DEFINITION, SAMPLING AND RESULTS IN BUSINESS ANGELS' RESEARCH

Abstract

Purpose: The lack of a standard definition and data sources makes it hard to compare findings and advance our knowledge in the business angel's domain. Therefore, this paper tackles this problem by a contributing a framework to help the push towards a consensus definition based on 10 issues identified in 30 years of business angels' research.

Methodology: The paper reviews 24 studies on business angels and classifies definition inconsistencies found in 10 different issues. Those differences are compared with methodological choices on sampling and with subsequent results.

Findings: We observe a connection between definitional and sampling choices, and the results obtained. Inconsistent definitions can lead to results that are more than 400 times higher in terms of average investment per project, for example.

Implications: We believe that the main implication of proposing a standard definition of business angles could help the academia in decreasing the great observed diversity which is actually leading to inconsistent and incomparable results that limit our understanding of this phenomenon.

Originality: This paper differs from previous studies as it tackles the problem by identifying the definitional issues and presents a framework in order to advance towards a consensus definition, rather than just comparing definitions.

Keywords: Business angels; informal investors; sampling; frame of reference.

1. Introduction

Business angels, individuals investing directly in unquoted companies, are an old phenomenon. Already in the 13th century, investors were lending capital to entrepreneurial merchants in Barcelona, Valencia, Venice, or Florence. Together with the entrepreneur, they shared risk and reward in a venture of uncertain outcome as a return trip across the Mediterranean was at the time. The long history of business angels is in contrast with the relatively new research on them.

Research on business angels dates back from the pioneering study of Wetzel (1983) in New England (USA). Departing from data on private placements and comparing that with the investments done by institutional venture capitalists, Wetzel concluded that business angels 'not only do exist, they may represent the largest pool of risk capital in the country'. He also went a step further by establishing a profile for business angels from a convenience sample.

In the two following decades, 'first generation' studies replicated Wetzel's early work. Initially those studies focused in other parts of the USA, and then after 1992 in other countries, reporting similar demographic profiles. Business angels found through those studies were middle aged men, with high income and a past experience as entrepreneurs, who invested rather large sums per venture. Since 2000, research on entrepreneurship has drawn further attention and efforts (Wiklund et al., 2011 and Shane, 2012). Results from new data sets, generated by projects like the Global Entrepreneurship Monitor (GEM), appear to contradict the earlier business angel profile established in 'first generation' studies (Shane, 2010).

A possible explanation for such contradictory findings is that the growth of research articles on business angels has not been matched by the development of methodologies and data sources used in that research (Harrison and Mason, 2008). Notably, the concerns are concentrated on the definitions and sampling methodologies used. The lack of a standard definition and data sources makes it hard to compare findings and advance our knowledge in this field of research. Therefore, a common definition is a prerequisite for further advances in business angels' research.

This paper extends our knowledge in the business angels' domain since it focuses the problem with definitions on 10 issues and analyzes the connections between definitional issues, sampling choices and contradictory results. Therefore, we are able to assess where the most significant methodological divergences lie and to link those with outcomes and policies adopted. Furthermore, it facilitates potential contributions towards a standard definition of business angels. Following Farrell's et al. (2008) call for a standard definition, still untackled, the present article is structured as follows. First, it presents the methodological problems identified in previous papers. Second, a review of 24 earlier studies leads to identify divergences in definitions around 10 issues, which are discussed. Third, the article explores the link between definition adopted, sampling techniques used and results, and finds that the contradictory results obtained to date could be attributable to methodological issues. Finally, we present a proposal for a potential definition of business angels that addresses the 10 issues outlined and highlight the public policy implications of the current lack of consensus on definitions.

2. Data sampling and definitions in business angels' research

Avdeitchikova et al. (2008) identified two obstacles for further development of research on business angels: the difficulty to obtain data and the use of inconsistent definitions. Both obstacles are closely related, Farrell et al. (2008: pp. 331) found that the limitation in identifying business angels 'precipitates narrow definitions of business angels in order to justify the sampling method used. The more narrow definition ultimately results in precluding various cohorts of angels from appearing in the data'.

The difficulty to obtain data is attributable to the desire of business angels to remain anonymous, the lack of a public registry of business angels from which to draw samples (Wetzel, 1987) and the high cost of identifying a large enough cohort of business angels through a random search, as they tend to be a small percentage of the general population. Scholars tried to circumvent those problems by using convenience samples instead of random samples of the business angels' population. Convenience samples are built by selecting participants because of the ease of their volunteering.

Much of business angels' research has been based on convenience samples, using mainly four different methods (Harrison and Mason, 1992; Farrell et al., 2008). First, a large scale sample survey, built from lists of individuals that might have a higher probability to make unquoted investments (for example, MBA Alumni, doctors, or subscribers to business magazines). Second, the contact through investee firms, using a list of businesses that might have had an informal investor. Third, the snowball method, in which initially identified individuals help to enlarge the sample by introducing the researcher to other investors in his network. Fourth, the contact through existing networks, where the researcher works with a network of investors such as a business angels networks (BAN) or a business introduction service (BIS) that grants him access to its investors.

All four methods have issues in terms of relatively high cost, low response rates and representativeness. The population of business angels is heterogeneous, so convenience samples may be non-representative and subject to unidentifiable bias (Harrison and Mason, 2007). Following the growth of BANs, researchers have tended to favor the fourth approach in recent studies, as it addresses the issues of cost and response rates. However, as BANs and BISs are considered to be only the tip of the iceberg of the volume of private equity investments (Mason and Harrison, 2001 and Shane, 2010), data from such studies cannot be extrapolated as representative of the general business angels population.

Since 2000, the increased interest on entrepreneurship facilitated alternatives to convenience sampling such as the Global Entrepreneurship Monitor (GEM) survey. Furthermore, incentives to informal investing have led to the creation of registries of investments that can be a source of data as in the Robinson and Cottrell (2007) study.

The seminal work of Wetzel contains several examples of how sampling methodologies can influence the results and ultimately lead to changes in the definition of the subject under study that are not justified and ultimately serve as a reinforcement of the choice of sampling method.

