ESCALATION OF COMMITMENT IN BUSINESS ANGEL INVESTMENT DECISION MAKING: ANTECEDENTS AND CONSEQUENCES

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ABSTRACT

This paper investigates angel investors’ investment behaviors in terms of reinvestment amount and the length of a deal. Using the AIPP data, we find that angel investors reinvest higher amount when sunk costs in terms of time or prior investment are high, and the deals are sourced through the angel group. Moreover, we find that when the deal is risky and indicates positive performance trend prior to the initial investment, the investment is short-term oriented. Last, we find that lengthening a deal period decreases the likelihood of a failed exit. Implications to investment decision-making theories and angel investors are discussed.

INTRODUCTION

Angel investors are wealthy individuals that invest his or her own money, either stand-alone or in a formal or informal syndicate, in an unquoted business that are not owned by their friends or family members (Mason & Harrison, 2008; Shane, 2009). The significance of angel investors arises due to its role as the largest external source of early-stage risk capital (Mason & Harrison, 2008). Financing the growth of early-stage ventures is risky due to lack of experience and reputation of the entrepreneur, and a lack of knowledge of how competitors will respond (Mason & Harrison, 2000; Sørheim, 2005). This results in the ‘valley of death’ phase of early-stage ventures, when accessing to formal sources of finance (e.g. debt financing from the bank) is seriously restricted while government subsidies cannot be expected to address this to a sufficient degree. While access to venture capital (VC) would be useful, the likelihood of getting the VC financing is very low. Angel investors, therefore, may substitute for unavailable formal sources of finance. Wiltbank et al. (2008) reported that angel investors typically place their money directly into early-stage new ventures. In the United States, angels invest in approximately 20 times the number of new ventures comparing to the venture capitalists (Sohl, 2005; Wiltbank, 2005). Recently forming angel investor groups by individual angels became an inevitable trend due to the several advantages such as diversification, bargain power and shared expertise (Wiltbank & Boeker, 2007a).

In the entrepreneurship literature, (re)investment decisions by entrepreneurs (e.g. McCarthy et al., 1993) and by venture capitalists (VCs) (Devigne et al., 2013; Devigne et al., 2016; Guler, 2007) have been extensively investigated. However, the phenomenon has not yet been addressed in the context of angel investors, while there has been a growing interest in this type of informal investors by both academics and policy makers in recent years because of their increasingly crucial role in financing the growth of early-stage ventures (Brush et al., 2012; Maxwell et al., 2011). Using the ‘Angel Investor Performance Project’ (AIPP) data from the Kaufmann foundation, containing 1,137 business angel investment exits between 1990 and 2007, we contribute to the scarce literature on behavioral characteristics of angel investors by investigating angel investors’ decision-making behaviors on the amount of reinvestment and the investment length of a deal. Both behaviors can be translated into dimensions of being consistent in decision making, either framed as goal attainment (a neutral or positive connotation about such behavior) or termed as escalating bias (a
negative connotation associated with a failing course of action). In this study, we explore possible antecedents causing these two dimensions of consistency in decision making. Moreover, we examine how the consistent behaviors in decision making affect the subsequent performance of angel investment. Thereby, this study also provides a more holistic view on the phenomenon of consistency in decision making in a broader context.

THEORY AND HYPOTHESES

Several theories explain the underlying mechanism for being consistent in investment decision. In the organizational science, most of previous studies focus on the escalating bias, i.e. decision makers overly committed to a failing course of action and subsequently made biased decision towards it (Brockner, 1992; McCarthy et al., 1993; Staw, 1997). In this study, we follow this tradition to build theoretical arguments. However, we treat escalation behavior as rather a neutral than a negative connotation of being consistent in decision making. In other words, we relax one of the features of escalation behavior, i.e. encompassing negative performance feedback on prior investment, in this study. Based on the recent meta-analysis of Sleesman et al. (2012), we categorize factors that influence the consistency in decision making into project, psychological, social and structural factors.

