RESOURCE BOOTSTRAPPING OF NASCENT ENTREPRENEURS: CONSCIOUS ENTREPRENEURIAL DECISION OR FORCED REACTION?

Dietmar Grichnik
WHU - Otto Beisheim School of Management

Luv Singh
WHU - Otto Beisheim School of Management, luv.singh@whu.edu

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ABSTRACT

Management research has neglected to conceptualize bootstrapping as a strategic resource management approach and to uncover its antecedents. To address this gap, this study studies the effect of strategic orientations and environmental factors on bootstrapping behavior. Our study of 298 entrepreneurs reveals that resource bootstrapping can be viewed as an individualistic choice made by entrepreneurs, based on a proactive maximization pattern.

INTRODUCTION

A central factor in the decision of nascent entrepreneurs to pursue their entrepreneurial endeavors is the perceived availability of resources (Hitt, Ireland, Camp, & Sexton, 2001). Because the literature has acknowledged that coping with resource constraints is a key factor for initial survival and subsequent growth, especially among nascent ventures, a controversial debate is underway regarding whether and under which circumstances constraints can be beneficial to firm progress (e.g., Hoegl, Gibbert, & Mazursky, 2008; Katila & Shane, 2005; Mishina, Pollock, & Porac, 2004). A growing school of thought argues that resource constraints stimulate resourceful solutions that are superior to those developed in situations where resource slack is readily available. However, the question if actions used to derive advantages from resource constraints are primarily triggered through the unfavorable resource situation itself, hence are based on random spontaneous reactions, or if these actions are rather based on a distinct individualistic strategic mindset, has still not received sufficient research attention.

We identify streams in strategic management and entrepreneurship literatures to address this debate. Strategic management literature details different orientations that independently provide mechanisms for reducing resource constraints (e.g., real options reasoning, social cooptation, and asset parsimony). In particular, the resource dependence theory (RDT) has been developed as a basis for explaining firm behavior in this respect (Pfeffer & Salancik, 1978). However, these mechanisms have not yet been combined into a cohesive resource management approach (Sirmon, Hitt, & Ireland, 2007). Notably, the entrepreneurship literature has pointed out that the vast majority of nascent ventures mitigate the effects of resource constraints through resourceful, efficient and self-reliant resource acquisition and utilization practices that we refer to as resource bootstrapping (RB). However, little academic research has been conducted to foster our understanding of the essential entrepreneurial phenomenon of bootstrapping (Ebben, 2009; Ebben & Johnson, 2006; Winborg, 2009; Winborg & Landström, 2001) by considering its antecedents, its occurrence throughout an emergent organization and its performance impact. Moreover, the literature does not provide conceptual clarity regarding what exactly bootstrapping encompasses. Definitions vary from the most commonly spread perception of operational financing approaches (e.g., “the use of methods to meet the needs for resources, without relying on long-term external finance” (Winborg & Landström, 2001)) to more abstract combinations of resource acquisition principles (e.g., “bootstrapping involves imaginative and parsimonious strategies for marshalling
and gaining control of resources” (Harrison, Mason, & Girling, 2004)). Following the RDT, so far bootstrapping has been conceptualized as a set of operational activities to avoid environmental constraints and as such is perceived as a forced approach due to lack of alternatives. Yet, strategy research offers theories that might relate to conceptualizing bootstrapping activities as a strategic approach to efficiently mitigate unfavorable resource dependencies.

To close this theoretical gap, we introduce the novel and more comprehensive concept of RB. To be clear, our purpose is not to question the internal logic of financial bootstrapping based on methods to avoid reliance on external financing (Ebben & Johnson, 2006; Winborg & Landström, 2001). We do feel, however, that restricting the scope of bootstrapping to operational financing activities undermines the opportunity to consider RB as a coherent strategic resource management approach to overcome resource dependencies, affecting all resource types of a venture. Our extended concept links entrepreneurs’ strategic orientations with RB activity. In other words, RB is conceived of as a strategic approach implementable through diverse bootstrapping methods for entrepreneurs to acquire and manage a venture’s resources to enable the pursuit of business opportunities where conventional approaches would instead discourage them. We consider conventional approaches to include tactics that can be found mainly in incumbent organizations such as building on resource slack (Mishina et al., 2004) or resource control (Brown, Davidsson, & Wiklund, 2001). This work aims to integrate distinct orientations from the strategic management literature with the entrepreneurial phenomenon of RB to sharpen our understanding of how entrepreneurs respond to resource constraints. In strategic management literature, the understanding that both exogenous circumstances and individual skills and strategic orientations of managers drive strategic action has already occupied a central position (Nadkarni & Barr, 2008). Thus, by controlling for exogenous factors, we are able to show the unique contribution that strategic orientations have on the chosen approach to pursue business opportunities. Our central research question can be summarized as follows: Is resource bootstrapping a proactive deliberate strategic pattern of entrepreneurs or a forced reaction?