In his seminal study, Wetzel (1983) found that angels 'tend to be found in clusters that are linked by informal networks of friends and business associates' (pp. 25-26). Given that the study used the snowball sampling method, it is possible that the conclusion was driven by the sampling method chosen.

Furthermore, the 133 investors in the convenience sample were quite well-off compared to the general population, probably as a side effect of the sampling methodology choice. That led Wetzel to modify his definition in later studies. Wetzel (1983) initially assimilated business angels to informal risk capital investors and defined both types as individual investors contributing their own funds to companies with which they had no previous relation (pp. 23). In later papers, Wetzel (1987) would then redefine business angels more narrowly: 'Individual venture investors (business angels) are defined as [individuals with] net worth over $1 million and annual income over $100 thousand'.

As research on business angels evolved, definitional issues multiplied, aggravated by the fact that often researchers were not explicit about the definition used. Therefore our research set to review not only definitional choices, but also sampling methodologies. In doing so, we wanted to detect implicit definitional choices and also to check to what extent narrow definitions are linked with convenience samples.

3. Definitional issues

Research on business angels evolved from 'first generation' to 'second generation' studies (Mason and Harrison, 1999). 'First generation' studies aimed at establishing a demographic profile of business angels and estimating the size of their activity. 'Second generation' studies were focused in the characteristics of angel activity and their comparison to other investors. We have reviewed 24 different papers on business angels published since 1983 that provide detail on the demographic profile of investors including both types of studies in order to find differences in definitional issues (see Annex A). The papers were selected to include the most cited studies on business angels, first-generation studies that have been used to size business angels activity, and recent studies on informal investing done based on general samples.

Farrell et al. (2008) reviewed business angels' literature and found differences in definitions around six issues (timing of investment; investments in equity and debt; virgin investors; corporate angels; family investors and; friends and other relations – 1 to 6 here below). During the performed literature review we detected four additional issues by comparing results (issues 7 to 10), which were often not clearly outlined as definitional choices but appeared to impact the results. Compared to previous studies on business angels' definitions, the current study splits the problem in the definitional issues identified, rather than comparing existing definitions. This allows assessing where the most significant divergences lie or in which issues there is relative consensus. The division of the problem facilitates potential contributions towards a standard definition of business angels. Furthermore, by including issues that are rarely made explicit but have an impact on results we avoid potential inconsistencies between studies that have an apparently similar definition.

(1) Timing of investment. Some authors set a discretionary time limit since their last investment agreement. Investors that did not close a deal recently would not be considered business angels. The time limit usually ranges between three years (Haar et al., 1988; Fiet, 1995; Van Osnabrugge, 1998; Global Entrepreneurship Monitor) and five years (Wetzel, 1983). The use of this cutoff criterion introduces a certain degree of confusion by assimilating the closure of an investment agreement with the overall activity of a business angel. Business angels' activity encompasses not only finding, analyzing, structuring and closing deals, but also following up investments until exit (Paul et al, 2007). While as the investment process can take about six months to complete, business angels hold the investment for an average of three to four years (Wiltbank, 2009). Given the average holding period for business angels' investments, angels that are currently active but have not entered into an investment agreement recently would be eliminated from studies adopting this criterion. We suggest that a business angel should be any individual that at the time of the study holds an investment that fulfills the rest of the conditions.

(2) Investments in equity and debt. The amount invested can be defined as amounts invested in equity only or include loans from investor to investee. The seminal work of Wetzel (1983) on business angels focused on equity. Later, other studies started to include funds contributed as loans and the trend in more recent studies seems to be in that direction (Shane, 2010). The case for excluding loans is based

on the claim that such funds would not have the risk capital element fundamental for venture capital. Nevertheless, business angels use extensively loans and loans guarantees to structure their deals (Gaston, 1989). The ratios of equity to loans contributed by business angels could range from 1:1 (Aram, 1989) to 3:1 (Harrison and Mason, 1992). As institutional venture capitalists, most sophisticated angels use convertible debt as a tool to accommodate entrepreneurs' interests. By doing so, entrepreneurs can get funds without being excessively diluted in terms of equity from the onset. From a definitional point of view, the hybrid nature of some loans, as convertible debt can convert to equity, poses a challenge to the claim that funds not contributed as equity are not risk capital. Therefore, estimates on the size of business angels activity should be calculated on the total amount contributed by the investor, irrespective of whether it is done in equity or loans.

(3) Virgin investors. As the informal venture capital market is inefficient, one of the research themes in business angels' research has been their potential as a source of funds for ventures and the public policy implications. Thus, potential investors may represent an indicator of market inefficiencies as a pool of untapped capital for ventures, and may drive the call for policies to address such inefficiencies. Therefore potential investors are included in several studies (Lumme and Mason, 1996; Coveney and Moore, 1998; Feeney et al., 1999; Hindle and Wenban, 1999 and Paul et al., 2003). Overall, it seems not reasonable to include potential investors in the definition based on the assumption that they might consider investing in the future. In line with the timing criteria, the two observable events in the investment process for any investor are the investment agreement and exit. In consequence, we defend the

idea that business angels should be those that are between those two points of time at the moment of the study.

(4) Corporate angels. The difference between formal and informal risk capital is the existence of financial intermediation (Mason 2005). Informal investors invest their own money directly in unquoted ventures, as opposed to formal investors, that act as intermediaries that raise all or part of their funds with others. Despite this apparently simple criterion, Wetzel (1983) already warned that 'the boundaries separating these segments (of the venture capital market) are indistinct and often overlap'. Since then, the growing sophistication of informal investment (Bruton et al., 2015) has introduced additional concerns (investment vehicles due to tax reasons, family office structures, angel funds, or crowdsourcing platforms) and is likely to throw additional challenges around this criteria. In some cases, small venture capital funds launched by financial institutions (the quintessential institutional venture capitalist) also claim to be 'angel funds'.

