

The informal investment context: specific issues concerned with business angels

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ABSTRACT: Informal investors play a key role to meet the financing needs of business projects in early stages. However, this is a group in which there are different kinds and ways of dealing with investment. One of these profiles is associated with the figure known as business angel, whose main distinguishing feature is its ability to add smart capital in the form of knowledge, experience and contacts. The aim of this paper is to determine to what extent the specific profile of business angels differ from the rest of informal investors. With a sample of over 800 informal investors in Spain, the empirical results of this study show that the higher income, skills and entrepreneurial training and the less family ties to the entrepreneur, the greater the probability of belonging to *business angel* investment group.

JEL Classification: G29.

Keywords: informal investing; business angels; entrepreneurship.

El contexto inversor informal: especificidades del segmento de los *business angels*

RESUMEN: Los inversores informales desempeñan un papel fundamental para cubrir las necesidades de financiación de los proyectos de negocio en fase emprendedora. Sin embargo, se trata de un segmento en el que cohabitan distintas tipologías y maneras de afrontar la inversión. Uno de estos perfiles se asocia a la figura conocida como inversor ángel o *business angel*, cuyo principal rasgo diferenciador reside en su capacidad para aportar un capital inteligente en forma de conocimiento, experiencia y contactos. El objetivo de este trabajo persigue conocer en qué medida el perfil específico de los *business angels* difiere del resto de inversores informales. Con una muestra de más de 800 inversores informales en España, los resultados empíricos de este trabajo ponen de manifiesto que a mayor nivel de renta, mayores habilidades y formación específica para emprender

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y menor vínculo familiar con el emprendedor, siendo mayor la probabilidad de pertenecer al segmento *business angel* de inversión informal.

Clasificación JEL: G29.

Palabras clave: inversión informal; *business angels*; actividad emprendedora.

1. Introduction

«Business angels» are becoming fundamental figures in efforts to close the equity gap encountered by start-ups at the outset of their projects (Harrison and Mason, 1999; Van Osnabrugge and Robinson, 2000). Once entrepreneurs have exhausted the funding available from the 3Fs (Family, Friends and Fools) that gap widens considerably, to between € 100,000 and € 2 million. This bracket is relatively unattractive to venture capital funds, which tend to opt for more conservative investment policies (projects that have survived beyond the initial stages of their start-up) and increasingly high minimum capital requirements for entry (OECD, 2011).

Business angels form part of the informal investment sector that can be found in all economies. However the financing market is highly heterogeneous, and the terms «informal investor» and «business angel» are not always synonymous (Avdeitchikova *et al.*, 2008): the latter not only provide capital but also engage actively with start-ups¹ by supplying expertise, know-how, experience and facilitating access to their networks of contacts.

This study seeks to determine to what extent and in what aspects the socioeconomic profile of business angels is significantly different from that of other informal investors in Spain. Specifically, an analysis is conducted to determine whether variables such as education level, income level and past entrepreneurial experience can be used to draw a significant distinction between different groups of informal investors (business angels and non business angels).

To that end a sample of over 800 informal investors in Spain is examined, located on the basis of data compiled by the GEM (Global Entrepreneurship Monitor) survey in 2010. From this group the GEM regional team for the Basque Country has obtained a sub-sample of investors who meet the criteria for consideration as business angels, *i. e.* they provide capital and experience and become actively engaged in the projects that they finance.

This paper's main contribution to the relevant literature lies in providing data to improve knowledge of the characteristics of informal financing markets, to which

¹ «Start-up» is a blanket term that covers numerous newly created undertakings and businesses in the early stages of development. According to the GEM (Global Entrepreneurship Monitor) project the «early stage» is the entrepreneurial stage of a business, which is deemed to cover its first 3.5 years of operation. A distinction must be drawn between start-ups and spin-offs: the latter are created to exploit and market technology or knowledge created by an organisation (corporate spin-offs) or by a university or research centre (academic spin-offs) (Heirman and Clarysse, 2004; Pirnay *et al.*, 2003).

little attention has been paid in the past by empirical literature. This may be partly because the investors involved keep a low profile and are hard to identify (Mason and Harrison, 2008).

The paper is presented in ten sections. Sections 2 and 4 review the relevant theory, seeking to clarify the nature and the peculiarities of informal investment and, more specifically, to analyse the important role played by business angels in financing start-ups. Section 4 outlines the hypotheses used in search of significant differences within the informal investment sector. Sections 5 and 6 then examine the methodology applied and the statistical analyses conducted, and sections 7 and 8 present and discuss the results of those analyses. Finally, the main conclusions are outlined and some comments are provided concerning limitations and lines for future research.

2. The concept of informal investment

Business angels form part of the informal investment sector that exists in all economies, which some authors refer to as the «informal venture capital market». However this market is highly heterogeneous and contains investors of various kinds (Politis, 2008). Indeed, the theoretical debate in the relevant branch of literature is still ongoing, and there is some uncertainty as to what definitions and terminology should be used (Avdeitchikova *et al.*, 2008).