This question has only received cursory research attention (Ebben, 2009; Winborg, 2009) and has strong implications for the for future theory development in the strategic entrepreneurship literature. The RDT and resource based view (RBV) share the assumption that the control over critical resources is a decisive determinant of firm success (Hillman, Withers, & Collins, 2009). However, bootstrappers, due to their liability of smallness and newness of their ventures lack the power to compete on the free market for these resources, hence they usually tap into whatever resources they might get. The RBV would claim that as most of these resources are not strategic, in the sense that they are not rare and imitable, they cannot be a source of competitive advantage. However, the RBV has further progressed to explain that firms may not achieve rents because of superior resources but because of special competencies in resource management (Sirmon et al., 2007) to extract superior service from resources. Makadok (2001) explains that resource picking, referring to economic resource acquisition, and capability building referring to most efficient resource deployment, determine how firms create rent. In particular it has been highlighted that socially complexity of conditions under which resources were accumulated and causal ambiguity of how they work lead to sustained heterogeneity (Crook, Ketchen, Combs, & Todd, 2008); Alvarez & Busenitz (2001) explicitly mention that bootstrapping of resources is in itself a rare and valuable resource that can be brought together through an entrepreneurs diverse social connections. We now empirically follow this assertion by arguing that RB can only be a source of enduring competitive advantage, if it is a strategic pattern of entrepreneurs, rather than a random reaction. Thus, by considering the internally focused perspectives of resource management and RBV on how organizations specify the need for or develop distinct resources and the externally
focused RDT on of how bootstrappers respond to their resource environment, our work implicitly follows the call of Hillman et al. (2009) to pursue steps to integrate the RBV and the RDT.

We address the research question by breaking it down to create distinct sub-hypotheses as presented in the next section. On the one hand, we include constructs that could collect evidence that RB is an individualistic choice of entrepreneurs based on a strategic pattern. These constructs include specifically developed strategic orientations and different dimensions of the human capital of entrepreneurs, including their level of experience and educational background. On the other hand, we also include constructs that could indicate that RB is a rather forced, reactionary response to unfavorable exogenous circumstances. These constructs include the hostility of the business environment, the financial backing and development phase of the venture, as well as the type of venture in respect to complexity and risk involved in the business. Moreover, because RB is usually based on exchanges through the entrepreneur’s social network, we include the influence of the social capital of the entrepreneurs on their RB activity to disentangle what kind of social complexity is involved in the bootstrapping process.

The next section presents the research framework and hypotheses. Then, we outline the research sample, measures and approach. Subsequently, we present the main findings and close by discussing the implications of those findings and considering future avenues of research.

**RESEARCH FRAMEWORK AND HYPOTHESES**

Our research draws from the RDT, which has also served as the theoretical basis for previous bootstrapping research (Ebben & Johnson, 2006). We use a comprehensive approach to evaluate what kind of entrepreneurs conduct what level of operational RB activity, with what kind of strategic orientation and under what external circumstances, involving what level of social complexity. Hence, we investigate what role distinct strategic orientations and individual characteristics of the entrepreneur take for addressing resource dependencies, while controlling for and external factors. In this way, we are directly heeding the call of several scholars in the field for more coherent research regarding possible determinants of bootstrapping behavior (Ebben & Johnson, 2006; Harrison et al., 2004; Smith, 2009; Van Auken, 2005; Winborg & Landström, 2001). In the following, we outline potential factors influencing RB activity.