Månsson and Landström (2006) counted as business angels those investors who had invested via a legal entity which was wholly owned either by the investor or by his/her family. Avdeitchikova et al. (2008) identified a grey area between business angels and institutional or formal venture capital caused by the requirements on how the investment was channeled, but advised to take into consideration whether the investor was the 'gatekeeper' that took the final investment decision (pp. 378). Hence, whether the investment is carried out privately or through a company is not of primary interest. It is rather whether the business angel has a decisive influence on the investment decision that is the key.

The use of that criterion, albeit slightly subjective, should help in differentiating business angels from institutional venture capitalists.

(5) Family investors. Relatives represent a significant proportion of informal investors and a largely under researched topic. According to the Global Entrepreneurship Monitor (GEM) study, 48% of informal investors are family members of the entrepreneur (Bygrave et al., 2002). The GEM definition of informal investors is controversial, as some authors dispute the inclusion of family investors as informal investors (Mason and Harrison, 2001) and others do not consider risk capital the amounts they contribute (Wetzel, 1983).

On the other hand, there is consensus among researchers that family investors should be differentiated from business angels. A relative of the entrepreneur is likely to invest driven by more emotional or altruistic considerations than a stranger (Maula et al., 2005) and would possibly have different attitudes and behavior and lower risk perceptions (Wong and Ho, 2007). Furthermore, family investors do not constitute a market, as their investments are constrained by ties of blood and marriage (Mason, 2005).

For methodological purposes, it is preferable to exclude from the definition of business angels all those investors that are included in a broad definition of family. Although the definitional issue with family investors is relatively clear, it presents implementation problems. Even though the use of convenience samples is likely to exclude family investors from the study, the high proportion of family investors within the total informal investor population makes it advisable to use filters to specifically ensure investments by family members do not end up being part of the sample of a study on business angels, as in the Månsson and Landström (2006) study on Swedish business angels. We argue that the filters should focus on the investment rather than the individual, since it is possible that the same individual is both a family investor and a business angel in two different investments.

(6) Friends and other relations. Related non-family investors (friends, work colleagues, and neighbors) present a similar challenge than family investors. Bygrave et al. (2002) report that 39.5% of informal investments are done by this type of investor. Nevertheless, that type of connections cannot be assessed with the same clarity as family connections. Coveney and Moore (1998) for example exclude friends from their definition but include other type of acquaintances. Hindle and Lee (2002) define angels as unrelated investors but then report that 62% of investors in their sample had known their entrepreneur investee for more than three years before investing.

It is possible that investments done in ventures launched by an acquaintance are done by different reasons than investments on strangers' venture, or that the evaluation process is different due to the preexisting knowledge of the entrepreneur. This emotional bias can explain the lower success rates for investors investing in friends' ventures, as reported by Lumme and Mason (1996). However, it is difficult to justify that business associates of the entrepreneur do not know the venture market and base their investment decision on personal considerations. The researcher trying to differentiate between related and unrelated investors is forced to define the relation and to draw a line between friends, business relations, acquaintances, neighbors, and unaffiliated investors. There are only few studies (Reitan and Sörheim, 2000 and Robinson and Cottrell, 2007) that use a narrow definition for related investors and report how they filter out those cases. Still, even unrelated investors report friends and acquaintances as one of the most important source of leads, making it difficult to separate related to unrelated investors.

In conclusion, it appears difficult to draw a clear and consistent distinction between friends and unrelated investors which is useful for research purposes. Even authors as Wetzel or Shane that defend the separation of friends' investors from the general population of business angels admit the choice presents significant implementation issues. This study supports Farrell's (2008) argument that defends that the exclusion of those investors from the definition of business angels has methodological problems and that 'including individuals of these types in angel research allows room for exploration about differences and similarities that may not have been uncovered otherwise. This is where new insights are gained' (pp.35).

(7) Net worth. In some studies, business angels are defined as high net worth or high income individuals. Usually, researchers don't report how these limits are defined, with some exceptions. Paul et al. (2003) set a barrier of GBP 10,000 available to invest and Wetzel (1987) defined angels as individuals with net worth over $1 million and annual income over $100 thousand. In other studies (Haar, Starr and MacMillan, 1989; Harrison and Mason, 1992; Tashiro, 1999; Robinson and Cottrell, 2007 and Wiltbank and Boeker, 2007), researchers start to identify potential investors by looking for high net worth and high net income individuals, for example from tax filings, setting a limit in practice. That type of distinction has several problems. First, there is no consensus on where the barrier should be set and how to account for differences across countries, in terms of cost of living or propensity to tax evasion, if using tax filings. Second, the source of the information is not without problems, as individuals are unlikely to report their income and net

worth in a transparent manner. Third, it is difficult to sustain that an individual with $ 1 less should be considered differently than another, when there are cases in which both have the same type of activity or even co-invest. Fourth, the reasons for which individuals with lower assets or income should not be considered as business angels remain unclear. Investors that are not millionaires exist, they outnumber millionaires and there is no evidence that they follow different practices as to be considered a different type of investor.

Even though defining business angels as high net worth or net income individual investors can simplify data collection, we find no justification to do so and believe it can lead to substantial bias.

(8) Investment size. As with the previous issue, investment size experiences similar problems. Furthermore, setting a barrier in investment size can have a major impact in the resulting study as current studies show a significant gap between average and median investment, with the average being significantly higher. Wetzel (1983) for example reported an average investment of $50,000 and a median of $20,000, with 36% of investments below $10,000. Most non-family informal investments tend to be in the €0 to €100,000 range, with a minority above €100,000. Defining business angels' activity as investments for example above €60,000 is likely to exclude most of that activity. Usually, there is no limit defined but the methodology chosen (for instance, constructing a convenience sample through a BAN) results in the exclusion of smaller investments. As Shane (2010; pp. 45) puts it, 'defining a single person's investments in the same company as both angel investments and non-angel investments just because one investment is $20,001, while the other is $19,999, doesn't make much sense'. Besides, the

needed amount of investment could significantly vary depending on the type of the new venture and the country where it is performed. Thus we find no justification to narrow the investments under study according to the amount invested.