Mason and Harrison (2000, 137) define «informal investors» as «private individuals who make investments directly in unlisted companies in which they have no family connection». The main difference between this and the definition of a business angel is that it does not specify that the investors take an active part in the projects that they finance, so it does not envisage the transfer of smart capital that characterises «angel investments».

Nor does this definition of informal investors include persons close to the entrepreneur who provide funds, *e. g.* relatives and friends. According to Mason and Harrison (2000) and Maula *et al.* (2005) the reasons why such people make contributions are different from those that prevail among professional investors, so they should not be counted strictly as informal investors. Moreover, since such funding is provided for reasons concerned exclusively with family ties and friendship, it does not meet the requirement of forming a market.

However not all the researchers in this field agree that this funding (such investors are also known as the 3Fs —Family, Friends and Fools— and their contributions as «love money») should be excluded. Indeed, there is currently a debate ongoing in the specialist literature as to whether they should be counted as part of the informal investment market (Avdeitchikova *et al.*, 2008).

The GEM project, for instance, uses a broader definition of the term «informal investor» that includes the 3Fs. Reynolds *et al.* (2003) conclude that micro-investments from the 3Fs account for around 80% of the external resources required by start-ups, and are therefore relatively important enough to merit inclusion in the informal fi-

nancing market. Erikson *et al.* (2003) introduce the concept of «family angels», *i. e.* persons who invest in projects to which they have family connections, and conclude that such angels tend to make their investments earlier and in less innovative businesses than other informal investors, and that they provide more patient capital.

Since we are aware of this lack of consensus as to what constitutes an informal investor (Avdeitchikova *et al.*, 2008), we seek to provide an approach here that will help clarify the nature of this form of investment by distinguishing between business angels and other informal investors. To establish this distinction we take as our basis what we believe to be the single element on which there is complete academic and institutional consensus concerning what constitutes a business angel: the ability to bring not just capital but also knowledge and experience to investment projects.

This means that the main characteristic or feature identifying an informal investor as a business angel is his/her ability and willingness to provide smart capital in the form of business know-how, commercial expertise, experience or his/her own network of business contacts (Mason and Harrison, 1995; Aernoudt, 2005). It is precisely this added value that other informal investors lack.

We have decided not to use links between investors and entrepreneurs as a variable by which investors can be distinguished from one another. In this study we relax the assumptions used in the definition given by Mason and Harrison (2008)², who assert that business angels do not maintain family links with the beneficiaries of their investments, and opt instead for a broader definition based solely on whether an investor provides projects with smart capital³.

3. Types of informal investment: business angels

As described above, a business angel is a private investor who provides start-ups with capital but also engages more or less actively in the development of the project funded, placing his/her network of contacts and experience at the disposal of the entrepreneur (De Clercq *et al.*, 2006). Such investors sometimes work via networks (Christensen, 2011), the specific workings of which may be more or less professionalised (Maxwell *et al.*, 2011).

Although it is hard to generalise (Mason and Harrison, 2000), the typical profile of a business angel seems to be an entrepreneur or business executive (either working

² Mason and Harrison (2008, 309) define a business angel as «a high net worth individual, acting alone or in a formal or informal syndicate, who invests his or her own money directly in an unquoted business in which there is no family connection and who, after making the investment, generally takes an active involvement in the business».

³ In line with the criterion followed here it makes no sense not to include as business angels investors who provide smart capital but also have ties through family or friendship with the entrepreneurs that they support. Direct observation, *e. g.* at talks and presentations given by business angels as part of networks or platforms, supports this contention: cases can be found of business angels who have supported projects led by members of their inner circle of friends or relatives.

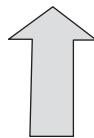
or retired) with a high net worth, experience in entrepreneurship and broad-ranging business expertise, who is willing to invest between 20,000 and 250,000 euros per project (Díaz *et al.*, 2010).

The angel investment market is essentially local or regional in scope (Lengyel and Gulliford, 1997; Harrison *et al.*, 2010), with angels favouring projects located close to home. They are willing to invest in a broad range of activities, including the service sector, are capable of accepting long maturity periods and offer patient capital with more relaxed disinvestment calendars and more flexible exit strategies.

It is fundamental that the role of business angels be fostered and developed to cover the equity gap suffered by start-ups in their early stages (Harrison *et al.*, 2010). They are of key importance in that they occupy a critical position as providers of transitional funding when entrepreneurs have exhausted the sources of funds closest at hand, *i. e.* the 3Fs, but do not yet have a long enough track record to earn themselves access to venture capital or to bring in an industrial partner (see figure 1). This is why public institutions are showing increasing interest in developing networks to promote business angels as alternative sources of financing (Collewaert *et al.*, 2010).

