FIRM BOUNDARIES AND INVESTMENTS IN INFORMATION TECHNOLOGIES IN SPANISH MANUFACTURING FIRMS

JAIME GÓMEZ
IDANA SALAZAR
PILAR VARGAS

FUNDACIÓN DE LAS CAJAS DE AHORROS
DOCUMENTO DE TRABAJO
Nº 700/2012

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.

ISSN: 1988-8767

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.

FIRM BOUNDARIES AND INVESTMENTS IN INFORMATION TECHNOLOGIES IN SPANISH MANUFACTURING FIRMS

Jaime Gómez[*]
Idana Salazar[*]
Pilar Vargas[*]

Abstract

The objective of this paper is to analyse the relationship between information processing needs and capabilities. We explore the consequences of variations in the vertical and horizontal boundaries of the firm on investments in information technologies. Contrarily to the existing literature, which postulates that less vertical integration implies more investments in information technologies, we argue that concurrent sourcing increases the likelihood of investing in the stock of information technologies. We also maintain that the type of technology analysed has to be taken into account when relating it to firm limits. In particular, we show that beyond-firm technologies are positively related with outsourcing, but diversification only has an influence on the technologies that are used internally. Our hypotheses are tested on a panel of Spanish manufacturing firms, offering general support to our arguments.

Keywords: vertical integration, horizontal boundaries, information processing needs, technology adoption, manufacturing.

JEL clasification: O33, M15.

---

[*]**Corresponding author**: Jaime Gómez, Departamento de Economía y Empresa, Facultad de Ciencias Empresariales, Universidad de La Rioja, Cigüeña 60 (26004), La Rioja, Spain. E-mail: jaime.gomez@unirioja.es, Tel.: 34941299373, Fax: 34941299393.

[*] Departamento de Economía y Empresa, Universidad de La Rioja.

Acknoledgements: We acknowledge financial aid from the Spanish Ministry of Science and Innovation and FEDER (project ECO2011-22947), from University of La Rioja (project EGI11-29) and from the Aragonese Government (S09/PM062).

1.- Introduction

The literature on management relates the information processing needs of firms and their information processing capabilities. From the works of Galbraith (1974) and Tushman and Nadler (1978) different papers have used this framework to determine the optimal design of organizations. The basic idea is that organizations are information processing systems that must cope with different degrees of uncertainty (Tushman and Nadler, 1978). The sources of uncertainty that organizations are facing may be internal or external and they critically determine the amount and the type of information processing mechanisms that an organization needs to develop. Therefore, under this perspective the optimal design for organizations is based on the concept of fit.

The aplication of the information processing needs-capabilities framework is far from being limited to the understanding of firm structure. Given that the information processing needs and capabilities of firms are partially dependent on the investments that firms perform in information technologies, a natural extension of this framework is their study. Our objetive in this paper is to examine whether firm boundaries are related to investments in information technologies through the unbalance that they may create whithin organizations. In our model, the information processing needs and capabilities of firms are determined by their vertical and horizontal limits. The degree of vertical and horizontal integration is critical when understanding the needs of firms to communicate with external providers of resources and the cost of coordinating the activities performed inside and outside the firm.

The arguments that we use in this paper can be mainly divided into two groups. First, we take advantage of recent developments on concurrent sourcing (Parmigiani, 2007; Puranam, Gulati and Battacharya, forthcoming) to argue that investments in technologies used for managing internal transactions do not reach their maximum when firms are vertically desintegrated, as the literature has argued (Dewan, Michael and Min, 1998). Contrarily, we maintain that the obtention of the complementarity advantages generated by concurrent sourcing (Puranam et al., forthcoming) create the highest level of information processing needs. Therefore, firms following this strategy require more internal investments in information technologies to combine internal and external flows of information, than firms that are either vertically integrated or desintegrated.

Second, extant research seems to assume a direct relationship between the boundaries of the firm and investments in the stock of new technologies. This omits the fact that the gap between information processing needs and capabilities may have different characteristics and may require different technologies to be closed. A particularly useful distinction is that of in-firm and beyond-firm technologies (Powell and Dent-Micallef, 1998). The first type includes those technologies that are used within the firm, whereas the second group consists of technologies that are used for managing interorganizational relationships. With this distinction in mind, we show that whereas investments in in-firm technologies are related to both the vertical and horizontal limits of the organization, this does not happen regarding beyond-firm technologies. The reason is that modifications in the vertical boundaries of the firm may potentially reduce its size, making the relationship between internal and external activities necessary. This increase in the interrelations betweent the firm and the market is not evident in the case of diversification or refocusing and, therefore, it does not necessarily motivate the adoption of beyond-firm technologies. Diversification, however, increases the variety of tasks that the firm is involved in and, consequently, increases the need to invest in information technologies that are used to manage internal flows of information. We also argue that this effect is specially important for firms that present higher degrees of related diversification, provided that the main benefits of this strategy stem from the tight coordination of close activities that generate sinergies. Firms that engage in related diversification present a higher inter-unit task interdependence and have to compensate for the higher uncertainty that subunits face. Therefore, the fact that coordination costs are higher in firms with related diversification explain why they should have a higher stock of in-firm technologies.

To test our hypotheses we have chosen a representative sample of manufacturing firms operating in Spain. The data collected provides us with information on the horizontal and vertical boundaries of around 2,000 organizations that are followed over time. In our model, these two dimensions determine the information processing needs and capabilities of organizations. The sample also includes information on the investments that firms perform in information technologies (in-firm technologies) and on the adoption of certain types of technologies that are mainly used for interorganizational communication (beyond-firm technologies). These data are used as a measure of the information processing capabilities of organizations. Provided the different nature of the data on information technologies, we perform separate analysis. On the one hand, we estimate the total investment that firms incurr in information processing equipment and relate it with both concurrent sourcing and diversification. The censored nature of the dependent variable makes the use of a Tobit model necessary. On the other hand, we test the relationship between outsourcing and diversification, and the use of beyond-firm technologies. We expect to find that those firms that outsource more (i.e., with lower information processing capabilities) are more likely to be using interorganizational communication technologies. As explained above, diversification should not show any significant relationship with technology adoption in this case. The use of a multivariate probit allows us to analyse the information available on several technologies in an integrated way.

This paper contributes to the literature in two ways. First, we explain the investments in information technologies as a function of the vertical and horizontal limits of the firm. In doing so, we differentiate ourselves from similar papers that have tackled the relationship between firm boundaries and investments in information technology (see, for example, Dewan et al., 1998). On the one hand, extant research has considered the two extreme forms that firms use to organize transactions in the vertical chain, the market and the hierarchy. This has led researchers to posit that the relationship between vertical integration and information technology investments is negative (see, for example, Dewan et al., 1998). However, we argue that the reasoning leading to that conclusion omits the existence of an intemediate form that combines these two, namely, concurrent sourcing. Recent research (Parmigiani, 2007, p. 304) has shown that concurrent sourcing cannot be understood just as a middle point in the continuum between making and buying, but as a independent discrete choice. This suggests that this intermediate form of governance has its own characteristics and its own costs, being them not just a function of the percentage of vertical integration achieved. This idea leads us to develop a rationale for the existence of an inverted U-shaped relationship between vertical integration/outsourcing and the stock of investments in information technologies, which is tested in the paper.

On the other hand, we show that the assumption that diversification is always related to investments in *all* the types of new technologies may be erroneous. When firms diversify they increase their internal information processing needs, which makes them to invest in the stock of information technologies that are use to manage *internal* tasks. However, this does not necessarily mean an increasing need of those technologies that are used for managing interorganizational relationships. We show that this is the case when considering investments in beyond firm technologies. Finally, in our analyses we control for the impact that other factors, as the stability of the market or the modifications in the products that the firm sells, may have on the amount of information that the firm needs to process.

Second, we provide additional evidence on the relationship between firm boundaries and investments in information technology. This evidence is much needed, given the conflicting results that are present in existing research. For example, regarding the vertical dimension, some empirical studies have found that the speed of adoption of new technologies is lower for non-vertically integrated firms (see, for example, Forman and Gron, 2011, and Gertner and Stillman, 2001). These findings are not only at odds with the postulates of the framework used here, but also with the prevailing view that developments in information technologies have allowed firms to reduce their limits (Forman and Goldfarb, 2006). An explanation to these results may be that they focus on single industries (Formand and Goldfarb, 2006). By choosing a sample integrated by firms operating in different markets we are able to check whether this is the reason for the inconsistency. Apart from this, we are not aware of any paper testing the possibility that concurrent sourcing may be the option that uses information more intensively.

The rest of the paper is structured as follows. The following section starts by presenting the information processing needs-capabilities framework. We then move into the development of the four hypotheses that are subsequently tested. Section three describes the model, the data, the variables and the methodology that is used to test them. Section four presents the results and relates them to the existing empirical evidence. The final section concludes and discusses the major implications of this paper.

2.- A framework for understanding information processsing needs and information processing capabilities

Our main argument in this paper is that we can use the information processing needs-capabilities framework in order to understand the investments that firm perform in new technology. Under this framework, organizations are understood as information processing systems (Tushman and Nadler, 1978). The amount of information that a firm has to process depends on the external and internal sources of uncertainty that it has to confront. Externally, an organization has to cope with the unpredictability that surrounds the obtention of inputs, the use of the technology or the changes in the tastes of consumers, to name just a few. Internally, the firm has to be effective at solving the coordination problems imposed by the division of labor and the different challengues associated to the activities that it has to perform. As Tushman and Nadler (1978), we consider that this uncertainty depends on three factors: (1) the characteristics of the tasks that the firm has to perform, specially whether the task is simple and rutinary or not, (2) the predictability of the environment in which each of the units develop their activities and (3) the interdependence between the different tasks. More complex, less rutinary activities that are surrounded by a changing environment and that need to be tightly coordinated generate higher information processing needs.

The information processsing needs of an organization have to be matched by its information processing capabilities (Tushman and Nadler, 1978; Benasou and Venkatraman, 1995). These capabilities are mainly determined by two factors. First, the organizational structure of the firm, that has the role of collecting environmental information and processing the internal data that is necessary for performing the activities. Second, the investments of firms in information technologies (Benasou and Venkatraman, 1995), on which we focus on this paper. The information processing capabilities of firms increase with the adoption of information technologies that help the firm to collect and manage the information required for producing and selling its products and services.

In this paper, we view investments in information technologies as a way to correct the unbalance between the information processing needs and capabilities of firms. In our model, the need to invest in information technologies is related to the horizontal and vertical boundaries of firms. The choice of the products and the customers to whom the firm will offer these products is one of the main decisions that managers have to take. This choice results in the delineation of the vertical and horizontal limits of the firm: the vertical scope is determined by the number of activities that are made in-house, whereas the horizontal scope is determined by its line of products.

Both the vertical and the horizontal limits of the firm are critical at understanding the information processing-needs and capabilities of firms. First, we propose that the simultaneous use of the market and the hierarchy (i.e., concurrent sourcing), increases the incentives of firms to invest in the stock of information technologies. This is due to complexities introduced by the need to produce an integrated management of both sources (Mols et al., forthcoming; Parmigiani, 2007). We also argue that firms that outsource a higher proportion of their transactions have a higher need of investing in interorganizational communication technologies. The reason is that not using a firm's organizational structure to govern the transactions lowers its information processing capabilities. Second, we maintain that diversification increases the information processing needs of firms by augmenting the complexity and the variety of the tasks performed and coordination costs. However, diversification should not be necessarily related to the adoption of technologies that are used for interorganizational communication, given that they do not contribute to the processing of internal information.

2.1. Outsourcing, information processing needs and investments in technology

The literature has traditionally argued that vertical integration leads firms to invest less in information technologies (see, for example, Dewan et al., 1998). In this section we add two qualifications to this hypothesis in order to build a more nuanced and realistic assessement of the relationship. In order to do this, we first focus on the increasing information processing needs that the use of concurrent sourcing imposes on firms, and analyse the incentives to invest in in-firm technologies. Then, we move into the consideration of the reduction of organizational structure that takes place when firms vertically desintegrate and analyse the consequences in terms of the need to adopt beyond-firm technologies to manage external links.

On the one hand, the literature on information systems has maintained that the way in which firms govern transacions may affect the intrafirm information processing needs and capabilities, determining a firm investment in information technologies. The forms of governance traditionally analysed have been the market and the hierarchy. However, the literature on management has recently focused on the analysis of situations in which firms use a combination of both[1]. This is what the literature has termed as concurrent sourcing and, in our view, its consideration in the context of in-

[1] Bradach and Eccles (1989) use the term "plural governance forms" and they take place when "distinct organizational control mechanisms operate simultaneusly for the same function by the same firm". Other studies have reflected the existence of the simultaneous use of the market and the hierarchy under different names such as "tapered integration" (Harrigan, 1986), plural governance (Heide, 2003) or concurrent sourcing (Parmigiani, 2007).

firm information technology investments has clear implications on the relationship that we are analysing.

To understand why concurrent sourcing may increase the information processing needs of the firm more than the use of the other two extremes, we have to analyse its advantages (Puranam et al., forthcoming; Mols et al., forthcoming). The preference of firms for the use of concurrent sourcing may be mainly explained in terms of (1) incentive and (2) knowledge complementarities. On the one hand, incentive complementarities are due to the competition that the simultaneous use of both sources may create between external an internal suppliers. First, the use of internal sources produces a credible threat on external suppliers that the firm may integrate backwards. Second, when firms produce internally, they collect information that may be used for controlling and monitoring external providers. The information may be also used to discipline the activities that are develop internally and for performance evaluations (Mols et al., forthcoming). On the other hand, knowledge complementarities are created through the combination of the external knowledge on the resources and capabilities of suppliers with the one that the firm possesses. This complementarity arises thanks to collaboration of suppliers and the firm. For example, the plural form provides the firm with a more complete knowledge on the state of the technology, given that it potentially relates the firm with a diverse set of suppliers (Mols et al., forthcoming).

All of these advantages are based on the intensive use of internal and external information, and on their combination. In the words of our theoretical model, they create interdependencies between the internal and the external activities. When firms use concurrent sourcing a complex management process emerges, given that both governing systems must be managed simultaneously (Mols et al., forthcoming; Parmigiani, 2007). In fact, the increased complexity that arises through the combination of two distinct forms of governance is recognised as one of the main costs of plural sourcing (Mols et al., forthcoming, p. 10). This complexity results in higher information processing needs than those steming from using only the market (and certainly, and we concur in this with the literature, from using the hierarchy).

Therefore, the advantages of concurrent sourcing in reducing information asymmetries (Heide, 2003) and learning from the combination of internal and external sources of knowledge increases the information processing needs of firms above those of the two competing forms of governance. We do not have any prediction of the amount of outsourcing that should be necessary to produce the maximum incentives for investing in in-firm technology. However, it seems sensible to expect that both the market and the hierarchy should be important in other to generate enough complexity in the managing process. Therefore, our first hypothesis maintains that:

Hypothesis 1. *Outsourcing has an U-inverted influence on investments in in-firm information technologies, such as that firms with a moderate use of concurrent sourcing are the ones with the highest stock*

On the other hand, to our knowledge the literature has generally considered investments in information processing capabilities, without taking into account the different types of technologies that firms may adopt. However, the distinction between technologies that are used within firms (in-firm technologies) and those used beyond their limits (beyond-firm technologies) seems important. It is important because the relationship between the boundaries of the firm and the adoption of the different technologies available in the market may be different. In particular, we argue that outsourcing is inequivocally and positively related to the adoption of beyond-firm technologies. As argued below, this relationship is specific of the vertical limits of the firm and we do not have any reason to suspect that beyond-firm technologies should also be related to the horizontal boundaries of organizations.