Project factors are built upon the expectancy theory (Vroom, 1964), which proposes that decision makers make assessments on the probability of whether assigning additional resources to a given course of action could help them attaining the goal as well as improving the value of goal attainment for instance the total gain from an investment (Brockner, 1992; Savage, 1954). Project factors concern the information availability and its related uncertainty on the initial course of action under the situation of information asymmetries. Psychological factors are supported by self-justification theory (Aronson, 1968; Festinger, 1957), and demonstrate the cognitive and affective information processes that lead individuals to be consistent to a certain course of action (Brockner, 1992; Sleemsman et al., 2012). Social factors emphasize on external justification. Built upon the self-presentation theory, individuals put emphasis on how they present themselves to the outside world and how they identify themselves with cohesive group (Grant & Mayer, 2009; Hogg & Terry, 2000; Mayers & Lamm, 1976; Sleesman et al., 2012). As a consequence, this leads to a certain fear to be regarded as an incapable manager or investor. Structural factors are derived from competitive dynamics research, which brings the perspective of the behavioral interdependence among market rivals. It suggests that decision makers use competitors as external reference points to justify their persistence in the face of adversity will eventually pay off in a similar way (Fiegenbaum et al., 1996; Kim & Tsai, 2012; Hsieh et al., 2015).

The Antecedents of Angel Investors’ Investment Behavior

Angel investors share several important investment characteristics, which are different from venture capitalists. First of all, angel investors are the largest external source of early-stage risk capital. The early-stage ventures often do not have a performance track record and are thus accompanied with a marginal amount of information (Bowen, 1987). Given the high uncertainty on the prospects of future outcome (Bragger et al., 1998) and high decision risk (Knight, 1921; Kahneman & Tversky, 1979), reinforced by the subjective expected utility theory (Savage, 1954), angels might therefore inherit signs of de-escalation behavior (Schaubroeck & Davis, 1994). Furthermore, angel investors invest their own money in the hope of the return on their investment. To mitigate the investment risks, angel investors typically make only a handful of investment by investing only a relatively small proportion of their wealth to a limited number of ventures.
They are more selective in choosing right investment, for instance investing in the ventures with positive performance trend information, in order to result in fewer bad investments (Benjamin & Margulis, 1996). Following these arguments, we thus hypothesize:

**Hypothesis 1a/b:** Angel investors investing in the early-stage ventures will de-escalate their commitment in terms of money (a) and time (b)

**Hypothesis 2a/b:** When there is a positive performance signal, angel investors will escalate their commitment in terms of money (a) and time (b)

Second, angel investors are likely to use an incomplete contract approach rather than a principal-agent approach in their investment process and play a significant hands-on role in the business that they have invested (Paul et al., 2007; van Osnabrugge, 2000). Via the ex-post allocation of control, angel investors monitor and align their interests with their investee firms. In addition to the financial capital, angel investors provide supports such as commercial skills, management experience and network contacts to their investee firms (Avdeitchikova et al., 2008). Due to the active involvement in their investee firms, angel investors are likely to develop the emotional and psychological commitment to their investments and to the investee firms, which could create personal biases towards their initial decisions. Furthermore, most angel investors have years of industry and management experience. Many of them are serial entrepreneurs, whose personality traits are associated with self-efficacy and confidence (Harrison & Mason, 1992). On one hand, their expertise and experience will benefit their investee firms, as angel investors are willing to provide supports such as commercial skills, management experience and network contacts to their investee firms in addition to the financial capital (Avdeitchikova et al., 2008). On the other hand, their particular personality traits might create a sense of ego threat. They might overlook negative information and continue a course of action in order not to be seen as incompetent (Bragger et al., 2003; Garland et al., 1990; Zhang & Baumeister, 2006). Given the self-justification arguments, we hypothesize the following:

**Hypothesis 3a/b:** Angel investors investing high initial amount will escalate their commitment in terms of money (a) and time (b)

**Hypothesis 4a/b:** Angel investors interacted frequently with their investee firms will escalate their commitment in terms of money (a) and time (b)

**Hypothesis 5a/b:** Angel investors with more experience as an entrepreneur will escalate their commitment in terms of money (a) and time (b)

**Hypothesis 6a/b:** Angel investors with more experience in the same industry as their investee firms will escalate their commitment in terms of money (a) and time (b)

Third, previous research has identified that angel investors are different in their approach in investment appraisal, due diligence and contracting comparing to the formal venture capitalists (Van Osnabrugge, 1998). They are rather informal, entailing by less detailed due diligence, fewer meetings with entrepreneurs before the deal was made, less likely to take up references as regards the entrepreneur and the investment. The source of angel investment deals is mainly referenced through friends and close contacts in their networks. Along with the recent trends in forming angel investor groups by individual angels (Wiltbank & Boeker, 2007a), angel investments are also sometime sourced through their affiliated angel groups. Based on the self-presentation theory, angel investors will strategically manage their impressions within their networks and groups and
be likely to escalate in order not to be associated with a failing course of decision and to conform the perception and judgement in their cohesive group (Hogg & Terry, 2000; Janis, 1972; Myers & Lamm, 1976). We thus hypothesize the following:

**Hypothesis 7a/b:** Angel investors sourcing the deal through a reference in the network will escalate their commitment in terms of money (a) and time (b)

**Hypothesis 8a/b:** Angel investors sourcing the deal through angel group will escalate their commitment in terms of money (a) and time (b)

Last, competitive dynamics research suggests that competitors can affect a firm’s decision maker to escalate her/his commitment to an underperforming initiative by revealing signals on the likely prospect of being persistent (Bikhchandani et al., 1998; Lieberman & Asaba, 2006). In the investment market, VCs can be considered an external reference point for business angel investors. VC investment is purely driven by economic considerations and VCs are much more experienced than business angel investors in terms of average investments made and the volume of investment portfolio (Mason & Harrison, 1994, 2002; Coveney & Moore, 1998). Therefore, when venture capitalists invest in a venture, business angel investors tend to invest in the same venture. This signals good prospects. Business angel investors are likely to use it as reference point to justify their further commitment to the investment. We thus hypothesize:

**Hypothesis 10a/b:** If venture capitalists invest in the venture, angel investors will escalate their commitment in terms of money (a) and time (b)

### The Consequences of Angel Investors’ Investment Behavior

As a tradition, consistency in decision making, particularly the escalating bias, is considered to result into negative outcomes. However, there is a sufficient amount of situations where the escalation of commitment might lead to successful outcomes and persistence is rewarded. Staw (1981) stated that the most difficult decisions are to make choices about the fate of an entire course of action. He explained “A salient feature… is that a *series* of decision is associated with a course of action rather than an isolated choice. The consequences of any single decision therefore can have implications about the utility of previous choices as well as determine future events or outcomes. This means that sunk costs may not be sunk psychologically but may enter into future decisions.” (Staw, 1981: p.g. 578). For instance, many entrepreneurs are likely to be persistent and stick with initial entrepreneurial decision. While in some cases the persistence results in short-term negative outcomes (e.g. venture exit due to bankruptcy), some of them may well paid-off in long-term in which they are benefit from their previous failing courses and eventually lead them being successful (Shepherd et al., 2009).

In the context of business angel investment, both ‘push’ and ‘pull’ factors play a role. When the emotional and psychological commitment to their investments pull angel investors to trade off between financial returns and non-financial ones such as their investments spillover to other activities (Sullivan, 1994; Wetzel, 1981), in some scenario when their investments are performing poorly or moderately, angel investors are pushed to be consistent given limited prospect to achieving an exit (Mason & Harrison, 2002). They cannot easily replace the management of such businesses comparing to the formal venture capitalist. Consequently, they might be forced to be more patient and contribute more hands-on support in the hope of improving performance sufficiently for a successful exit or their shares will be bought by someone (Mason & Harrison,
2002). In many cases, such investments are ultimately sold to the existing shareholders in the business rather than the exit option of ceasing operation (Mason & Harrison, 2002). Based on aforementioned arguments, we thus hypothesize as follows:

**Hypothesis 11a/b:** Angel investors perceiving the escalating behavior in reinvesting (a) or in holding their investment for a longer period (b) are less likely to make their investee firms cease the operations

### DATA AND METHOD

**Sample:** 624 usable investment exits from the 'Angel Investor Performance Project' (AIPP) data, which collected 1,137 angel investment exits and closures (on 3,097 investments) from 538 accredited angel investors actively between 1990 and 2007

**DV** = 1) Reinvestment amount; 2) the length of investment deal; 3) type of investment exit ('1'=failed exit; '0'=successful exit)

**IV** = 1) project factors: risk deal & positive performance trend; 2) psychological factors: sunk cost in terms of money and time, angel's familiarity with decision context; 3) social factors: sources of deal & co-investors; 4) Structural factors: venture capital participation prior to the exit

**Controls** = 1) angel investor level: angel investor's age, overall angel investment experience in terms of the number of angel investments made, education, proportion of wealth invested, angel investor experience in the number of exits experienced; 2) deal-level: the deal involving multiple rounds, hours in due diligence