Figure 1. Business angels: range of investment and coverage of equity gap

Informal investment		Formal investment	
Family, Friends and Fools (3Fs)	Business angels Usual range of investment: \$25,000-500,000	Venture capital funds Usual range of investment: \$2-5 million	
Seed stage	Early stages	Later stages	



Financing gap

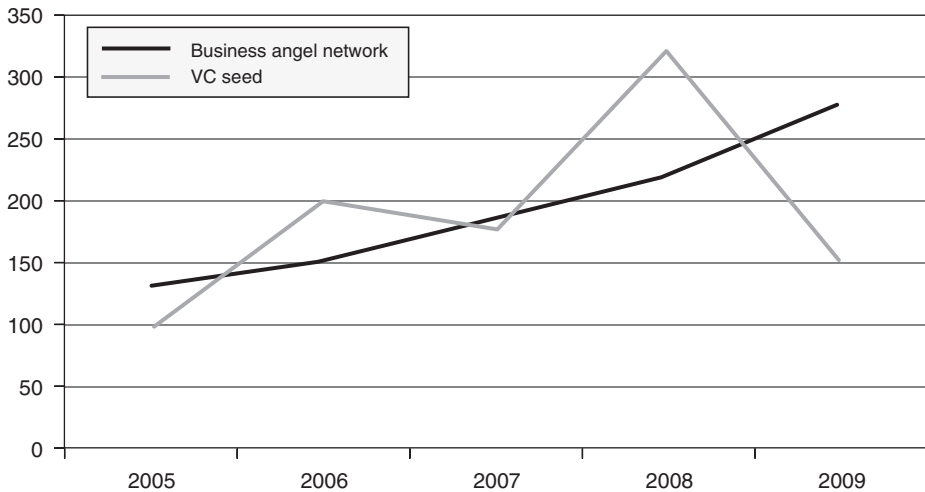
Source: OECD (2011).

Moreover, the role of angel investors is revealed as even more important when trends in the venture capital market are taken into account. Changes can be observed in the profile of investors in young technology-based firms, with an increasing presence of the public sector and of informal investors, while venture capital concerns are tending to turn rather to investments in more mature projects, with larger volumes

of investment per operation (Fernández and Ubierna, 2011). The OECD (2011) estimates that in 2009 Business Angel Networks (BANs) in Europe mobilised more funding than venture capital operators and funds in regard to seed-stage projects (see Graph 1).

The major challenge facing the angel investment sector is to increase in size and raise the average volume of funds provided. There is a need to move towards formulae involving syndicated funding by more than one business angel or joint investment operations with venture capital funds (OECD, 2011) if business angels aspire to cover today's increasingly wide equity gaps, which currently average between \$500,000 and \$2 million (EBAN, 2010).

Graph 1. Business Angel Network (BAN) and venture capital seed investment in Europe 2005-2009. EUR millions



Source: OECD (2011) based on EBAN and EVCA data.

4. Business angels and other informal investors: differences in profiles

This paper sets out to determine whether the socio-economic profile of business angels in Spain is significantly different from that of other informal investors. Business angels contribute actively to the development of the companies in which they invest, so it is important to learn what their profile as investors looks like. To that end, we examine the variables of education level, entrepreneurial skills and expertise, entrepreneurial experience and net worth.

4.1. Education Level

Previous studies (Freear *et al.*, 1994; Mason and Harrison, 2000; Wong and Ho, 2007) confirm that the typical informal investor is an individual with a high or medium-to-high level of education. According to GEM data for 2010, around 60% of such investors hold university-level qualifications (Güemes *et al.*, 2010), a figure far higher than the percentage for the adult population as a whole in Spain⁴.

Based on this evidence, this paper seeks to determine whether informal investors who match the profile for classification as business angels include a higher-than-average proportion of degree holders. Business angels are characterised in particular by not just providing financial support but also advice and actual assistance. Although such contributions depend on their management experience and their social capital and not necessarily on their level of education, we feel that the data available (more university graduates among informal investors) can serve as the basis for our first working hypothesis (H_1):

Hypothesis 1 (H_1): The fact that an investor holds a university-level qualification increases the probability of his/her belonging to the business angel category of informal investors.

4.2. Skills and Specific Training in Creating Start-ups

In line with the tenets of hypothesis 1 (H_1), hypothesis 2 (H_2) also examines the training and skills of investors. However, this time the objective is to determine whether there are significant differences between groups of investors in terms of specific entrepreneurial skills and expertise. According to the 2010 GEM report on Spain (Güemes *et al.*, 2010), 78.6% of informal investors see themselves as holding the skills and expertise required for entrepreneurship, compared to a figure of 50.2% among the rest of the adult population of Spain. Our third hypothesis (H_3) suggests that the figure is even higher among the specific group of business angels. Our second working hypothesis (H_2) therefore looks like this:

Hypothesis 2 (H_2): possession of the specific skills and expertise required to create a start-up increases the probability of an informal investor belonging to the business angel category.

