Universitat Autònoma de Barcelona

Documents de Treball

# ENTREPRENEURIAL INTENTION, COGNITIVE SOCIAL CAPITAL AND CULTURE: EMPIRICAL ANALYSIS FOR SPAIN AND TAIWAN

**Francisco Liñán**

**Francisco J. Santos**

**José L. Roldán**

**Document de Treball núm. 08/3**

Departament d'Economia de l'Empresa

© Francisco Liñán, Francisco J. Santos, José L. Roldán.

Coordinador / Coordinator *Documents de treball:*

David Urbano
http://selene.uab.es/dep-economia-empresa/dt
e-mail: david.urbano@uab.es
Telèfon / Phone: +34 93 5814298
Fax: +34 93 5812555

Edita / Publisher*:*

Departament d'Economia de l'Empresa
http://selene.uab.es/dep-economia-empresa/
Universitat Autònoma de Barcelona
Facultat de Ciències Econòmiques i Empresarials
Edifici B
08193 Bellaterra (Cerdanyola del Vallès), Spain
Tel. 93 5811209
Fax 93 5812555

**ISSN**:
1988-7736. Documents de Treball (Departament d'Economia de l'Empresa, Universitat Autònoma de Barcelona)

Febrero / February, 2008

# ENTREPRENEURIAL INTENTION, COGNITIVE SOCIAL CAPITAL AND CULTURE: EMPIRICAL ANALYSIS FOR SPAIN AND TAIWAN

**Francisco Liñán**

**Francisco J. Santos**

**José L. Roldán**

**Document de Treball núm. 08/3**

La sèrie *Documents de treball d'economia de l'empresa* presenta els avanços i resultats d'investigacions en curs que han estat presentades i discutides en aquest departament; això no obstant, les opinions són responsabilitat dels autors. El document no pot ser reproduït total ni parcialment sense el consentiment de l'autor/a o autors/res. Dirigir els comentaris i suggerències directament a l'autor/a o autors/res, a la direcció que apareix a la pàgina següent.

A Working Paper in the *Documents de treball d'economia de l'empresa* series is intended as a mean whereby a faculty researcher's thoughts and findings may be communicated to interested readers for their comments. Nevertheless, the ideas put forwards are responsibility of the author. Accordingly a Working Paper should not be quoted nor the data referred to without the written consent of the author. Please, direct your comments and suggestions to the author, which address shows up in the next page.

# ENTREPRENEURIAL INTENTION, COGNITIVE SOCIAL CAPITAL AND CULTURE: EMPIRICAL ANALYSIS FOR SPAIN AND TAIWAN

Francisco Liñán,

Universidad de Sevilla, Av. Ramón y Cajal, 1. 41018-Sevilla (Spain).

Tel.: +34.954554487. Fax: +34.954551636. Email: flinan@us.es

Francisco J. Santos

Universidad de Sevilla, Av. Ramón y Cajal, 1. 41018-Sevilla (Spain).

Tel.: +34.954557641. Fax: +34.954551636. Email: fjsantos@us.es

José L. Roldán

Universidad de Sevilla, Av. Ramón y Cajal, 1. 41018-Sevilla (Spain).

Tel.: +34.954554458. Fax: +34.954556989. Email: jlroldan@us.es

**ENTREPRENEURIAL INTENTION, COGNITIVE SOCIAL CAPITAL AND CULTURE: EMPIRICAL ANALYSIS FOR SPAIN AND TAIWAN**


## Abstract

**Objectives**: The main purpose of this paper is building a research model to integrate the socioeconomic concept of social capital within intentional models of new firm creation. Nevertheless, some researchers have found cultural differences between countries and regions to have an effect on economic development. Therefore, a second objective of this study is exploring whether those cultural differences affect entrepreneurial cognitions.

**Research design and methodology:** Two samples of last year university students from Spain and Taiwan are studied through an Entrepreneurial Intention Questionnaire (EIQ). Structural equation models (Partial Least Squares) are used to test the hypotheses. The possible existence of differences between both sub-samples is also empirically explored through a multigroup analysis.

**Main outcomes and results:** The proposed model explains 54.5% of the variance in entrepreneurial intention. Besides, there are some significant differences between both subsamples that could be attributed to cultural diversity.

**Conclusions:** This paper has shown the relevance of cognitive social capital in shaping individuals' entrepreneurial intentions across different countries. Furthermore, it suggests that national culture could be shaping entrepreneurial perceptions, but not cognitive social capital. Therefore, both cognitive social capital and culture (made up essentially of values and beliefs), may act together to reinforce the entrepreneurial intention.

## 1.- Introduction

The entrepreneurship research programme, among its different fields of study, has recently been focused on the analysis of potential entrepreneurs' behaviour, and how they carry out the process of opportunity recognition and firm creation (Krueger and Brazeal, 1994, Reynolds, Hay and Camp, 1999, Krueger 2003, Shane and Eckhardt, 2003). However, as it is well known, one of the main difficulties in analysing entrepreneurial behaviours is the need for multidisciplinary research.

From a psychological point of view, some scholars had been elaborating different models to explain why some persons choose to become entrepreneurs and others do not (McClelland, 1961, Brockhaus, 1980, Cooper and Dunkleberg, 1987). From a sociological point of view, other scholars have emphasized the influence of some social factors and networks (social structure) to gain access to a variety of resources very important for the creation of new firms and for the consolidation of existing firms (Wilken 1979, Birley 1985, Butler and Hansen 1991, Johannisson, 1995, Jack and Anderson, 2002, Hoang and Antoncic, 2003, Greve and Salaff, 2003).

Nevertheless, few studies have attempted to connect both the psychological and the sociological views of entrepreneurship. Advances in social cognition, such as those derived from Bandura's (1977) social learning theory, may be applied to the field of entrepreneurship. They offer new possibilities to better understand the role played by social relationships in the intention-creation and opportunity-recognition cognitive processes (Krueger and Carsrud 1993, Krueger 2003). However, the links between social structure and cognitive process has remained in a secondary position in these models.

One possibility to better analyse this link could be inserting into these models some constructs from the cognitive dimension of social capital. Social capital is a concept in an emerging phase which could be defined as capital captured in the form of social relationships (Lin 2003). Its cognitive dimension, that is to say, cognitive social capital, could be defined as the values, attitudes, beliefs and trust transmitted through those social relationships (Naphiet and Ghoshal, 1998, Uphoff, 2000, Grootaert and Bastelaer, 2001).

Therefore, in an attempt to shed some light into the process of entrepreneurial emergence and firm creation, this paper firstly tries to build a research model which includes cognitive social capital into an entrepreneurial intention model. This model will be empirically tested using the Partial Least Square statistic technique.

This model is expected to be cross-culturally robust. Nevertheless, some social researchers have found clear cultural differences among countries and regions which influence economic development. Therefore, a second objective of the paper is to explore whether these cultural differences could have some influence on entrepreneurial cognitions.

To reach these objectives, two samples of young undergraduate students in the last year of their degree from Spain and Taiwan will be used. This will allow us to explore whether cultural differences could also play some relevant influences on entrepreneurial cognitions. Therefore, in addition to testing the hypotheses of the research model, an exploratory analysis (multigroup analysis) will be performed to look for possible differences among the target population of both countries.

After this introduction, the paper is organized in six additional parts. In the following section, the entrepreneurial intention models and the meaning of the cognitive dimension of social capital will be presented. In section three, social capital will be introduced into entrepreneurial intention models, leading to our research model. The specific hypotheses to be tested are then made explicit. In section four, the possible relationship between culture and entrepreneurial activity will be considered. The fifth section describes the methodology used for sample selection, data gathering and for the statistical analysis. Main results are presented in section six. The paper ends up with a discussion and interpretation of those results and their implications.

## 2. - Theoretical background

### a) Entrepreneurship and intention-based models

Much research has tried to explain why some persons but not others choose to become entrepreneurs. They started paying attention to psychological characteristics and personality traits which might differentiate entrepreneurs from the rest of the population (McClelland, 1961, Collins and Moore, 1964, Borland, 1975). Later on, other research works emphasized the importance of different demographic factors among entrepreneurs. Age, gender, birth, religion, ethnic group, education, socioeconomic status or professional experience would be among these factors (Cooper and Dunkelberg, 1987, Veciana 1989, Reynolds, Storey and Westhead, 1994, Storey 1994). Nevertheless, from a theoretical point of view, these approaches have been criticised both for their methodological and conceptual problems and for their weak explanatory

capacity (Gartner 1989, Shaver and Scott ,1991, Krueger, Reilly and Carsrud, 2000).

In this sense, Bandura's (1977) social learning theory attributes great importance to the influence of environmental factors over higher *cognitive processes* and learning. Behaviours would thus be the results of environmental stimuli, feed-back processes (reward and punishment) and, mainly, observational learning.

Along this line, the entrepreneurial intention approach has recently emerged. Unlike previous entrepreneurship models, this one emphasizes the *individual's cognitive process* (Shapero and Sokol, 1982, Krueger and Carsrud, 1993, Kolvereid, 1996, Tchakev and Kolvereid, 1999, Baron, 2004, Liñán and Chen forthcoming). The central factor of this theory is the individual intention to become an entrepreneur. Intentions capture the motivational factors which influence behaviour, becoming measures of the effort the individual plans to exert to perform the behaviour. So, the higher the intention to become an entrepreneur, the higher the probability of its effective performance will be.

The most important early contribution to this approach within the field of entrepreneurship is the 'entrepreneurial event' theory (Shapero and Sokol, 1982). According to it, individuals decide to create a firm (become potential entrepreneurs) when the entrepreneurial activity is perceived as more desirable and more feasible than other alternatives. Thus, p*erceived desirability* would be the degree of attraction towards becoming an entrepreneur. *Perceived feasibility*, in turn, would refer to the perception about the self-capacity or self-efficacy (Bandura, 1997) to perform the entrepreneurial behaviour.

