melle
- 189/2004 Efficiency differences among banks: external, technical, internal, and managerial  
Santiago Carbó Valverde, David B. Humphrey y Rafael López del Paso

- 190/2004 Una aproximación al análisis de los costes de la esquizofrenia en España: los modelos jerárquicos bayesianos  
F. J. Vázquez-Polo, M. A. Negrín, J. M. Cavasés, E. Sánchez y grupo RIRAG
- 191/2004 Environmental proactivity and business performance: an empirical analysis  
Javier González-Benito y Óscar González-Benito
- 192/2004 Economic risk to beneficiaries in notional defined contribution accounts (NDCs)  
Carlos Vidal-Meliá, Inmaculada Domínguez-Fabian y José Enrique Devesa-Carpio
- 193/2004 Sources of efficiency gains in port reform: non parametric malmquist decomposition tfp index for Mexico  
Antonio Estache, Beatriz Tovar de la Fé y Lourdes Trujillo
- 194/2004 Persistencia de resultados en los fondos de inversión españoles  
Alfredo Ciriaco Fernández y Rafael Santamaría Aquilué
- 195/2005 El modelo de revisión de creencias como aproximación psicológica a la formación del juicio del auditor sobre la gestión continuada  
Andrés Guiral Contreras y Francisco Esteso Sánchez
- 196/2005 La nueva financiación sanitaria en España: descentralización y prospectiva  
David Cantarero Prieto
- 197/2005 A cointegration analysis of the Long-Run supply response of Spanish agriculture to the common agricultural policy  
José A. Mendez, Ricardo Mora y Carlos San Juan
- 198/2005 ¿Refleja la estructura temporal de los tipos de interés del mercado español preferencia por la liquidez?  
Magdalena Massot Perelló y Juan M. Nave
- 199/2005 Análisis de impacto de los Fondos Estructurales Europeos recibidos por una economía regional: Un enfoque a través de Matrices de Contabilidad Social  
M. Carmen Lima y M. Alejandro Cardenete
- 200/2005 Does the development of non-cash payments affect monetary policy transmission?  
Santiago Carbó Valverde y Rafael López del Paso
- 201/2005 Firm and time varying technical and allocative efficiency: an application for port cargo handling firms  
Ana Rodríguez-Álvarez, Beatriz Tovar de la Fe y Lourdes Trujillo
- 202/2005 Contractual complexity in strategic alliances  
Jeffrey J. Reuer y Africa Ariño
- 203/2005 Factores determinantes de la evolución del empleo en las empresas adquiridas por opa  
Nuria Alcalde Fradejas y Inés Pérez-Soba Aguilar
- 204/2005 Nonlinear Forecasting in Economics: a comparison between Comprehension Approach versus Learning Approach. An Application to Spanish Time Series  
Elena Olmedo, Juan M. Valderas, Ricardo Gimeno and Lorenzo Escot

- 205/2005 Precio de la tierra con presión urbana: un modelo para España  
Esther Decimavilla, Carlos San Juan y Stefan Sperlich
- 206/2005 Interregional migration in Spain: a semiparametric analysis  
Adolfo Maza y José Villaverde
- 207/2005 Productivity growth in European banking  
Carmen Murillo-Melchor, José Manuel Pastor y Emili Tortosa-Ausina
- 208/2005 Explaining Bank Cost Efficiency in Europe: Environmental and Productivity Influences.  
Santiago Carbó Valverde, David B. Humphrey y Rafael López del Paso
- 209/2005 La elasticidad de sustitución intertemporal con preferencias no separables intratemporalmente: los casos de Alemania, España y Francia.  
Elena Márquez de la Cruz, Ana R. Martínez Cañete y Inés Pérez-Soba Aguilar
- 210/2005 Contribución de los efectos tamaño, book-to-market y momentum a la valoración de activos: el caso español.  
Begoña Font-Belaire y Alfredo Juan Grau-Grau
- 211/2005 Permanent income, convergence and inequality among countries  
José M. Pastor and Lorenzo Serrano
- 212/2005 The Latin Model of Welfare: Do 'Insertion Contracts' Reduce Long-Term Dependence?  