(9) Investment type. Defining the investor according to the type of companies it invests in is controversial. While as angels tend to invest in companies in the start-up phase and in high-technology sectors, they invest in all type of development phases and sectors (Shane, 2010). Restricting the definition of business angels to those individuals that only invest in start-ups or in some sectors can help gain attention for the topic with researchers and public in general phase, but can lead to strange choices. The same individual making the same type of contribution in the same venture would find the initial one done in the start-up phase classified as an angel investment while any follow-on investment would be not. For example, Brettel (2003) validated the representativeness of a sample of business angel investments comparing it to the sector distribution of institutional venture capital investments. Therefore we support a wide definition that includes investments irrespective of the company sector or stage of development.

(10) Involvement. The last issue in defining business angels relates to the involvement that investors assume in the investee firm. Some authors defend that only those investors taking an active or 'hands-on' role should be considered business angels. By depicting business angels as investors contributing equity, knowledge and contacts, the attractiveness of business angels for policy makers would be enhanced. Business angels would provide differential value add compared to other fund providers. However, the application of that criterion is not without problems.

First, the investors' role is not fixed and can change from one investment to the other, or even during the lifetime of one investment. Typically an investor can intervene in a critical phase (i.e. closing of a contract, change of team members) and remain passive during the rest of the time. Second, there is no consensus on how to separate active from passive investors. Even authors that choose to consider only 'hands-on' investors as business angels (Avdeitchikova et al. 2008) admit that 'it is not possible to define some general criteria for the level of investment activity and hands-on contribution that would qualify an investor as a business angel' (pp. 379). Those two issues lead us to recommend not to exclude investors according to their level of involvement.

Table 1 presents a summary of the 10 definitional issues where the narrow and wide approaches for each issue are described and the approach proposed by authors jointly with a brief justification. As observed, we propose to define business angels as any individual that currently holds an investment made (debt and/or equity) directly with his or her own money in an unquoted company, is neither the entrepreneur nor his or her relatives, and plays an active or passive role in the investee firm.

** Insert Table 1 around here **

4. The impact of definitions on sampling and results

The review of studies validates Farrell et al. (2008) claim of a link between the definition and the sampling method used. Studies using the snowball sampling method tend to use narrow definitions; while as studies not using a convenience sample favor wide definitions (see Annex B). Furthermore, as business angels belonging to a network are not representative of the general population (Shane, 2010) sampling techniques such as contact through BANs or BISs imply narrowing the definition even if that choice is not put forward.

We also validate Reitan and Sörheim (2000) claim that the disparity of definitions and sampling methods leads to different results. Studies using narrow definitions and convenience sampling end up studying fewer and bigger investments. Most of the existing literature takes the individual investor as the unit analysis and compares demographic profiles. The fact that in most of the studies business angels are middle-aged men with high income is often used to justify that the profile for business angels is similar globally and that studies are comparable. When taking the investment and not the individual as the unit analysis, the differences between highly sophisticated angels and the rest emerge (see Annex B). The 5 studies done with general surveys or public registry data report average investments between €1,122 and €27,257, while as the 19 studies based on convenience samples report average investments between €12,100 and €481,159, with a vast majority of 16 above €50,000. In Singapore, two studies using a similar definition reported average investments of $210,000 using a convenience sample (Hindle and Lee, 2002) and $16,666 according to GEM data (Wong and Ho, 2007).

By using different definitions and sampling techniques, researchers end up investigating very different investors and concluding that their attitudes, behavior and characteristics are indicative of the general business angels' population, only based on the fact that they are all middle-aged men. The conclusions reached for investments done by highly sophisticated angels are then extrapolated as representative of the general business angels' population. Shane (2010) proved that the estimates for IPO exits of business angels' investments in the USA were wrong. There were simply not enough IPOs in the market to accommodate the number of angel investments IPO exits that researchers were estimating.

5. Conclusions

In an interview in 2007[1], Wetzel admitted that as a result of methodological issues, 'research on informal venture capital has always been seen as 'second-class' research'. Our review of 24 studies on business angels shows that researchers use different definitions, don't make their choice explicit often, and adopt definitions that are not then applied or, vice versa, take sampling options that lead to implicit definitional choices. That limits research on the field and can push researchers in need of clarity and rigor away.

In order to cope with this current limitation, this paper extends Farrell et al. (2008)'s work and identifies 10 definitional issues in 24 previous studies. That allows assessing where the most significant divergences lie or in which issues there is relative consensus to make a definition proposal based on these key definitional issues. We also prove the connection between definitional and sampling choices, and results obtained. Inconsistent definitions can lead to results that are more than 400 times higher if we take the investment as the unit of analysis.

As a result of the analysis, 10 definitional issues emerge. The most significant definitional issues in terms of potential impact on the results are those relating with the treatment of related investors (issues 5 and 6) and the limitations on net worth or investment size (issues 7 and 8). According to the GEM, for each unaffiliated investor

[1] Handbook of Research on Venture Capital (2007). Edited by H. Landström. pp. 57.

there would be as many as nine investors with a preexisting relation with the entrepreneur. Similarly, the limits set by same studies appear to be higher than the average investment found in other studies that applied no limitation. As a result, those studies draw conclusions by investigating only the tip of the iceberg. Those conclusions are then applied to the general population of informal investors.

During the review of the existing literature we have identified in each of the 10 definitional issues a wide and a narrow approach (see Table 1). We propose a wide definition that addresses the 10 issues. We found that a wide definition might be preferable for several reasons.

First, the adoption of a narrow definition excludes the majority of informal investors from the business angels category. Those investors are considered to be an undefined phenomenon. This exclusion is done on unsupported assumptions on those investors behavior. Researchers favoring a narrow approach should address the problem of categorization and research on those investors. That would allow for comparative studies between groups and ultimately to a reinforcement of the reasons for narrowing the definition.

Second, when analyzing the reasons to narrow the definition, it appears that some of them are difficult to apply (for example, distinguishing related from unrelated investors) or difficult to justify (limits on net worth, investment size or debt contributions).

Third, some definitional choices are taken based on cross-sectional studies (for example, defining business angels as those who invest only in the venture start-up phase), but pose methodological problems if applied to longitudinal studies, which should be a priority in the agenda for future research on business angels.