Similarly, Krueger and Casrud (1993) and Krueger and Brazeal (1994) apply the theory of planned behaviour (Ajzen, 1991) to explain entrepreneurial potential. According to them, intention to set a new firm would be influenced by three perceptions. The first one, personal attraction towards the entrepreneurial activity, is very close to Shapero and Sokol's (1982) perceived desirability. Perceived behavioural control or self-efficacy is equally close to perceived feasibility (Krueger et al., 2000). The third one, subjective norms, refers to perceptions about the existing social pressure to perform the firm-creation behaviour. That is, the perception that people in their closer environment would approve of their firm-creation decision (closer environment approval), would contribute towards a more favourable entrepreneurial intention.

More recently, human capital constructs, such as 'entrepreneurial knowledge', have been added as explicative factors within this model (Liñán, 2004). Entrepreneurial knowledge could be defined as the knowledge individuals have about different aspects related to both the entrepreneurial activity and the institutions promoting it. It may be argued that entrepreneurial knowledge would derive both from the human capital accumulated during the whole life of the individual and experience (experiential learning).

Nevertheless, a human-capital construct, such as entrepreneurial knowledge, would not be paying attention to the social relationships making possible its accumulation. Social networks are a highly relevant element in the creation of human capital. According to Coleman (1988), the parents' level of human capital has a positive influence on children's level, whenever parents and children have strong ties. Coleman also points out how parents' social

relationships with other people in their personal environment significantly contribute to the formation of children's human capital.

Therefore, following this line of reasoning, the inclusion of different constructs in the intention model representing social relationships would help to improve its explanatory capacity. In particular, the cognitive dimension of those social relationships would be especially relevant. Social capital theory may be helpful in this respect.

**b) Social capital.**

Bourdieu (1986) defines social capital as the aggregate actual and potential resources which are linked possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition. Then, social capital in this Bourdieu's formulation is related to the existence of social relationships and also trust and reciprocity between people.

Social capital emerges from a process of investment in human relationships, for which resources and, more specifically, time is required (Lin, 2003). The result of this investment is a stock of assets, such us easier access to information, better coordination of activities, lower transaction costs or easier collective-decision actions (Grootaert, 1998). This stock of assets generates a flow of benefits, such us income or revenue streams (Collier, 2002) but also allows individual opportunity recognition and exploitation (Shane and Venkataraman, 2000). Social capital also gives access to other forms of capital, such as human capital (Coleman, 1988). Moreover, social capital, same as physical capital, can be accumulated and can also be depreciated or even

destroyed (Putnam, 1993, 2000, Flap and Volker, 2004, Svendsen and Svendsen, 2004).

Putnam (1993) identifies social capital with networks, social norms and trust within horizontal organizations, making collective action and cooperation easier. Nevertheless, despite what might be inferred from Putman's view, social capital has to be considered not only at an intermediate or organizational level, but even more at a multidimensional level (Grootaert, 2001). On the one hand, at the macro- or social level, social networks may have potential benefits for a society, such as the improvement in income levels (North, 1990, Fukuyama, 1995, Knack and Keefer, 1997, Grootaert and Bastelaer, 2001, Dakhli and Clerq, 2004). On the other hand, at the micro-level, individual relationship networks may also have benefits, such as helping in the firm start-up process or in the entrepreneurial development (Lin, 2003, Chell and Baines, 2000, Davidsson and Honig, 2003).

Linkages with other individuals or organizations may differ in strength. Granovetter (1983, 1985) was the first to differentiate between strong and weak ties. The strength of the linkages depends on the frequency and proximity of contact between individuals. Both strong ties (among members of a family or ethnic group) and weak ties are complementary for an efficient development of social capital (Woolcock and Narayan, 2000). In this sense, we can talk about *bonding social capital*, derived from intra-community strong ties, and *bridging social capital*, derived from extra-community weak ties. Both categories would be the result of the relational dimension of social capital (Naphiet and Ghoshal, 1998).

Nevertheless, the benefits from both bonding and bridging social capital at whichever level (micro, intermediate and macro-levels) would derive, in turn, from the two essential dimensions of social capital: *structural and cognitive ones*. Until now, the role of structural social capital in the form of personal networks has been studied as an important element in the creation and development of entrepreneurial firms (Jack and Anderson, 2002, Hoang and Antoncic, 2003, Greve and Salaff, 2003). Conversely, the possible role of cognitive social capital (CSC) within entrepreneurship research has not yet been considered.

One reason to explain this may be that structural social capital is a relatively objective and externally observable dimension. On the other hand, cognitive social capital (CSC) derives from mental processes and resulting ideas, reinforced by culture and ideology, generating values, attitudes, beliefs and trust. Thus, cognitive social capital (CSC) has a subjective and intangible character.

According to Naphiet and Ghoshal (1998), the cognitive dimension of social capital is, in general, very important. It helps individuals to making sense of information and classifies it into perceptual categories. In particular, CSC provides assets in the way of shared languages or vocabulary, and shared narratives. Firstly, shared language and vocabulary facilitate access to people and information, influence perceptions regarding the likely benefits of exchange and, finally, enhance combination capabilities. Secondly, shared narratives, such as myths, stories or metaphors, enable the creation and transfer of new interpretations of events and, therefore, facilitate the combination of different forms of knowledge.

Then, the question arises whether these positive characteristics of CSC help explain why some persons and not others choose to become entrepreneurs. Thus, the interest in recent entrepreneurship research towards cognition as a source of discovery, evaluation and exploitation of entrepreneurial opportunities could offer new possibilities to consider the role of CSC (Baron 2004). Specifically, CSC could be included within entrepreneurial intention models as independent variables.

## 3.- Cognitive social capital within entrepreneurial intention models: research hypotheses

Our proposed integration of social capital into an entrepreneurial intention model is done to explain mental processes. Therefore, according to the classification made in the previous section, we point out two assumptions in our model; firstly, social capital will be located at the individual level of analysis and, secondly, we will consider only the cognitive dimension of social capital.

Few works link the cognitive dimension of social capital with entrepreneurship. One of them argues that cognitive social capital can shape the cognitive processes of potential entrepreneurs, thus influencing perceptions towards start-up (de Carolis and Saparito, 2006). In this sense, the different elements of cognitive social capital (trust, values, shared languages or shared narratives) would be the source of cognitive biases or errors, such as overconfidence, illusion of control and the belief in the law of small numbers. Therefore, these cognitive biases should exert their influence on risk perception and on the exploitation of entrepreneurial opportunities (Simon et al., 2000, Baron, 2004).

Nevertheless, an important consideration should be made when working with the entrepreneurial intention model. Although, Ajzen's (1991) model introduces a construct that may be considered as a form of social capital (perceived subjective norms), he found that, in general, its direct influence on intention is quite weak. In fact, eleven out of nineteen empirical studies he analysed find its regression coefficient to be negative or non-significant. Specifically for entrepreneurship, Krueger et al. (2000) did not find any direct relationship from perceived subjective norms to entrepreneurial intention either. In later work, Krueger (2003) considered 'perceived social norms' as an antecedent of desirability.

These reasons lead us to establish the possibility that CSC could firstly exert an influence on perceptions (desirability and feasibility) and only indirectly on intention (figure 1). In this sense, Simon et al. (1999) and de Carolis and Saparito's (2006) models contribute to the theoretical and empirical foundation for this assumption.

Nevertheless, as mentioned above, social capital may be bonding or bridging, depending on the strength or weakness of the links. Both kinds of social capital have their cognitive dimension and both could exert their influence on perceived feasibility and desirability and only indirectly on intention.

Firstly, bonding cognitive social capital (CSC), based on strong ties, generates different values, trust, shared languages and share narratives, which would affect individual perceptions. Thus, contact with relatives and close entrepreneurs could contribute to generating more favourable perceptions of desirability and even feasibility to start-up (Cooper and Dunkelberg, 1987, Scherer, Brodzinsky and Wiebe, 1991, Kuratko and Mathews, 2004, Greve and

Salaff, 2003). Besides, those elements generate trust in the ability to perform a specific behaviour because they enhance combination capabilities (Naphiet and Ghoshal, 1998). Therefore, our first two hypotheses are (see figure 1):

**H1:** Bonding CSC positively influences perceived desirability to become an entrepreneur.

**H2**: Bonding CSC positively influences perceived feasibility to become an entrepreneur.

Secondly, bridging cognitive social capital based on weak ties could also generate, through the acquisition of information and experience, favourable values and beliefs towards firm start-up (Jack and Anderson, 2002, Hoang and Antoncic, 2003). This influence would derive from informal relationships established, for instance, in previous employee positions (Ray, 1993, Ozgen and Baron, 2007). Nevertheless, It could also derive from informal relationships with specific business networks, such as entrepreneurial promotion agencies, certain entrepreneurial organizations or certain entrepreneurial networks (Bryson et al., 1993). It may be reasonably assumed that having this kind of contacts derived from one's own experience may contribute to higher entrepreneurial self-efficacy (Ozgen and Baron, 2007). Therefore, the third hypothesis is (see figure 1):

**H3:** Bridging CSC positively influences perceived feasibility to become an entrepreneur.

The last two additional hypotheses would derive directly from Shapero and Sokol's (1982) and Ajzen's model (1991). These have been consistently supported by the empirical evidence (Autio et al., 2001, Erikson, 1999, Kolvereid, 1996, Kolvereid and Isaksen, 2006, Krueger, 1993, Krueger et al.,

2000, Lee and Wong, 2004, Peterman and Kennedy, 2003, Tchakev and Kolvereid, 1999). Specifically, they are (see figure1):

**H4:** Perceived desirability towards start-up positively influences the entrepreneurial intention.

**H5:** Perceived feasibility towards start-up positively influences the entrepreneurial intention.

***Insert figure 1 about here***

## 4.- The moderating role of culture on entrepreneurial intention.

Can the influence of CSC on entrepreneurial intention be different across countries and regions? Obviously, the consideration of culture is an important element to take into account to answer this question. The research model proposed is expected to be cross-culturally robust because many factors underlying entrepreneurial behaviour are common across cultures (McGrath and MacMillan, 1992, McGrath et alia, 1992). Nevertheless, some social researchers see clear cultural differences between countries and even regions of a same country (Inglehart 1997, Hofstede's 2003). Therefore, some entrepreneurship researchers consider these cultural differences as influencing the differences in entrepreneurial behaviour across countries and regions (Shane et alia, 1991, Davidsson, 1995, Mueller and Thomas, 2001, Hayton et alia, 2002).