4.3. Entrepreneurial Experience

Theory-based literature sees business angels as investors with high levels of education, entrepreneurial and business experience and a high level of financial culture,

⁴ According to the report Overview of Education: OECD Indicators 2011 (Ministry of Education, 2011), 30% of the adult population of Spain hold higher-education qualifications.

as required to make such investments (Freear *et al.*, 1994; Mason and Harrison, 2000; Politis and Landström, 2002; Maula *et al.*, 2005). Indeed, they tend to invest in business sectors and technologies that they know well, which means that the level of value added that they can offer projects is high.

Some empirical research projects in this area have also concluded that business angels are currently or have in the past been entrepreneurs themselves, and that they have, in their careers, held posts concerned with the management and administration of new companies. This gives them broad experience in company start-ups (Freear *et al.*, 1994; Mason and Harrison, 2000; Politis and Landström, 2002; Maula *et al.*, 2005).

Our initial hypothesis here is that business angels possess significantly greater entrepreneurial experience than other informal investors. To check this out, we examine the proportion of start-up entrepreneurs (involved in projects that have been running for less than 3.5 years) (H3a), of potential entrepreneurs (H3b), and of individuals who have been involved in the winding up of a company within the past year (H3c) in the group. These hypotheses are formulated as follows:

Hypothesis 3 (H₃): the more entrepreneurial experience an informal investor has, the more likely he/she is to belong to the business angel category.

Hypothesis 3a (H_{3a}): investors who at the same time also work as entrepreneurs on business projects that have been running for less than 3.5 years are more likely to belong to the business angel category of informal investors.

Hypothesis 3b (H_{3b}): informal investors who at the same time expect to start up entrepreneurial projects within the next three years (potential entrepreneurs) are more likely to belong to the business angel category of informal investors.

Hypothesis 3c (H_{3c}): informal investors who have taken part in the winding up of a business project within the past year are more likely to belong to the business angel category of informal investors.

4.4. Income Level

The likelihood of an individual acting as an informal investor seems initially to be positively correlated to his/her income level. The literature on entrepreneurship (Freear *et al.*, 1994; Harrison and Mason, 1992) establishes that business angels have high net worth and income levels. However, empirical studies such as that of Maula *et al.* (2005) find no evidence for this. Here our initial hypothesis (H₄) is that the income levels of business angels are higher than those of other informal investors. This fourth hypothesis is formulated as follows:

Hypothesis 4 (H₄): the higher the income level of an investor is, the more likely it is that he/she belongs to the business angel category.

4.5. Relationship between Investors and Entrepreneurs

Pre-existing relationships between investors and entrepreneurs comprise another variable that we analyse here. Data from the 2010 GEM report for Spain (Güemes *et al.*, 2010) reveal the prevalence of close links (family ties, friendship, working environment) between investors and entrepreneurs. As indicated above, we do not exclude from the business angel category those investors who provide capital and expertise for projects set up by entrepreneurs with whom they have family ties or links of friendship. However, we do seek to check whether such links are less frequent among business angels.

In this case the number of investors with a more professional profile may be expected to be greater. Indeed, business angels are tending to act increasingly through professional or more formal channels such as networks, forums or investment clubs, where they establish professional relationships with entrepreneurs with whom they are not initially connected by kinship or close proximity. The relevant hypothesis is formulated as follows:

Hypothesis 5 (H_5): the more prior links they have with entrepreneurs based on family ties or friendship, the less likely informal investors are to belong to the business angel category.

4.6. Average Volume of Investment

Business angels act from a more professional viewpoint than other informal investors, investing in high-potential start-ups and weighing up and selecting their investment choices on the basis of stricter criteria. Their involvement in projects on a larger scale leads to hypothesis (H_6), which posits that their average capital contribution is greater than the average contribution of other informal investors.

Hypothesis 6 (H_6): The bigger the volume of capital provided, the more likely it is that an informal investor belongs to the business angel category.

5. Method

The data used are those gathered by the Global Entrepreneurship Monitor⁵ (GEM) project for the adult population (aged over 18 and under 65) of the whole of Spain between April and June 2010. The questionnaire used is the same one used in the GEM method, which is common to all the countries and regions where the project is implemented. The CATI (Computer-Assisted Telephone Interviewing) software program was used to ensure that interviews were properly conducted, recorded and encoded. The technical data file for the sample is presented in table 1.

⁵ For more information on the project see www.gemconsortium.org.

Table 1. Technical data file for the GEM survey on the population aged 18-64

<i>Universe</i>	30,741,514 people aged between 18 and 64 living in Spain.
<i>Sample</i>	26,388 individuals aged between 18 and 64.
<i>Sample selection</i>	Multi-stage sampling: random selection of cities and municipalities in provinces depending on the scope and population quotas resident in municipalities with more than 5000 residents (urban population) and less than 5000 residents (rural population). In stage two, telephone numbers for each municipality were obtained at random. Finally, individuals aged between 18 and 64 were selected, with quotas for each sex and age-group proportional to the population of each regional autonomous community.
<i>Method</i>	CATI (Computer-Assisted Telephone Interviewing).
<i>Sample error (+/-)</i>	+/- 0.6% a priori and +/- 0.24% a posteriori.
<i>Confidence level</i>	95%
<i>Survey period</i>	April-July 2009.