To understand the positive relationship between outsourcing and the adoption of beyond-firm technologies we focus our attention on the organizational structure of firms or, in other terms, the type of subunit structure that a firm uses in order to cope with the uncertainty of the environment (Tushman and Nadler, 1978). As mentioned above, the organizational structure has the role of collecting environmental information and processing the internal data that is necessary for performing the activities. Researchers have offered arguments in favor of the proposition that different organizational structures have different capacities for effective information processing (Tushman and Nadler, 1978). However, we are interested in the reduction of information processing capabilities that the firm experiences when it reduces its vertical limits. In particular, our main argument is that the absence of an organizational structure reduces the information capabilities of firms. This creates an unbalance between information processing needs and capabilities that has to be corrected through the use of certain information technologies, specifically, the ones that serve to establish interorganizational links between the firm and the stages of the vertical chain that are performed externally.

For our purposes, a firm can manage the production process of a given product internally or it can outsource a given proportion of it. If the full production process is performed internally, the firm benefits from the information processing capabilities that are provided by its organizational structure. More precisely, they benefit from different mechanisms such as rules and procedures, task forces, teams, integrating roles or liaison roles (Galbraith, 1978 and Thusman and Nadler, 1978) that provide the firm with the necessary infraestructure to manage the transaction.

The situation just described is very different when a firm decides to externalize all or, at least, a part of the activities. The absence of an organizational structure means that the organization is not able to use intraorganizational mechanisms in order to manage a given transaction. Thus, processing capabilities may be improved through the use of other mechanisms, such as investments in information technologies (Bensaou and Venkatraman, 1995, pp.1475). Investments in information technologies may be useful for the firm both before and after the transaction takes place, improving the communication and helping in the coordination of the interorganizational activities. For example, they may be used to coordinate all the activities related to searching, communicating and establishing contracts between agents (Malone, Yates and Benjamin, 1987; Clemons, Reddi and Row, 1993). Additionally, they improve the ability of firms to perform other tasks that take place after this and that have to do with ordering, billing, making transportation arrangements or confirming payments (Wang and Benaroch, 2004; Lucking-Reiley and Spulber, 2001).

The coordination advantages described above are not only obtained thanks to the establisment of links through which firms exchange information about different variables such as price, quality, or delivery conditions (Malone et al., 1987; Clemons et al., 1993), but also because these technologies reduce the complexities, and thus the costs, associated with communication and coordination between firms. Information technology facilitates the specification of the characteristics of the externalised production in a language that is understandable for all parties (Blois, 1986). This reduction of complexity is obtained thanks to the codification of information and to formalization (Argyres, 1999), which makes it easier the transference of knowledge and of the details of the transaction between organizations. Another important advantage of codified information is that it facilitates the management of inter-firm dependences and the right combination of the externalized activities with those that are performed in house (Bardhan, Whitaker and Mithas, 2006). Codification is important because it helps reducing coordination costs by limiting the independence of suppliers and by minimizing the number of errors (Atallah, 2002). This, in turn, makes quality controls technologically feasible (Blois, 1986) and allow to adress incentive and cognitive conflicts (Mani et al., 2010).[2]

In summary, our second hypothesis reflects the fact that organizational structure and interorganizational communication technologies are, at least within the information processing needs and capabilities framework, substitutes.

Hypothesis 2. *Firms that outsource production at a higher extent of are more likely to invest in beyond-firm information technologies than those firms that outsource less*

2.2. Diversification, information processing needs and investments in technology

The diversification level of a firm accounts for the extent to which it simultaneously operates in distinct lines of business. Through diversification, firms can take out excess capacity in resources or production factors, which can not be sold efficiently in the market (Dewan et al., 1998). Despite economic benefits steming from the sharing of these resources between different lines of business, diversification increases internal coordination requirements and, consequently, its information processing needs. Diversification not only increases internal coordination costs because of the coordination of the resources between different lines of business, but also because the need to manage more activities within more complex structures. However, diversification has little effect on external coordination costs. In this sense, through diversification the firm increases firm activities and, unlike vertical integration, there is no need to obtain the product in the market (Hitt, 1999; Dewan et al., 1998). Hence, diversification increases internal coordination requirements, but it has little effect on the external ones. To account for the increase in information processing needs diversified firms demand information technologies investments as a way to increase their information processing capabilities and reducing internal coordination costs (Hitt 1999;

[2] Incentive conflict assumes the existence of possible opportunistic behaviour. This conflict affect firms' motivation to process information accurately. Cognitive conflicts assumes the lack of a common communication language and therefore, the lack of a shared understanding.

Dewan et al., 1998; Gurbaxani and Whang 1991). Contrarily to the second hypothesis and similarly to the first, in this case we focus on in-firm information technology investments, given that they can be used to coordinate the different activities that it performs. Therefore, our third hypothesis can be written as follows:

Hypothesis 3. *More diversified firms are more likely to invest in in-firm information technologies that facilitate intrafirm coordination*

The distinction between related and unrelated diversification is also helpful for understanding the information processing needs of firms. To understand the difference that may arise, we have to clarify the nature of the economic benefits that firms obtain with both types of diversification. When firms engage in related diversification they seek to obtain economic benefits through the sharing of resources between related lines of business. However, the benefits of unrelated diversification mainly stem from the exploitation of internal capital markets (Hill, 1988; Hill and Hoskisson, 1987; Teece, 1982). In other words, the information processing needs created by related diversification are much more important than the ones of unrelated diversification and, therefore, the importance of increasing the information capabilities of firms is also different. When the type of diversification is related, firms use investments in in-firm information technologies to coordinate different lines of business, obtaining economies of scope as the coordination and control of sharing resources between different lines of business improve (Tanriverdi, 2006; Clemons and Row, 1991). However, the benefits of unrelated diversification stem from sharing financial resources in business units that are not related to each other. That is, the sharing of resources in related diversification creates more interdependences within firms and therefore, more needs to coordinate than unrelated diversification (Shin, 2006; Hitt, 1999; Dewan et al., 1998; Hill and Hoskisson, 1987). Due to the reduction in coordination costs achieved through information technologies investments and the greater need to reduce the costs of interdependences in related diversification firms, the demand for in-firm information technologies investments should be greater in those firms with a relatedly diversified strategy (Hitt, 1999; Dewan et al., 1998).

Hypothesis 4. *Those firms with related diversification are more likely to invest in in-firm information technologies that facilitate intrafirm coordination than the ones with unrelated diversification*

Regarding the relationship between a firm horizontal boundaries and investments in interorganizational communication technologies, whereas diversification increases the likelihood of investing in information technologies that facilitate intrafirm coordination, we do not expect them to be related to the use of technologies that are conceived for external communication (beyond-firm). The reason is that, in this case, diversification is not unambiguously related with an increase in the interorganizational information processing needs or a reduction in the interorganizational information processing capabilities of firms. In other words, firm boundaries are expected to be related to investments in information technologies. However, the types of investments taken into account should be considered at the time of understanding the relationship between them. Although econometric theory precludes us from enunciating a hypothesis in which we expect no causal relationship, we control for diversification in the model that explains the adoption of interorganizational communication technologies.

3.- Empirical Analysis

3.1. Sample description

The data set used in the empirical analysis is the Survey of Business Strategies (ESEE), which is conducted by the Spanish Ministry of Industry since 1990. This data source provides information about firms' characteristics and strategies belonging to the Spanish manufacturing sector. Although the survey is not specific for studying investments in information technologies, the questionnaire includes a set of questions regarding (1) the use of several technologies that facilitate interorganizational transactions (beyond-firm technologies) and the (2) investments that the firm performs in information processing technologies (in-firm technologies).

In order to test our hypotheses we have performed two analysis. The first one helps us testing Hypotheses 1, 3 and 4. Given that these hypotheses are based on internal coordination costs we have calculated an indicator that picks up the investments in in-firm technologies that help to manage them. This indicator is the stock of information technology, which is based on both the firm's investments in information processing equipments and the external expenses in information technology training. Combining this information we calculate the stock in information technologies using the perpetual inventory method for the first component (information processing equipment) and a three year capitalized valued for the training expenses. In order to homogenise the time reference of the two analyses we have calculated this variable in the years 2002 and 2006. For this analysis we have an incomplete panel of 2,480 firms and 3,576 observations. The sample size for this analysis is different than the second one mainly due to the need for available data that the calculation of the perpetual inventory method requires.

The second analysis allows us to test hypothesis 2. It maintains that outsourcing reduces the use of the hierarchy, weakening the information processing capabilities of firms and increasing the need to use beyond-firm technologies. The data also offers information on the use of ebusiness. More precisely, the questionnaire includes information about the use of supplier to business (S2B), business to business (B2B) and business to consumer technologies (B2C). From this set of technologies we choose those that facilitate interorganizational communication, namely, S2B and B2B. The data set also provides information on the use of Computer Aided Design (CAD).[3] The use of CAD is justified by the fact that they improve the codification and the formalization of the transactions that are developed with other organizations. Following Hypothesis 2, we cannot expect that B2C is explained by vertical integration, given that this technology is designed to communicate with consumers and it is not related to the outsourcing practices of firms. However, it may offer a reference point to be compared with the results obtained for the other ebusiness technologies. Taking into account all these four technologies means that our analysis is limited to the years 2002 and 2006 and to an incomplete panel of 2,520 firms and 3,624 observations.

3.2. Variable description and Measurements

Dependent variables

Investments in in-firm information technology stock. The measure of information technology stock combines investments in information processing equipment with a capitalized value of information technology expenses and it is used to test Hypotheses

[3] Although CAD could be understood as an in-firm technology, some authors (see for example Blois, 1986) have also considered that this technology can also be used to standardize interorganizational communication.

1, 3 and 4. Among these expenses we consider the ones in computer and information technology training.

The stock of investments in information processing equipment has been used because it seems a more stable and suitable indicator than the annual information technology investment, which is more sensitive to short-term fluctuations in firm performance. It has been constructed using the perpetual inventory method, using with the investments in information processing equipment (IPEt) from 1994 to 2006. In accordance with Linchtenber (1995), the annual depreciation rate (δ) is assumed to be 15% and in order to approximate the first year value a presample growth rate of 5% has been considered.

Regarding, the capitalized value of information technologies training, we follow Dewan and Kraemer (2000), Dewan et al. (1998) and Dewan and Min (1997), by assuming that computer and information technology training (T) create an asset whose service life is three years. Therefore, we have calculated a three year capitalization of computer and information technology training using a depreciation rate, δ_1, of 33%. The combination of both dimensions, the stock of investments in information processing equipment and the three year capitalized valued of information technologies training, is obtained through the following specification of information technologies stock:

$$IT_t = (1-\delta) * IT_{t-1} + IPE_t + \sum_{k=0}^{2} (1-\delta_1)^k * T_{t-k}$$

We take the natural logarithm of this variable as the final measure of the stock of IT.

Investments in beyond firm technologies. As explained above, for testing Hypothesis 2 we have considered four technologies. Two of them are necessary to perform supplier and interfirm transactions, i.e., supplier to business and business to business. Along with these technologies, we also consider one technology that facilitates supplier transactions (CAD) and an ebusiness technology that is not clearly related to the outsourcing of production that we are studying (B2C). We codify the use of these technologies through four dummy variables that take a value of 1 if the firm uses the technology, and zero otherwise.

Independent variables

Vertical integration. We use the percentage of finished products or tailored components manufactured by a third-party over total purchases as a proxy of the firm's vertical integration. This measure indicates the importance of production externalization and out of the four dimensions of vertical integration established by Harrigan (1986), it makes reference to the breadth of the production stage.

Diversification. To clarify whether there are differences in the use of information technology between firms with different degrees of diversification we use a dummy variable that takes the value one when the firm is not diversified. Similarly, in order to analyse the differences in the use of information technologies that depend on the type of diversification, i.e. related and unrelated, we use a dummy variable that identifies the firms with unrelated diversification.

Control Variables

The models that we estimate also include a set of control variables affecting the decision to adopt a given technology and the total investments that the firm performs. Along with some variables affecting the information processing needs or capabilities, the model includes other variables directly related to the adoption of technology, according to diffusion theory.

Diversification/Vertical integration. We include diversification and vertical integration as a control variable in both analysis. The argument that supports their inclusion is that, given the limited coordination capacity of firms, both dimensions could be conceived as substitutive (Zhou, 2011). For example, the firm could outsource activities in order to free up coordination capacity to carry out other activities such as diversification.

Market stability. As comented, predictability of the environment is one factor to take into account when the information processing needs are being analyzed. Those activities developed in inestable markets generate higher information processing needs (Premkumar, Ramamurthy and Saunders, 2005) and, as a consequence, they can increase the need to invest in all the types of information processing equipment. To control for this effect we have included a dummy variable taking the value 1 when all the markets served by the firm are characterized as stable, and zero otherwise. Therefore, we expect the sign of this variable to be negative in all the analysis.

Product stability. Information processing needs could also be affected by the characteristics of the tasks developed by the firm. In order to control for the information processing needs generated by the activities whose description varies over time we have included a dummy variable that takes a value of 1 when the firm does not change its product offering, and zero otherwise. We expect this variable to have a negative and significant sign in all the estimations.

Business group. The corporate status of the firm, that is, whether the firm is part or not of a larger business group, could also affect the likelihood of investing in information technologies. Baptista (2000) argues that the effect of this variable could be ambiguous. On one hand, independent firms could have a higher flexibility, which favours adoption. On the other hand, firms belonging to a business group could have a better access to financial resources and benefit from information sharing among group members, experiencing less uncertainty. To control for this effect, we include a dummy variable that takes a value of 1 when the firm belongs to a larger business group, and zero otherwise.

Foreign capital. This variable indicates the possession of a part of the capital by foreign investors. The inclusion of this variable is justified by the fact that foreign parent companies often transfer new technology to domestic affiliates (Hollestein and Woerter, 2008). We include a dummy variable taking a value of 1 if the presence of foreign capital in the focal firm is higher than 30%, and zero otherwise. This threshold has been used by other empirical studies studying manufacturing firms (see, Merino and Salas, 1995, 1996).

Export intensity. The literature on the diffusion of new technologies suggests the importance of taking into account the presence of the firm in international markets when the adoption of technologies is analyzed. Export-oriented firms use information technologies mainly to find information about the latest market trends and for the co-ordination of activities with foreign partners (Lal, 1999, 2002). They may also invest in information technologies to confront the higher levels of competition that are present in international markets. Therefore, we expect a positive relationship between a firm's export orientation and information technologies adoption. Export intensity is measured by the ratio of total exports to sales.