According to Spilling (1991), the cognitive concept of culture is related to ideas, values and norms common to a group of people. In the same sense,

Inglehart (1997) defines culture as the set of basic common values which contribute to shaping people's behaviour in a society. According to Hofstede (2005), the notion of culture also includes patterns of thinking, feeling and acting, which are learned and shared by people living within the same social environment. He calls those patterns of behaviour software of the mind and, thus, defines culture as «the collective programming of the mind which distinguishes the members of a group of people from others» (Hofstede, 2005: XXX).

Cultural factors must be considered as a variable, not a constant, within whatever empirical research. Their changes throughout time exert an influence on economic development. Weber´s (1969) theory about protestant ethic and the origin of capitalism, Hoselitz´s (1960) and Hagen´s (1962) theories about social change and development, or McClelland´s (1961) theory about need of achievement and development are pioneers in this line of research. Nevertheless, if we analyse carefully all these theories, they have something in common: they consider entrepreneurship as one of the most important links between culture and economic development. More recently, this link has been emphasized by researchers both on Italian Industrial Districts (Becattini, 1979) and on local endogenous development theory (Vázquez, 2002; Romero and Santos, 2007).

According to Davidsson (1995), culture may influence entrepreneurship both through social legitimation (at the aggregate level) and through promoting on individuals certain positive attitudes related to firm creation. As Hofstede (1980) pointed out, the reason why this happens is that culture shapes people's

cognitive schemas, programming behavioural patterns which are consistent with the cultural context.

Entrepreneurs' cognitive schemas derived from culture can help entrepreneurs in several aspects (Busenitz and Lau, 1996): reducing the uncertainty of taking a decision, identifying cause/effect relationships to advance the development of ideas and opportunities, facilitating fortcasts and predictions about outcomes and, what is most important in this study, increasing the intention to start-up.

Starting from Krueger and Casrud (1993) and Shapero and Sokol (1982), Mitchell's et alia (2002) propose that cultural values exert a direct influence on arrangement, ability and willingness cognitions and, only then, on the decision to start-up. This model has some similarities with the model proposed above. On the one hand, ability and willingness cognitions are very similar to perceptions of feasibility and desirability in our model. On the other hand, arrangement cognitions are related to our concept of CSC.

Nevertheless, the specific position of culture within the model proposed in this paper is difficult to establish. In principle, there could be two possibilities (figure 2). Firstly, culture could exert a direct influence only on CSC, which in turn would affect perceptions (option A in figure 2). Secondly, CSC and culture could both exert their own independent influence directly on perceptions, since values and beliefs are the essence of both constructs (option B).

***Insert figure 2 about here***

In the empirical analysis that follows, the entrepreneurial intention research model proposed in section 3 is going to be tested in a population from two

different countries, Spain and Taiwan. Both countries are quite different in many aspects and national culture is not an exception. In fact, according to Inglehart et al. (2004), Taiwan's culture is slightly more secular-rational than that of Spain and, according to Hofstede (2005), Spain would be characterized by higher individualism and uncertainty avoidance than Taiwan.

Then, although we expect the model to be cross-culturally robust, an exploratory analysis will be performed to look for possible differences among both sub-samples. Results will be discussed, suggesting some implications for the role of culture in the entrepreneurial intention model with CSC.

## 5.- Data and methodology.

### a) Sample selection

The empirical analysis was carried out through a questionnaire to last-year undergraduate students. The selection of this target population was due to three reasons: Firstly, this kind of population is commonly used in entrepreneurship research (Autio et al., 2001, Tkachev and Kolvereid 1999, Krueger et al. 2000, Fayolle and Gailly 2004, Veciana, Aponte and Urbano, 2005). Secondly, according to Reynolds et al. (2002), university graduates from 25 to 34 years old are the segment of the population showing higher probability to become entrepreneurs. Finally, these students are at the point of facing their own choice of professional career. Therefore, their answers could be expected to be more careful and pondered.

The Spanish sample has been obtained from three public universities in Andalusia. Two of them (Seville and Pablo Olavide universities) are located within the Seville metropolitan area, with more than 1.2 million inhabitants. The

third one is Jaen University, located in a middle-sized rural-area town. The final Spanish sample was composed of 400 students: 46 from Jaen University, 31 from Pablo Olavide University, and the 323 remaining ones from Seville University. 69'2% of the sample corresponds to Management students and the rest to Economics. In particular, all the questionnaires from Jaen and Pablo Olavide Universities correspond to Management students, because the Economics degree is not on offer there. 55% of respondents are women, while the average age is 23.7 years old. These percentages broadly correspond with the general characteristics of the students at both degrees. Therefore, the sample can be considered as representative.

The Taiwanese sample answered a Chinese version of the questionnaire, translated using the double-back translation system. They are participants of the Technology Innovation Competition. This is the most important business-plan competition for university students in Taiwan. One of the steps consists on a 3-day winter camp. It was during this stage that the fieldwork was carried out. Two people were randomly selected from each competing team and asked to answer the questionnaire. 133 valid questionnaires were thus collected. Average age is 23.1 years and 42.1% of respondents are female. Again, business is the most common degree (60.6%), followed by engineering (24.4%), the rest being mostly health and life sciences students.

Some differences do arise between both samples, as might be expected. In the first place, the Spanish sample includes significantly more women. Similarly, knowing an entrepreneur is more common in Spain (86% compared to 48.5% of the Taiwanese sample). This difference is consistent for all possible sources of entrepreneurial role models: family (66.0% in Spain, 27.8% in Taiwan); friends

(57.3% to 23.3%) or boss/foreman (17.5% to 4.5%). On the other hand, even though the proportion of respondents having work experience is broadly similar (43.5% to 36.8%), Taiwanese students have much higher self-employment experience (2.5% in Spain, 8.5% in Taiwan).

**b) Measures**

The Entrepreneurial Intention Questionnaire (EIQ) used for the analysis has been carefully developed starting from the literature and specifically designed to allow its statistical validation. For its construction, a rigorous analysis of other instruments used in the literature has been performed. The possible existing discrepancies between those other instruments have been solved resorting to Ajzen's (1991, 2001, 2002) theory of planned behaviour. The EIQ items used in this analysis are included in the appendix.

Social capital measures are essentially multidimensional (Granovetter, 1983, 1985, Woolcock and Narayan, 2000, Uphoff, 2000, Grootaert and Bastelaer, 2001). Thus, bonding CSC has been measured as a second order dimension, encompassing four first-order constructs: family role-model, other role-models, valuation of entrepreneurship in the closer environment, and closer-environment approval for start-up. Bridging CSC, in turn, has also been measured as a second-order dimension encompassing two first-order constructs: knowledge of the institutional entrepreneurial environment, and labour experience.

The EIQ used in this analysis has already been statistically validated with satisfactory results (Liñán and Chen, forthcoming). The central elements of the entrepreneurial intention model (Krueger et al., 2000, Kolvereid, 1996, Ajzen, 1991, Liñán, 2004) are relatively well established. They have been measured

through 7-point likert-type scales with five (desirability) and six items (feasibility and intention).

**c) Assessment of epistemic relationships**

Epistemic relationships describe the link between theory (constructs) and data (indicators) (Fornell, 1982). Basically, there are two types of epistemic relationships (Jarvis, McKenzie and Podsakoff, 2003, McKenzie, Podsakoff and Jarvis, 2005). On the one hand, 'reflective' indicators are assumed to reflect the unobserved theoretical construct and, hence, covary with the level of the latent variable. On the other hand, 'formative' indicators produce or jointly influence the composite latent variable. Manifest variables, named formative indicators, give rise to the latent variable. Therefore, formative indicators are not necessarily correlated (Chin and Gopal, 1995). Consequently, traditional reliability and validity assessment have been argued as inadequate (Bagozzi, 1994, Bollen, 1989).

Thus, the constructs in our model have been assessed according to the four criteria proposed by Jarvis, McKenzie and Podsakoff (2003) and McKenzie, Podsakoff and Jarvis (2005). Most constructs and first order dimensions have been measured through reflective indicators (approval, valuation, contact, desirability, feasibility and intention). Only the construct dimension regarding non-family role models and the two second-order constructs (bonding and bridging CSC) present formative relationships with regard to its indicators and dimensions, respectively.

**d) Statistical technique used in the empirical analysis.**

Given the characteristics of the model proposed in section three, a structural equation model will be used to test the hypotheses presented there. In particular, a multivariate analysis technique based on Partial Least Squares (PLS) will be used. According to Gefen, Straub and Boudreau (2000), when exploratory studies are carried out and relatively small samples are used, this multivariate statistical technique is more suitable than others, such as LISREL, based on the covariance analysis. The PLSGraph V. 3.00 Build 1126 (Chin and Frye, 2003) software has been used. PLS analysis provides results for both the structural model (hypothesized relationships) and the measurement model (reliability and validity of indicators), according to Sánchez-Franco and Roldán (2005). PLS is especially appropriate for analysis of measurement and structural models when both formative and reflective constructs are used (Diamantopoulos and Winklhofer, 2001).

Second order constructs have to be built prior to operate the full structural model. The items measuring those social capital constructs used as first-order dimensions are optimally weighted and combined using the PLS algorithm to create latent variable scores. These latter scores, in turn, are then used as indicators to more accurately form the second-order construct (Chin and Gopal, 1995, Calvo-Mora, Leal and Roldán, 2005).

Additionally, with the purpose of exploring possible differences in the results between both countries, a multigroup analysis has been performed. This technique looks for statistically significant differences in path coefficients between sub-samples (Chin, 2000). If they are found, they may be attributed to differences in national culture, at least partly.

## 6.- Results

A PLS model is analysed and interpreted in two stages. The first one refers to the assessment of the measurement model (reliability and validity analysis). Only then conclusions regarding structural relationships among the constructs may be logically derived (Barclay, Higgins and Thompson, 1995).