Fourth, business angels are a relatively new topic of research. It is therefore not advisable to narrow the focus of study before fully understanding the phenomenon from a wider point of view. The market for informal investments seems to have a large base of small investments and a minority of large investments done by sophisticated angels (Månsson and Landström, 2006; Robinson and Cottrell 2007). That hypothesis is validated by the comparison of results presented in Annex B. By investigating smaller investments done by entrepreneurs' acquaintances, the business angels' phenomenon is put in context and new insights can be gained on how to promote their development. On the contrary, studying the narrow range of highly sophisticated angels provides evidence of best practices that are not representative of the general population and cannot be extrapolated.

As a summary, following the approach of several authors (Mason and Harrison, 1999; O'Gorman and Terjesen, 2006; Wong and Ho, 2007) and based on empirical and theoretical aspects we suggest that a business angel is any individual that currently holds an investment made (debt and/or equity) directly with his or her own money in an unquoted company, is neither the entrepreneur nor his or her relatives, and plays an active or passive role in the investee firm . This paper differs from previous studies as it tackles the problem by identifying the definitional issues, rather than just comparing definitions.

The definition proposal advanced here does not aim to conclude the current debate, but rather to contribute a framework to help the push towards a consensus definition. For the sake of clarity and building on Farrell et al. (2008) work, any definition should propose a clear position in each of the 10 issues previously described. We believe that the main implication of proposing a standard definition of business angles could help the academia in decreasing the great observed diversity which is actually leading to inconsistent and incomparable results that limit our understanding of this phenomenon. A wide definition, as proposed, will allow a correct sizing of investors activity and will be the basis for further research. Based on this, one priority should be to develop a segmentation of the heterogeneous population of angel investors, not necessarily according to any of the issues described above, maybe according to the years of investment activity experience or even gender, as suggested by Maula et al. (2005) and Harrison and Mason (2007). Another priority would be to establish the relation between angel investment and economic growth. None of the two have been possible due to the confusion around definitions.

Implications of an agreed wide definition could also have implications at the public policy since a better understanding of this phenomenon could enhance policies to foster business angels' activities. Public policy as has been driven by research on sophisticated business angels and has promoted measures addressed at them as establishing BANs or tax breaks for investments done through a specific purpose company (Mason, 2009). Given the low percentage of sophisticated business angels within the general non-family informal investor population, measures aiming to foster angel investments should be primarily targeted to those investors that might have a lower income, invest lower amounts, are maybe friends of the entrepreneur, but represent a much larger population than the sophisticated business angels profiled to date. Those investors might face issues such as diversification, learning, or limitation of funds. While BANs might be useful in attracting millionaires to angel investing, it might be more effective to promote incremental angel investments from those having already invested a small amount in a friends' venture. Current policies aimed at promoting women investors might also be misplaced as they are based in studies with narrow definitions that return very low percentages of women investors or no women investors at all (Hindle and Lee, 1999 and Tashiro, 1999). Other studies using a wider definition have found that the share of women investors can be as high as 32% (Bygrave et al., 2002 and O'Gorman and Terjesen, 2006). The interest of policy makers and practitioners in angel investment has spurred the growth of research. However, it appears that the push for 'consulting-like' research has been at the expense of methodological rigor.

A consensus definition is a prerequisite for contextualizing angel investment and further development of the field, away from descriptive studies. Even estimates on number of investors and the market size can differ by several multiples depending on the definition used, so the foundations of business angels' research need to be revisited. Business angels' scholars face now the challenge to go back to the base and establish the foundations of this field of research.

References

Avdeitchikova, S., Landström, H. and Månsson, N. (2008). What do we mean when we talk about business angels? Some reflections on definitions and sampling. Venture Capital 10 (4), pp. 371 – 394.

Aram, J.D. (1989). Attitudes and behaviors of informal investors towards early-stage investments, technology-based ventures, and coinvestors. Journal of Business Venturing, 4, pp. 333 – 347.

Brettel, M. (2003). German Business Angels in International Comparison. The Journal of Private Equity, 5 (2), pp. 53 – 67.

Bruton, G., Khavul, S., Siegel, D., and Wright, M. (2015). New Financial Alternatives in Seeding Entrepreneurship: Microfinance, Crowdfunding, and Peer-to-Peer Innovations. Entrepreneurship Theory & Practice, 39 (1), pp. 9 – 26.

Bygrave, W., Hay, M., Ng, E., and Reynolds, P. (2002). A study of informal investing in 29 nations composing the Global Entrepreneurship Monitor (GEM). In Frontiers of entrepreneurship research, ed. W.D. Bygrave, C.G. Brush, P. Davidsson, J. Fiet, P.G. Greene, R.T. Harrison, M. Lerner, G.D. Meyer, J. Sohl, and A. Zacharakis, pp. 366–80. Wellesley, MA: Babson College.

Clark, C. (2008). The impact of entrepreneurs' oral 'pitch' presentation skills on business angels' initial screening investment decisions. Venture Capital, 10 (3), pp. 257 – 279.

Coveney, P. and Moore, K. (1998). Business angels: securing start up finance. Chichester (UK). John Wiley & Sons.

Farrell, E., Howorth, C. and Wright, M. (2008). A review of sampling and definitional issues in informal venture capital research. Venture Capital, 10 (4), pp. 331 – 353.

Feeney, L., Haines, G.H. Jr. and Riding, A.L. (1999). Private investors' investment criteria: insights from qualitative data. Venture Capital, 1 (2), pp. 121 – 145.

Fiet, J. O. (1995). Risk avoidance strategies in venture capital markets, Journal of Management Studies, 32, pp. 551 – 574.

Gaston, R.J. (1989). The scale of informal capital markets. Small Business Economics, 1, pp. 223—230.

Gaston, R.J. and Bell. S.E. (1986). Informal risk capital in the sunbelt region. US Small Business Administration, Office of Advocacy, Washington DC.

Haar, N.E., Starr, J. and MacMillan, I.C. (1988). Informal risk capital investors: investment patterns on the East coast of the U.S.A. Journal of Business Venturing, 3, pp. 11 – 29.