- (1) *Source:* US Census 2010, based on INE data.
- (2) The sample error was calculated for infinite populations.
Hypothesis: P = Q = 50% or maximum indeterminacy.

Among many other issues, the GEM survey enables Spain's informal investors to be identified. An «informal investor» is defined as an adult (aged 18-64) who has invested his/her own money in a business run by others in the past three years⁶. Extrapolating the answers to the question of whether respondents considered themselves to match this definition, 3.2% of the adult population of Spain can be said to fall within this category. This gives us a sample of 854 informal investors here.

Secondly, since that this study was undertaken to identify those members of the overall group of informal investors who fitted the profile for consideration as business angels, the GEM research team in the Basque Country incorporated into the standard questionnaire a set of specific questions aimed at doing just that. Accordingly, persons already identified as informal investors (3.2% of the population aged between 18 and 64) were asked whether they provided management or entrepreneurial experience and expertise for the start-ups that they financed as well as capital.

35.7% of the respondents identified as informal investors answered yes to this question. This can be taken as showing that almost four out of ten informal investors in Spain can be considered as business angels in the sense that they claim to provide smart capital to the start-ups in which they invest. The remaining 63%, *i. e.* the majority, provide only financial support for start-ups and do not involve themselves actively or provide assessment based on their own professional experience or expertise. This is the position typically held by those who fall into the category of the 3Fs.

⁶ This excludes investment in bonds, shares and investment funds.

6. Variables and statistical method

The working hypotheses drawn up are checked out using logistic regression analysis, also known as «logit analysis», a statistical procedure that has proved especially useful in cases where the presence or absence of a characteristic or result is to be predicted according to the figures obtained for a number of forecast variables. Its use is appropriate here since it provides a number of coefficients or weightings for independent variables that highlight the ability of each one to distinguish between the groups established in accordance with the dependent variable (business angels vs. non business angels).

The forecast of whether an individual belongs to one group or the other is based on the likelihood of an event occurring. The function obtained in the regression thus provides a value or forecast probability of between zero and one in each case, enabling cases to be allocated to one group or the other⁷. The regression coefficients of the independent variables here were obtained with the input method, comprising the inputting of all the specific variables in the model in a single operation⁸.

The dependent variable is encoded as follows: 1 = informal investors considered to be business angels and 0 = the rest. The independent dummy and metric variables cover the various points to be analysed: education level (higher education), entrepreneurial experience, specific training for the creation of start-ups, relationship between investors and entrepreneurs, income level⁹ and volume of investment. The encoding of all the variables analysed is shown in table 2. In the case of entrepreneurial experience several variables are used: firstly the TEA¹⁰ indicator, which in this study measures the percentage of investors who are also involved as entrepreneurs in business projects that have been running for less than 42 months (TEA variable); secondly those investors who state that they intend to start up new businesses within the next three years (EXPECT variable); and thirdly those informal investors who have been involved in the winding up or closing down of a business undertaking in the past year (CLOSE-DOWN variable).

Two variables are used in regard to specific training in the creation of start-ups: the first is an objective variable (SKILLS2) that establishes whether an informal investor has received specific training related to the creation of start-ups at any time in

⁷ To this end a cut-off point for the logistic function needs to be set, above which cases are allocated to one group and below which they are allocated to the other (Pérez, 2005). In this study the cut-off point used is 0.5. This is the default setting in most statistics packages, including SPSS.

⁸ Correlation analysis of the full set of independent variables specified in the model shows no significant link between them. This ensures that there will be no multi-collinearity problems in the regression analysis.

⁹ The INCOME variable is expressed in ordinal form on a scale of 1-7: 1 = up to € 10,000; 2 = € 10,001 - € 20,000; 3 = € 20,001 - € 30,000; 4 = € 30,001 - € 40,000; 5 = € 40,001 - € 60,000; 6 = € 60,001 - 100,000; and 7 = over € 100,000.

¹⁰ The GEM project calculates the TEA (*Total Entrepreneurial Activity*) index as the percentage of the adult population (aged 18-64) involved in creating business undertakings that have been running for 3.5 years or less.