### a) Measurement model

Reliability analysis may be carried out using item loadings. In this sense, individual reflective-item reliability is considered adequate when item loadings are above 0.707 on their respective constructs. It means that shared variance between the construct and its indicators, is greater than the error variance (Sánchez-Franco and Roldán, 2005). Table 1 presents item loadings for our model. The three reflective constructs has item loadings well above that threshold level.

***Insert table 1 about here***

For formative constructs, on the other hand, weights provide information about the make up and relative importance of each indicator in the creation/formation of the component (Chin, 1998). In this respect, a customary precaution is checking for multicollinearity (Sánchez-Franco and Roldán, 2005). This has been done through the analysis of variation inflation factors (VIF), which are well below the usual threshold level (VIF < 5), indicating multicollinearity is not a concern in this case.

Regarding Bridging CSC, the two items forming this construct have similar weights, indicating their relative contributions are broadly equivalent. For Bonding CSC, in contrast, the contribution of the family role-model is very small in absolute value, and negative. This would be indicating the contribution of this item to the construct is negligible.

The idea that a family role model contribute very weakly to the Bonding CSC construct is somewhat surprising. We analysed country differences and found that for Spain, the weight was positive and substantially higher (0.1593), though still the weakest of them four. In contrast, the weight for Taiwan was clearly negative (-0.1671). This result will receive further attention in the discussion section.

Composite reliability scores are also included in Table 1. They assess the internal consistency of the constructs (Roldán and Leal, 2003, Barroso, Cepeda and Roldán, 2008). It is usually assumed than a 0.7 threshold is enough for initial stages of research (Nunnally, 1978). In this case, scores are above 0.9 for the three reflective constructs considered.

Average Variance Extracted (AVE) assesses the amount of variance that a construct captures from its indicators relative to the amount due to measurement error (Sánchez-Franco and Roldán, 2005). It is usually considered that a level above 0.5 indicates adequate reliability (Gefen et al., 2000).

***Insert table 2 about here***

Discriminant validity may also be assessed comparing AVE and the variance shared between this construct and the others in the model; that is, the squared correlation between each pair of constructs (Barclay et al., 1995). In this sense, Table 2 presents AVE scores on the main diagonal, together with squared correlations. As may be observed, AVE scores are always higher, indicating adequate discriminant validity.

**b) Structural model**

Results from the measurement model indicate constructs present adequate properties, except for the surprising result regarding the influence of a family role model in forming the Bonding CSC construct. Keeping this in mind, the results for the structural model may now be analysed. Figure 3 shows the variance explained ($R^2$) in the endogenous constructs and the path coefficients ($\beta$) for all significant relationships. Consistent with Chin (1998), bootstrapping (500 resamples) has been used to generate standard errors and t-statistics. Bootstrap represents a non-parametric approach for estimating the precision of the PLS estimates. This allows us to assess the statistical significance of the path coefficients.

***Insert figure 3 about here***

Table 3 compares the coefficients and significance levels for the combined sample and for each sub-sample. As may be observed, hypotheses H1, H2 and H3 are fully corroborated for the combined sample, and also for each of the national samples. The same may be said with respect to hypotheses H4 and

H5, derived from the entrepreneurial intention model. Besides, a non-hypothesized relationship between Bridging CSC and Desirability was found for the combined sample, but it was not significant for either of both subsamples. This may be simply due to a size effect.

***Insert table 3 about here***

### c) Multigroup analysis

Finally, the multigroup analysis was carried out to test whether there were any statistically significant differences among both sub-samples with respect to path coefficients. We have applied the approach proposed by Chin (2000) and implemented by Keil, Tan, Wei, Saarinen, Tuunainen and Wassenaar (2000, p. 315) and Sánchez-Franco and Roldán (2005). In accordance with this procedure, a *t*-test has been calculated following equation 1, which follows a *t*-distribution with $m + n - 2$ degrees of freedom, *Sp* (equation 2) being the pooled estimator for the variance, *m* the number of cases of the Spanish sample, *n* the number of cases of the sample from Taiwan, and *SE* the standard error for the path provided by PLS-Graph in the bootstrap test. Results are described in Table 4…

$$t = \frac{Path_{\text{Spain}} - Path_{\text{Taiwan}}}{Spx\sqrt{\frac{1}{m} + \frac{1}{n}}} \approx t(m + n - 2)$$

**Equation 1. *T*-statistic with $m + n - 2$ degrees of freedom**

$$Sp = \sqrt{\frac{(m-1)^2}{m+n-2} xSE^2_{\text{Spain}} + \frac{(n-1)^2}{m+n-2} xSE^2_{\text{Taiwan}}}$$

**Equation 2. Pooled estimator for the variance**

***Insert table 4 about here***

As Table 4 shows, the effect of bonding and bridging CSC on desirability and feasibility is equivalent in both cases. However, the formation of intention is clearly different. In Spain, desirability is a much more important influence on intention than feasibility is. Conversely, Taiwanese students had their intention more strongly based on feasibility perceptions.

## 7.- Discussion and conclusion.

This study has tried to contribute to the cognitive analysis of the start-up process from a new perspective. Thus, starting from an integration of entrepreneurial intention models (Shapero and Sokol, 1982, Ajzen, 1991, Liñán, 2004), social capital has been introduced as a novel factor. Social capital is defined as the whole set of relationships which an individual has. It gives access to other production resources, such as physical and human capital. Social capital facilitates the decision-making process, the performance of a concrete behaviour, and collective action through reciprocity and mutual trust.

In the proposed model, CSC has been specifically considered, since it consists on the transmission of values, beliefs and attitudes which determine perceptions and, through then, intentions to perform behaviours, such us

starting up a firm. This CSC may derive from both strong and weak ties. Thus, two categories have been considered: bonding and bridging CSC.

The empirical analysis carried out has corroborated the indirect influence of CSC on entrepreneurial intention. Cognitive social-capital measures exert their direct influence on perceptions and these, in turn, on intention. Results from the structural model explain 57% of the variance in entrepreneurial intention. This notably improves previous research, which typically explains less than 40% of the variance in this construct (Autio et al., 2001, Kolvereid, 1996).

All our hypotheses have been confirmed. Bonding CSC significantly explains both perceived desirability (H1) and perceived feasibility (H2). Bridging CSC explains feasibility (H3). Meanwhile, Perceived desirability and feasibility significantly explain entrepreneurial intention (H4 and H5, respectively). Besides, these hypotheses are confirmed not only on the combined sample, but also in each of the national sub-samples. Therefore, the model proposed seems to be considerably robust.

On the other hand, a non-hypothesized relationship has emerged for the combined sample. Bridging CSC exerts a weak but significant influence on perceived desirability. However, this does not hold for either sub-sample. Therefore, further research would be needed before this hypothesis is included or rejected, especially given that no strong theoretical support has been found for it.

With respect to the multi-group analysis performed, results were not conclusive. On the one hand, the relative contribution of desirability and feasibility to explaining intention is significantly different in both countries. On

the other hand, there were no significant country differences regarding the effects of CSC on perceived feasibility and desirability.

In this sense, the role of culture should be considered. No specific research comparing the effects of national cultural differences on entrepreneurial intentions for these two countries has been found. However, Mcgrath et al. (1992) compared cultural values of entrepreneurs from Taiwan and the USA (and also China) and Uslay, Teach, & Schwartz (2002) compared entrepreneurial attitudes of Spanish and US MBA students (and also Turkish).

Mcgrath et al. (1992) found that Taiwanese entrepreneurs disagree significantly more than their US counterparts with the statement 'starting a company adds to the excitement of your life'. Meanwhile, Uslay et al. (2002) found that Spanish students agreed significantly more than their US counterparts with the statement 'entrepreneurship offers job satisfaction'. This would be indicating that 'salient beliefs' conforming the motivational intention antecedents are different in each culture (Ajzen, 1991). In this sense, entrepreneurial intention could be more closely linked to perceived desirability among Spanish respondents, whereas in Taiwan perceived feasibility would be a relatively stronger influence.

Taking into account cognitive theory, it is clear that values affect perceptions (Bandura, 1977, 1997, Baron, 2004). It is also clear that the essence of both CSC and national culture are values (Inglehart et al., 2004, Hofstede, 2005). But it seems that they exert a differentiated and parallel influence. In this sense, values, beliefs and trust transmitted through personal contacts (CSC) exert a similar effect on perceptions in both cultures, according to the multigroup analysis. This would be indicating that national cultural values do not modify the

kind of entrepreneurial values and beliefs transmitted by CSC in each country, as option A in figure 2 suggested. Instead, these national cultural values would exert a parallel influence on perceptions (along with CSC), as shown by option B in figure 2.

Further research is undoubtedly needed to explore the specific ways through which values, beliefs and trust affect perceptions. In particular, this study should be repeated using alternative samples from diverse cultural contexts and including different indicators for national cultural values.

The present study has a number of limitations that should be acknowledged. To start with, this is a first attempt to introduce CSC variables into entrepreneurial intention models. Therefore, alternative measures should be developed and tested. Another area of concern is the effect of a family role-model in forming the bonding CSC construct. Previous literature suggests that it contributes to the formation of values and beliefs towards entrepreneurship (Cooper and Dunkelberg, 1987, Greve and Salaff, 2003, Matthews and Moser, 1995). Since no multicollinearity problems were found, it may be the case that the influence of a family role model is distinct from the other bonding CSC measures. Alternatively, as Scherer et al. (1991) suggest, this influence may depend on personal relationships with parents and the evaluation made about how successful these parents are as entrepreneurs.

**Acknowledgements**

We are most grateful to

**Notes**

## References


Ajzen, I. (1991): The theory of planned behaviour, *Organizational Behaviour and Human Decision Processes*, 50, 179-211.

Ajzen, I. (2001): Nature and operation of attitudes, *Annual Review of Psychology*, 52, 27-58.

Ajzen, I. (2002): Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior, *Journal of Applied Social Psychology*, 32, 1-20.