First, for the two opposing views on RB, we derive two distinct strategic patterns from the RDT. Pfeffer & Salancik (1978) suggest that resource dependence adopts a voluntaristic orientation and gives primacy to the role of managers by broadly defining two contingent managerial mindsets: (1) adapt firm strategies to fit environmental requirements, or (2) use firm strategies to engage with the environment in ways that meet the demands of the firm and its capabilities. We propose that passive minimization (minimizing the need for resources and the number of stakeholders) or proactive maximization (maximizing resource efficiency and the leverage of external actors) *bootstrapping mindsets* can be derived from these two orientations. A *maximizing mindset* can then be considered to consist of the real options orientation, the social cooptation orientation and the resource usage orientation. This maximization orientation requires the entrepreneur to engage in imaginative interplay with external actors to leverage their resources for his or her own advantage. The *real options orientation* (McGrath, Ferrier, & Mendelow, 2004) reflects an approach of determining the optimal timing for satisfying a new resource demand, delaying full commitment until the entrepreneur is sure of its necessity and fitness. The *social cooptation orientation* (Starr & MacMillan, 1990) reflects the entrepreneur’s preference for engaging in transactions built on patterns of expectations, norms and governance structures from past personal relationships when picking resources instead of conventional or formal monetary-
based transactions. Resource usage orientation (Brown et al., 2001) reflects the entrepreneur’s willingness to extract value from resources without needing to formally own them. In contrast, the minimizing mindset focuses on the internal locus of control through an effort to become largely autonomous from external stakeholders. This mindset can be considered to include the asset parsimony and independence orientations. The asset parsimony orientation is based on the theoretical work of McGrath & MacMillan (2000) and reflects the entrepreneur’s focus on cost consciousness and on minimizing the need for additional resources by adopting strategies that do not require the entrepreneur to incur additional debt. The independence orientation is based on the theoretical work of Douglas & Shepherd (2002) and reflects the tendency of entrepreneurs to minimize the influence of external stakeholders on their ventures.

We expect entrepreneurs who show a high operational degree of RB activity (DOB) to share a distinct bootstrapping mindset, reflected in a pattern of strategic orientations, which can be derived from the RDT. However, due to a lack of research on the strategic perspective of RB and the consequently exploratory nature of this research effort, the composition of this mindset is unclear. Occasional comments in the literature state that bootstrapping has been seen as a forced reaction (Ebben, 2009), with financial constraints in particular triggering bootstrapping activity. On the other hand, Ebben (2009) mentions that many in the entrepreneurial field believe that bootstrapping can be used strategically by small firms to improve their chances of success. A substantial number of today’s most successful enterprises (e.g., Microsoft, Dell, eBay, Oracle, Cisco Systems), especially those in the new economy, have been proactively bootstrapped, achieving millions of dollars in revenues. Consequently, we present the following competing hypotheses that firstly capture that RB is a distinct versus random approach based on a strategic pattern and secondly differentiate the kind of pattern:

H1a. The strategic orientations based on a proactive maximizing pattern are positively associated with the DOB.

H1b. The strategic orientations based on a passive minimization pattern are positively associated with the DOB.

Second, to evaluate whether RB is provoked by external factors, we focus on the role of the environment hostility and the phase of the venture (as a proxy for the liability of newness). Furthermore, because financial resource constraints are often speculated to lead entrepreneurs to pursue bootstrapping practices, we explicitly track whether initial financial coverage and the perceived availability of external financial resources are linked to greater RB activity. In addition, we also control for venture characteristics with respect to the uncertainty involved in a venture (indicated through the degree of innovation and technology involvement) as well as for the required resource endowments (indicated through the different business models).

The characteristics of the business environment are an integral part of the RDT. Dynamic environments with low munificence are substantially different from dynamic environments with high munificence, and these two environments have different implications for how resources must be managed to create value (Sirmon et al., 2007). In particular, hostile environments intensify the importance of managing resources effectively because resources may not be readily available to the firm when needed. Moreover, a hostile business environment is characterized by low profit margins, rapidly switching customers and high competitive pressure. These factors demand additional attention, discipline, resourceful behavior and careful cash management.

H2a. Environmental hostility increases the DOB.
Because bootstrapping is originally viewed as an independent financing approach and because financial capital is an enabling resource for acquiring other resource types (Brush, Greene, & Hait, 2001), we dedicate special attention to the role of financial constraints. As Wiklund & Shepherd (2005) note, while the ownership of financial resources is important, access to those resources is essential. Several bootstrapping authors have suggested that they expect entrepreneurs to be more reliant on bootstrapping if they are financially constrained (Ebben, 2009).