Table 2. Independent & dependent variables of the analysis. Encoding

<i>Independent variables</i>	
<i>Variable Label</i>	<i>Values</i>
EDUC_LEVEL	1 if the investor has a university-level qualification 0 otherwise
TEA	1 if the investor is also an entrepreneur in a business that has been running for less than 3.5 years. 0 otherwise
EXPECT	1 if the investor expects to start up a new business within the next three years. 0 otherwise
CLOSE-DOWN	1 if the investor has wound up a business undertaking (including self-employment) in the past 12 months. 0 otherwise
SKILLS1	1 if the investor considers him/herself to possess the skills and expertise needed to be an entrepreneur. 0 otherwise
SKILLS2	1 if the investor declares him/herself to have received specific training in starting up new businesses. 0 otherwise
RELAT_	1 if there is no prior link between the investor and the beneficiary of the funds, or if there is a purely professional or work-related link. 0 if there is a link based on family ties or friendship between the investor and the beneficiary of the funds.
INCOME	Average annual income of the investor.
INVEST_VOL	Average amount (in euros) invested in the business undertakings that they support as investors.
<i>Dependent variable</i>	
BUSANGEL	1 if the informal investor matches the profile for consideration as a business angel. 0 for other informal investors.

his/her life. The second is a subjective variable (SKILLS1) based on the investor's perception of whether he/she has the expertise and skills required to start up a business undertaking.

7. Results of analyses

The model reveals statistical significance in rejecting the null hypothesis based on the ratio of verisimilitude test (Sig = 0.000), which seems to indicate a better fit once the independent variables are incorporated into the model. On the other hand the lack of significance of the Hosmer-Lomeshow test (Sig = 0.642) means that the null hypothesis of no significant differences between observed and predicted classifi-

cations can be accepted: this confirms that the model specified fits the data correctly (see table 4).

Table 3. Variables analysed: descriptive statistics

	<i>Business angel-type investors (n = 305)</i>		<i>Other informal investors (n = 538)</i>	
	<i>Mean</i>	<i>St. Deviation</i>	<i>Mean</i>	<i>St. Deviation</i>
EDUC_LEVEL	0.49	(0.501)	0.41	(0.492)
TEA	0.12	(0.326)	0.07	(0.250)
EXPECT	0.23	(0.420)	0,19	(0.391)
CLOSE-DOWN	0.10	(0.299)	0,05	(0.225)
SKILLS1	0.87	(0.366)	0.64	(0.440)
SKILLS2	0.55	(0.499)	0.39	(0.488)
RELAT_	0.21	(0.406)	0,08	(0.274)
INCOME	3.78	(1.552)	3.30	(1.476)
INVEST_VOL	338,255.64	(3836806.18)	26,042.47	(193,148.51)

Table 4. Logistic regression: results for the model

<i>Business Angel vs. Non-Business Angel</i>						
<i>Regressor variables</i>	<i>B</i>	<i>SD</i>	<i>Wald</i>	<i>Gf</i>	<i>Sig.</i>	<i>Exp(β)</i>
EDUC_LEVEL	0,286	0,211	1,843	1	0,175	1,331
TEA	-0,261	0,356	0,536	1	0,464	0,770
EXPECT	0,226	0,253	0,797	1	0,372	1,253
CLOSE-DOWN	0,401	0,429	0,877	1	0,349	1,494
SKILLS1	0,830***	0,267	9,645	1	0,002	2,293
SKILLS2	0,359*	0,210	2,919	1	0,088	1,432
RELAT_	1,162***	0,314	13,706	1	0,000	3,198
INCOME	0,121*	0,068	3,175	1	0,075	1,129
INVEST_VOL	0,000	0,000	0,090	1	0,764	1,000
Constant	-2,315	0,419	30,470	1	0,000	0,099
Valid N = 466						
Nagelkerke's R ² = 0.114						
-2Log of verisimilitude = 589.317		Chi-square = 42.305		gf = 9		Sig = 0.000
Hosmer & Lomeshow test		Chi-square = 5.871		gf = 8		Sig = 0.662

* p < 0,1; ** p < 0,05; *** p < 0,01.

Table 4 also shows the results of the logit regression model, in which it can be seen that some of the regressor variables identified have a significant influence on whether investors match the business angel profile. The estimated coefficient (β), the standard deviation of β (SD), Wald's statistic, the degrees of freedom (g), the sig-

nificance of the estimated coefficient (Sig.) and the odds ratio [$\text{Exp}(\beta)$] are obtained for each of the variables included in the model. The descriptive statistics (mean and standard deviation) of the various variables are shown in table 3.

To judge from Wald's statistic, the only significant regression coefficients are those that correspond to variables concerned with income level ($p < 0.1$), the type of relationship between investors and entrepreneurs ($p < 0.01$) and specific training in creating start-ups ($p < 0.01$; $p < 0.1$).

The higher the available income (INCOME) of an investor is, the more likely it is that he/she will be a business angel (Sig = 0.075). With a positive β coefficient (0.121) and an exponential value of β in excess of 1 ($e^{0.121} = 1.129$), it is found that business angels have higher annual incomes than the «other informal investors» group (for $p > 0.1$).

The type of relationship between investors and entrepreneurs (RELAT_) also proves to be significant, this time at the 1% level. With a positive β coefficient of 1.162 and an exponential value of β of 3.198 (> 1), it can be stated that when there are family ties or links of friendship between the investor and the entrepreneur the investor is more likely to belong to the «non business angels» group. However if there is a professional link or if there is no *a priori* kinship link between the parties the investor is much more likely to be a business angel.