Autio, E., Keeley, R. H., Klofsten, M., Parker, G. G. C., and Hay, M. (2001): Entrepreneurial intent among students in Scandinavia and in the USA. *Enterprise and Innovation Management Studies, 2*(2), 145-160.

Bagozzi, R.P. (1994): Structural equation models in marketing research: Basic principles. En R. Bagozzi (Ed.): *Principles of Marketing Research*, 317-385. Oxford: Blackwell.

Bandura, A. (1977) *Social Learning Theory.* N.J. Prentice-Hall.

Bandura, A. (1997): *Self-efficacy: The exercise of control*. NY: Freeman.

Barclay, D., Higgins, C. and Thompson, R. (1995): The partial least squares (PLS) approach to casual modelling: personal computer adoption and use as an illustration, *Technology Studies*, 2 (2), 285-309.

Baron, R.A. (2004) The cognitive perspective: a valuable tool for answering entrepreneurship's basic “why” questions, *Journal of Business Venturing,* 19 (2) 221-239.

Barroso, C., Cepeda, G. and Roldán, J.L. (2005): Investigar en Economía de la Empresa: ¿partial least squares o modelos basados en la covarianza?, *XIX Congreso Anual AEDEM*, Vitoria-Gasteiz.

Becattini, G. (1979): Dal settore industriale al distretto industrial. Alcune considerazione sull'unitá di indagine dell'economia industriale, *Rivista di Economia e Politica Industriale*, 1, 7-21.

Becker, G.S. (1964): *Human capital,* Chicago; University of Chicago Press.

Birley, 1985

Bollen, K.A. (1989), *Structural equations with latent variables*, John Wiley and Sons, New York.

Borland, C.M. (1975): *Locus of Control, Need for Achievement and Entrepreneurship*. Doctoral Thesis, Austin: The University of Texas.

Boudreau (2000)

Bourdieu, P.(1986): The forms of capital, in J. Richardson (ed) *Handbook of theory and research for the sociology of education,* Wesport, CT; Greenwood Press

Brockhaus, R. H. (1980) Psychological and Environmental Factors Which Distinguish the Successful from the Unsuccessful Entrepreneur: A Longitudinal Study. *Academy of Management Meeting,* pp. 368-372.

Busenitz, L W. and Lau, C.M. (1996) A cross cultural cognitive model of new venture creation". *Entrepreneurship: Theory and Practice,* 20 (4), 25-39

Bryson, J, Wood, P y Keeble, D (1993): Business Networks, Small Firm Flexibility and Regional Development in United Kingdom Business Services. *Entrepreneurship and Regional Development,* 5. (3), 265-277.

Butler, J E. and Hansen, G S. (1991): Network Evolution, Entrepreneurial Success and Regional Development. *Entrepreneurship and Regional Development,* 3, 1, 1-16.

Calvo-Mora, Leal and Roldán (2005)

Chell, A. and Baines, S. (2000) Networking, entrepreneurship and microbusiness behaviour, *Entrepreneurship and regional development,* 12, 195-215.

Chin, W.W. (1998): The partial least squares approach to structural equation modelling, in Marcoulides, G.A. (Ed.): *Modern Methods for Business Research*, 295-336, Mahwah, N.J: Lawrence Erlbaum Associates.

Chin (2000)

Chin, W.W. and Frye, (2003): *PLSGraph v. 2.91.03.04* (Computer software), Calgary, Alberta, Canada: University of Calgary

Chin, W.W. and Gopal, A. (1995): Adoption intention in GSS: relative importance of beliefs, *Database*, 26 (2-3), 42-64.

Coleman, J.S. (1988): Social capital in the creation of human capital, *The American Journal of Sociology, 94*, 95-120.

Collier (2002)

Collins and Moore (1964)

Cooper, A.C., Dunkelberg, W.C. (1987), Entrepreneurial research: old questions, new answers, and some methodological issues, *American Journal of Small Business*, 11 (3) 11–23.

Dakhli, M. and Clercq, D. de (2004): Human capital, social capital and innovation: a multicountry study, *Entrepreneurship and Regional Development,* 16, 107-128.

Davidsson, P. (1991) Continued entrepreneurship: ability, need and opportunity as determinants of small firm growth. *Journal of Business Venturing,* 6: 405-429

Davidson, P. (1995): Culture, structure, and regional level of entrepreneruship. *Entrepreneurship and Regional Development*, 7 (1) 41-62.

Davidsson, P and Honig, B. (2003) The role of social and human capital among nascent entrepreneurs, *Journal of Business Venturing,* 18 (3), 301-331.

De Carolis, D.M. and Saparito, P (2006) Social Capital, Cognition, and Entrepreneurial Opportunities: A Theoretical Framework, *Entrepreneurship, Theory and Practice,* 30 (1), 41-56.

Diamantopoulos, A. and Winklhofer, H.M. (2001): Index construction with formative indicators: an alternative to scale development, *Journal of Marketing Research*, 38, 269-277.

Erikson, T. (1999). A study of entrepreneurial career choices among MBAs - The extended Bird model. *Journal of Enterprising Culture, 7*(1), 1-17.

Fayolle, A. and Gailly, B. (2004): Using the theory of planned behaviour to assess entrepreneurship teaching programs: a first experimentation, *IntEnt2004 Conference*, Nápoles (Italia), 5-7 Julio.

Flap, H. and Volker, B. (ed) (2004) *Creation and returns of social capital: a new research program,* Routledge, London.

Fornell, C. (1982), A second generation of multivariate analysis: An overview, in Fornell C. (Ed.), *A Second Generation of Multivariate Analysis*, 1, Praeger Publishers, New York, pp. 1-21.

Fukuyama, F. (1995) *Trust: the social virtues and the creation of prosperity,* The Free Press, NY.

Gartner, W.B. (1989): 'Who is an entrepreneur?' is the wrong question, *Entrepreneurship Theory and Practice*, 13 (4), 47-68.

Gefen, D., Straub, D.W. and Boudreau, M.C. (2000): Structural equation modelling and regresión: guidlines for research practice, *Communications of the Association for Information Society*, 4, 7, 1-77.

Granovetter, M (1983) The strength of weak ties: a network theory revisited *Sociological Theory*, 1, 201-233.

Granovetter, M (1985) Economic action and social structure: the problem of embeddedness, *The American Journal of Sociology,* 91, 3, 481-510.

Greve, A and Salaf, J.W (2003): Social networks and entrepreneurship, *Entrepreneurship Theory and Practice,* 28 (1) , 1-22

Grootaert, C. (1998) Social capital: the missing link?, *The World Bank, Social Capital Initiative*, Working Paper Nº 3.

Grootaert, C. (2001)

Grootaert, C, and Bastelaer, T van (2001) Understanding and measuring social capital: a synthesis of findings and recommendations from the social capital initiative, *The World Bank, Social Capital Initiative*, Working Paper Nº 24.

Guzmán, J. and Santos, F. J. (2001): The booster function and the entrepreneurial quality: an application to the province of Seville, *Entrepreneurship and Regional Development,* 13, 211-228.

Hagen, Everett E. (1962) *On the theory of social change: how economic growth Bbegins.* Massachusetts Institute of Technology. Homewood, Illinois; The Dorsey Press Inc,.

Hayton, C. George, G. and Zahra, S.A. (2002): National culture and entrepreneurship: a review of behavioural research. *Entrepreneurship: Theory and Practice,* 26

Hoang, H and Antoncic, B. (2003) Network-based research in entrepreneurship A critical review, *Journal of Business Venturing,* 8(2), 165-187

Hofstede, G. (1980). *Culture´s Consequences: International Differences in work-related values*. Beverly Hills, CA: Sage Publications

Hofstede, G. (2003)

Hofstede, G. (2005)

Hofstede, G and Hofstede, G. J. (2005) *Cultures and Organizations, Software of the Mind*, New York: McGraw-Hill.

Hoselitz, Bert F. (1962) *Aspectos sociológicos del desarrollo económico* ( 1ª edc en 1960 "*Sociological Aspects of Economic Growth*". Free Press) Ed Hispano-Europea, Barcelona.

Inglehart, R (1997) *Modernization and Postmodernization*, Princeton: Princeton University Press,

Inglehart, R., Basanez, M., Deiz-Medrano, J., Halman, L. and Luijkx, R. (2004) *Human Beliefs and Values: A Cross-Cultural Sourcebook based on the 1999-2002 values Surveys.*, Siglo XXI: Mexico City.

Jack, S.L. and Anderson, A.R. (2002) The effects of embeddedness on the entrepreneurial process, *Journal of Business Venturing*, 17 (5), 467-487

Jarvis, C.B.; McKenzie, S.B.; Podsakoff, P.M. (2003): A critical review of construct indicators and measurement model misspecification in marketing and consumer research, *Journal of Consumer Research*, 30: 199-218.

Johanisson, B. (1995)

Keil et al. (2000)

Knack and Keefer (1997)

Kolvereid, L. (1996): Prediction of employment status choice intentions, *Entrepreneurship Theory & Practice*, 21 (1), 47-57.

Kolvereid, L., and Isaksen, E. (2006): New business start-up and subsequent entry into self-employment. *Journal of Business Venturing, 21*(6), 866-885.

Krueger, N. F. (1993): The impact of prior entrepreneurial exposure on perceptions of new venture feasibility and desirability. *Entrepreneurship Theory and Practice, 18*(1), 5-21.

Krueger (2003)

Krueger and Brazeal (1994)

Krueger, N.F. and Carsrud, A.L. (1993): Entrepreneurial intentions: applying the theory of planned behaviour, *Entrepreneurship and Regional Development*, 5, 315–330.

Krueger, N.F., Reilly, M.D. and Carsrud, A.L. (2000): Competing models of entrepreneurial intentions, *Journal of Business Venturing*, 15 (5/6), 411-432.

Kuratko, D.F. and Mathews,R.D. (2004): CommunityWeb: An Internet Firm's Fight to Survive. *Entrepreneurship Theory and Practice* 28 (3), 265–290.