**H2b. Shortages of initial capital and a perceived lack of opportunities for external funding lead to higher DOB.**

Nascent ventures in particular suffer from a lack of negotiation power due to the twin liabilities of newness and smallness (Stinchcombe, 1965). These liabilities can manifest themselves through different mechanisms, such as a lack of trust among potential employees and suppliers, a lack of social capital that is already present in established organizations, a lack of economic capital that accrues over time, and underdeveloped internal organizational systems. All of these mechanisms lead to heightened vulnerability for emergent organizations due to resource constraints. Some of the findings of studies relating the use of certain bootstrapping methods with the maturity of small firms were in agreement with the RDT (Ebben & Johnson, 2006). Thus, we conclude that the phenomenon of RB mitigates the liability of newness (Winborg, 2007), which is especially present in the early stage of the venture life cycle.

**H2c. Less mature ventures show a higher DOB.**

Third, to find support for the individualist perspective on RB, we will determine whether different facets of human capital influence the DOB. The literature has found that to acquire resource below their true value, aside from luck to outsmart the strategic factor market, it is the subjectivistic ex-ante judgment of entrepreneurs about combinations and quality of resources, their prices and future value potential when incorporated in their ventures (e.g. Foss, Klein, Kor, & Mahoney, 2008). An individualistic perspective would require the individualistic characteristics of the entrepreneur to be associated with greater RB activity. These characteristics might be prior entrepreneurial or industry experience on the part of the entrepreneur or cognitive abilities gained through specific courses or general formal academic education.

The process of venture creation is a process of learning that generates specific knowledge that the entrepreneur can transfer to other founding situations. Through this process, the entrepreneur learns how to establish and develop contacts with customers and financiers, how to organize internal processes and structures, and how to attract and retain employees. Prior entrepreneurial experience provides insights into how to gather and allocate resources to successfully set up and run a new firm. Because experienced entrepreneurs have already been exposed to bootstrapping practices, we expect them to be more active in applying bootstrapping methods in their current ventures than inexperienced entrepreneurs.

However, from the RDT perspective one could also argue that as more experienced and skilled entrepreneurs have fewer difficulties in obtaining resources, they face lower resource dependencies. Hence, these entrepreneurs would be less driven towards RB activities. It is important to note that this argument stream implies that RB is rather a provoked than deliberate choice. As we do not make this assumption we believe, as well as for the following human capital based hypotheses, that the experience and capability based arguments prevail (Winborg, 2009).
H3a. Entrepreneurs with more venture experience show a higher DOB.

While founding expertise is an indicator of entrepreneurship-specific skills and knowledge, industry work experience is a more general type of human capital (Ucbasaran, Westhead, & Wright, 2008). As for prior entrepreneurial expertise, prior industry experience is usually accompanied by an industry-wide knowledge base and resource network. Industry-experienced entrepreneurs can be expected to have greater information processing abilities and also to be aware of inefficiency and resource waste or underutilization on the part of incumbent firms. Free from organizational pressure, industry-experienced entrepreneurs may be more inclined toward a bootstrapping mindset, leveraging their professional networks to avoid any resource misallocations that they have experienced in previous jobs. It is possible to argue that past experience in the industry would influence an entrepreneur against a bootstrapping mindset because in incumbent firms, decision-making generally requires comprehensive market research and information analysis, transactions are highly formal and asset parsimony is usually not actively promoted. Nonetheless, we expect the above-mentioned factors to be more important.

H3b. Entrepreneurs with more industry experience show a higher DOB.

Williams & Lee (2009) remark that traits such as education and specialization play an important role in identifying, evaluating and exploiting opportunities. A higher level of formal academic education might play a positive signaling role with resource providers (Backes-Gellner & Werner, 2006), which would facilitate leveraging the resources of external actors. Lee, Wong, Foo, & Leung (2009) also find that individuals with higher levels of education tend to have stronger entrepreneurial intentions, which should also benefit RB as it is a core entrepreneurial behavior. Still, no prior studies have shown any association between a formal academic degree and bootstrapping behavior. However, the domain-specific education required for the entrepreneurial endeavor has not yet been taken into account. Because bootstrappers are even more reliant than non-bootstrappers on their personal skills, additional courses that are specific to the venture should serve as better preparation for RB. Supporting this view, Zhao, Seibert, & Hills (2005) discovered that entrepreneurial education is positively associated with higher levels of self-efficacy, which has been found to facilitate entrepreneurial actions.

H3c. Entrepreneurs with more specific venture-related education show a higher DOB.