Firm size. Previous studies that analyse the diffusion of innovations have related the size of the firm and the adoption of new technologies. These studies establish a positive relationship between the two variables, offering reasons such as the possibilities to obtain economies of scale or the improved access to resources achieved by large firms (Astebro, 2002; Karshernas and Stoneman, 1993; Romeo, 1975). Regarding information technologies adoption, Battisti, Canepa and Stoneman (2009) argue that this variable could pick up several firm characteristics that justify the positive relationship between size and information technologies adoption. These characteristics include efficiency, management abilities, past innovations or variations in the costs of acquiring the new technology, and scale economies. Size is measured by the number of employees working for a given firm (in thousands) and according to previous literature (Battisti et al., 2009; Hollestein and Woerter, 2008; Hollestein, 2004; Bertschek and Fryges, 2002) we expect a positive sign on the accompanying coefficient.

R&D intensity. This variable is included to recognize the influence of absorptive capacity in increasing the likelihood of adopting new technologies. The inclusion of this variable accounts for the fact that the likelihood of adopting new technology not only depends on the amount of available information but also on a firm's ability to assimilate and apply it to commercial ends (Cohen and Levinthal, 1990). Therefore, we consider that those firms that present higher ratio of R&D expending to sales have a higher capacity to value information and they are more likely to invest in technology.

Market Concentration. Market structure has been traditionally linked to the degree of innovation and to the incentives of firms to invest in a given technology. However, the direction of its influence has been ambiguous in most of the cases (Reinganum, 1981). We build a concentration measure that uses the market shares of the four largest firms in every industry to construct a concentration ratio (CR_4).

Industry variables. Other industry features, apart from market concentration, could also affect the likelihood of adopting a given technology. To control for them, we include 19 dummy variables in order to capture the differences between the 20 industries identified in the survey.

Time variables. In order to control for the higher likehood of adoption that may be induced by the learning-by-contact process, i.e. epidemic effect, we also include a dummy variable that takes the value 1 in 2002. This variable also picks up any other temporal effect related to the investments in technology.

Tables 1 and 2 offer some descriptive statistics and correlations on the variables of interest for both the samples used in the first and second analysis.

	S2B			B2B			B2C			CAD		
	Mean		z	Mean		z	Mean		z	Mean		z
	Yes 760	No 2864		Yes 285	No 3339		Yes 190	No 3434		Yes 1388	No 2236	
P. Externalization	11.189	8.063	-6.075***	11.812	8.455	-3.327***	11.902	8.543	-2.417**	11.897	6.746	-12.943***
Export propensity	0.253	0.173	-10.885***	0.271	0.183	-7.781***	0.219	0.188	-2.702***	0.251	0.152	-12.868***
Firm size	0.318	0.195	-11.251***	0.491	0.197	-11.321***	0.390	0.211	-5.265***	0.306	0.168	-13.551***
M. Concentration	40.847	39.919	-1.299	41.066	40.032	-1.858*	40.915	40.070	-1.394	40.320	39.974	-1.204
R&D intensity	0.012	0.005	-13.518***	0.010	0.007	-8.147***	0.011	0.007	-4.492***	0.011	0.004	-14.619***

		S2B			B2B			B2C			CAD		
		Yes	No	χ^2	Yes	No	χ^2	Yes	No	χ^2	Yes	No	χ^2
Market Stability	**Yes**	330	1509	20.444***	124	1715	6.480**	85	1754	2.896*	638	1201	20.561***
	No	429	1354		161	1624		105	1680		750	1035	
Product Stability	**Yes**	559	2314	19.182***	211	2662	5.174**	146	2727	0.724	1003	1870	67.381***
	No	201	550		74	677		44	707		385	366	
Business group	**Yes**	345	946	40.036***	163	1128	62.752***	86	1205	8.124***	603	688	59.990***
	No	415	1918		122	2211		104	2229		785	1548	
Foreign capital	**Yes**	170	476	13.549***	97	549	55.485***	46	600	5.581***	310	336	31.219***
	No	590	2388		188	2790		144	2834		1078	1900	
No Diversification	**Yes**	645	2548	9.626***	248	2945	0.350	163	3030	1.028	1190	2003	12.081***
	No	115	316		37	394		27	404		198	233	
Unrelated Diversification	**Yes**	60	189	1.576	21	228	0.120	15	234	0.329	135	114	28.664***
	No	700	2675		264	3111		175	3200		1253	2122	

Table 2. Correlations between all the independent variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
P. Externalization (1)	1									
No Diversification (2)	-0.013	1								
Un. Diversification (3)	0.023	-0.739	1							
Market Stability (4)	-0.053	0.011	-0.031	1						
Product Stability (5)	-0.078	-0.009	0.002	0.083	1					
Business Group (6)	0.019	0.015	-0.020	-0.026	-0.009	1				
Foreign capital (7)	0.006	0.017	-0.046	-0.020	-0.002	0.506	1			
Export propensity (8)	0.063	-0.006	-0.006	-0.080	-0.047	0.336	0.330	1		
Firm size (9)	-0.007	-0.050	0.001	-0.007	-0.051	0.317	0.289	0.202	1	
Market Concentration (10)	-0.023	0.064	-0.021	0.008	0.0164	0.069	0.006	0.048	0.101	1
R&D intensity (11)	0.116	-0.007	0.009	-0.041	-0.077	0.147	0.106	0.184	0.160	0.059

3.3. Methodology

Provided the different nature of our dependent variables, we use two different methodologies for the independent test of Hypothesis 1, 3 and 4, on the one hand, and Hypothesis 2, on the other. The first analysis uses a tobit model in order to account for the censored nature of the investments in information technologies. Similarly, the limited nature of the adoption of new technologies suggests using a multivariate probit model to test Hypotheses 2. At the same time, it controls for the potential correlation arising between the adoption of the different technologies analysed. Both methods are briefly described in the two following subsections.

First analysis: diversification and investments in information technologies

Regarding the first analysis, and given that the variable "stock in information technologies" has a censored distribution (the lower threshold is a value of 0) a tobit regression was chosen. The general model is specified as follows (Greene, 2008):

$$
\begin{aligned}
&y_i^* = x_i\beta_i + \varepsilon_i \\
&y_i = 0 \ \text{ if } \ y_i^* \le 0 \\
&y_i = y_i^* \ \text{ if } \ y^* > 0
\end{aligned}
$$

where y^* is a latent variable that is a function of a group of exogenous variables and, ε, the error term, which is normally distributed with mean 0 and variance σ_ε. The observed values, y, depend on the value of the latent variable for values greater than 0, and are censored at 0 otherwise.

Second analysis: vertical boundaries and the adoption of interorganization technologies

The second analysis studies the impact of production outsourcing on the adoption of three e-business technologies and computer aided design. As explained above, we use a multivariate probit model to achieve this. Its advantage is that it allows the estimation of the equations corresponding to each of the technologies at the same time. This recognizes the possibility that the adoption of all of them may not be independent. The relation between them may be justified in terms of common factors (for example, firm characteristics) affecting the propensity to adopt or by the presence of systems formed by two or more technologies. Although the model does not distinguish between the two potential sources of correlation, their existence would render a separate estimation as inefficient. We estimate this model through the method proposed by Capellari and Jenkins (2003).

4.- Results

Table 3 shows the results of the estimation of a tobit model on the 3,576 observations available. It is used to test for Hypotheses 1, 3 and 4. The first column of table 4 present the results of the estimation of a simple model that only includes the control variables. Columns 2 and 3 present the results of a augmented model that allow us to test Hypothesis 1 and 3 (column 2) and Hypothesis 4 (column 3). All the three models are globally significant as shown by the value of the LR Chi-2. Furthermore, the analysis of the comparison of the models reveals that model 2 is preferred to models 1 and 3.

Hypothesis 1 maintained that when firms use concurrent sourcing they present higher investments in in-firm information technologies than when they use either the market or the hierarchy. This suggests a quadratic influence of product externalization on the stock of IT. The results show that product externalization has an U-inverted influence on the stock of information technologies, suppporting hypothesis 1. In other words, firms with a higher degree of vertical integration and those that rely intensively in the market invest in information technologies less money than those firms that make a simultaneous use of both the market and the hierarchy. Taking model 2 as the reference, the maximum investment in information technologies takes place when firms outsource approximately a 52% of their production.

Hypothesis 3 argued that firms with higher degrees of diversification have higher information processing needs and will invest more in in-firm information technologies. Column 2 adds one additional variable, whether the firm is diversified or not, that allows us to test this. The coefficient of the variable identifying those firms with no diversification is negative and significant. This means that, as predicted by Hypothesis 2, diversified firms are more likely to use in-firm information technologies.

Finally, Hypothesis 4 argued that those firms with related diversification have higher information processing needs and will invest more in information technologies than those firms with unrelated diversification. Column 3 shows the estimation results of the augmented model that includes the variable that identifies the firms presenting unrelated diversification. This variable has a negative and no significant sign, which indicates that the type of diversification has no effect on the use of information technology. The variable capturing whether the firm is diversified, however, maintains the significance and sign previously obtained and the one measuring product externalization still suggests the inverted U-shaped influence of outsourcing in the stock of IT.

The results of the preferred model provide us with important information about the effect of the control variables on the stock of in-firm information technologies. This model reveals that all the control variables, with the exception of market structure, have a significant effect on the use of information technology. Specifically, the results indicate that market and product stability are negatively related to investments in new technologies, as suggested by our model. They also show that those firms that have higher levels of export intensity, larger size, that belong to a business group and have foreign investors in their capital are more likely to use information technologies. All these results are consistent with our expectancies and with previous research in the literature of diffusion.

A possible drawback of our results on the relationship between the boundaries of the organization and investments in the stock of information technology is that is that the survey is not explicit on whether the latter could include the adoption of beyond-firm technologies. As argued (and tested below), these technologies should play a minor role in the case of managing a diversified corporation. Similarly, it could be maintained that these technologies could be related to the degree of vertical integration, affecting our conclusions on the relationship outsourcing-stock of in-firm information technologies. In order to address this potential shortcoming we re-estimated all the three models without including those firms that are using supplier to business, business to business and consumer to business technologies. We did not exclude the firms using CAD because this technology is not unambiguously related with one of the dimensions (vertical or horizontal).

Table 3. Tobit estimates on the investments that firms perform in information technologies

Dependent variable	IT Stock	IT Stock	IT Stock	IT Stock	IT Stock	IT Stock
No Diversification		-0.807***	-0.987***		-0.790***	-1.057**
		(-3.57)	(-2.94)		(-2.81)	(-2.46)
Unrelated Diversification			-0.312			-0.442
			(-0.73)			(-0.82)
Production externalization	0.043***	0.042***	0.042***	0.055***	0.054***	0.054***
	(3.94)	(3.83)	(3.86)	(4.06)	(3.98)	(4.00)
Production externalization^2	-0.0004***	-0.0004***	-0.0004***	-0.0007**	-0.0006**	-0.0007**
	(-2.84)	(-2.73)	(-2.75)	(-3.38)	(-3.31)	(-3.34)
Market Stability	-0.539***	-0.534***	-0.537***	-0.480**	-0.476**	-0.479**
	(-3.67)	(-3.64)	(-3.66)	(-2.70)	(-2.69)	(-2.70)
Product Stability	-0.498***	-0.507***	-0.506***	-0.481**	-0.489***	-0.493***
	(-2.70)	(-2.75)	(-2.75)	(-2.09)	(-2.13)	(-2.14)
Year 2002	1.301***	1.314***	1.314***	1.449***	1.458***	1.458***
	(8.63)	(8.73)	(8.73)	(8.04)	(8.10)	(8.10)
Integrated in a business group	2.020***	2.034***	2.039***	2.174***	2.189***	2.198***
	(10.79)	(10.88)	(10.90)	(9.29)	(9.37)	(9.40)
Foreign capital	0.984***	1.013***	1.007***	0.919***	0.945***	0.938***
	(4.28)	(4.42)	(4.39)	(3.10)	(3.19)	(3.17)
Export propensity	2.835***	2.844***	2.839***	2.844***	2.864***	2.859***
	(9.02)	(9.06)	(9.05)	(7.22)	(7.28)	(7.26)
Firm size	1.432***	1.392***	1.386***	1.320***	1.276***	1.264***
	(10.03)	(9.74)	(9.69)	(7.26)	(7.01)	(6.92)
Market concentration	0.007	0.007	0.007	0.006	0.007	0.007
	(0.59)	(0.68)	(0.68)	(0.41)	(0.51)	(0.51)
R&D intensity	18.249***	18.440***	18.475***	25.373***	25.605***	25.640***
	(4.59)	(4.64)	(4.65)	(4.52)	(4.57)	(4.57)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Constant	7.296***	8.043***	8.222***	6.879***	7.601***	7.875***
	(10.11)	(10.72)	(10.41)	(7.97)	(8.45)	(8.21)
No. Observations	3576	3576	3576	2683	2683	2683
Test comparison (models 2, 3 vs. 1)	---	12.72***	6.63***	---	7.92***	4.30**
Test comparison (models 3 vs. 2)	---	---	0.53	---	---	0.67
VIF (max/mean)	6.96/2.84	6.97/2.78	6.98/2.81	6.70/2.69	6.70/2.64	6.71/2.68
LR χ^2	1041.65***	1054.35***	1054.88***	761.10***	769.00***	769.68***

***, **, *: Variable statistically significant at the 1%, 5% or 10%, respectively. T-ratios in parentheses

Columns 4 to 6 present the estimations over the restricted sample. The number of observations is reduced from 3,576 to 2,683. The estimates show very similar results both for the variables of interest and for the control variables. Diversified firms invest more in in-firm information processing equipment than non-diversified firms, with the distinction between related and unrelated diversification not being relevant. The coefficients corresponding to the degree of production externalization show that the quadratic influence that was predicted is still present in the reduced sample. Finally, the impact of the control variables does not show any qualitatively important variation, confirming the stability of our results.

The second analysis that we develop was intended to show that research that considers the link between firm boundaries and investment in information technologies has to take into account the nature of the technology analysed. Therefore, we focused on beyond firm technologies, which are supposed to be related to the vertical limits of the organization, but that have no evident link with diversification decisions. Table 4 shows the results of estimating a multivariate probit model and serves to test Hypothesis 2.[4] Therefore, it attempts to confirm that firms with a higher externalization of production are more likely to use certain information technologies. In particular, those that are used for interorganizational communication. The first four columns of Table 4 only use the control variables, whereas the four last columns introduce the variable of interest, which measures the percentaje of products and components that are produced by a third party. The Wald test shows that the full model is globally significant. The results obtained confirm that the externalization of production is positively related to the adoption of three out of the four technologies analysed, namely, supplier to business, business to business and CAD. It is important to highlight that the coefficient corresponding to business to consumer is not significant, reducing the concerns that product externalization is either related to every technology or to ebusiness technologies. Similarly, it is important to take into account that this result is robust to a control for diversification. The variables measuring both the degree and the type of diversification are generally non-significant, although non-diversified firms have a lower likelihood of having adopted S2B.