Lee, S. H., and Wong, P. K. (2004). An exploratory study of technopreneurial intentions: a career anchor perspective. *Journal of Business Venturing, 19*(1), 7-28.

Lin, N. (2003): *Social capital, a theory of social structure and action,* Cambridge University Press, Cambridge.

Liñán, F. (2004): Intention-based models of entrepreneurship education, *Piccolla Impresa / Small Business*, 3, 11-35.

Liñán, F. and Chen, Y.W. (forthcoming): Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory & Practice*

Lumpkin, G. T. and Dess, G. G. (1996) Clarifying the entrepreneurial orientation to construct and linking it to performance. *Academy of Management Review,* 21 (1): 135-172.

Matthews, C. H. and Moser, S. B. (1995) Family Background and Gender: Implications for Interest in Small Firm Ownership. *Entrepreneurship and Regional Development,* 7, 4, 365-377.

McClelland, D. C. (1961) *The Achieving Society*. The Free Press. London.

Mcgrath, R. G., Macmillan, I. C., Yang, E. A., & Tsai, W. (1992). Does Culture Endure, or Is It Malleable - Issues for Entrepreneurial Economic-Development. *Journal of Business Venturing*, 7(6), 441-458.

Mcgrath, R. G. and Macmillan, I. C., (1992) More like each other than anyone else? A cross-cultural study of entrepreneurial perceptions *Journal of Business Venturing*, 7(5), 419-429

McKenzie, S.B. Podsakoff, P.M. Jarvis, C.B. (2005): The problem of measurement model misspecification in behavioural and organizational research and some recommended solutions, *Journal of Applied Psychology*, 90: 710-730.

Mitchell, R.K., Smith, J. B. Morse, E.A., Seawright, K.W., Peredo, A.M. and Mckenzie, B. (2002) Are Entrepreneurial Cognitions universal? Assessing Entrepreneurial Cognitions across Cultures, *Entrepreneurship: Theory and Practice*, 26

Mueller, S.L and Thomas, A.S (2001): Culture and entrepreneurial potential A nine country study of locus of control and innovativeness, *Journal of Business Venturing*, 16(1), 51-75.

Naphiet and Ghoshal (1998)

North, D. C. (1990): *Institutions, institutional change and economic performance,* Cambridge University Press, Cambridge.

Nunnally, J.C. (1978): *Psychometric Theory*, Mc-Graw-Hill, New York.

Ozgen, E. and Baron, R.A (2007) Social sources of information in opportunity recognition: Effects of mentors, industry networks, and professional forums, *Journal of Business Venturing,* 22 (2), 174-192.

Peterman, N. E., and Kennedy, J. (2003). Enterprise education: Influencing students' perceptions of entrepreneurship. *Entrepreneurship-Theory and Practice, 28*(2), 129-144.

Putnam, R. D. (1993) *Making democracy work: civic tradition in modern Italy,* Princeton University Press, Princeton.

Putnam, R.D. (2000)

Ray, D. M. (1993) Understanding the Entrepreneur: Attributes, Experiences and Skills. *Entrepreneurship and Regional Development,* 5 , (4),345-357.

Reynolds, P., Storey, D.J. and Westhead, P. (1994): Cross-national comparison of the variation in new firm rates, *Regional Studies*, 28, 443-456.

Reynolds, P.D., Hay, W.M. and Camp, S.M. 1999. *Global entrepreneurship monitor 1999, executive report*. London: London Business School and Babson College

Reynolds, P.D., Bygrave, W.D., Autio, D. and Hay, M. (2002): *Global Entrepreneurship Monitor. 2002 summary report*, Ewin Marion Kauffman Foundation, Kansas City.

Roldán, J.L. and Leal, A. (2003): A validation test of an adaptation of the DeLone and McLean's model in the Spanish EIS field, en Cano, J.J. (Ed.) *Critical Reflections on Information Systems. A Systematic Approach*, pp. 66-84, Idea Group Publishing, Hershey, PA (EEUU).

Romero, J and Santos, F.J. (2007) Firm size and regional linkages. A typology of manufacturing establishments in southern Spain, *Regional Studies,* 41 (5), 571-584.

Sanchez-Franco, M.J. and Roldán, J.L. (2005): Web acceptance and usage model, *Internet Research*, 15 (1), 21-48.

Scherer, R.F., Brodzinsky, J.D. and Wiebe, F.A. (1991): Examining the relationship between personality and entrepreneurial career preference, *Entrepreneurship and Regional Development*, 3, 195-206.

Schultz, T (1959): Investment in man: an economist´s view, *Social Service Review,* 33 (2), 109-117.

Shane and Eckhardt (2003)

Shane and Venkataraman (2000)

Shane et al. (1991)

Shapero, A. and Sokol, L. (1982): Social dimensions of entreprenurship, in Kent, C.A., Sexton, D.L. and Vesper, K.H. (eds.): *Encyclopaedia of entrepreneurship*. Prentice Hall, Englewood Cliffs (NJ).

Shaver and Scott (1991)

Simon, M, Houghton, S.M. and Aquino, K. (2000): Cognitive biases, risk perceptions and venture formation: how the individual decide to start companies. *Journal of Business Venturing,* 14 (5), 113-134.

Spilling, O. R. (1991). Entrepreneurship in a cultural perspective, *Entrepreneurship and Regional Development,* 3, 33-48.

Storey D.J. (1994): *Understanding the small business sector*, Routledge, London.

Svendsen, G.L.H. and Svendsen, G.T. (2004). *The creation and destruction of social capital: entrepreneurship, co-operative movements and institutions,* Edward Elgar, Cheltenham.

Tkachev, A. and Kolvereid, L. (1999): Self-employment intentions among Russian students, *Entrepreneurship and Regional Development*, 11, 269-280.

Uphoff, N. (2000) Understanding social capital: learning from the analysis and experience of participation, in Dasgupta, P and Serageldin, I (eds) *Social capital, a multifaceted perspective,* Washington; The World Bank, 215-249.

Uslay, C., Teach, R. D., & Schwartz, R. G. (2002): Promoting entrepreneurship for economic development: a cross-cultural analysis of attitudinal differences about entrepreneurship. *Journal of Research in Marketing and Entrepreneurship*, 4(2), 101-118.

Vázquez, A. (2002) *Endogenous development. networking, innovation, institutions and cities.* London: Routledge

Veciana, J. M. (1989) Características del Empresario en España. *Papeles de Economía Española,* 39, 19-36.

Veciana, J.M., Aponte, M. and Urbano, D. (2005): University students' attitudes towards entrepreneurship: a two countries comparison, *International Entrepreneurship and Management Journal*, 1 (2), 165-182.

Weber, Max (1969) *La Etica Protestante y el Espíritu del Capitalismo.* (1st edition in German *Protestantische Ethik 1904)* Barcelona: Ediciones Península.

Wilken (1979)

Woolcock, M. and Narayan, D. (2000) Social capital: implications for development theory, research and policy, *The World Bank Research Observer,* 15, 2, 225-249.

## Table 1. Full-sample measurement model (reliability indicators)

| | Weights | Loadings | Composite reliability | Average Variance Extracted (AVE) |
|---|---|---|---|---|
| **Bonding CSC** | | | --- | --- |
| Approval | 0.595 | | | |
| Valuation | 0.373 | | | |
| Family RModel | -0.073 | | | |
| Non-Family RM | 0.511 | | | |
| **Bridging CSC** | | | --- | --- |
| Institutional Knowl | 0.702 | | | |
| Work_exp | 0.675 | | | |
| **Desirability** | | | 0.928 | 0.721 |
| i11aatra | | 0.728 | | |
| i11batra | | 0.886 | | |
| i11catra | | 0.891 | | |
| i11datra | | 0.853 | | |
| i11eatra | | 0.876 | | |
| **Feasibility** | | | 0.920 | 0.657 |
| i15acapa | | 0.739 | | |
| i15bcapa | | 0.851 | | |
| i15ccapa | | 0.876 | | |
| i15dcapa | | 0.739 | | |
| i15ecapa | | 0.813 | | |
| i15fcapa | | 0.836 | | |
| **Intention** | | | 0.958 | 0.793 |
| i18ainte | | 0.795 | | |
| i18binte | | 0.910 | | |
| i18cinte | | 0.907 | | |
| i18dinte | | 0.927 | | |
| i18einte | | 0.896 | | |
| i18finte | | 0.902 | | |

## Table 2. Discriminant validity

| | Intention | Feasibility | Desirability | BondingCSC | BridgingCSC |
|---|---|---|---|---|---|
| Intention | **0.793** | | | | |
| Feasibility | 0.254 | **0.657** | | | |
| Desirability | 0.486 | 0.155 | **0.721** | | |
| BondingCSC | 0.095 | 0.098 | 0.143 | **n.a.** | |
| BridgingCSC | 0.040 | 0.117 | 0.031 | 0.027 | **n.a.** |

n.a. = non-applicable

## Table 3. Compared path coefficients for the structural model

| Effects on endogenous variables | Combined (N = 533) Path coefficients (β) / t-value | Spain (N = 400) Path coefficients (β) / t-value | Taiwan (N = 133) Path coefficients (β) / t-value |
|---|---|---|---|
| **Desirability** | **$R^2$ = 0.156** | **$R^2$ = 0.183** | **$R^2$ = 0.327** |
| H1: Bonding CSC -> Desirability | 0.359*** / 8.6907 | 0.407*** / 7.9662 | 0.554*** / 8.3258 |
| Non-hypot.: Bridging CSC->Desirability | 0.116** / 2.7947 | $0.067^{ns}$ / 1.4517 | $0.063^{ns}$ / 0.8042 |
| **Feasibility** | **$R^2$ = 0.184** | **$R^2$ = 0.195** | **$R^2$ = 0.253** |
| H2: Bonding CSC -> Feasibility | 0.264*** / 6.1422 | 0.266*** / 5.5003 | 0.410*** / 0.5920 |
| H3: Bridging CSC -> Feasibility | 0.298*** / 7.1683 | 0.295*** / 6.1481 | 0.209** / 2.5954 |
| **Intention** | **$R^2$ = 0.548** | **$R^2$ = 0.567** | **$R^2$ = 0.579** |
| H4: Desirability -> Intention | 0.589*** / 19.0297 | 0.663*** / 20.2410 | 0.302*** / 4.8148 |
| H5: Feasibility -> Intention | 0.272*** / 7.1065 | 0.183*** / 4.3092 | 0.579*** / 8.8928 |