Fourth, entrepreneurs have unique ways of exposing themselves to a varied cross-section of social interactions, allowing themselves to accumulate necessary and sometimes rare resources (Alvarez & Busenitz, 2001; Smith, 2009; Winborg & Landström, 2001). Hence, special interests exist to create a more differentiated understanding of the role of social capital for RB (Harrison et al., 2004; Smith, 2009; Winborg & Landström, 2001). From a RDT perspective, parallel to the arguments for the influence of human capital on the DOB, one could argue that entrepreneurs who can hold on to a greater social network enjoy better access to diverse information and increased legitimacy which should facilitate resource picking. Thus, these entrepreneurs should be less susceptible to unfavorable resource dependencies and could be expected to be less incentivized to conduct bootstrapping activities. But again, this reasoning implies that RB is a forced choice. Instead we argue that entrepreneurs with greater social capital will realize the advantages of a greater social network and find it easier to bootstrap and accordingly show a higher DOB. Regarding the disentanglement of types of social capital we focus on the relational structural split of social networks. Researchers tend to propose that bonding social capital (with strong ties) is of higher value in the nascent phase of the venture, as Brush et al. (2001) state that entrepreneurs typically begin with a close network of contacts benefitting from the increased trust and good will
found in strong tie networks but deal with more distant business contacts as the business moves forward benefitting from the richness in diversity of information and expertise found in weak tie networks (Hanlon & Saunders, 2007). Therefore, we first examine whether social capital relates to a higher DOB and second consider if differences exist in the degree of influence of weak and strong tie networks for RB.

**H4a. The greater the social capital of an entrepreneur, the higher his DOB.**

**H4b. Strong ties have a greater effect on DOB than weak ties.**

### DATA COLLECTION AND MEASURES

#### Sample

This study focuses on nascent entrepreneurs currently in the process of starting or establishing their firms. In this way, the study avoids the retrospective bias that plagued previous research. The data sample consists of 298 entrepreneurs from Germany and Austria whose development was tracked for six months. Most of the entrepreneurs were associated with annually held regional business plan contests to facilitate entrepreneurial endeavors. The sample had good coverage of firms from different geographic areas, industries, low vs. high-tech and venture phases. To economically gather empirical data on this population, we used an online questionnaire approach. Prior to launching the survey, we conducted pre-tests with entrepreneurs and gathered feedback from the managers of each of the organizations that promoted our survey. We tested the data for possible non-response and common method bias and were able to reject both.

#### Dependent Variable

*Degree of resource bootstrapping activity (DOB).* We operationalized the DOB by building on the prior literature on financial bootstrapping (Winborg & Landström, 2001). Yet, while prior measurements focused on financial bootstrapping, we extend the analysis of RB beyond financial resources by adding items to reflect bootstrapping activity across all resource types of an emergent organization (human, financial, organizational and physical. We subjected the variety of bootstrapping activities to an exploratory factor analysis. The resulting factors depict that RB is carried out in more domains than previously identified (Table 1). The bootstrapping construct for human resources reflects practices that enable the entrepreneur to recruit fully intrinsically committed and aligned employees at minimum cost. The bootstrapping construct for financial resources reflects practices for financing the venture through the personal funds of the entrepreneur, “softer” financing by asking for financial resources from family and friends, or delaying payments and accelerating cash inflow for self-financing through operations. The bootstrapping construct for organizational resources reflects practices intended to build efficient structures and processes for knowledge flow and decision-making. Moreover, this construct reflects the inclusion of external stakeholders such as customers or suppliers for developing and promoting the products or services of the venture. The bootstrapping construct for physical resources reflects joint resource acquisition and utilization approaches. All four sub-dimensions met the internal reliability Cronbach’s alpha criterion for newly developed scales (Nunnally, 1978). The score for the overall DOB was determined by summing the score of all items. The analysis of bootstrapping on resource type level is excluded due to space limitations.

#### Independent Variables
Strategic orientations. As our main independent variables, we consider the proactive maximization bootstrapping pattern (real options reasoning, social cooptation, resource usage) and the passive minimization bootstrapping pattern (asset parsimony, independence) with different strategic orientations. Because most of these strategic orientations have not previously been operationalized in this specific way to define a bootstrapping mindset under the lens of the RDT, we derived the item operationalizations from the previous literature and conducted further rigid scale development procedures. Confirmatory factor analysis revealed the unidimensionality and construct validity of the final measures based on the criteria summarized by Hair, Black, Babin, Anderson, & Tatham (2006) for newly developed scales. In general, we used a four-item 7-point bi-polar scale for all of the constructs. The resource usage orientation construct was based on Brown et al., (2001). In the item purification process, one item was eliminated from each scale to improve construct validity and reliability. The scales can be requested from the authors.