Another significant relationship is found in regard to the possession of the skills required to create a start-up (SKILLS1 and SKILLS2 variables). Business angels claim to have higher levels of the knowledge and human capital required to be entrepreneurs (SKILLS1), and to have received more specific training in this regard (SKILLS2), based on the values of their β (0.830 and 0.359) and on their odds ratios in excess of one (2.293 and 1.492).

However, no significant link is observed ($p > 0.1$) in the cases of the following regressor variables included in the model: education level (EDUC_LEVEL variable), entrepreneurial experience (TEA, EXPECT and CLOSE-DOWN variables) and average volume of investment per project (INVEST_VOL variable).

To check the predictive ability of the model its accuracy rate must be tested by comparing the observed data from the sample with the predictions made. The confusion matrix or classification table shown in table 5 reveals that the model correctly classifies 22.6% of the informal investors with business angel profiles and 93.3% of non business angels. In overall terms this works out to 68.6% accuracy over the total number of original cases.

Huberty's test (e) was the performed to check whether this accuracy level is greater than the number of cases that would be correctly classified at random. This resulted in a Z^* statistic value, which was distributed as a normal distribution. For a 5% significance level a Z^* statistic value of 14.14 was obtained (so the null hypothesis is rejected)¹¹, so

¹¹ Ho: The number of cases correctly classified by the model does not differ from the classification expected due to the effects of random chance.

it can be stated that the accuracy rate provided by the model is significantly greater than would be obtained at random (see table 5).

Table 5. Results of the classification

<i>Observed</i>		<i>Forecast</i>		
		Do investors provide expertise & experience and involve themselves actively in the start-up that they fund?		
		<i>Yes = Business Angel</i>	<i>No = Other informal investors</i>	<i>% correct</i>
Do investors provide expertise & experience and involve themselves actively in the start-up that they fund?	<i>Yes = Business Angel</i>	38	132	22.6%
	<i>No = Other informal investors</i>	21	296	93.3%
	<i>Overall percentage</i>			68.6%
<i>Huberty's test (e)</i>				
$e = (1/487) * (170^2 + 317^2) = 265,68$		$Z^* = \frac{(334 - 265,68 \cdot 87) \cdot \sqrt{487}}{\sqrt{265,68 \cdot (487 - 265,68)}} = 6,22 > 1,96$		

8. Discussion of results

Our analysis of this logistic regression covers a number of independent variables or regressors and reveals how they affect the dichotomous dependent variable (1 = Business angel; 0 = Other informal investors). Our findings confirm that: i) the fewer links of kinship or friendship an investor has with the entrepreneur; ii) the higher his/her income level is; and iii) the more expertise and skills he/she has in regard to creating a start-up, the more likely he/she is to have a business-angel-type investor profile.

These findings confirm our hypotheses 2, 4 and 5. Unlike other informal investors, business angels are willing to bring money, time and experience to start-ups with high growth potential. The confirmation of hypothesis 2 corroborates the idea that the transfer of knowledge is based also on higher qualifications and more skills than other informal investors. This can be deduced from the finding that business angels are more endowed with the specific skills required for entrepreneurship and have more specific training in areas related to business start-ups.

The confirmation of hypothesis 4 shows that informal investors with higher income levels are more likely to belong to the business angel category. Mason and Harrison (2008) define angel investors as individuals with high purchasing power. They tend to operate portfolios of between two and five investment projects, though the high risks involved mean that they do not usually invest more than 10%-15% of

their net worth (Mason, 2006). However no significant differences can be observed in the average amount invested per project (which means that hypothesis 6 is rejected). This means that in Spain it cannot be said that business angels typically provide significantly more funding than other informal investors¹².

Funds linked to the 3Fs are highly important in funding start-ups. Once self financing (funds provided by the promoting team themselves) is exhausted the first external resources resorted to by entrepreneurs are usually those of their inner circle of personal friends and family. This is proximity financing, in which closeness to and prior confidence in a person are the sole guarantee or collateral demanded. However, business angels are associated by definition with investments made on the basis of more professional criteria, and although the capital that they provide is patient (flexible in terms of return rates and disinvestment schedules) it is also demanding in that it seeks high-quality projects with the potential for future growth.

The confirmation of hypothesis 5 bears out in part the contention that business angels are more rigorous and professional than other informal investors. This is demonstrated by the fact that they are found to invest less in projects run by people with whom they are linked by kinship or friendship. Logically, this means that the proportion of operations in which they have no prior proximity-based links with the entrepreneurs is greater: the investor/entrepreneur relationship is based rather on the professional setting of each project and its attractiveness as an investment opportunity in the relevant market.