Harrison, R. T. and Mason, C. M. (1992). International perspectives on the supply of informal venture capital. Journal of Business Venturing, 7, pp. 459 – 475.

Harrison, R. T. and Mason, C. M. (2007). Does gender matter? Women business angels and the supply of entrepreneurial finance. Entrepreneurship Theory & Practice, 31 (3), pp. 445 – 472.

Harrison, R. T. and Mason, C. M. (2008). Sampling and data collection in business angels research. Venture Capital, 10 (4), pp. 305 – 308.

Hindle, K. and Lee, L. (2002). An exploratory investigation of informal capitalists in Singapore. Venture Capital, 4, pp. 169 – 181.

Hindle, K. and Wenban, R. (1999). Australia's informal venture capitalists: an exploratory profile. Venture Capital, 1 (2), pp. 169 – 186.

Landström, H. (1993). Informal risk capital in Sweden and some international comparisons. Journal of Business Venturing, 8, pp. 525 – 40.

Lumme, A. and Mason, C. M. (1996) The returns from informal venture capital investments: An exploratory study. Journal of Entrepreneurial & Small Business Finance, 5 (2), pp. 139 – 153.

Månsson, N. and Lanström, H. (2006). Business angels in a changing economy: The case of Sweden. Venture Capital, 8 (4), pp. 281 – 301.

Mason, C. M. (2005) Informal sources of venture finance. The Life Cycle of Entrepreneurial Ventures: Volume 2. International Handbook on Entrepreneurship, Kluwer, 2006

Mason, C.M. (2009). Public policy support for the informal venture capital market in Europe: a critical review. International Small Business Journal, 27 (5), pp. 536 – 556.

Mason, C. M. and Harrison, R. T. (1999). Editorial. An overview of informal venture capital research. Venture Capital, 1 (2), pp. 95 – 100.

Mason, C. M. and Harrison, R.T. (2001). The size of the informal venture capital market in the United Kingdom. Small Business Economics, 15 (2), pp. 137 – 148.

Maula, M., Autio, E. and Arenius, P. (2005). What drives micro-angel investments? Small Business Economics, 25, pp. 459 – 475.

O'Gorman, C. and Terjesen, S. (2006). Financing the Celtic Tigress: Venture financing and informal investment in Ireland. Venture Capital, 8 (1), pp. 69 – 88.

Paul, S., Whittam, G. and Wyper, J. (2007). Towards a model of the business angel investment process, Venture Capital 9 (2), pp. 107 – 125.

Reitan, B. and Sörheim, R. (2000). The informal venture capital market in Norway - investor characteristics, behaviour and investment preferences. Venture Capital, 2 (2), pp. 129 – 141.

Robinson, R.J. and Cottrell, T.J. (2007). Investment Patterns of Informal Investors in the Alberta Private Equity Market. Journal of Small Business Management, 45 (1), pp. 47–67.

Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad policy. Small Business Economics, 33(2), pp. 141 – 149.

Shane, S. (2010). Fool's gold; the truth behind angel investment in America. New York City. Oxford University Press.

Shane, S. (2012). Delivering on the promise of entrepreneurship as a field of research. Academy of Management Review, 37 (1), pp. 10–20.

Sørheim, R. and Landström, H. (2001). Informal investors: A categorization, with policy implications. Entrepreneurship & Regional Development, 13, pp. 351 – 370.

Stedler, H. R. and Peters, H. H. (2003). Business angels in Germany: an empirical study. Venture Capital, 5 (3), pp. 269 – 276.

Tashiro, Y. (1999). Business angels in Japan. Venture Capital, 1 (3), pp. 259 – 273.

van Osnabrugge, M. (1998). The financing of entrepreneurial firms in the UK. Unpublished doctoral dissertation, University of Oxford.

Wetzel, W. E. Jr. (1983). Angels and informal risk capital, Sloan Management Review, 24 (4), pp. 23 – 34.

Wetzel, W. E. Jr. (1987). The informal venture capital market: aspects of scale and market efficiency. Journal of Business Venturing, 2, pp. 299 – 313.

Wiklund, J., Davidsson, P., Audretsch, D.B. and Karlsson, C. (2011). The future of entrepreneurship research. Entrepreneurship Theory & Practice, 35 (1), pp. 1 – 9.

Wiltbank, R.E. and Boeker, W. (2007). Returns to angel investors in Groups. Ewing Marion Kauffman Foundation and Angel Capital Education Foundation. Retrieved on April, 7th, 2014 from: http://sites.kauffman.org/pdf/angel_groups_111207.pdf

Wiltbank, R.E. (2009). Siding with the angels: Business angel investing – promising outcomes and effective strategies. Research report. National Endowment for Science, Technology and the Arts (NESTA) and British Business Angels Association (BBAA). Retrieved on Jan 13th, 2014 from: http://www.nesta.org.uk/sites/default/files/siding_with_the_angels.pdf

Wong, P.K. and Ho, P.Y. (2007). Characteristics and determinants of informal investment in Singapore. Venture Capital, 9 (1), pp. 43 – 70.