Regarding the effect of the other control variables and focusing on the full models, we can observe that they do have an important role in explaining the decision to

[4] Tables 1 and 2 offer some descriptive statistics and correlations on the variables of interest.

adopt interorganizational communication technologies. Market and product stability have a very significant and negative effect on the adoption of interorganizational technologies, as in the first analysis. In other words, as suggested by the model, an environment with lower uncertainty and a product with less changes reduces the incentives of firms to invest in beyond-firm information technologies. Apart from CAD, the diffusion process of all the three ebusiness technologies still seems to be underway, given the significance of the dummy variable that picks the epidemic effect up. The four technologies are generally responsive to the other variables that are frequently used to explain diffusion. Supplier to business is positively affected by the integration of the firm in a business group, by a higher export propensity and by investments in R&D. Business to business is positively affected by all the control variables, except for market concentration, whose coefficient is negative, and R&D intensity, which is non-significant. Business to consumer is positively affected by firm size and R&D intensity and negatively by market concentration, finding no significant impact for the rest of the variables. Finally, the adoption of CAD is explained by the integration in a business group, export propensity, firm size and R&D intensity, given that all the coefficients corresponding to these variables present a positive and significant impact.

Finally, the bottom of the Table presents the coefficients that show whether the adoption of the four technologies is related. A positive sign means either that the technologies are related or that they are explained by common factors omitted by our estimations. All the 6 coefficients are positive and very significant confirming that the adoption of one of the technologies creates and incentive to adopt the other three. The highest relationship is observed between B2B and B2C, whereas the lowest is the one that relates B2C and CAD. It is important to note that all the ebusiness technologies present higher values for the rho coefficients when the comparison is performed with another ebusiness technology, suggesting that their adoption is frequently simultaneous. In other words, the lowest coefficient is found when CAD is compared with the other three technologies.

Table 4. Multivariate probit estimates of the decision to adopt interorganizational technologies (years 2002 and 2006)

Dependent variable	S2B	B2B	B2C	CAD	S2B	B2B	B2C	CAD
Production externalization					0.003**	0.005***	0.002	0.004***
					(2.49)	(2.92)	(1.10)	(3.09)
No Diversification	-0.282***	-0.013	-0.150	0.079	-0.285***	-0.020	-0.151	0.079
	(-2.67)	(-0.09)	(-1.01)	(0.72)	(-2.70)	(-0.14)	(-1.02)	(0.72)
Unrelated Diversification	-0.189	0.064	-0.052	0.336**	-0.193	0.060	-0.052	0.336**
	(-1.38)	(0.35)	(-0.26)	(2.45)	(-1.41)	(0.33)	(-0.27)	(2.45)
Market Stability	-0.190***	-0.142**	-0.154***	-0.145***	-0.185***	-0.135**	-0.150***	-0.140***
	(-3.86)	(-2.24)	(-2.21)	(-3.14)	(-3.76)	(-2.13)	(-2.15)	(-3.03)
Product Stability	-0.219***	-0.160**	-0.089	-0.386***	-0.212***	-0.147*	-0.084	-0.379***
	(-3.74)	(-2.13)	(-1.06)	(-6.82)	(-3.61)	(-1.96)	(-1.01)	(-6.67)
Year 2002	-0.442***	-0.278***	-0.184***	-0.044	-0.441***	-0.276***	-0.184***	-0.042
	(-8.49)	(-4.04)	(-2.43)	(-0.91)	(-8.47)	(-4.00)	(-2.43)	(-0.88)
Integrated in a business group	0.172***	0.216***	0.012	0.238***	0.171***	0.214***	0.011	0.234***
	(2.86)	(2.81)	(0.14)	(4.05)	(2.83)	(2.78)	(0.12)	(3.97)
Foreign capital	-0.030	0.225**	0.131	-0.069	-0.029	0.228**	0.132	-0.065
	(-0.41)	(2.60)	(1.29)	(-0.96)	(-0.40)	(2.64)	(1.30)	(-0.91)
Export propensity	0.451***	0.298***	0.087	0.430***	0.442***	0.291***	0.081	0.417***
	(4.52)	(2.35)	(0.59)	(4.39)	(4.42)	(2.29)	(0.55)	(4.25)
Firm size	0.059	0.158***	0.124***	0.124***	0.061	0.161***	0.126***	0.128***
	(1.52)	(3.92)	(2.62)	(2.73)	(1.58)	(3.98)	(2.66)	(2.81)
Market concentration	-0.002	-0.013***	-0.016***	0.001	-0.001	-0.012***	-0.016***	0.001
	(-0.47)	(-2.59)	(-2.66)	(0.24)	(-0.39)	(-2.42)	(-2.62)	(0.35)
R&D intensity	4.646***	1.600	3.485*	7.456***	4.374***	1.144	3.298**	7.101***
	(3.93)	(1.09)	(2.37)	(5.26)	(3.69)	(0.77)	(2.23)	(5.03)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.483*	-1.054***	-1.083**	-1.450***	-0.504*	-1.104***	-1.094***	-1.480***
	(-1.81)	(-2.82)	(-2.48)	(-4.94)	(-1.89)	(-2.96)	(-2.50)	(-5.04)
	rho21	0.418***	**rho32**	0.784***	**rho21**	0.418***	**rho32**	0.784***
	rho31	0.395***	**rho42**	0.130***	**rho31**	0.392***	**rho42**	0.125***
	rho41	0.129***	**rho43**	0.111***	**rho41**	0.126***	**rho43**	0.110***
No. Observations	3624				3624			
Wald Test	1063.65				1082.13			
LR test $rho_{ij}=0 \ \forall \ i \neq j$	590.37***				588.38***			
Test comparison (model 2 vs. 1)	---				20.34***			

***, **, *: Variable statistically significant at the 1%, 5% or 10%, respectively. T-ratios in parentheses

5.- Conclusions

This paper studies the relationship between the vertical and horizontal scope of the firm and investments in information technologies using a sample of Spanish manufacturing firms. As expected, the pattern of these investments is different depending on the information processing capabilities of firms and on their information processing needs. In other words, investments in information technologies varies depending on the choice of the firm's vertical and horizontal boundaries.

Regarding the investments in in-firm information technologies our results show that they are related to both the horizontal and the vertical boundaries of the organization. First, we have found a that concurrent sourcing has the highgest influence on information processing needs and, therefore, demands the highest degree of investment. As predicted, there is a quadratic influence of production externalization on investments in in-firm information technologies, with both the use of the hierarchy and the market at the two extremes, for which the need of increasing the information processing capabilities through the technology is lower. Second, our results confirm that the internal coordination costs that diversification originates increase the information processing needs and create incentives to invest in in-firm information technology. That is, they show that diversified firms make higher investments in information technologies to manage the coordination costs stemming from the use of more complex structures. However, we have not found differences in the investments of information technologies depending on the type of diversification.

Regarding the investments in beyond-firm technologies, our estimations point out that those firms which outsource production are more likely to use them. In this sense, and in order to compensate for the unbalance created between information needs and capabilities, firms invest in technologies that elude or decrease the costs stemming from the transactions with the suppliers of the outsourced production. Specifically, we find that higher levels of production externalization are positively related to the use of supplier to business, business to business and CAD. With the exception of supplier to business, we do not find that the horizontal dimension of the firm is related to these technologies.

These results have clear implications for the study of firm boundaries and for the adoption of information technologies. First, the finding that those firms with medium levels of production externalization present higher levels in the stock of in-firm information technologies is interesting in terms of the study of the different forms through which firms may organize their transactions. This result suggests that the firms that use concurrent sourcing have the highest coordination needs due to the interdependences that arise between the in-house and the outsourced production. Parmigiani (2007) and Puranam et al. (forthcoming) highlight the advantages of using concurrent sourcing, arguing that it allows the firm to simultaneously monitor suppliers, produce efficiently and improve processes, among others. Prior works support the use of both sources simultaneously, using arguments based on uncertainty and synergies (Harrigan, 1986), control and innovation processes (Bradach, 1987), or firm and supplier expertise and technological uncertainty (Heide and John, 1988). However, the benefit from these advantages come at the expense of managing a complex process that combines the the market and the hierarchy (Parmigiani, 2007). As a result, firms have to invest in in-firm information technologies that allow the external and internal information to be fused.

Second, given the neccesary fit beetween the information processing needs and capabilities implied by the model and its expected relation to the performance of the firm our results suggest that any change in both vertical and horizontal limits should be accompanied by a change in the levels of investments in technology. Accepting the implications on performance, our results not only suggest the situations in which managers should invest more in information technologies, but also the type of technology that should be selected. Variations in the horizontal limits modify internal coordination costs and create incentives to invest in in-firm technologies. Regarding beyond-firm technologies and although we accept that the absence of evidence cannot be used as an evidence of absence, our results suggest that their adoption is not affected by modifications in the horizontal boundaries of the firm. Similarly, regarding vertical integration, the decision to use concurrent sourcing creates the need of increasing the information processing capabilities of the firm through in-firm investments in IT. In this case, the extent to which firms outsource production also affect the need to adopt technologies that are used for connecting the stages of the production process that take place inside the firm and those that are developed in the market.

On a more general basis, the results are generally consistent with the information processing needs-capabilities model and they also show a promising way for integrating the literatures on information systems and on technology diffusion. On the one hand, they offer support to the arguments developed in Galbraith (1974) and subsequent papers (see, for example, Tushman and Nadler, 1978). For example, they support the idea that those activities that need to be tightly coordinated generate higher information processing needs and higher incentives to invest in information technologies, as it happens in the case of concurrent sourcing. Similarly, firms that diversify are likely to develop a more varied number of tasks than non-diversified firms, increasing coordination costs. However, the results also support the idea that rutinary tasks that are developed in more predictable environments generate less information processing needs. This is shown by the fact that both product and market stability are negatively related to investments in information technologies, irrespective of the type of technology considered. On the other hand, the success in integrating the analysis of the boundaries of the firm suggested by the information processing needs-capabilities model and the variables from the technology diffusion literature recommends a more frequent combination of both literatures. Although, as shown by this paper, they look complementary in depicting the types of factors that can explain technology adoption, the impression is that they have evolved separately, which impedes offering a complete picture of the factors conditioning technology diffusion.

Our study is subject to some limitations. First, the measure of diversification only indicates whether the firm is diversified or not but does not indicate its extent, or the relative importance of using each type of diversification (related or unrelated). Second, the study only analyses the increase in information processing capabilities derived from technology investments, and do not consider other interorganizational mechanisms that may help the firm to increase information capabilities. Along with information technology mechanisms, Bensaou and Venkatraman (1995) propose two additional interorganizational mechanisms. On the one hand, firms could increase their information processing capabilities through the use of interorganizational structural mechanisms (number of information channels, frequency and extend to which the information exchange between firms is for coordination vs. control purposes). On the other hand, process mechanisms (the use of a cooperative vs collaborative approach for solving disputes, the utilization of commitment and joint effort between firms, …) could also affect the information flow within structural mechanisms and, therefore, a firm's information processing capabilities. This latter limitation opens the opportunity to future empirical research that jointly analyze several mechanisms affecting information processing capabilities.

References

Argyres, N., 1999. The impact of information technology on coordination: evidence form B-2 “Stealth” bomber. *Organization Science*, 10(2), 162-180.

Astebro, T., 2002. Noncapital investment costs and the adoption of CAD and CNC in US metalworking industries. *Rand Journal of Economics*, 33(4), 672-688.

Atallah, G., 2002. Production technology, information technology and vertical integration under asymmetric information, CIRANO Working Papers 2002-32.

Baptista, R., 2000. Do innovations diffuse faster within geographical clusters?. *International Journal of Industrial Organisation*, 18, 515-535.

Bardhan, I., Whitaker, J., Mithas, S., 2006. Information technology, production process outsourcing, and manufacturing plant performance. *Journal of Management Information Systems*, 23(2), 13-40

Battisti, G., Canepa, A., Stoneman, P., 2009. E-Business usage across and within firms in the UK: profitability, externalities and policy. *Research Policy*, 38, 133-143.

Bensaou, M., Venkatraman, M., 1995. Configurations of interorganizational relationships: a comparison between U.S. and Japanese automakers. *Management Science*, 41(9), 1471-1492.

Blois, K.J., 1986. The electronic Re-organisation of industry: Implications for sub-contractors. *European Journal of Marketing*, 20(8), 41-48.

Bradach, J.L., Eccles, R.G., 1989. Price, authority, and trust: from ideal types to plural forms. *Annual Review of Sociology*, 15, 97-118.

Bradach, J., 1987. Using the plural form in the management of restaurant chains. *Administrative Science Quarterly*, 42, 276-303.

Bertschek, I., Fryges, H., 2002. The Adoption of Business-to-Business E- ommerce: Empirical Evidence for German Companies, Discussion Paper No. 02-05, Centre for European Economic Research.

Cappellari, L., Jenkins, S.P., 2003. Multivariate probit regression using simulated maximum likelihood. *The Stata Journal*, 3(3), 278-294.

Clemons E.K., Reddi, S.P., Row, M.C., 1993. The impact of Information Technology on the organization of economic activity: the “move to the middle” hypothesis. *Journal of Management Information System*, 10(2), 9-35.

Clemons E.K., Row, M.C., 1991. Sustaining IT advantage: the role of structural differences. *MIS Quarterly*, 15(3), 275-292.

Cohen, W.M., Levinthal, D.A., 1990. Absorptive capacity: a new perspective on learning and innovation. *Administrative Science Quarterly*, 35, 128–152.

Dewan, S., Kraemer, K., 2000. Information technology and productivity: evidence from country-level data. *Management Science*, 46 (4), 548-562.

Dewan, S., Michael S.C., Min, CH-K., 1998. Firm characteristics and investments in information technology: scale and scope effects. *Information Systems Research*, 9(3), 219-232.

Dewan, S., Min, C-K., 1997. The substitution of Information technology for other factors of production: a firm level analysis. *Management Science*, 43 (12), 1660-1675.

Forman, C., Goldfarb, A., 2006. Diffusion of information and comunication technologies to business, in Terrence Hendershott (ed): *Economics and Information System*, 1-43.

Forman, C., Gron, A. 2011. Vertical integration and information technology investment in the insurance industry. *Journal of Law, Economics & Organization*, 27(1), 180-218.

Galbraith, J.R., 1974. Organization design: An information processing view. *Interfaces*, 43, 28-36.

Gertner, R., Stillman, R., 2001. Vertical integration and Internet strategies in the apparel industry. *The Journal of Industrial Economics*, 49, 417-440.

Greene, W.H., 2008. *Econometric analysis*. 6th ed. Upper Saddle River, NJ: Prentice-Hall.

Gurbaxani V., Wang S., 1991. The impact of information systems on organizations and markets. *Communications of the ACM*, 34(1), 59- 73.

Harrigan, K.R., 1986. Matching vertical integration strategies to competitive conditions. *Strategic Management Journal*, 7(6), 535-555.

Heide, J.B., 2003. Plural governance in industrial purchasing. *Journal of Marketing*, 67, 18-29.

Heide, J.B., John G., 1988. The role of dependence balancing in safeguarding transacion-specific assets in conventional channel. *Journal of Marketing*, 58, 20-35.

Hill, C.W.L., 1988. Internal capital market controls and financial performance in multidivisional firms. *The Journal of Industrial Economics*, 37(1), 67-83.

Hill, C.W.L., Hoskisson R.E., 1987. Strategy and structure in the multiproduct firm. *Academic Management Review*, 12 (2), 331-341.

Hitt, L., 1999. Information technology and firm boundaries: evidence from panel data. *Information Systems Research*, 10(2), 134-149.

Hollestein, H., Woerter, M., 2008. Inter and intra-firm diffusion of technology: The example of the e-comerce. An analysis based on Swiss firm-level data. *Research Policy*, 37, 545-564.