**Statistical analysis** = Linear regression model; binary logistic regression model

### RESULTS

Considering the linear regression models of possible antecedents, we find that angel investors actively interacting with their investee firms (B=3.15, p<0.1 for moderate interaction; B=4.13, p<0.05 for frequent interaction) and investing initially high amount (B=9.81, p<0.05) are more likely to reinvest and to put high amount in reinvestment. Moreover, if the deal is sourced via affiliated angel group, angel investors tend to reinvest high amount (B=4.72, p<0.05). Other hypothesized factors, however, have no effect on the consistency dimension in terms of money. As regards consistency in a longitudinal manner, we find that both high risk deal (B=-0.60, p<0.1) and positive performance trend prior to initial investment (B=-18.7, p<0.05) have significantly negative effects on the length of years held on the investment. Other hypothesized factors have no effect on the time dimension of consistency. With regards to the consequences of consistency behavior in investment decision, our results demonstrate that the amount of reinvestment does not matter while the longer the deal held the less likely the deal will encounter a failed exit as the termination of the deal (dy/dx=-0.06, p<0.05).

### DISCUSSION AND CONCLUSION

Based on our empirical findings, we have several observations: first, we find that both psychological and social factors play a role causing consistency of angel investors’ investment decision in terms of the reinvested amount to their initial deals. Our empirical results indicate that the more money invested as initial investment and the more time involved in the investee firms, angel investors intend to reinvest and put a higher amount money in their reinvestment. Our findings are supported by the self-justification theory (Aronson, 1968; Festinger, 1957), which indicates that sunk costs could trigger self-justification pressure so that decision makers (in our sample, the angel investor) do not want to admit that previously allocated resources are wasted in vain (Arkes & Blumer, 1985). Furthermore, when an angel investor is actively involved in the
investee firm, it is more likely to develop both emotional and psychological commitment to the investee firm. Emotional and psychological commitment could create personal bias towards the investee firm. Angel investor might simply value and develop strong preferences for the investee firm which is supported by the arguments based on subjective expected utility theory (Schulz-Hardt et al., 2009). Among social determinants, we find if the investment deal is sourced from the screen or the presentation meetings of the angel group, angel investors are likely to reinvest in a higher amount to their initial deals. This finding is supported by the self-presentation theory (Goffman, 1959; Jones & Pittman, 1982), which proposes that decision makers often facing evaluation or having a need to conform the perception and judgment within a cohesive group are likely to exhibit an escalation bias (Brockner et al., 1981; Hogg & Terry, 2000; Mayers & Lamm, 1976; Sleesman et al., 2012). In our sample, all angels are the member of one of angel groups and are accredited. In order not to be seen as incompetent by their peers, angel investors might strategically manage their impressions in front of their peers and to conform the perception and judgement within their cohesive group (Hogg & Terry, 2000; Janis, 1972; Myers & Lamm, 1976).

Second, as regards consistency behavior in a longitudinal manner, our empirical findings indicate that angel investors investing in high risk deals hold their investment period shorter. This finding is supported by the expectancy theory (Vroom, 1964; Brockner, 1992) and subjective expected utility theory (Savage, 1954). These theories indicate that risk normally increase the likelihood of loss associated with decision makers. Thus, given the subjective expected utility function, high decision risk will induce angel investor to de-escalate and to exit the risk deal earlier. Moreover, positive performance trend seems to predict the de-escalating behavior in our analysis, instead of the positive correlation to the escalating behavior as suggested by previous studies (Moon & Conlon, 2002). One possible explanation can be that when a firm has already a positive performance (i.e. positive revenue) at the time of the investor’s initial investment, this also signals the prospect that the investor can sooner achieve the expected utility associated with this investment. It might seems not logical if an investor hold a good investment for a long period instead of harvesting and getting return on the investment.

Last, our findings indicate that escalating in terms of time seems reducing the probability of a failed exit as ceasing operation. Our finding supports the view that consistency in decision does not necessarily lead to negative outcomes, and suggests that such behavior might lead to successful outcomes and is rewarded in the context of angel investment. To conclude, our study contributes to the scarce literature on the behavioral characteristics of angel investors. Our findings suggest that consistency behavior in terms of money and time can be caused by different factors, to which both angel investors and angel groups should pay attention. Furthermore, we demonstrate that being consistent in a longitudinal manner might mitigate the risk of failed exit in the context of angel investment. Last, by studying both the antecedents and consequence of two types of consistency behavior, our paper provides a more holistic view on the phenomenon of investment decision making in a broader context.

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