Table 1. 10 definitional issues and different approaches				
Definitional issues	Narrow approach	Wide approach	Proposed approach	Justification
Timing of investment	Individuals that closed an investment agreement in the last 3-5 years.	Individuals having closed an investment agreement in the past.	Alternative approach: individuals holding an investment at the time of the study.	The defining event should be holding an investment: investor activity encompasses not only deal making but also holding investment until exit.
Investments in equity and debt	Only investments in equity.	Investments in equity and debt.	Wide approach: investments in equity and debt.	The decision to include debt is a deal structuring decision. Debt is usually granted in hybrid instruments.
Virgin investors	Investors having ever made an investment.	Potential investors considering to make an investment.	Alternative approach: individuals holding an investment at the time of the study.	Individuals with no investment track record cannot be considered investors.
Corporate angels	Direct investments held by an individual.	Direct investments and indirect investments done through an entity controlled and managed by an individual or through a platform bringing investors together.	Wide approach: investor has decisive influence on the investment decision.	Investment through an entity can be due to tax optimization reasons. If the investor is the same person making decisions in the entity, then indirect investments can be assimilated
Family investors	Family members are not considered informal investors.	Family investors are informal investors but should be differentiated from business angels.	Wide approach: family investors should be differentiated from business angels using the investment as the unit of analysis.	The investment drivers, processes and attitudes are likely to be different in unrelated investments.
Friend investors	Investors with a previous connection with the entrepreneur are not business angels.	Investors with a previous connection with the entrepreneur can be business angels.	Wide approach: investors with a previous connection with the entrepreneur can be business angels.	Contrary to family investors, defining the previous connection (type, intensity and timing) and assuming it leads to different investment practices is difficult.
Investor's net worth	Only investors over a certain level of net worth or net income can be considered business angels.	No limitation in terms of net worth or net income.	Wide approach: no limitation in terms of net worth or net income.	No evidence of different practices according to income or net worth. Difficulty to set a limit below which an investor is not a business angel.

Investment size	Only investments above a certain amount are business angels investments.	No limitation in terms of investment size.	Wide approach: no limitation in terms of investment size.	Difficulty to set a limit below which an investor is not a business angel. Difference between median and average investment can result in the unjustified exclusion of many small investments.
Investment type	Investments in start-up phase or in high technology sectors.	Any investment that fulfills the rest of conditions irrespective of evolution phase and sector.	Wide approach: any investment that fulfills the rest of conditions irrespective of evolution phase and sector.	Treatment of follow-on investments. Difficulty to define sector and phase.
Investor's involvement	Investors taking an active role in investee firm.	Both active and passive investors.	Wide approach: both active and passive investors.	Definition of active and passive and applicability of the criterion during investment lifetime or according to investors' involvement in different investments.

Annex A. 10 definitional issues in business angels literature

Table 1. 10 definitional issues in business angels literature

Author	Wetzel	Gaston and Bell	Haar, Starr and MacMillan	Aram	Harrison and Mason	Landström	Lumme and Mason	Coveney and Moore
Date	1983	1986	1988	1989	1992	1993	1996	1998
Area	New England, USA	USA	East Coast, USA	Great Lakes, USA	UK	Sweden	Finland	UK
Definitional issues								
Timing of investment	Investment done in prior 5 years	Investment done in prior 3 years	Investment done in prior 3 years	Investment done in prior 3 years	Investment done in prior 3 years	Investment done at any point of time	Investors having exited a deal	Investors having exited a deal
Investments in equity and debt	Only equity	Includes loans and loans guarantees	Unclear, but compares amounts to Wetzel (equity-only)	Includes loans and loans guarantees	Equity and loans	Equity or equity-linked capital	n.a.	Unclear
Virgin investors	No	No	No	No	No	No	Provides results for active and potential investors	Included
Corporate angels	No	No	No	No. Only those investing their own funds	No	No	No	Includes companies doing 'angel-type investments'
Family investors	No: 'angels do not include founders, friends, and relatives' (p.23)	Yes, except entrepreneur's spouse and children	Yes: 'This opaque market consists primarily of friends and business colleagues' (p.11)	Yes	Yes	Yes	Yes, 43% knew the owner previously	Excluded
Friend investors		Yes		Yes	Yes	Yes		Excluded
Investor's net worth	Establishes sample representativity comparing it to the population	No limit	Builds sample looking for individuals with 'high enough discretionary	No limit, but describes initially 'individuals having	No limit, but builds sample looking for high income individuals	No limit	No limit	No limit
Investment size	No limit	No limit	No limit	No limit	No limit	No limit	No limit	No limit
Investment type	All types	Start-up and small business growth	Young start-up companies. It is not clear how other cases are filtered out	All types, distinguishes by growth stage and sector	New and growing ventures	All types, distinguishes by growth stage and sector	All types, but admits sample might be biased towards high-tech sector	Unquoted ventures
Investor's involvement	Both active and passive	Both active and passive	Both active and passive	Both active and passive	Both active and passive	Both active and passive	All types, but admits sample might be biased towards active investors	Both active and passive

Annex A. 10 definitional issues in business angels literature (cont.)

Table 1. 10 definitional issues in business angels literature								
Author	Feeney, Haines and Riding	Hindle and Wenban	Tashiro	Reitan and Sörheim	Bygrave, Hay, Ng and Reynolds	Hindle and Lee	Brettel	Paul, Whittam and Johnston
Date	1999	1999	1999	2000	2002	2002	2003	2003
Area	Canada	Australia	Japan	Norway	29 countries	Singapore	Germany	Scotland
Definitional issues								
Timing of investment	Investments done at any time	Individuals considering to invest in the next 12 months	Currently holding an investment	Investment done in prior three years	Investment done in prior three years	Currently holding an investment	Investment done in prior three years	Availability to invest in the future
Investments in equity and debt	Unclear	Only equity	Equity, debt, warrants and convertible bonds	Amounts invested, apparently including debt	Unclear, apparently included	Amounts invested, apparently including debt	Amounts invested, apparently including debt	Included ('personal exposure')
Virgin investors	Included 10% potential investors and 25% non-investors	Included	Excluded	Specifically excluded from sample	Excluded	Excluded, but provides separate results for potential	Excluded	Investors with funds available ('nascent angels')
Corporate angels	No	Direct investment without intermediaries	Excluded	Only direct investments	Excluded	Excluded	No	No
Family investors	Unclear. Informal investor, private investor and business angel are used as interchangeable terms	Unclear. Informal investor and business angel are used as interchangeabl e terms.	Included	Excludes specifically companies with a formal or family-related connection with the investor	Included	Excluded	Apparently included. One of the motivations for business angels is 'to help friends or family members'	Not mentioned in definition nor in sample construction
Friend investors			Included		Included	Apparently included, 'related' refers to family investors		
Investor's net worth	Defines angels as 'wealthy individuals'. It is unclear how this is applied	Defines angels as 'high net worth investors'. It is unclear how	No limit, but builds sample from high income population	No limit, but builds sample from high income population	No limit	No limit	No limit	No limit
Investment size	No limit	No limit	No limit	No limit	No limit	No limit	No limit	10,000 GBP minimum investment
Investment type	Small companies	Entrepreneurial ventures	Entrepreneurial business	Unlisted company	New firms	New registered and established companies	New companies	Private company
Investor's involvement	Both active and passive	Both active and passive	Both active and passive	Both active and passive	Both active and passive	Both active and passive	Both active and passive	Both active and passive

Annex A. 10 definitional issues in business angels literature (cont.)