Hollestein, H., 2004. Determinants of the adoption of Information Comunication Technologies (ICT). An empirical analysis based on firm-level data for Swiss business sector. *Structural Change and Economics Dynamics*, 15, 315-342.

Karshenas, M., Stoneman, P., 1993. Rank, stock, order, and epidemic effects in the diffusion of new process technologies: an empirical model. *Rand Journal of Economics*, 24 (4), 503–528.

Lal, K., 2002. E-business and manufacturing sector: a study of small and medium-sized enterprises in India. *Research Policy*, 31, 1199-1211.

Lal, K., 1999. Determinants of the adoption of information technology: a case study of electrical and electronic goods manufacturing firms in India. *Research Policy*, 28, 667-680.

Linchtenber, F., 1995. The output contributions of computer equipment and personnel: a firm-level analysis. *Journal of Economics of Innovation and New Technology*, 3, 201-217.

Lucking-Reiley, D., Spulber, D., 2001. Business-to-business electronic commerce. *Journal of Economic Perspectives*, 15 (1), 55-68.

Malone, T.W., Yates J., Benjamin, R.I., 1987. Electronic markets and electronic hierarchies. *Communications of the ACM*, 30(6), 484-497.

Mani, D., Barua, A., Whinston, A., 2010. An empirical analysis of the impact of information capabilities design on business process outsourcing performance. *MIS Quarterly*, 34(1), 39-62.

Merino, F., Salas, V., 1996. Diferencias de eficiencia entre empresas nacionales y extranjeras en el sector manufacturero. *Papeles de Economía Española*, 66, 191-207.

Merino, F., Salas, V., 1995. Empresa extranjera y manufactura española: efectos directos e indirectos. *Revista de Economía Aplicada*, 9, 105-131.

Mols, N.P., Hansen, J.R., Villadsen, A.R. Plural governance: the effect of internal production on supplier performance. *Industrial Marketing Management*, (forthcoming).

Parmigiani, A., 2007. Why do firms both make and buy? An investigation of concurrent sourcing. *Strategic Management Journal*, 28, 285-311.

Powell T.C., Den-Micallef A., 1997. Information technology as competitive advantage: the role of human, business, and technology resources. *Strategic Management Journal*, 18(5), 375-405

Premkumar, G., Ramamurthy, K., Saunders, C.S., 2005. Information processing view of organizations: an exploratory examination of fit in the context of interorganizational relationships. *Journal of Management Information Systems,* 22(1), 257-294.

Puranam, P., Gulati, R., Bhattacharya, S. How Much to Make and How Much to Buy? Explaining Plural Sourcing Strategies. *Strategic Management Journal* (forthcoming).

Reinganum, J.F., 1981. Market structure and the diffusion of new technology". *The Bell Journal of Economics*, 12 (2), 618-624.

Romeo, A.A., 1975. Interindustry and interfirm differences in the rate of diffusion of an innovation. *Review of Economics and Statistics*, 5(3), 311-319.

Shin, N., 2006. The impact of information technology on the financial performance of diversified firms. *Decision Support Systems*, 41, 698-707.

Tanriverdi, H., 2006. Performance effects of information technology synergies in multibusiness firms. *Mis Quarterly*, 30(1), 57-77.

Teece, D.J., 1982. Towards an economic theory of the multiproduct firm. *Journal Economic Behavior and Organization*, 3(1), 39-63.

Thusman, M., Nadler, D., 1978. Information processing as an integrating conceptin organizational design. *Academy of Management Review*, 3, 613-624.

Wang, C., Benaroch, M., 2004. Supply cahin coordination in buyer centric B2B electronic markets. *International Journal of Production Economics*, 92, 113-124.

Zhou, Y., 2011. Sinergy, coordination costs, and diversification choices. *Strategic Management Journal*, 32, 624-639.

FUNDACIÓN DE LAS CAJAS DE AHORROS

DOCUMENTOS DE TRABAJO

Últimos números publicados

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.
Mª Ángeles García Valiñas

184/2004 Estimación de la economía sumergida es 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 Faíña 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 Faíña 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.
Víctor 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 Withadditive 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 Faíña

251/2006 Funciones abreviadas de bienestar social: Una forma sencilla de simultanear 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 Mª 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, Mª Dolores López and Javier Rodrigo

276/2006 Investment and growth in Europe during the Golden Age
Antonio Cubel and Mª 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 Tram-ways, 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 Rodriguez-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
Vanesa 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 Iráizoz, 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, Mª Dolores López y Javier Rodrigo

322/2007 Human resource management and environment management systems: an empirical study
Mª Concepción López Fernández, Ana Mª Serrano Bedia 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 Mª 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

337/2007 Las clasificaciones de materias en economía: principios para el desarrollo de una nueva clasificación
Valentín Edo Hernández

338/2007 Reforming Taxes and Improving Health: A Revenue-Neutral Tax Reform to Eliminate Medical and Pharmaceutical VAT
Santiago Álvarez-García, Carlos Pestana Barros y Juan Prieto-Rodriguez

339/2007 Impacts of an iron and steel plant on residential property values
Celia Bilbao-Terol

340/2007 Firm size and capital structure: Evidence using dynamic panel data
Víctor M. González and Francisco González

341/2007 ¿Cómo organizar una cadena hotelera? La elección de la forma de gobierno
Marta Fernández Barcala y Manuel González Díaz

342/2007 Análisis de los efectos de la decisión de diversificar: un contraste del marco teórico "Agencia-Stewardship"
Almudena Martínez Campillo y Roberto Fernández Gago

343/2007 Selecting portfolios given multiple eurostoxx-based uncertainty scenarios: a stochastic goal programming approach from fuzzy betas
Enrique Ballestero, Blanca Pérez-Gladish, Mar Arenas-Parra and Amelia Bilbao-Terol

344/2007 "El bienestar de los inmigrantes y los factores implicados en la decisión de emigrar"
Anastasia Hernández Alemán y Carmelo J. León

345/2007 Governance Decisions in the R&D Process: An Integrative Framework Based on TCT and Knowledge View of The Firm.
Andrea Martínez-Noya and Esteban García-Canal

346/2007 Diferencias salariales entre empresas públicas y privadas. El caso español
Begoña Cueto y Nuria Sánchez- Sánchez

347/2007 Effects of Fiscal Treatments of Second Home Ownership on Renting Supply
Celia Bilbao Terol and Juan Prieto Rodríguez

348/2007 Auditors' ethical dilemmas in the going concern evaluation
Andres Guiral, Waymond Rodgers, Emiliano Ruiz and Jose A. Gonzalo

349/2007 Convergencia en capital humano en España. Un análisis regional para el periodo 1970-2004
Susana Morales Sequera y Carmen Pérez Esparrells

350/2007 Socially responsible investment: mutual funds portfolio selection using fuzzy multiobjective programming
Blanca Mª Pérez-Gladish, Mar Arenas-Parra , Amelia Bilbao-Terol and Mª Victoria Rodríguez-Uría

351/2007 Persistencia del resultado contable y sus componentes: implicaciones de la medida de ajustes por devengo
Raúl Iñiguez Sánchez y Francisco Poveda Fuentes

352/2007 Wage Inequality and Globalisation: What can we Learn from the Past? A General Equilibrium Approach
Concha Betrán, Javier Ferri and Maria A. Pons

353/2007 Eficacia de los incentivos fiscales a la inversión en I+D en España en los años noventa
Desiderio Romero Jordán y José Félix Sanz Sanz

354/2007 Convergencia regional en renta y bienestar en España
Robert Meneu Gaya

355/2007 Tributación ambiental: Estado de la Cuestión y Experiencia en España
Ana Carrera Poncela

356/2007 Salient features of dependence in daily us stock market indices
Luis A. Gil-Alana, Juncal Cuñado and Fernando Pérez de Gracia

357/2007 La educación superior: ¿un gasto o una inversión rentable para el sector público?
Inés P. Murillo y Francisco Pedraja

358/2007 Effects of a reduction of working hours on a model with job creation and job destruction
Emilio Domínguez, Miren Ullibarri y Idoya Zabaleta

359/2007 Stock split size, signaling and earnings management: Evidence from the Spanish market
José Yagüe, J. Carlos Gómez-Sala and Francisco Poveda-Fuentes

360/2007 Modelización de las expectativas y estrategias de inversión en mercados de derivados
Begoña Font-Belaire

361/2008 Trade in capital goods during the golden age, 1953-1973
Mª Teresa Sanchis and Antonio Cubel

362/2008 El capital económico por riesgo operacional: una aplicación del modelo de distribución de pérdidas
Enrique José Jiménez Rodríguez y José Manuel Feria Domínguez

363/2008 The drivers of effectiveness in competition policy
Joan-Ramon Borrell and Juan-Luis Jiménez

364/2008 Corporate governance structure and board of directors remuneration policies: evidence from Spain
Carlos Fernández Méndez, Rubén Arrondo García and Enrique Fernández Rodríguez

365/2008 Beyond the disciplinary role of governance: how boards and donors add value to Spanish foundations
Pablo De Andrés Alonso, Valentín Azofra Palenzuela y M. Elena Romero Merino

366/2008 Complejidad y perfeccionamiento contractual para la contención del oportunismo en los acuerdos de franquicia
Vanesa Solís Rodríguez y Manuel González Díaz

367/2008 Inestabilidad y convergencia entre las regiones europeas
Jesús Mur, Fernando López y Ana Angulo

368/2008 Análisis espacial del cierre de explotaciones agrarias
Ana Aldanondo Ochoa, Carmen Almansa Sáez y Valero Casanovas Oliva

369/2008 Cross-Country Efficiency Comparison between Italian and Spanish Public Universities in the period 2000-2005
Tommaso Agasisti and Carmen Pérez Esparrells

370/2008 El desarrollo de la sociedad de la información en España: un análisis por comunidades autónomas
María Concepción García Jiménez y José Luis Gómez Barroso

371/2008 El medioambiente y los objetivos de fabricación: un análisis de los modelos estratégicos para su consecución
Lucía Avella Camarero, Esteban Fernández Sánchez y Daniel Vázquez-Bustelo

372/2008 Influence of bank concentration and institutions on capital structure: New international evidence
Víctor M. González and Francisco González

373/2008 Generalización del concepto de equilibrio en juegos de competición política
Mª Dolores López González y Javier Rodrigo Hitos

374/2008 Smooth Transition from Fixed Effects to Mixed Effects Models in Multi-level regression Models
María José Lombardía and Stefan Sperlich

375/2008 A Revenue-Neutral Tax Reform to Increase Demand for Public Transport Services
Carlos Pestana Barros and Juan Prieto-Rodriguez

376/2008 Measurement of intra-distribution dynamics: An application of different approaches to the European regions
Adolfo Maza, María Hierro and José Villaverde

377/2008 Migración interna de extranjeros y ¿nueva fase en la convergencia?
María Hierro y Adolfo Maza

378/2008 Efectos de la Reforma del Sector Eléctrico: Modelización Teórica y Experiencia Internacional
Ciro Eduardo Bazán Navarro

379/2008 A Non-Parametric Independence Test Using Permutation Entropy
Mariano Matilla-García and Manuel Ruiz Marín

380/2008 Testing for the General Fractional Unit Root Hypothesis in the Time Domain
Uwe Hassler, Paulo M.M. Rodrigues and Antonio Rubia

381/2008 Multivariate gram-charlier densities
Esther B. Del Brio, Trino-Manuel Ñíguez and Javier Perote

382/2008 Analyzing Semiparametrically the Trends in the Gender Pay Gap - The Example of Spain
Ignacio Moral-Arce, Stefan Sperlich, Ana I. Fernández-Saínz and Maria J. Roca

383/2008 A Cost-Benefit Analysis of a Two-Sided Card Market
Santiago Carbó Valverde, David B. Humphrey, José Manuel Liñares Zegarra and Francisco Rodriguez Fernandez

384/2008 A Fuzzy Bicriteria Approach for Journal Deselection in a Hospital Library
M. L. López-Avello, M. V. Rodríguez-Uría, B. Pérez-Gladish, A. Bilbao-Terol, M. Arenas-Parra

385/2008 Valoración de las grandes corporaciones farmaceúticas, a través del análisis de sus principales intangibles, con el método de opciones reales
Gracia Rubio Martín y Prosper Lamothe Fernández

386/2008 El marketing interno como impulsor de las habilidades comerciales de las pyme españolas: efectos en los resultados empresariales
Mª Leticia Santos Vijande, Mª José Sanzo Pérez, Nuria García Rodríguez y Juan A. Trespalacios Gutiérrez

387/2008 Understanding Warrants Pricing: A case study of the financial market in Spain
David Abad y Belén Nieto

388/2008 Aglomeración espacial, Potencial de Mercado y Geografía Económica: Una revisión de la literatura
Jesús López-Rodríguez y J. Andrés Faíña

389/2008 An empirical assessment of the impact of switching costs and first mover advantages on firm performance
Jaime Gómez, Juan Pablo Maícas

390/2008 Tender offers in Spain: testing the wave
Ana R. Martínez-Cañete y Inés Pérez-Soba Aguilar

391/2008 La integración del mercado español a finales del siglo XIX: los precios del trigo entre 1891 y 1905
Mariano Matilla García, Pedro Pérez Pascual y Basilio Sanz Carnero

392/2008 Cuando el tamaño importa: estudio sobre la influencia de los sujetos políticos en la balanza de bienes y servicios
Alfonso Echazarra de Gregorio

393/2008 Una visión cooperativa de las medidas ante el posible daño ambiental de la desalación
Borja Montaño Sanz

394/2008 Efectos externos del endeudamiento sobre la calificación crediticia de las Comunidades Autónomas
Andrés Leal Marcos y Julio López Laborda

395/2008 Technical efficiency and productivity changes in Spanish airports: A parametric distance functions approach
Beatriz Tovar & Roberto Rendeiro Martín-Cejas

396/2008 Network analysis of exchange data: Interdependence drives crisis contagion
David Matesanz Gómez & Guillermo J. Ortega

397/2008 Explaining the performance of Spanish privatised firms: a panel data approach
Laura Cabeza Garcia and Silvia Gomez Anson

398/2008 Technological capabilities and the decision to outsource R&D services
Andrea Martínez-Noya and Esteban García-Canal

399/2008 Hybrid Risk Adjustment for Pharmaceutical Benefits
Manuel García-Goñi, Pere Ibern & José María Inoriza

400/2008 The Team Consensus–Performance Relationship and the Moderating Role of Team Diversity
José Henrique Dieguez, Javier González-Benito and Jesús Galende

401/2008 The institutional determinants of CO_2 emissions: A computational modelling approach using Artificial Neural Networks and Genetic Programming
Marcos Álvarez-Díaz , Gonzalo Caballero Miguez and Mario Soliño

402/2008 Alternative Approaches to Include Exogenous Variables in DEA Measures: A Comparison Using Monte Carlo
José Manuel Cordero-Ferrera, Francisco Pedraja-Chaparro and Daniel Santín-González

403/2008 Efecto diferencial del capital humano en el crecimiento económico andaluz entre 1985 y 2004: comparación con el resto de España
Mª del Pópulo Pablo-Romero Gil-Delgado y Mª de la Palma Gómez-Calero Valdés