*** p < 0.001, ** p < 0.01, * p < 0.05, ns: not significant (based on t(499), one-tailed test)

t(0.05; 499) = 1.64791345; t(0.01; 499) = 2.333843952; t(0.001; 499) = 3.106644601

**Table 4. Multigroup analysis**

| | $\beta_{Spain}$ | $\beta_{Taiwan}$ | $\beta_{Spain} - \beta_{Taiwan}$ | t-student |
|---|---|---|---|---|
| Bonding → desirability | 0.407 | 0.554 | -0.147$^{ns}$ | -1.52454 |
| Bonding → feasibility | 0.266 | 0.41 | -0.144$^{ns}$ | -1.55182 |
| Bridging → desirability | 0.067 | 0.063 | 0.004$^{ns}$ | 0.04357 |
| Bridging → feasibility | 0.295 | 0.209 | 0.086$^{ns}$ | 0.90396 |
| Desirability → intention | 0.663 | 0.302 | 0.361*** | 5.36718 |
| Feasibility → intention | 0.183 | 0.579 | -0.396*** | -4.79557 |

Note: $^{ns}$ = not significant. Levels of significance based on a Student $t_{(531)}$ distribution with two tails.
*p<.05, $t_{(.05, 531)} = 1.964$, **p<.01, $t_{(.01, 531)} = 2.585$, ***p<.001, $t_{(.001, 531)} = 3.308$

**Figure1: Research model and hypotheses**

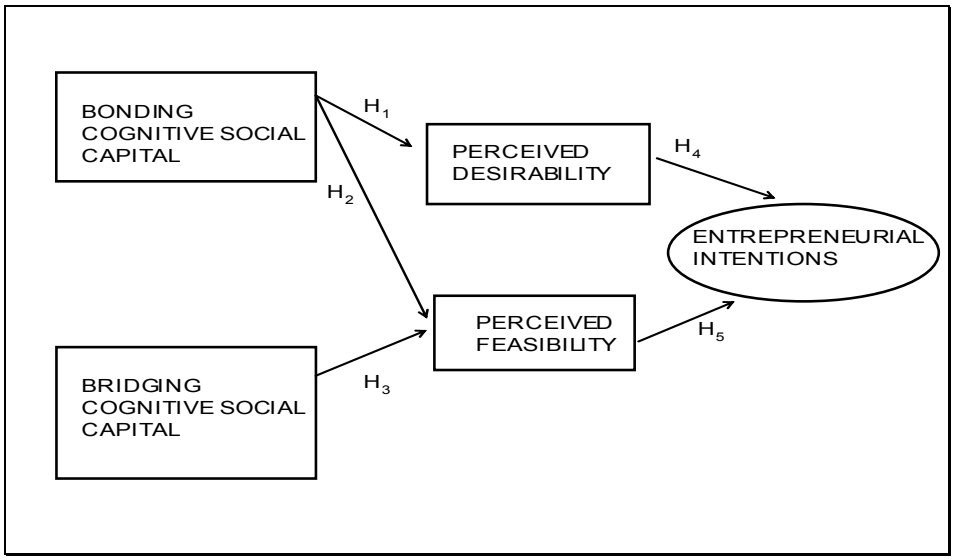
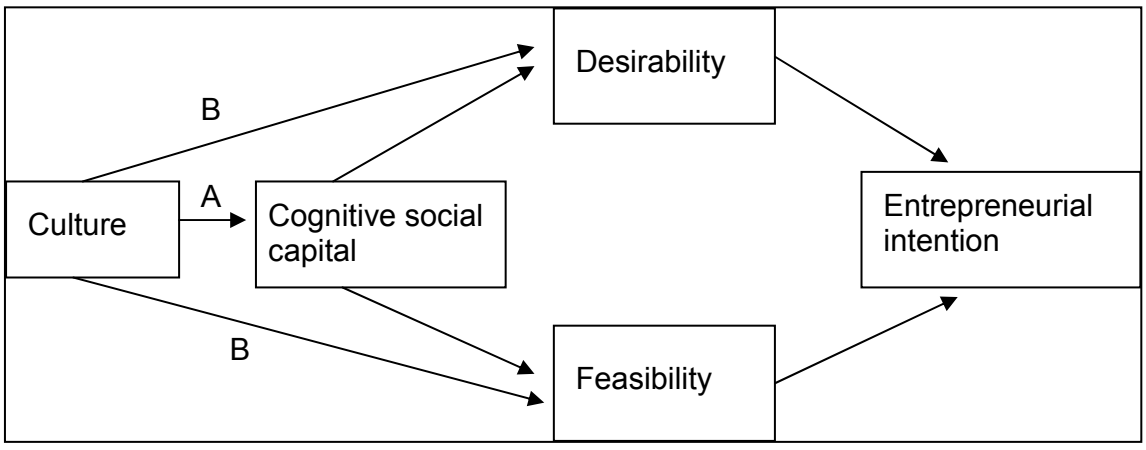
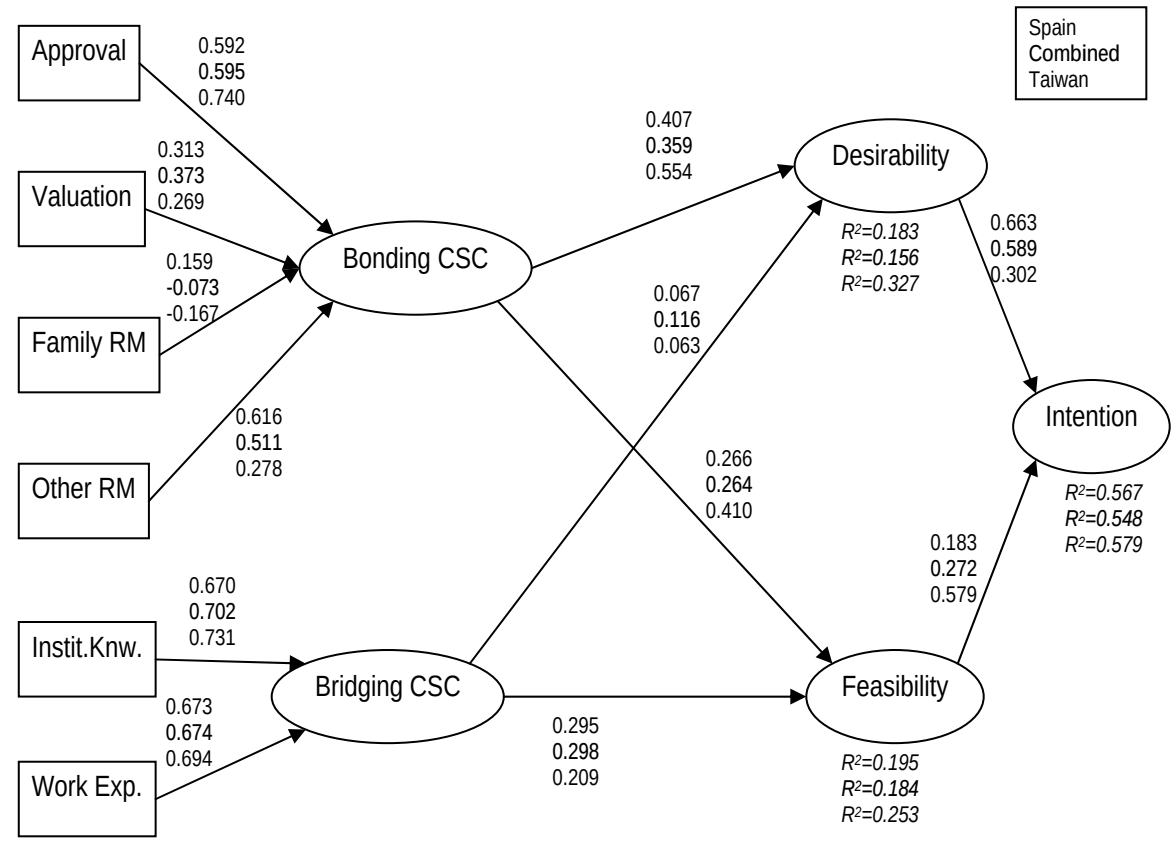



**Figure 2**
**A tentative cross-cultural model of entrepreneurial intention**



## Figure 3. Structural model results




Note: figures below the constructs indicate explained variance

**Edicions / Issues:**

95/1 *Productividad del trabajo, eficiencia e hipótesis de convergencia en la industria textil-confección europea*
Jordi López Sintas

95/2 *El tamaño de la empresa y la remuneración de los máximos directivos*
Pedro Ortín Ángel

95/3 *Multiple-Sourcing and Specific Investments*
Miguel A. García-Cestona

96/1 *La estructura interna de puestos y salarios en la jerarquía empresarial*
Pedro Ortín Ángel

96/2 *Efficient Privatization Under Incomplete Contracts*
Miguel A. García-Cestona
Vicente Salas-Fumás

96/3 *Institutional Imprinting, Global Cultural Models, and Patterns of OrganizationalLearning: Evidence from Firms in the Middle-Range Countries*
Mauro F. Guillén (The Wharton School, University of Pennsylvania)

96/4 *The relationship between firm size and innovation activity: a double decision approach*
Ester Martínez-Ros (Universitat Autònoma de Barcelona)
José M. Labeaga (UNED & Universitat Pompeu Fabra)

96/5 *An Approach to Asset-Liability Risk Control Through Asset-Liability Securities*
Joan Montllor i Serrats
María-Antonia Tarrazón Rodón

97/1 *Protección de los administradores ante el mercado de capitales: evidencia empírica en España*
Rafael Crespí i Cladera