Luis Ayala and Magdalena Rodríguez
- 213/2005 The effect of geographic expansion on the productivity of Spanish savings banks  
Manuel Illueca, José M. Pastor and Emili Tortosa-Ausina
- 214/2005 Dynamic network interconnection under consumer switching costs  
Ángel Luis López Rodríguez
- 215/2005 La influencia del entorno socioeconómico en la realización de estudios universitarios: una aproximación al caso español en la década de los noventa  
Marta Rahona López
- 216/2005 The valuation of spanish ipos: efficiency analysis  
Susana Álvarez Otero
- 217/2005 On the generation of a regular multi-input multi-output technology using parametric output distance functions  
Sergio Perelman and Daniel Santin
- 218/2005 La gobernanza de los procesos parlamentarios: la organización industrial del congreso de los diputados en España  
Gonzalo Caballero Miguez
- 219/2005 Determinants of bank market structure: Efficiency and political economy variables  
Francisco González
- 220/2005 Agresividad de las órdenes introducidas en el mercado español: estrategias, determinantes y medidas de performance  
David Abad Díaz

- 221/2005 Tendencia post-anuncio de resultados contables: evidencia para el mercado español  
Carlos Forner Rodríguez, Joaquín Marhuenda Fructuoso y Sonia Sanabria García
- 222/2005 Human capital accumulation and geography: empirical evidence in the European Union  
Jesús López-Rodríguez, J. Andrés Faña y Jose Lopez Rodríguez
- 223/2005 Auditors' Forecasting in Going Concern Decisions: Framing, Confidence and Information Processing  
Waymond Rodgers and Andrés Guiral
- 224/2005 The effect of Structural Fund spending on the Galician region: an assessment of the 1994-1999 and 2000-2006 Galician CSFs  
José Ramón Cancelo de la Torre, J. Andrés Faña and Jesús López-Rodríguez
- 225/2005 The effects of ownership structure and board composition on the audit committee activity: Spanish evidence  
Carlos Fernández Méndez and Rubén Arrondo García
- 226/2005 Cross-country determinants of bank income smoothing by managing loan loss provisions  
Ana Rosa Fonseca and Francisco González
- 227/2005 Incumplimiento fiscal en el irpf (1993-2000): un análisis de sus factores determinantes  
Alejandro Estellér Moré
- 228/2005 Region versus Industry effects: volatility transmission  
Pilar Soriano Felipe and Francisco J. Climent Diranzo
- 229/2005 Concurrent Engineering: The Moderating Effect Of Uncertainty On New Product Development Success  
Daniel Vázquez-Bustelo and Sandra Valle
- 230/2005 On zero lower bound traps: a framework for the analysis of monetary policy in the 'age' of central banks  
Alfonso Palacio-Vera
- 231/2005 Reconciling Sustainability and Discounting in Cost Benefit Analysis: a methodological proposal  
M. Carmen Almansa Sáez and Javier Calatrava Requena
- 232/2005 Can The Excess Of Liquidity Affect The Effectiveness Of The European Monetary Policy?  
Santiago Carbó Valverde and Rafael López del Paso
- 233/2005 Inheritance Taxes In The Eu Fiscal Systems: The Present Situation And Future Perspectives.  
Miguel Angel Barberán Lahuerta
- 234/2006 Bank Ownership And Informativeness Of Earnings.  
V́ctor M. González
- 235/2006 Developing A Predictive Method: A Comparative Study Of The Partial Least Squares Vs Maximum Likelihood Techniques.  
Waymond Rodgers, Paul Pavlou and Andres Guiral.
- 236/2006 Using Compromise Programming for Macroeconomic Policy Making in a General Equilibrium Framework: Theory and Application to the Spanish Economy.  
Francisco J. André, M. Alejandro Cardenete y Carlos Romero.

- 237/2006 Bank Market Power And Sme Financing Constraints.  