Table 1. 10 definitional issues in business angels literature									
Author	Stedler and Peters	Mansson and Landstrom	O'Gorman and Terjesen	Robinson and Cottrell	Wiltbank	Wong and Ho	Wiltbank	Shane	Current proposal
Date	2003	2006	2006	2007	2007	2007	2009	2010	
Area	Germany	Sweden	Ireland	Alberta, Canada	USA	Singapore	UK	USA	
Definitional issues									
Timing of investment	Investments done at any time	Investment done in prior five years	Investment done in prior three years	Investments done in 4 months of 2003	Investments done at any time	Investment done in prior three years	Investments done at any time	Unclear	Currently holding an investment
Investments in equity and debt	Unclear	Amounts invested, apparently including debt	Unclear, apparently included	Equity only	'Equity investment'	Unclear, apparently included	'Equity capital'	Equity, debt and warrants	Equity, debt and warrants
Virgin investors	Unclear	Excluded	Excluded	Specifically excluded from sample	Excluded	Excluded	Excluded	Excluded	Excluded
Corporate angels	No	Includes investments by wholly-owned or family-controlled	Excluded	Investments not done by individuals are considered formal VC	Excluded	Excluded	Excluded	Excluded	Excluded
Family investors	Unclear	Excluded	Included	Specifically excludes relationship investors (friends, family, business associates, employees) from sample	Unclear	Excluded	Excluded	Excluded	Excluded
Friend investors	Unclear	Included	Included		Unclear	Included	Included	Excluded	Included
Investor's net worth	No limit	No limit, but admits sample might be biased towards high-income	No limit	Limited to high net worth (< CND 5m) and high income (< CND 0.2m)	High net worth (< $1m) and high income (<$0.2m)	No limit	No limit	No limit	No limit
Investment size	Unclear	No limit	Amounts between €100 and €1,000,000	No limit	No limit	No limit	No limit	No limit	No limit
Investment type	Unquoted companies	Unquoted companies	New firms	Unlisted company	New ventures	New firms	Young unquoted companies, unquoted business	Unlisted company	Unquoted companies
Investor's involvement	Both active and passive	Both active and passive	Both active and passive	Both active and passive	Both active and passive	Both active and passive	Both active and passive	Both active and passive	Both active and passive

Annex B. Sample size, sample method and results in business angels literature

Table 2. Sample size, sample method and results in business angels literature

Author	Wetzel	Gaston and Bell	Haar, Starr and MacMillan	Aram	Harrison and Mason	Landström	Lumme and Mason	Coveney and Moore
Date	1983	1988	1988	1989	1992	1993	1996	1998
Area	New England, USA	USA	East Coast, USA	Great Lakes, USA	UK	Sweden	Finland	UK
Sample size	133	436	121	55	86	52	38	467
Sampling method								
Mailing list			X		X			
Contact through investees		X		X		X		
Snowball method	X				X	X	X	
Contact through BANs/ BINs								X
Public registry/ General survey								
Investor profile								
Age	n.a.	47	41-60	47.2	53	54	54	49
Men	n.a.	95%	98%	n.a.	99%	n.a.	95%	98%
Entrepreneurs	75%	83%	n.a.	80%	57%	96%	95%	~67%
Investment	50,000 USD	113,656 USD	132,867 USD	98,857 USD	10,000 GBP	500,000 SEK	75% of investments below 175,000 USD	75,000 GBP

Table 2. Sample size, sample method and results in business angels literature

Author	Feeney, Haines and Riding	Hindle and Wenban	Tashiro	Reitan and Sörheim	Bygrave, Hay, Ng and Reynolds	Hindle and Lee	Brettel	Paul, Whittam and Johnston
Date	1999	1999	1999	2000	2002	2002	2003	2003
Area	Canada	Australia	Japan	Norway	29 countries	Singapore	Germany	Scotland
Sample size	194	36	10	425	1440	29	48	140
Sampling method								
Mailing list	X		X	X				
Contact through investees						X	X	
Snowball method	X	X					X	
Contact through BANs/ BINs	X			X				X
Public registry/ General survey					X			
Investor profile								
Age	n.a.	40	60	47	35-54	40-49	48	~50
Men	n.a.	100%	100%	97%	68%	90%	n.a.	92%
Entrepreneurs	32%	n.a.	70%	47%	n.a.	72%	75%	45%
Investment	225,000 CAD	98,721 USD	664,000 USD	76,300 USD	1548 USD per year	210,000 USD	200,000 USD	50,000 GBP

Table 2. Sample size, sample method and results in business angels literature

Author	Stedler and Peters	Mansson and Landstrom	O'Gorman and Terjesen	Robinson and Cottrell	Wiltbank	Wong and Ho	Wiltbank	Shane
Date	2003	2006	2006	2007	2007	2007	2009	2010
Area	Germany	Sweden	Ireland	Alberta, Canada	USA	Singapore	UK	USA
Sample size	232	253	131	1808	539	161	158	n.a.
Sampling method								
Mailing list		X						
Contact through investees		X						
Snowball method		X						
Contact through BANs/ BINs	X	X			X		X	
Public registry/ General survey			X	X		X		X
Investor profile								
Age	48	56	38.4	n.a.	57	34.8	53	45-54
Men	95%	96%	69%	n.a.	86%	78%	93%	n.a.
Entrepreneurs	55%	90%	18%	n.a.	High	30%	73%	88%
Investment	151,515 EUR	303,571 EUR	10,040 EUR	41,324 CAD	191,000 USD	16,666 USD	42,000 GBP	10,000 USD