97/2 *Determinants of Ownership Structure: A Panel Data Approach to the Spanish Case*
Rafael Crespí i Cladera

97/3 *The Spanish Law of Suspension of Payments: An Economic Analysis From Empirical Evidence*
Esteban van Hemmen Almazor

98/1 *Board Turnover and Firm Performance in Spanish Companies*
Carles Gispert i Pellicer

98/2 *Libre competencia frente a regulación en la distribución de medicamentos: teoría y evidencia empírica para el caso español*
Eva Jansson

98/3 *Firm's Current Performance and Innovative Behavior Are the Main Determinants of Salaries in Small-Medium Enterprises*
Jordi López Sintas y Ester Martínez Ros

98/4 *On The Determinants of Export Internalization: An Empirical Comparison Between Catalan and Spanish (Non-Catalan) Exporting Firms*
Alex Rialp i Criado

98/5 *Modelo de previsión y análisis del equilibrio financiero en la empresa*
Antonio Amorós Mestres

99/1 *Avaluació dinàmica de la productivitat dels hospitals i la seva descomposició en canvi tecnològic i canvi en eficiència tècnica*
Magda Solà

99/2 *Block Transfers: Implications for the Governance of Spanish Corporations*
Rafael Crespí, and Carles Gispert

99/3 *The Asymmetry of IBEX-35 Returns With TAR Models*
M.ª Dolores Márquez, César Villazón

99/4 *Sources and Implications of Asymmetric Competition: An Empirical Study*
Pilar López Belbeze

99/5 *El aprendizaje en los acuerdos de colaboración interempresarial*
Josep Rialp i Criado

00/1 *The Cost of Ownership in the Governance of Interfirm Collaborations*
Josep Rialp i Criado, i Vicente Salas Fumás

00/2 *Reasignación de recursos y resolución de contratos en el sistema concursal español*
Stefan van Hemmen Alamazor

00/3 *A Dynamic Analysis of Intrafirm Diffusion: The ATMs*
Lucio Fuentelsaz, Jaime Gómez, Yolanda Polo

00/4 *La Elección de los Socios: Razones para Cooperar con Centros de Investigación y con Proveedores y Clientes*
Cristina Bayona, Teresa García, Emilio Huerta

00/5 *Inefficient Banks or Inefficient Assets?*
Emili Tortosa-Ausina

01/1 *Collaboration Strategies and Technological Innovation: A Contractual Perspective of the Relationship Between Firms and Technological Centers*
Alex Rialp, Josep Rialp, Lluís Santamaria

01/2 *Modelo para la Identificación de Grupos Estratégicos Basado en el Análisis Envolvente de Datos: Aplicación al Sector Bancario Español*
Diego Prior, Jordi Surroca

01/3 *Seniority-Based Pay: Is It Used As a Motivation Device?*
Alberto Bayo-Moriones

01/4 *Calidad de Servicio en la Enseñanza Universitaria: Desarrollo y Validación de una Escala de Medida.*
Joan-Lluís Capelleras, José M.ª Veciana

01/5 *Enfoque estructural vs. recursos y capacidades: un estudio empírico de los factores clave de éxito de las agencias de viajes en España.*
Fabiola López-Marín, José M.ª Veciana

01/6 *Opción de Responsabilidad Limitada y Opción de Abandonar: Una Integración para el Análisis del Coste de Capita.*
Neus Orgaz

01/7 *Un Modelo de Predicción de la Insolvencia Empresarial Aplicado al Sector Textil y Confección de Barcelona (1994-1997).*
Antonio Somoza López

01/8 *La Gestión del Conocimiento en Pequeñas Empresas de Tecnología de la Información: Una Investigación Exploratoria*.
Laura E. Zapata Cantú

01/9 *Marco Institucional Formal de Creación de Empresas en Catalunya: Oferta y Demanda de Servicios de Apoyo*
David Urbano y José María Veciana.

02/1 *Access as a Motivational Device: Implications for Human Resource Management*.
Pablo Arocena, Mikel Villanueva

02/2 *Efficiency and Quality in Local Government. The Case of Spanish Local Authorities*
M.T. Balaguer, D. Prior, J.M. Vela

02/3 *Single Period Markowitz Portfolio Selection, Performance Gauging and Duality: A variation on Luenberger's Shortage Function*
Walter Briec, Kristiaan Kerstens, Jean Baptiste Lesourd

02/4 *Innovación tecnológica y resultado exportador: un análisis empírico aplicado al sector textil-confección español*
Rossano Eusebio, Àlex Rialp Criado

02/5 *Caracterización de las empresas que colaboran con centros tecnológicos*
Lluís Santamaria, Miguel Ángel García Cestona, Josep Rialp

02/6 *Restricción de crédito bancario en economías emergentes: el caso de la PYME en México*
Esteban van Hemmen Almazor

02/7 *La revelación de información obligatoria y voluntaria (activos intangibles) en las entidades de crédito. Factores determinantes.*
Gonzalo Rodríguez Pérez

02/8 *Measuring Sustained Superior Performance at the Firm Level*
Emili Grifell - Tatjé, Pilar Marquès - Gou

02/9 *Governance Mechanisms in Spanish Financial Intermediaries*
Rafel Crespi, Miguel A. García-Cestona, Vicente Salas

02/10 *Endeudamiento y ciclos políticos presupuestarios: el caso de los ayuntamientos catalanes*
Pedro Escudero Fernández, Diego Prior Jiménez

02/11 *The phenomenon of international new ventures, global start-ups, and born-globals:what do we know after a decade (1993-2002) of exhaustive scientific inquiry?*
Àlex Rialp-Criado, Josep Rialp-Criado, Gary A. Knight

03/1 *A methodology to measure shareholder value orientation and shareholder value creation aimed at providing a research basis to investigate the link between both magnitudes*
Stephan Hecking

03/2 A*ssessing the structural change of strategic mobility. Determinants under hypercompetitive environments*
José Ángel Zúñiga Vicente, José David Vicente Lorente

03/3 *Internal promotion versus external recruitment: evidence in industrial plants*
Alberto Bayo-Moriones, Pedro Ortín-Ángel

03/4 *El empresario digital como determinante del éxito de las empresas puramente digitales: un estudio empírico*
Christian Serarols, José M.ª Veciana

03/5 *La solvencia financiera del asegurador de vida y su relación con el coste de capital*
Jordi Celma Sanz

03/6 *Proceso del desarrollo exportador de las empresas industriales españolas que participan en un consorcio de exportación: un estudio de caso*
Piedad Cristina Martínez Carazo

03/7 *Utilidad de una Medida de la Eficiencia en la Generación de Ventas para la Predicción del Resultado*
María Cristina Abad Navarro

03/8 *Evaluación de fondos de inversión garantizados por medio de portfolio insurance*
Sílvia Bou Ysàs

03/9 *Aplicación del DEA en el Análisis de Beneficios en un Sistema Integrado Verticalmente Hacia Adelante*
Héctor Ruiz Soria

04/1 *Regulación de la Distribución Eléctrica en España: Análisis Económico de una Década, 1987-1997*
Leticia Blázquez Gómez; Emili Grifell-Tatjé

04/2 *The Barcelonnettes: an Example of Network-Entrepreneurs in XIX Century Mexico. An Explanation Based on a Theory of Bounded Rational Choice with Social Embeddedness.*
Gonzalo Castañeda

04/3 *Estructura de propiedad en las grandes sociedades anónimas por acciones. Evidencia empírica española en el contexto internacional*
Rabel Crespí; Eva Jansson

05/1 *IFRS Adoption in Europe: The Case of Germany.*
Soledad Moya, Jordi Perramon, Anselm Constans

05/2 *Efficiency and environmental regulation: a 'complex situation'*
Andrés J. Picazo-Tadeo, Diego Prior

05/3 *Financial Development, Labor and Market Regulations and Growth*
Raquel Fonseca, Natalia Utrero

06/1 *Entrepreneurship, Management Services and Economic Growth*
Vicente Salas Fumás, J. Javier Sánchez Asín

06/2 *Triple Bottom Line: A business metaphor for a social construct*
Darrel Brown, Jesse Dillard, R. Scott Marshall

06/3 *El Riesgo y las Estrategias en la Evaluación de los Fondos de Inversión de Renta Variable*
Sílvia Bou

06/4 *Corporate Governance in Banking: The Role of Board of Directors*
Pablo de Andrés Alonso, Eleuterio Vallelado González

06/5 *The Effect of Relationship Lending on Firm Performance*
Judit Montoriol Garriga

06/6 *Demand Elasticity and Market Power in the Spanish Electricity Market*
Aitor Ciarreta, María Paz Espinosa

06/7 *Testing the Entrepreneurial Intention Model on a Two-Country Sample*
Francisco Liñán, Yi-Wen Chen

07/1 *Technological trampolines for new venture creation in Catalonia: the case of the University of Girona*
Andrea Bikfalvi, Christian Serarols, David Urbano, Yancy Vaillant

07/2 *Public Enterprise Reforms and Efficiency in Regulated Environments: the Case of the Postal Sector*
Juan Carlos Morales Piñero, Joaquim Vergés Jaime

07/3 *The Impact of Prevention Measures and Organisational Factors on Occupational Injuries*
Pablo Arocena, Imanol Núñez, Mikel Villanueva

07/4 *El impacto de la gestión activa en la performance de los fondos de inversión de renta fija*
Sílvia Bou Ysàs

07/5 *Organisational status and efficiency: The case of the Spanish SOE "Paradores"*
Magda Cayón, Joaquim Vergés

07/6 *Longitudinal Analysis of Enterpreneurship and competitiveness dynamics in Latin America*
José Ernesto Amorós, Óscar Cristi

08/1 *Earnings Management and cultural values*
Kurt Desender, Christian Castro, Sergio Escamilla

08/2 *Why do convertible issuers simultaneously repurchase stock? An arbitrage-based explanation*
Marie Dutordoir, Patrick Verwijmeren

08/3 *Entrepreneurial intention, cognitive social capital and culture: empirical analysis for Spain and Taiwan*
Francisco Liñán, Francisco Santos, José L. Roldán