404/2008 Análisis de fusiones, variaciones conjeturales y la falacia del estimador en diferencias
Juan Luis Jiménez y Jordi Perdiguero

405/2008 Política fiscal en la uem: ¿basta con los estabilizadores automáticos?
Jorge Uxó González y Mª Jesús Arroyo Fernández

406/2008 Papel de la orientación emprendedora y la orientación al mercado en el éxito de las empresas
Óscar González-Benito, Javier González-Benito y Pablo A. Muñoz-Gallego

407/2008 La presión fiscal por impuesto sobre sociedades en la unión europea
Elena Fernández Rodríguez, Antonio Martínez Arias y Santiago Álvarez García

408/2008 The environment as a determinant factor of the purchasing and supply strategy: an empirical analysis
Dr. Javier González-Benito y MS Duilio Reis da Rocha

409/2008 Cooperation for innovation: the impact on innovatory effort
Gloria Sánchez González and Liliana Herrera

410/2008 Spanish post-earnings announcement drift and behavioral finance models
Carlos Forner and Sonia Sanabria

411/2008 Decision taking with external pressure: evidence on football manager dismissals in argentina and their consequences
Ramón Flores, David Forrest and Juan de Dios Tena

412/2008 Comercio agrario latinoamericano, 1963-2000: aplicación de la ecuación gravitacional para flujos desagregados de comercio
Raúl Serrano y Vicente Pinilla

413/2008 Voter heuristics in Spain: a descriptive approach elector decision
José Luís Sáez Lozano and Antonio M. Jaime Castillo

414/2008 Análisis del efecto área de salud de residencia sobre la utilización y acceso a los servicios sanitarios en la Comunidad Autónoma Canaria
Ignacio Abásolo Alessón, Lidia García Pérez, Raquel Aguiar Ibáñez y Asier Amador Robayna

415/2008 Impact on competitive balance from allowing foreign players in a sports league: an analytical model and an empirical test
Ramón Flores, David Forrest & Juan de Dios Tena

416/2008 Organizational innovation and productivity growth: Assessing the impact of outsourcing on firm performance
Alberto López

417/2008 Value Efficiency Analysis of Health Systems
Eduardo González, Ana Cárcaba & Juan Ventura

418/2008 Equidad en la utilización de servicios sanitarios públicos por comunidades autónomas en España: un análisis multinivel
Ignacio Abásolo, Jaime Pinilla, Miguel Negrín, Raquel Aguiar y Lidia García

419/2008 Piedras en el camino hacia Bolonia: efectos de la implantación del EEES sobre los resultados académicos
Carmen Florido, Juan Luis Jiménez e Isabel Santana

420/2008 The welfare effects of the allocation of airlines to different terminals
M. Pilar Socorro and Ofelia Betancor

421/2008 How bank capital buffers vary across countries. The influence of cost of deposits, market power and bank regulation
Ana Rosa Fonseca and Francisco González

422/2008 Analysing health limitations in spain: an empirical approach based on the european community household panel
Marta Pascual and David Cantarero

423/2008 Regional productivity variation and the impact of public capital stock: an analysis with spatial interaction, with reference to Spain
Miguel Gómez-Antonio and Bernard Fingleton

424/2008 Average effect of training programs on the time needed to find a job. The case of the training schools program in the south of Spain (Seville, 1997-1999).
José Manuel Cansino Muñoz-Repiso and Antonio Sánchez Braza

425/2008 Medición de la eficiencia y cambio en la productividad de las empresas distribuidoras de electricidad en Perú después de las reformas
Raúl Pérez-Reyes y Beatriz Tovar

426/2008 Acercando posturas sobre el descuento ambiental: sondeo Delphi a expertos en el ámbito internacional
Carmen Almansa Sáez y José Miguel Martínez Paz

427/2008 Determinants of abnormal liquidity after rating actions in the Corporate Debt Market
Pilar Abad, Antonio Díaz and M. Dolores Robles

428/2008 Export led-growth and balance of payments constrained. New formalization applied to Cuban commercial regimes since 1960
David Matesanz Gómez, Guadalupe Fugarolas Álvarez-Ude and Isis Mañalich Gálvez

429/2008 La deuda implícita y el desequilibrio financiero-actuarial de un sistema de pensiones. El caso del régimen general de la seguridad social en España
José Enrique Devesa Carpio y Mar Devesa Carpio

430/2008 Efectos de la descentralización fiscal sobre el precio de los carburantes en España
Desiderio Romero Jordán, Marta Jorge García-Inés y Santiago Álvarez García

431/2008 Euro, firm size and export behavior
Silviano Esteve-Pérez, Salvador Gil-Pareja, Rafael Llorca-Vivero and José Antonio Martínez-Serrano

432/2008 Does social spending increase support for free trade in advanced democracies?
Ismael Sanz, Ferran Martínez i Coma and Federico Steinberg

433/2008 Potencial de Mercado y Estructura Espacial de Salarios: El Caso de Colombia
Jesús López-Rodríguez y Maria Cecilia Acevedo

434/2008 Persistence in Some Energy Futures Markets
Juncal Cunado, Luis A. Gil-Alana and Fernando Pérez de Gracia

435/2008 La inserción financiera externa de la economía francesa: inversores institucionales y nueva gestión empresarial
Ignacio Álvarez Peralta

436/2008 ¿Flexibilidad o rigidez salarial en España?: un análisis a escala regional
Ignacio Moral Arce y Adolfo Maza Fernández

437/2009 Intangible relationship-specific investments and the performance of r&d outsourcing agreements
Andrea Martínez-Noya, Esteban García-Canal & Mauro F. Guillén

438/2009 Friendly or Controlling Boards?
Pablo de Andrés Alonso & Juan Antonio Rodríguez Sanz

439/2009 La sociedad Trenor y Cía. (1838-1926): un modelo de negocio industrial en la España del siglo XIX
Amparo Ruiz Llopis

440/2009 Continental bias in trade
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez Serrano

441/2009 Determining operational capital at risk: an empirical application to the retail banking
Enrique José Jiménez-Rodríguez, José Manuel Feria-Domínguez & José Luis Martín-Marín

442/2009 Costes de mitigación y escenarios post-kyoto en España: un análisis de equilibro general para España
Mikel González Ruiz de Eguino

443/2009 Las revistas españolas de economía en las bibliotecas universitarias: ranking, valoración del indicador y del sistema
Valentín Edo Hernández

444/2009 Convergencia económica en España y coordinación de políticas económicas. un estudio basado en la estructura productiva de las CC.AA.
Ana Cristina Mingorance Arnáiz

445/2009 Instrumentos de mercado para reducir emisiones de co2: un análisis de equilibrio general para España
Mikel González Ruiz de Eguino

446/2009 El comercio intra e inter-regional del sector Turismo en España
Carlos Llano y Tamara de la Mata

447/2009 Efectos del incremento del precio del petróleo en la economía española: Análisis de cointegración y de la política monetaria mediante reglas de Taylor
Fernando Hernández Martínez

448/2009 Bologna Process and Expenditure on Higher Education: A Convergence Analysis of the EU-15
T. Agasisti, C. Pérez Esparrells, G. Catalano & S. Morales

449/2009 Global Economy Dynamics? Panel Data Approach to Spillover Effects
Gregory Daco, Fernando Hernández Martínez & Li-Wu Hsu

450/2009 Pricing levered warrants with dilution using observable variables
Isabel Abínzano & Javier F. Navas

451/2009 Information technologies and financial prformance: The effect of technology diffusion among competitors
Lucio Fuentelsaz, Jaime Gómez & Sergio Palomas

452/2009 A Detailed Comparison of Value at Risk in International Stock Exchanges
Pilar Abad & Sonia Benito

453/2009 Understanding offshoring: has Spain been an offshoring location in the nineties?
Belén González-Díaz & Rosario Gandoy

454/2009 Outsourcing decision, product innovation and the spatial dimension: Evidence from the Spanish footwear industry
José Antonio Belso-Martínez

455/2009 Does playing several competitions influence a team's league performance? Evidence from Spanish professional football
Andrés J. Picazo-Tadeo & Francisco González-Gómez

456/2009 Does accessibility affect retail prices and competition? An empirical application
Juan Luis Jiménez and Jordi Perdiguero

457/2009 Cash conversion cycle in smes
Sonia Baños-Caballero, Pedro J. García-Teruel and Pedro Martínez-Solano

458/2009 Un estudio sobre el perfil de hogares endeudados y sobreendeudados: el caso de los hogares vascos
Alazne Mujika Alberdi, Iñaki García Arrizabalaga y Juan José Gibaja Martíns

459/2009 Imposing monotonicity on outputs in parametric distance function estimations: with an application to the spanish educational production
Sergio Perelman and Daniel Santin

460/2009 Key issues when using tax data for concentration analysis: an application to the Spanish wealth tax
José Mª Durán-Cabré and Alejandro Esteller-Moré

461/2009 ¿Se está rompiendo el mercado español? Una aplicación del enfoque de feldstein –horioka
Saúl De Vicente Queijeiro□, José Luis Pérez Rivero□ y María Rosalía Vicente Cuervo□

462/2009 Financial condition, cost efficiency and the quality of local public services
Manuel A. Muñiz□ & José L. Zafra□□

463/2009 Including non-cognitive outputs in a multidimensional evaluation of education production: an international comparison
Marián García Valiñas & Manuel Antonio Muñiz Pérez

464/2009 A political look into budget deficits.The role of minority governments and oppositions
Albert Falcó-Gimeno & Ignacio Jurado

465/2009 La simulación del cuadro de mando integral. Una herramienta de aprendizaje en la materia de contabilidad de gestión
Elena Urquía Grande, Clara Isabel Muñoz Colomina y Elisa Isabel Cano Montero

466/2009 Análisis histórico de la importancia de la industria de la desalinización en España
Borja Montaño Sanz

467/2009 The dynamics of trade and innovation: a joint approach
Silviano Esteve-Pérez & Diego Rodríguez

468/2009 Measuring international reference-cycles
Sonia de Lucas Santos, Inmaculada Álvarez Ayuso & Mª Jesús Delgado Rodríguez

469/2009 Measuring quality of life in Spanish municipalities
Eduardo González Fidalgo, Ana Cárcaba García, Juan Ventura Victoria & Jesús García García

470/2009 ¿Cómo se valoran las acciones españolas: en el mercado de capitales doméstico o en el europeo?
Begoña Font Belaire y Alfredo Juan Grau Grau

471/2009 Patterns of e-commerce adoption and intensity. evidence for the european union-27
María Rosalía Vicente & Ana Jesús López

472/2009 On measuring the effect of demand uncertainty on costs: an application to port terminals
Ana Rodríguez-Álvarez, Beatriz Tovar & Alan Wall

473/2009 Order of market entry, market and technological evolution and firm competitive performance
Jaime Gomez, Gianvito Lanzolla & Juan Pablo Maicas

474/2009 La Unión Económica y Monetaria Europea en el proceso exportador de Castilla y León (1993-2007): un análisis de datos de panel
Almudena Martínez Campillo y Mª del Pilar Sierra Fernández

475/2009 Do process innovations boost SMEs productivity growth?
Juan A. Mañez, María E. Rochina Barrachina, Amparo Sanchis Llopis & Juan A. Sanchis Llopis

476/2009 Incertidumbre externa y elección del modo de entrada en el marco de la inversión directa en el exterior
Cristina López Duarte y Marta Mª Vidal Suárez

477/2009 Testing for structural breaks in factor loadings: an application to international business cycle
José Luis Cendejas Bueno, Sonia de Lucas Santos, Inmaculada Álvarez Ayuso & Mª Jesús Delgado Rodríguez

478/2009 ¿Esconde la rigidez de precios la existencia de colusión? El caso del mercado de carburantes en las Islas Canarias
Juan Luis Jiménez y Jordi Perdiguero

479/2009 The poni test with structural breaks
Antonio Aznar & María-Isabel Ayuda

480/2009 Accuracy and reliability of Spanish regional accounts (CRE-95)
Verónica Cañal Fernández

481/2009 Estimating regional variations of R&D effects on productivity growth by entropy econometrics
Esteban Fernández-Vázquez y Fernando Rubiera-Morollón

482/2009 Why do local governments privatize the provision of water services? Empirical evidence from Spain
Francisco González-Gómez, Andrés J. Picazo-Tadeo & Jorge Guardiola

483/2009 Assessing the regional digital divide across the European Union-27
María Rosalía Vicente & Ana Jesús López

484/2009 Measuring educational efficiency and its determinants in Spain with parametric distance functions
José Manuel Cordero Ferrera, Eva Crespo Cebada & Daniel Santín González

485/2009 Spatial analysis of public employment services in the Spanish provinces
Patricia Suárez Cano & Matías Mayor Fernández

486/2009 Trade effects of continental and intercontinental preferential trade agreements
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez-Serrano

487/2009 Testing the accuracy of DEA for measuring efficiency in education under endogeneity
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez-Serrano

488/2009 Measuring efficiency in primary health care: the effect of exogenous variables on results
José Manuel Cordero Ferrera, Eva Crespo Cebada & Luis R. Murillo Zamorano

489/2009 Capital structure determinants in growth firms accessing venture funding
Marina Balboa, José Martí & Álvaro Tresierra

490/2009 Determinants of debt maturity structure across firm size
Víctor M. González

491/2009 Análisis del efecto de la aplicación de las NIIF en la valoración de las salidas a bolsa
Susana Álvarez Otero y Eduardo Rodríguez Enríquez

492/2009 An analysis of urban size and territorial location effects on employment probabilities: the spanish case
Ana Viñuela-Jiménez, Fernando Rubiera-Morollón & Begoña Cueto

493/2010 Determinantes de la estructura de los consejos de administración en España
Isabel Acero Fraile y Nuria Alcalde Fradejas

494/2010 Performance and completeness in repeated inter-firm relationships: the case of franchising
Vanesa Solis-Rodriguez & Manuel Gonzalez-Diaz

495/2010 A Revenue-Based Frontier Measure of Banking Competition
Santiago Carbó, David Humphrey & Francisco Rodríguez

496/2010 Categorical segregation in social networks
Antoni Rubí-Barceló

497/2010 Beneficios ambientales no comerciales de la directiva marco del agua en condiciones de escasez: análisis económico para el Guadalquivir
Julia Martin-Ortega, Giacomo Giannoccaro y Julio Berbel Vecino

498/2010 Monetary integration and risk diversification in eu-15 sovereign debt markets
Juncal Cuñado & Marta Gómez-Puig

499/2010 The Marshall Plan and the Spanish autarky: A welfare loss analysis
José Antonio Carrasco Gallego

500/2010 The role of learning in firm R&D persistence
Juan A. Mañez, María E. Rochina-Barrachina, Amparo Sanchis-Llopis & Juan A. Sanchis-Llopis

501/2010 Is venture capital more than just money?
Marina Balboa, José Martí & Nina Zieling

502/2010 On the effects of supply strategy on business performance: do the relationships among generic competitive objectives matter?
Javier González-Benito

503/2010 Corporate cash holding and firm value
Cristina Martínez-Sola, Pedro J. García-Teruel & Pedro Martínez-Solano

504/2010 El impuesto de flujos de caja de sociedades: una propuesta de base imponible y su aproximación contable en España
Lourdes Jerez Barroso y Joaquín Texeira Quirós