Santiago Carbó-Valverde, Francisco Rodríguez-Fernández y Gregory F. Udell.
- 238/2006 Trade Effects Of Monetary Agreements: Evidence For Oecd Countries.  
Salvador Gil-Pareja, Rafael Llorca-Vivero y José Antonio Martínez-Serrano.
- 239/2006 The Quality Of Institutions: A Genetic Programming Approach.  
Marcos Álvarez-Díaz y Gonzalo Caballero Miguez.
- 240/2006 La interacción entre el éxito competitivo y las condiciones del mercado doméstico como determinantes de la decisión de exportación en las Pymes.  
Francisco García Pérez.
- 241/2006 Una estimación de la depreciación del capital humano por sectores, por ocupación y en el tiempo.  
Inés P. Murillo.
- 242/2006 Consumption And Leisure Externalities, Economic Growth And Equilibrium Efficiency.  
Manuel A. Gómez.
- 243/2006 Measuring efficiency in education: an analysis of different approaches for incorporating non-discretionary inputs.  
Jose Manuel Cordero-Ferrera, Francisco Pedraja-Chaparro y Javier Salinas-Jiménez
- 244/2006 Did The European Exchange-Rate Mechanism Contribute To The Integration Of Peripheral Countries?.  
Salvador Gil-Pareja, Rafael Llorca-Vivero y José Antonio Martínez-Serrano
- 245/2006 Intergenerational Health Mobility: An Empirical Approach Based On The Echp.  
Marta Pascual and David Cantarero
- 246/2006 Measurement and analysis of the Spanish Stock Exchange using the Lyapunov exponent with digital technology.  
Salvador Rojí Ferrari and Ana Gonzalez Marcos
- 247/2006 Testing For Structural Breaks In Variance With additive Outliers And Measurement Errors.  
Paulo M.M. Rodrigues and Antonio Rubia
- 248/2006 The Cost Of Market Power In Banking: Social Welfare Loss Vs. Cost Inefficiency.  
Joaquín Maudos and Juan Fernández de Guevara
- 249/2006 Elasticidades de largo plazo de la demanda de vivienda: evidencia para España (1885-2000).  
Desiderio Romero Jordán, José Félix Sanz Sanz y César Pérez López
- 250/2006 Regional Income Disparities in Europe: What role for location?.  
Jesús López-Rodríguez and J. Andrés Faña
- 251/2006 Funciones abreviadas de bienestar social: Una forma sencilla de simultaneizar la medición de la eficiencia y la equidad de las políticas de gasto público.  
Nuria Badenes Plá y Daniel Santín González
- 252/2006 "The momentum effect in the Spanish stock market: Omitted risk factors or investor behaviour?".  
Luis Muga and Rafael Santamaría
- 253/2006 Dinámica de precios en el mercado español de gasolina: un equilibrio de colusión tácita.  
Jordi Perdiguero García

- 254/2006 Desigualdad regional en España: renta permanente versus renta corriente.  
José M. Pastor, Empar Pons y Lorenzo Serrano
- 255/2006 Environmental implications of organic food preferences: an application of the impure public goods model.  
Ana Maria Aldanondo-Ochoa y Carmen Almansa-Sáez
- 256/2006 Family tax credits versus family allowances when labour supply matters: Evidence for Spain.  
José Felix Sanz-Sanz, Desiderio Romero-Jordán y Santiago Álvarez-García
- 257/2006 La internacionalización de la empresa manufacturera española: efectos del capital humano genérico y específico.  
José López Rodríguez
- 258/2006 Evaluación de las migraciones interregionales en España, 1996-2004.  
María Martínez Torres
- 259/2006 Efficiency and market power in Spanish banking.  
Rolf Färe, Shawna Grosskopf y Emili Tortosa-Ausina.
- 260/2006 Asimetrías en volatilidad, beta y contagios entre las empresas grandes y pequeñas cotizadas en la bolsa española.  
Helena Chuliá y Hipòlit Torró.
- 261/2006 Birth Replacement Ratios: New Measures of Period Population Replacement.  