As expected, it is therefore confirmed that investors who do not contribute expertise or experience to the projects that they finance (non business angels) mostly have ties of kinship or friendship with the entrepreneurs that they support. In other words, there is significantly less transfer of smart capital when investors belong to the category of the 3Fs.

In any event it must be pointed out that asymmetry of information sources makes it very difficult for investors and entrepreneurs to find each other, so it is not easy for investors to find attractive investment opportunities outside their immediate circle. However, more and more business angels are beginning to operate via platforms, networks or investment clubs that provide a way of accessing high-quality projects with high future growth potential outside their area of influence.

9. Conclusions

Business angels are individuals who invest their own money in start-ups and make an active contribution to the deployment of the relevant businesses by providing expertise, know-how, experience and their own networks of contacts. The main

¹² However, although the difference is not statistically significant, descriptive data reveal that the average investment made by business angels (€ 12,000) is higher than the average amount invested by the rest of the informal investment sector (€ 6,000).

advantage for entrepreneurs is that they invest at risk, with no demand for guarantees, and at the same time there is a transfer of «smart capital».

Business angels operate within the so-called «informal» venture capital market, a market characterised by its extreme heterogeneity. However, to date there has been little research into what profile or type of person is willing to invest his/her own wealth in businesses at the start-up stage.

A priori it seems clear that business angels represent a specific type of private investment. Their specific characteristics lead them to make contributions very different from the «proximity financing» provided by the 3Fs: they provide projects not only with funding but also with expertise, contacts, confidence and credibility in the eyes of third parties.

The findings of this study reveal that business angels tend to have higher income levels than other informal investors, and possess more skills relevant to creating start-ups. This is a positive finding in that it shows that the knowledge transferred to entrepreneurs is based on higher qualifications and skills on the part of investors. In other words, such investors are better trained, have more purchasing power and may be expected to base their decisions on more professional criteria.

It is essential for the figure of the business angel to be developed if the equity gap affecting start-ups at the outset of their projects is to be closed. This equity gap is especially difficult to bridge because the funding bracket involved is unattractive to venture capital funds, which generally prefer more conservative investment policies (less involved with early stage start-ups) and larger capital amounts.

The business angel market is subject to asymmetries of information, specific demand-related problems and limitations in its environment that affect its efficiency and its operation. There is therefore a need to set up networks that can help overcome some of these problems by providing a mechanism for matching investors with projects and acting as a preliminary filter to enable each investor to select the projects best suited to his/her interests. Such networks can also foster the training and preparation of entrepreneurs and investors and promote the development of programmes and seminars to increase public awareness of this type of financing.

Another important challenge for the business angel market lies in professionalising itself and increasing the volume of funding provided per operation. In this context syndicated and joint investment by more than one private investor may provide an innovative formula worth developing. This would also enable inexperienced business angels to work alongside more experienced investors, thus reducing risk levels in operations and giving rise to a learning effect that would also help professionalise the sector. Similarly, mixed operations by business angels and venture capital funds or subordinated public-sector loans would also help increase the coverage of the equity gap encountered in the early stages of start-ups.

Even so, it is clear that the business angel has become a figure of undoubted importance in the funding of entrepreneurial processes. This idea is supported by the fact that numerous public institutions have set up initiatives to support and encourage

business angels (networks, tax incentives, etc.). Moreover, in with current financial crisis banks have placed major constraints on lending, especially to start-ups, so angel financing may be the only way of securing funds to set up new projects.

10. Limitations and future research lines

The main limitation of this study lies in the sample selected. In accordance with the data used, and in line with the methods of the Global Entrepreneurship Monitor (GEM) project, the sample of informal investors and the subsample of business angels are obtained from the percentage of the adult population aged between 18 and 64 who have invested money in business operations run by others in the past three years. However, the facts show that business angels are frequently experienced professionals with entrepreneurial backgrounds who are now retired. Accordingly, failing to take 65 to 75-year-olds into account means excluding the significant proportion of business angels who are aged over 64.

To facilitate future research, further studies are required to clarify the heterogeneity of informal venture capital markets and analyse the idiosyncrasies of this type of investment. Specifically, it would be useful to study the behaviour of business-angel type investors, because their contributions in the form of smart capital (money + knowledge) make them key figures in helping entrepreneurs to bridge the equity gap and make up the shortfall in resources and skills from which they tend to suffer. Moreover, little is known about how entrepreneurs and investors first establish contact with each other, about what characteristics business angels rate highly when deciding whether to support a particular project or about the type of knowledge that they transfer to the start-ups that they support.

Future research could also examine the influence of the business environment itself in helping or hindering the development of informal venture capital markets. An analysis broken down by countries or regions would incorporate territorial variables and enable their influence to be measured in this regard.

Finally, the influence of the network effect could also be investigated: it would be worth analysing whether the intermediation of groups or BANs (Business Angel Networks) has any significant influence on the behaviour of investors in terms of project selection and post-investment contributions, or on the investment readiness of the entrepreneurs who resort to such platforms.

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