505/2010 The effect of technological, commercial and human resources on the use of new technology
Jaime Gómez & Pilar Vargas

506/2010 ¿Cómo ha afectado la fiscalidad a la rentabilidad de la inversión en vivienda en España? Un análisis para el periodo 1996 y 2007
Jorge Onrubia Fernández y María del Carmen Rodado Ruiz

507/2010 Modelización de flujos en el análisis input-output a partir de la teoría de redes
Ana Salomé García Muñiz

508/2010 Export-led-growth hypothesis revisited. a balance of payments approach for Argentina, Brazil, Chile and Mexico
David Matesanz Gómez & Guadalupe Fugarolas Álvarez-Ude

509/2010 Realised hedge ratio properties, performance and implications for risk management: evidence from the spanish ibex 35 spot and futures markets
David G McMillan & Raquel Quiroga García

510/2010 Do we sack the manager... or is it better not to? Evidence from Spanish professional football
Francisco González-Gómez, Andrés J. Picazo-Tadeo & Miguel Á. García-Rubio

511/2010 Have Spanish port sector reforms during the last two decades been successful? A cost frontier approach
Ana Rodríguez-Álvarez & Beatriz Tovar

512/2010 Size & Regional Distribution of Financial Behavior Patterns in Spain
Juan Antonio Maroto Acín, Pablo García Estévez & Salvador Roji Ferrari

513/2010 The impact of public reforms on the productivity of the Spanish ports: a parametric distance function approach
Ramón Núñez-Sánchez & Pablo Coto-Millán

514/2010 Trade policy versus institutional trade barriers: an application using “good old” ols
Laura Márquez-Ramos, Inmaculada Martínez-Zarzoso & Celestino Suárez-Burguet

515/2010 The “Double Market” approach in venture capital and private equity activity: the case of Europe
Marina Balboa & José Martí

516/2010 International accounting differences and earnings smoothing in the banking industry
Marina Balboa, Germán López-Espinosa & Antonio Rubia

517/2010 Convergence in car prices among European countries
Simón Sosvilla-Rivero & Salvador Gil-Pareja

518/2010 Effects of process and product-oriented innovations on employee downsizing
José David Vicente-Lorente & José Ángel Zúñiga-Vicente

519/2010 Inequality, the politics of redistribution and the tax-mix
Jenny De Freitas

520/2010 Efectos del desajuste educativo sobre el rendimiento privado de la educación: un análisis para el caso español (1995-2006)
Inés P. Murillo, Marta Rahona y Mª del Mar Salinas

521/2010 Sructural breaks and real convergence in opec countries
Juncal Cuñado

522/2010 Human Capital, Geographical location and Policy Implications: The case of Romania
Jesús López-Rodríguez□, Andres Faiña y Bolea Cosmin-Gabriel

523/2010 Organizational unlearning context fostering learning for customer capital through time: lessons from SMEs in the telecommunications industry
Anthony K. P. Wensley, Antonio Leal-Millán, Gabriel Cepeda-Carrión & Juan Gabriel Cegarra-Navarro

524/2010 The governance threshold in international trade flows
Marta Felis-Rota

525/2010 The intensive and extensive margins of trade decomposing exports growth differences across Spanish regions
Asier Minondo Uribe-Etxeberria & Francisco Requena Silvente

526/2010 Why do firms locate r&d outsourcing agreeements offshore? the role of ownership, location, and externalization advantages
Andrea Martínez-Noya, Esteban Gárcía-Canal & Mauro f. Guillén

527/2010 Corporate Taxation and the Productivity and Investment Performance of Heterogeneous Firms: Evidence from OECD Firm-Level Data
Norman Gemmell, Richard Kneller, Ismael Sanz & José Félix Sanz-Sanz

528/2010 Modelling Personal Income Taxation in Spain: Revenue Elasticities and Regional Comparisons
John Creedy & José Félix Sanz-Sanz

529/2010 Mind the Remoteness!. Income disparities across Japanese Prefectures
Jesús López-Rodríguez□, Daisuke Nakamura

530/2010 El nuevo sistema de financiación autonómica: descripción, estimación empírica y evaluación
Antoni Zabalza y Julio López Laborda

531/2010 Markups, bargaining power and offshoring: an empirical assessment
Lourdes Moreno & Diego Rodríguez

532/2010 The snp-dcc model: a new methodology for risk management and forecasting
Esther B. Del Brio, Trino-Manuel Ñíguez & Javier Perote

533/2010 El uso del cuadro de mando integral y del presupuesto en la gestión estratégica de los hospitales públicos
David Naranjo Gil

534/2010 Análisis de la efectividad de las prácticas de trabajo de alta implicación en las fábricas españolas
Daniel Vázquez-Bustelo□□ y Lucía Avella Camarero

535/2010 Energía, innovación y transporte: la electrificación de los tranvías en España, 1896-1935
Alberte Martínez López

536/2010 La ciudad como negocio: gas y empresa en una región española, Galicia 1850-1936
Alberte Martínez López y Jesús Mirás Araujo

537/2010 To anticipate or not to anticipate? A comparative analysis of opportunistic early elections and incumbents' economic performance
Pedro Riera Sagrera

538/2010 The impact of oil shocks on the Spanish economy
Ana Gómez-Loscos, Antonio Montañés & María Dolores Gadea

539/2010 The efficiency of public and publicly-subsidiz ed high schools in Spain. evidence from pisa-2006
María Jesús Mancebón, Jorge Calero, Álvaro Choi & Domingo P. Ximénez-de-Embún

540/2010 Regulation as a way to force innovation: the biodiesel case
Jordi Perdiguero & Juan Luis Jiménez

541/2010 Pricing strategies of Spanish network carrier
Xavier Fageda, Juan Luis Jiménez & Jordi Perdiguero

542/2010 Papel del posicionamiento del distribuidor en la relación entre la marca de distribuidor y lealtad al establecimiento comercial
Oscar González-Benito y Mercedes Martos-Partal

543/2010 How Bank Market Concentration, Regulation, and Institutions Shape the Real Effects of Banking Crises
Ana I. Fernández, Francisco González & Nuria Suárez

544/2010 Una estimación del comercio interregional trimestral de bienes en España mediante técnicas de interpolación temporal
Nuria Gallego López, Carlos Llano Verduras y Julián Pérez García

545/2010 Puerto, empresas y ciudad: una aproximación histórica al caso de Las Palmas de Gran Canaria
Miguel Suárez, Juan Luis Jiménez y Daniel Castillo

546/2010 Multinationals in the motor vehicles industry: a general equilibrium analysis for a transition economy
Concepción Latorre & Antonio G. Gómez-Plana

547/2010 Core/periphery scientific collaboration networks among very similar researchers
Antoni Rubí-Barceló

548/2010 Basic R&D in vertical markets
Miguel González-Maestre & Luis M. Granero

549/2010 Factores condicionantes de la presión fiscal de las entidades de crédito españolas, ¿existen diferencias entre bancos y cajas de ahorros?
Ana Rosa Fonseca Díaz, Elena Fernández Rodríguez y Antonio Martínez Arias

550/2010 Analyzing an absorptive capacity: Unlearning context and Information System Capabilities as catalysts for innovativeness
Gabriel Cepeda-Carrión, Juan Gabriel Cegarra-Navarro & Daniel Jimenez-Jimenez

551/2010 The resolution of banking crises and market discipline: international evidence
Elena Cubillas, Ana Rosa Fonseca & Francisco González

552/2010 A strategic approach to network value in information markets
Lucio Fuentelsaz, Elisabet Garrido & Juan Pablo Maicas

553/2010 Accounting for the time pattern of remittances in the Spanish context
Alfonso Echazarra

554/2010 How to design franchise contracts: the role of contractual hazards and experience
Vanesa Solis-Rodriguez & Manuel Gonzalez-Diaz

555/2010 Una teoría integradora de la función de producción al rendimiento empresarial
Javier González Benito

556/2010 Height and economic development in Spain, 1850-1958
Ramón María-Dolores & José Miguel Martínez-Carrión

557/2010 Why do entrepreneurs use franchising as a financial tool? An agency explanation
Manuel González-Díaz & Vanesa Solís-Rodríguez

558/2010 Explanatory Factors of Urban Water Leakage Rates in Southern Spain
Francisco González-Gómez, Roberto Martínez-Espiñeira, Maria A. García-Valiñas & Miguel Á. García Rubio

559/2010 Los rankings internacionales de las instituciones de educación superior y las clasificaciones universitarias en España: visión panorámica y prospectiva de futuro.
Carmen Pérez-Esparrells y José Mª Gómez-Sancho.

560/2010 Análisis de los determinantes de la transparencia fiscal: Evidencia empírica para los municipios catalanes
Alejandro Esteller Moré y José Polo Otero

561/2010 Diversidad lingüística e inversión exterior: el papel de las barreras lingüísticas en los procesos de adquisición internacional
Cristina López Duarte y Marta Mª Vidal Suárez

562/2010 Costes y beneficios de la competencia fiscal en la Unión Europea y en la España de las autonomías
José Mª Cantos, Agustín García Rico, Mª Gabriela Lagos Rodríguez y Raquel Álamo Cerrillo

563/2010 Customer base management and profitability in information technology industries
Juan Pablo Maicas y Francisco Javier Sese

564/2010 Expansión internacional y distancia cultural: distintas aproximaciones —hofstede, schwartz, globe
Cristina López Duarte y Marta Mª Vidal Suárez

565/2010 Economies of scale and scope in service firms with demand uncertainty: An application to a Spanish port
Beatriz Tovar & Alan Wall

566/2010 Fiscalidad y elección entre renta vitalicia y capital único por los inversores en planes de pensiones: el caso de España
Félix Domínguez Barrero y Julio López Laborda

567/2010 Did the cooperative start life as a joint-stock company? Business law and cooperatives in Spain, 1869–1931
Timothy W. Guinnan & Susana Martínez-Rodríguez

568/2010 Predicting bankruptcy using neural networks in the current financial crisis: a study for US commercial banks
Félix J. López-Iturriaga, Óscar López-de-Foronda & Iván Pastor Sanz

569/2010 Financiación de los cuidados de larga duración en España
Raúl del Pozo Rubio y Francisco Escribano Sotos

570/2010 Is the Border Effect an Artefact of Geographic Aggregation?
Carlos Llano-Verduras, Asier Minondo-Uribe & Francisco Requena-Silvente

571/2010 Notes on using the hidden asset or the contribution asset to compile the actuarial balance for pay-as-you-go pension systems
Carlos Vidal-Meliá & María del Carmen Boado-Penas

572/2010 The Real Effects of Banking Crises: Finance or Asset Allocation Effects? Some International Evidence
Ana I. Fernández, Francisco González & Nuria Suárez Carlos

573/2010 Endogenous mergers of complements with mixed bundling
Ricardo Flores-Fillol & Rafael Moner-Colonques

574/2010 Redistributive Conflicts and Preferences for Tax Schemes in Europe
Antonio M. Jaime-Castillo & Jose L. Saez-Lozano

575/2010 Spanish emigration and the setting-up of a great company in Mexico: bimbo, 1903-2008
Javier Moreno Lázaro

576/2010 Mantenimiento temporal de la equidad horizontal en el sistema de financiación autonómica
Julio López Laborda y Antoni Zabalza

577/2010 Sobreeducación, Educación no formal y Salarios: Evidencia para España
Sandra Nieto y Raúl Ramos

578/2010 Dependencia y empleo: un análisis empírico con la encuesta de discapacidades y atención a la dependencia (edad) 2008.
David Cantarero-Prieto y Patricia Moreno-Mencía

579/2011 Environment and happiness: new evidence for Spain
Juncal Cuñado & Fernando Pérez de Gracia

580/2011 Aanalysis of emerging barriers for e-learning models. a case of study
Nuria Calvo & Paolo Rungo

581/2011 Unemployment, cycle and gender
Amado Peiró, Jorge Belaire-Franch, & Maria Teresa Gonzalo

582/2011 An Analytical Regions Proposal for the Study of Labour Markets: An Evaluation for the Spanish Territory
Ana Viñuela Jiménez & Fernando Rubiera Morollón

583/2011 The Efficiency of Performance-based-fee Funds
Ana C. Díaz-Mendoza, Germán López-Espinosa & Miguel A. Martínez-Sedano

584/2011 Green and good?. The investment performance of US environmental mutual funds
Francisco J. Climent-Diranzo & Pilar Soriano-Felipe

585/2011 El fracaso de Copenhague desde la teoría de juegos.
Yolanda Fernández Fernández, Mª Ángeles Fernández López y Blanca Olmedillas Blanco

586/2011 Tie me up, tie me down! the interplay of the unemployment compensation system, fixed-term contracts and rehirings
José M. Arranz & Carlos García-Serrano

587/2011 Corporate social performance, innovation intensity and their impacts on financial performance: evidence from lending decisions
Andrés Guiral

588/2011 Assessment of the programme of measures for coastal lagoon environmental restoration using cost-benefit analysis.
José Miguel Martínez Paz & Ángel Perni Llorente

589/2011 Illicit drug use and labour force participation: a simultaneous equations approach
Berta Rivera, Bruno Casal, Luis Currais & Paolo Rungo

590/2011 Influencia de la propiedad y el control en la puesta en práctica de la rsc en las grandes empresas españolas
José-Luis Godos-Díez, Roberto Fernández-Gago y Laura Cabeza-García

591/2011 Ownership, incentives and hospitals
Xavier Fageda & Eva Fiz

592/2011 La liberalización del ferrocarril de mercancías en europa: ¿éxito o fracaso?
Daniel Albalate del Sol, Maria Lluïsa Sort García y Universitat de Barcelona

593/2011 Do nonreciprocal preference regimes increase exports?
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez-Serrano

594/2011 Towards a dynamic analysis of multiple-store shopping: evidence from Spanish panel data
Noemí Martínez-Caraballo, Manuel Salvador, Carmen Berné & Pilar Gargallo

595/2011 Base imponible y neutralidad del impuesto de sociedades: alternativas y experiencias
Lourdes Jerez Barroso

596/2011 Cambio técnico y modelo de negocio: las compañías de transporte urbano en España, 1871-1989
Alberte Martínez López

597/2011 A modified dickey-fuller procedure to test for stationarity
Antonio Aznar, María-Isabel Ayuda

598/2011 Entorno institucional, estructura de propiedad e inversión en I+D: Un análisis internacional
Félix J. López Iturriaga y Emilio J. López Millán

599/2011 Factores competitivos y oferta potencial del sector lechero en Navarra
Valero L. Casasnovas Oliva y Ana M. Aldanondo Ochoa

600/2011 Política aeroportuaria y su impacto sobre la calidad percibida de los aeropuertos
Juan Luis Jiménez y Ancor Suárez

601/2011 Regímenes de tipo de cambio y crecimiento económico en países en desarrollo
Elena Lasarte Navamuel y José Luis Pérez Rivero

602/2011 La supervivencia en las empresas de alta tecnología españolas: análisis del sector investigación y desarrollo
Evangelina Baltar Salgado, Sara Fernández López, Isabel Neira Gómez y Milagros Vivel Búa

603/2011 Análisis económico y de rentabilidad del sistema financiero español, por tipo de entidades y tamaño, después de cuatro años de crisis y ante los retos de la reestructuración financiera
Salvador Climent Serrano