José Antonio Ortega.
- 262/2006 Accidentes de tráfico, víctimas mortales y consumo de alcohol.  
José M<sup>a</sup> Arranz y Ana I. Gil.
- 263/2006 Análisis de la Presencia de la Mujer en los Consejos de Administración de las Mil Mayores Empresas Españolas.  
Ruth Mateos de Cabo, Lorenzo Escot Mangas y Ricardo Gimeno Nogués.
- 264/2006 Crisis y Reforma del Pacto de Estabilidad y Crecimiento. Las Limitaciones de la Política Económica en Europa.  
Ignacio Álvarez Peralta.
- 265/2006 Have Child Tax Allowances Affected Family Size? A Microdata Study For Spain (1996-2000).  
Jaime Vallés-Giménez y Anabel Zárate-Marco.
- 266/2006 Health Human Capital And The Shift From Foraging To Farming.  
Paolo Rungo.
- 267/2006 Financiación Autonómica y Política de la Competencia: El Mercado de Gasolina en Canarias.  
Juan Luis Jiménez y Jordi Perdiguero.
- 268/2006 El cumplimiento del Protocolo de Kyoto para los hogares españoles: el papel de la imposición sobre la energía.  
Desiderio Romero-Jordán y José Félix Sanz-Sanz.
- 269/2006 Banking competition, financial dependence and economic growth  
Joaquín Maudos y Juan Fernández de Guevara
- 270/2006 Efficiency, subsidies and environmental adaptation of animal farming under CAP  
Werner Kleinhanß, Carmen Murillo, Carlos San Juan y Stefan Sperlich

- 271/2006 Interest Groups, Incentives to Cooperation and Decision-Making Process in the European Union  
A. Garcia-Lorenzo y Jesús López-Rodríguez
- 272/2006 Riesgo asimétrico y estrategias de momentum en el mercado de valores español  
Luis Muga y Rafael Santamaría
- 273/2006 Valoración de capital-riesgo en proyectos de base tecnológica e innovadora a través de la teoría de opciones reales  
Gracia Rubio Martín
- 274/2006 Capital stock and unemployment: searching for the missing link  
Ana Rosa Martínez-Cañete, Elena Márquez de la Cruz, Alfonso Palacio-Vera and Inés Pérez-Soba Aguilar
- 275/2006 Study of the influence of the voters' political culture on vote decision through the simulation of a political competition problem in Spain  
Sagrario Lantarón, Isabel Lillo, M<sup>a</sup> Dolores López and Javier Rodrigo
- 276/2006 Investment and growth in Europe during the Golden Age  
Antonio Cubel and M<sup>a</sup> Teresa Sanchis
- 277/2006 Efectos de vincular la pensión pública a la inversión en cantidad y calidad de hijos en un modelo de equilibrio general  
Robert Meneu Gaya
- 278/2006 El consumo y la valoración de activos  
Elena Márquez y Belén Nieto
- 279/2006 Economic growth and currency crisis: A real exchange rate entropic approach  
David Matesanz Gómez y Guillermo J. Ortega
- 280/2006 Three measures of returns to education: An illustration for the case of Spain  
María Arrazola y José de Hevia
- 281/2006 Composition of Firms versus Composition of Jobs  
Antoni Cunyat
- 282/2006 La vocación internacional de un holding tranviario belga: la Compagnie Mutuelle de Tramways, 1895-1918  
Alberte Martínez López
- 283/2006 Una visión panorámica de las entidades de crédito en España en la última década.  
Constantino García Ramos
- 284/2006 Foreign Capital and Business Strategies: a comparative analysis of urban transport in Madrid and Barcelona, 1871-1925  
Alberte Martínez López
- 285/2006 Los intereses belgas en la red ferroviaria catalana, 1890-1936  
Alberte Martínez López
- 286/2006 The Governance of Quality: The Case of the Agrifood Brand Names  
Marta Fernández Barcala, Manuel González-Díaz y Emmanuel Raynaud
- 287/2006 Modelling the role of health status in the transition out of malthusian equilibrium  
Paolo Rungo, Luis Currais and Berta Rivera
- 288/2006 Industrial Effects of Climate Change Policies through the EU Emissions Trading Scheme  
Xavier Labandeira and Miguel Rodríguez

- 289/2006 Globalisation and the Composition of Government Spending: An analysis for OECD countries  
Norman Gemmell, Richard Kneller and Ismael Sanz
- 290/2006 La producción de energía eléctrica en España: Análisis económico de la actividad tras la liberalización del Sector Eléctrico  
Fernando Hernández Martínez
- 291/2006 Further considerations on the link between adjustment costs and the productivity of R&D investment: evidence for Spain  
Desiderio Romero-Jordán, José Félix Sanz-Sanz and Inmaculada Álvarez-Ayuso
- 292/2006 Una teoría sobre la contribución de la función de compras al rendimiento empresarial  
Javier González Benito
- 293/2006 Agility drivers, enablers and outcomes: empirical test of an integrated agile manufacturing model  
Daniel Vázquez-Bustelo, Lucía Avella and Esteban Fernández
- 294/2006 Testing the parametric vs the semiparametric generalized mixed effects models  
María José Lombardía and Stefan Sperlich
- 295/2006 Nonlinear dynamics in energy futures  
Mariano Matilla-García
- 296/2006 Estimating Spatial Models By Generalized Maximum Entropy Or How To Get Rid Of W  
Esteban Fernández Vázquez, Matías Mayor Fernández and Jorge Rodríguez-Valez
- 297/2006 Optimización fiscal en las transmisiones lucrativas: análisis metodológico  
Félix Domínguez Barrero
- 298/2006 La situación actual de la banca online en España  
Francisco José Climent Diranzo y Alexandre Momparler Pechuán
- 299/2006 Estrategia competitiva y rendimiento del negocio: el papel mediador de la estrategia y las capacidades productivas  
Javier González Benito y Isabel Suárez González
- 300/2006 A Parametric Model to Estimate Risk in a Fixed Income Portfolio  
Pilar Abad and Sonia Benito
- 301/2007 Análisis Empírico de las Preferencias Sociales Respecto del Gasto en Obra Social de las Cajas de Ahorros  
Alejandro Esteller-Moré, Jonathan Jorba Jiménez y Albert Solé-Ollé
- 302/2007 Assessing the enlargement and deepening of regional trading blocs: The European Union case  
Salvador Gil-Pareja, Rafael Llorca-Vivero y José Antonio Martínez-Serrano
- 303/2007 ¿Es la Franquicia un Medio de Financiación?: Evidencia para el Caso Español  
Vanessa Solís Rodríguez y Manuel González Díaz
- 304/2007 On the Finite-Sample Biases in Nonparametric Testing for Variance Constancy  
Paulo M.M. Rodrigues and Antonio Rubia
- 305/2007 Spain is Different: Relative Wages 1989-98  
José Antonio Carrasco Gallego



- 306/2007 Poverty reduction and SAM multipliers: An evaluation of public policies in a regional framework  
Francisco Javier De Miguel-Vélez y Jesús Pérez-Mayo
- 307/2007 La Eficiencia en la Gestión del Riesgo de Crédito en las Cajas de Ahorro  
Marcelino Martínez Cabrera
- 308/2007 Optimal environmental policy in transport: unintended effects on consumers' generalized price  
M. Pilar Socorro and Ofelia Betancor
- 309/2007 Agricultural Productivity in the European Regions: Trends and Explanatory Factors  
Roberto Ezcurra, Belen Iraizoz, Pedro Pascual and Manuel Rapún
- 310/2007 Long-run Regional Population Divergence and Modern Economic Growth in Europe: a Case Study of Spain  