604/2011 Does competition affect the price of water services? Evidence from Spain
Germà Bel, Francisco González-Gómez & Andrés J Picazo-Tadeo

605/2011 The Effects of Remoteness in Japanese Educational Levels
Jesús López-Rodríguez & Daisuke Nakamura

606/2011 The money market under information asymmetries and imperfectly competitive loan and deposit markets
Aday Hernández

607/2011 The effects of airline and high speed train integration
M. Pilar Socorro & M. Fernanda Viecens

608/2011 Consecuencias de la imbricación de los clientes en la dirección medioambiental: un análisis empírico
Jesús Ángel del Brío González, Esteban Fernández Sánchez y Beatriz Junquera Cimadevilla

609/2011 Revenue autonomy and regional growth: an analysis for the 25 year-process of fiscal decentralisation in Spain
Ramiro Gil-Serrate, Julio López-Laborda & Jesús Mur

610/2011 The accessibility to employment offices in the Spanish labor market: Implications in terms of registered unemployment
Patricia Suárez, Matías Mayor & Begoña Cueto

611/2011 Time-varying integration in European government bond markets
Pilar Abad, Helena Chuliá & Marta Gómez-Puig

612/2011 Production networks and EU enlargement: is there room for everyone in the automotive industry?
Leticia Blázquez, Carmen Díaz-Mora & Rosario Gandoy

613/2011 Los factores pronóstico económico, estructura productiva y capacidad de innovar en la valoración de activos españoles
Mª Begoña Font Belaire y Alfredo Juan Grau Grau

614/2011 Capital structure adjustment process in firms accessing venture funding
Marina Balboa, José Martí & Álvaro Tresierra

615/2011 Flexibilidad Contable en la Valoración de Instrumentos Financieros Híbridos
Jacinto Marabel-Romo, Andrés Guiral-Contreras & José Luis Crespo-Espert

616/2011 Why are (or were) Spanish banks so profitable?
Antonio Trujillo-Ponce

617/2011 Extreme value theory versus traditional garch approaches applied to financial data: a comparative evaluation
Dolores Furió & Francisco J. Climent

618/2011 La restricción de balanza de pagos en la España del euro. Un enfoque comparativo.
David Matesanz Gómez, Guadalupe Fugarolas Álvarez-Ude y Roberto Bande Ramudo

619/2011 Is inefficiency under control in the justice administration?
Marta Espasa & Alejandro Esteller-Moré

620/2011 The evolving patterns of competition after deregulation
Jaime Gómez Villascuerna, Raquel Orcos Sánchez & Sergio Palomas Doña

621/2011 Análisis pre y post-fusiones del sector compuesto por las cajas de ahorros españolas: el tamaño importa
Antonio A. Golpe, Jesús Iglesias y Juan Manuel Martín

622/2011 Evaluating three proposals for testing independence in non linear spatial processes
Fernando A. López-Hernández, M. Luz Maté-Sánchez-Val & Andrés Artal-Tur

623/2011 Valoración del Mercado de los Activos Éticos en España: una Aplicación del Método de los Precios Hedónicos
Celia Bilbao-Terol y Verónica Cañal-Fernández

624/2011 Happiness beyond Material Needs: The Case of the Mayan People
Jorge Guardiola, Francisco González-Gómez & Miguel A. García-Rubio

625/2011 Stock characteristics, investor type and market myopia
Cristina Del Rio-Solano & Rafael Santamaria-Aquilué

626/2011 Is mistrust under control in the justice administration?
Alejandro Esteller-Moré

627/2011 Working capital management, corporate performance, and financial constraints
Sonia Baños-Caballero, Pedro J. García-Teruel & Pedro Martínez-Solano

628/2011 On the optimal distribution of traffic of network ailines
Xavier Fageda & Ricardo Flores-Fillol

629/2011 Environmental tax and productivity in a subcentral context: new findings on the porter hypothesis
Jaime Vallés- Giménez & Anabel Zárate-Marco

630/2011 The impact of scale effects on the prevailing internet-based banking model in the US
Alexandre Momparlera, Francisco J. Climentb & José M. Ballesterb

631/2011 Student achievement in a cross-country perspective: a multilevel analysis of pisa2006 data for Italy and Spain
Tommaso Agasisti & Jose Manuel Cordero-Ferrera

632/2011 Banking liberalization and firms' debt structure: International evidence
Víctor M. González & Francisco González

633/2011 Public sector contingent liabilities in Spanish toll roads
Carlos Contreras

634/2011 Fiscal Sustainability and Immigration in the Madrid Region
Luis Miguel Doncel, Pedro Durá, Pilar Grau-Carles & Jorge Sainz

635/2011 Las desviaciones presupuestarias del gasto del estado en el periodo 1990-2009: un análisis desde las perspectivas agregada y de programas.
Valentín Edo Hernández

636/2011 A network approach to services internationalization
Stefano Visintin

637/2011 Factors behind the presence of agricultural credit cooperatives in Spain, 1900-1935: an econometric model
Ángel Pascual Martínez-Soto, Ildefonso Méndez- Martínez & Susana Martínez-Rodríguez.

638/2011 La eficiencia técnica en la industria de agua latinoamericana medida a través de la función de distancia
Angel Higuerey Gómez , Lourdes Trujillo Castellano y María Manuela González Serrano

639/2011 Urban Patterns, Population Density and the Cost of Providing Basic Infrastructure: A Frontier Approach
Inmaculada C. Álvarez, Ángel M. Prieto & José L. Zofío

640/2011 A comparison of national vs. multinational firms' performance using a general equilibrium perspective
María C. Latorre

641/2011 A computable general equilibrium evaluation of market performance after the entry of multinationals
María C. Latorre

642/2011 Competition for procurement shares
José Alcalde & Matthias Dahm

643/2011 Air services on thin routes: regional versus low-cost airlines
Xavier Fageda & Ricardo Flores-Fillol

644/2011 Efficiency and Stability in a Strategic Model of Hedonic Coalitions
Antoni Rubí-Barceló

645/2011 An analysis of the cost of disability across Europe using the standard of living approach
José-Ignacio Antón, Francisco-Javier Braña & Rafael Muñoz de Bustillo

646/2011 Estimating the gravity equation with the actual number of exporting firms
Asier Minondo & Francisco Requena

647/2011 New public management-delivery forms, quality levels and political factors on solid management waste costs in Spanish local governments
José Luis Zafra-Gómez, Diego Prior Jiménez, Ana María Plata Díaz & Antonio M López Hernández

648/2011 El sector financiero como factor desestabilizador para la economía a partir del análisis de Hyman Minsky
Isabel Gimenez Zuriaga

649/2011 Determinantes de la prima de riesgo en las emisiones de bonos de titulización hipotecaria en España (1993-2011)
Miguel Ángel Peña Cerezo, Arturo Rodríguez Castellanos y Francisco Jaime Ibáñez Hernández

650/2011 Does complexity explain the structure of trade?
Asier Minondo & Francisco Requenaz

651/2011 Supplementary pensions and saving: evidence from Spain
José-Ignacio Antón, Rafael Muñoz de Bustillo & Enrique Fernández-Macías

652/2011 The role of destination spatial spillovers and technological intensity in the location of manufa cturing and services firms
Andrés Artal-Tur, José Miguel Navarro-Azorín & María Luisa Alamá-Sabater

653/2011 El papel de los márgenes extensivo e intensivo en el crecimiento de las exportaciones manufactureras españolas por sectores tecnológico
Juan A. Máñez, Francisco Requena-Silvente, María E. Rochina-Barrachina y Juan A. Sanchis-Llopis

654/2011 Incumbents and institutions: how the value of resources varies across markets
Lucio Fuentelsaz, Elisabet Garrido & Juan Pablo Maícas

655/2011 Price differences between domestic and international air markets: an empirical application to routes from Gran Canaria
Xavier Fageda, Juan Luis Jiménez & Carlos Díaz Santamaría

656/2012 The role of accruals quality in the access to bank debt
Pedro J. García-Teruel, Pedro Martínez-Solano and Juan P. Sánchez-Ballesta

657/2012 Trade Under Uncertainty: Legal Institutions Matter
Lisa Kolovich & Isabel Rodriguez-Tejedo

658/2012 La relación bidireccional entre la rsc y el resultado empresarial: conclusiones de un estudio empírico el sector de las cajas de ahorros
Almudena Martínez Campillo, Laura Cabeza García y Federico Marbella Sánchez

659/2012 Consejos de administración y performance de la empresa: efecto de la pertenencia a múltiples consejos
Félix J. López Iturriaga y Ignacio Morrós Rodríguez

660/2012 Análisis comparado de los sistemas eléctricos en España y Argentina, 1890-1950. Estrategias globales y experiencias divergentes de la electrificación en dos países de industrialización tardía
Isabel Bartolomé y Norma Silvana Lanciotti

661/2012 Leverage and corporate performance: International evidence
Víctor M. González

662/2012 Procesos de prociclicidad crediticia e impacto de la provisión estadística en España
Francisco Jaime Ibáñez Hernández, Miguel Ángel Peña Cerezo y Andrés Araujo de la Mata

663/2012 Policy success or economic slowdown?. Effects of the 80 km•h-1 speed limit on air pollution in the Barcelona metropolitan area
Germà Bel i Queralt & Jordi Rosell i Segura

664/2012 Modelos regulatorios en las telecomunicaciones fijas de banda ancha: competencia en redes frente a competencia en servicios. la evidencia empírica en la OCDE y España
Juan Rubio Martín y César Sánchez Pérez

665/2012 Regional export promotion offices and trade margins
Salvador Gil-Pareja, Rafael Llorca-Vivero, José Antonio Martínez-Serrano & Francisco Requena-Silvente

666/2012 An Experimental Study of Gender Differences in Distributive Justice
Ismael Rodriguez-Lara

667/2012 Spanish savings banks in the credit crunch: could distress have been predicted before the crisis? A multivariate statistical analysis
Martí Sagarra, Cecilio Mar-Molinero & Miguel García-Cestona

668/2012 Cities to live or to work in: an input-output model of migration and commuting
Ana Viñuela & Esteban Fernández-Vázquez

669/2012 Non-linear Dynamics in Discretionary Accruals: An Analysis of Bank Loan-Loss Provisions
Marina Balboa, Germán López-Espinosa & Antonio Rubia

670/2012 Iniciación, persistencia e intensificación en la realización de actividades de I+D en España
Dolores Añón Higón, Juan A. Máñez and y Juan A. Sanchis-Llopis

671/2012 La neutralidad financiera en el impuesto sobre sociedades: microsimulación de las opciones de reforma para España
Lourdes Jerez Barroso y Fidel Picos Sánchez

672/2012 When trains go faster than planes: The strategic reaction of airlines in Spain
Juan Luis Jiménez and Ofelia Betancor

673/2012 Distribución del gasto sanitario público por edad y sexo en España: Análisis de la década 1998-2008
Ángela Blanco Moreno, Rosa Urbanos Garrido y Israel John Thuissard Vasallo

674/2012 Does school ownership matter? An unbiased efficiency comparison for Spain regions
Eva Crespo-Cebada, Francisco Pedraja-Chaparro and Daniel Santín

675/2012 Factores condicionantes de la desigualdad educativa: un análisis para el caso español
Crespo Cebada, Eva, Díaz Caro, Carlos y Jesús Pérez Mayo

676/2012 Integrating network analysis and interregional trade to study the spatial impact of transport infra-structure using production functions
Inmaculada C. Álvarez-Ayuso, Ana M. Condeço-Melhorado, Javier Gutiérrez y Jose L. Zofío

677/2012 An actuarial balance model for DB PAYG pension systems with disability and retirement contingencies
Manuel Ventura-Marco & Carlos Vidal-Meliá

678/2012 Will it last? An assessment of the 2011 Spanish pension reform using the Swedish system as benchmark
Carlos Vidal-Meliá

679/2012 Iniciativas educativas en las universidades mexicanas: un análisis estadístico multivariante
Martí Sagarra, Cecilio Mar-Molinero & Herberto Rodríguez-Regordosa

680/2012 Tributación y política de dividendos de las sociedades no financieras, 2000-2010
Félix Domínguez Barrero y Julio López Laborda

681/2012 Lending relationships and credit rationing: the impact of securitization
Santiago Carbó-Valverde, Hans Degryse & Francisco Rodriguez-Fernandez

682/2012 Percepciones de los ciudadanos sobre las haciendas regionales: quién es y quién debería ser responsable de los servicios e impuestos autonómicos
Julio López Laborda y Fernando Rodrigo

683/2012 Trade credit, the financial crisis, and firm access to finance
Santiago Carbó-Valverde, Francisco Rodríguez-Fernández & Gregory F. Udell

684/2012 Changing market potentials and regional growth in Poland
Jesús López-Rodríguez & Malgorzata Runiewizc-Wardyn

685/2012 Firm boundaries and investments in information technologies in Spanish manufacturing firms
Jaime Gómez, Idana Salazar & Pilar Vargas

686/2012 Movimientos de capital, inserción en el mercado mundial y fluctuaciones financieras de la economía cubana: la bolsa de la habana, 1910-1959
Javier Moreno Lázaro

687/2012 El impacto de la inmigración sobre el crecimiento económico español. un enfoque contable
Rodrigo Madrazo García de Lomana

688/2012 Structural equivalence in the input-output field
Ana Salomé García Muñiz

689/2012 Testing the expectations hypothesis in euro overnight interest swap rates
Lucía Hernandis & Hipòlit Torró

690/2012 Bank asset securitization before the crisis: Liquidity, bank type and risk transfer as determinants
Martí Sagarra, Miguel García-Cestona & Josep Rialp

691/2012 Análisis del riesgo soberano utilizando mapas auto-organizativos. el caso de europa, España y Alemania
Félix J. López Iturriaga e Iván Pastor Sanz

692/2012 Economic forecasting with multivariate models along the business cycle
Carlos Cuerpo & Pilar Poncela

693/2012 Testing opvar accuracy: an empirical back-testing on the loss distribution approach
José Manuel Feria-Domínguez, Enrique J. Jiménez-Rodríguez & Mª Paz Rivera-Pérez

694/2012 Is the boost in oil prices affecting the appreciation of real exchange rate?: Empirical evidence of “Dutch disease” in Colombia
Pilar Poncela, Eva Senra & Lya Paola Sierra

695/2012 Market efficiency and lead-lag relationships between spot, futures and forward prices: The case of the Iberian Electricity Market (MIBEL)
Jose María Ballester, Francisco Climent & Dolores Furió

696/2012 Complementarities in the innovation strategy: do intangibles play a role in enhancing the impact of r&d on firm performance?
Dolores Añón, Jaime Gómez & Pilar Vargas

697/2012 The real effects of bank branch deregulation at various stages of economic development: The European experience
José Manuel Pastor, Lorenzo Serrano & Emili Tortosa-Ausina

698/2012 Effects of the financial crisis on the european integration process: relevance of exchange rate, inflation and domestic risks
Alfredo J. Grau-Grau

699/2012 Las Preferencias por la Redistribución: Teoría y Evidencia para España
Julio López Laborda y Eduardo Sanz Arcega

700/2012 Firm boundaries and investments in information technologies in spanish manufacturing firms
Jaime Gómez, Idana Salazar and Pilar Vargas