María Isabel Ayuda, Fernando Collantes and Vicente Pinilla
- 311/2007 Financial Information effects on the measurement of Commercial Banks' Efficiency  
Borja Amor, María T. Tascón and José L. Fanjul
- 312/2007 Neutralidad e incentivos de las inversiones financieras en el nuevo IRPF  
Félix Domínguez Barrero
- 313/2007 The Effects of Corporate Social Responsibility Perceptions on The Valuation of Common Stock  
Waymond Rodgers , Helen Choy and Andres Guiral-Contreras
- 314/2007 Country Creditor Rights, Information Sharing and Commercial Banks' Profitability Persistence across the world  
Borja Amor, María T. Tascón and José L. Fanjul
- 315/2007 ¿Es Relevante el Déficit Corriente en una Unión Monetaria? El Caso Español  
Javier Blanco González y Ignacio del Rosal Fernández
- 316/2007 The Impact of Credit Rating Announcements on Spanish Corporate Fixed Income Performance: Returns, Yields and Liquidity  
Pilar Abad, Antonio Díaz and M. Dolores Robles
- 317/2007 Indicadores de Lealtad al Establecimiento y Formato Comercial Basados en la Distribución del Presupuesto  
Cesar Augusto Bustos Reyes y Óscar González Benito
- 318/2007 Migrants and Market Potential in Spain over The XXth Century: A Test Of The New Economic Geography  
Daniel A. Tirado, Jordi Pons, Elisenda Paluzie and Javier Silvestre
- 319/2007 El Impacto del Coste de Oportunidad de la Actividad Emprendedora en la Intención de los Ciudadanos Europeos de Crear Empresas  
Luis Miguel Zapico Aldeano
- 320/2007 Los belgas y los ferrocarriles de vía estrecha en España, 1887-1936  
Alberte Martínez López
- 321/2007 Competición política bipartidista. Estudio geométrico del equilibrio en un caso ponderado  
Isabel Lillo, M<sup>a</sup> Dolores López y Javier Rodrigo
- 322/2007 Human resource management and environment management systems: an empirical study  
M<sup>a</sup> Concepción López Fernández, Ana M<sup>a</sup> Serrano Bedía and Gema García Piqueres

- 323/2007 Wood and industrialization. evidence and hypotheses from the case of Spain, 1860-1935.  
Iñaki Iriarte-Goñi and María Isabel Ayuda Bosque
- 324/2007 New evidence on long-run monetary neutrality.  
J. Cunado, L.A. Gil-Alana and F. Perez de Gracia
- 325/2007 Monetary policy and structural changes in the volatility of us interest rates.  
Juncal Cuñado, Javier Gomez Biscarri and Fernando Perez de Gracia
- 326/2007 The productivity effects of intrafirm diffusion.  
Lucio Fuentelsaz, Jaime Gómez and Sergio Palomas
- 327/2007 Unemployment duration, layoffs and competing risks.  
J.M. Arranz, C. García-Serrano and L. Toharia
- 328/2007 El grado de cobertura del gasto público en España respecto a la UE-15  
Nuria Rueda, Begoña Barruso, Carmen Calderón y M<sup>a</sup> del Mar Herrador
- 329/2007 The Impact of Direct Subsidies in Spain before and after the CAP'92 Reform  
Carmen Murillo, Carlos San Juan and Stefan Sperlich
- 330/2007 Determinants of post-privatisation performance of Spanish divested firms  
Laura Cabeza García and Silvia Gómez Ansón
- 331/2007 ¿Por qué deciden diversificar las empresas españolas? Razones oportunistas versus razones económicas  
Almudena Martínez Campillo
- 332/2007 Dynamical Hierarchical Tree in Currency Markets  
Juan Gabriel Brida, David Matesanz Gómez and Wiston Adrián Risso
- 333/2007 Los determinantes sociodemográficos del gasto sanitario. Análisis con microdatos individuales  
Ana María Angulo, Ramón Barberán, Pilar Egea y Jesús Mur
- 334/2007 Why do companies go private? The Spanish case  
Inés Pérez-Soba Aguilar
- 335/2007 The use of gis to study transport for disabled people  
Verónica Cañal Fernández
- 336/2007 The long run consequences of M&A: An empirical application  
Cristina Bernad, Lucio Fuentelsaz and Jaime Gómez