Human Capital. We divided human capital into measures of cognition and experience-based human capital. The domain-specific education measure captured how much additional specific education/training the entrepreneurs gathered to run their venture. We asked them to only select particular options (classes, trainings, workshops, etc.) if they actually helped them to start their venture. Finally, we summed the selected options and introduced three groups of special education scores: (0 courses, 1-2 courses, more than 2 courses). The academic education measure captured the level of formal academic education ranging from “1: High School”, to “6: MBA/PhD” (De Carolis, Litzky, & Eddleston, 2009). Venture experience was measured by asking the entrepreneurs to enter the number of years they had spent working for start-up firms. We introduced three experience groups (0, 1-3, and more than three years) to minimize the effects of outliers and to account for the learning curve effect (Eckhardt, Shane, Eckhardt, & Delmar, 2006). Industry experience was measured similarly to start-up experience by asking the entrepreneurs to enter the number of years they had worked in the industry.

Perceived environmental hostility. This construct was measured using a 6-item, 7-point scale originally used by Covin, Slevin, & Heeley (2000).

Financial situation of the venture. We measured the entrepreneur’s level of satisfaction with his or her access to financial capital on a 7-point scale using the opposing statements “Insufficient and a great impediment to our development” and “Fully satisfactory for the firm’s development” (Wiklund & Shepherd, 2005). On the other hand, to understand how much financial pressure or dependence the venture is facing, we capture how much initial capital is/was available to the venture. This scale ranges from “It is not sufficient to formally incorporate the venture” to “It is sufficient to finance the venture independently for more than 6 months”.

Nascent venture status. Davidsson & Honig (2003) suggest that a venture is nascent if at least one of the following applies to the venture: if any of twenty gestation activities listed by Carter, Gartner, & Reynolds (1996) needs to be completed, if no money was invested six months prior to the survey, if expenses are higher than income, or if the venture is not legally incorporated. We calculated a corresponding dummy variable, reflecting whether or not a venture meets the criteria for being considered nascent.

Total social capital. Social capital was measured following De Carolis et al. (2009). Measures were constructed to assess the extent to which entrepreneurs were relationally or structurally embedded in their personal networks. We asked the entrepreneurs to select groups of people in which they knew entrepreneurs and to indicate in what kind of groups they knew people who
supported them in their venture. We summed the number of groups selected for weak and strong ties and finally aggregated the scores to create a total social capital score.

**Control Variables**

*Business model.* Dummy variables were introduced because service-based ventures may require lower fixed resource endowments and thus be less capital-intensive and “easier to bootstrap”. Therefore, we asked the entrepreneurs to state their venture’s business model.

*Technology and Innovation (TCH, INV).* RB may be more important for technology-based firms because acquiring financial capital is commonly more difficult for them due to the high cost and risk associated with technology development and due to long market lead times (Van Auken, 2005). Therefore, we asked the entrepreneurs to state whether or not they would consider their venture to be technology-based. In the same vein, we control for the degree of innovation of the venture, with options ranging from "not innovative" or "marginally innovative" versus "radical" or "extremely innovative" (Dencker, Gruber, & Shah, 2008; Kirzner, 1997).

*Age of the entrepreneur.* Because we capture the professional experience of the entrepreneurs based on the number of years of prior work employment, it is useful to control for the age of the entrepreneur (Davidsson & Honig, 2003).

*Business Plan Competition participation.* We control for an eventual impact of business plan competitions by capturing the participation intensity (number of events attended).

**ANALYSES AND RESULTS**

The relationships between different factors influencing the DOB were investigated using a three-step hierarchical regression analysis. The regression results are shown in Table 1; the correlation table could not be attached due to space limitations and can be requested from the authors. All controls are insignificant, and the human and social capital block together with the resource dependency variables add explanatory power (R square change 0.10). The strategic block also contributes to the model explanation (R square change 0.09). We find that distinct variables in each hypothesis category have significant effects, supporting our basic hypotheses overall.

As we suggested, bootstrappers have a distinct mindset that is based on a strategic pattern that can be derived from the RDT. We find that the bootstrapping mindset constructs arguing for a maximizing, proactive response to resource dependencies becomes an evident antecedent of bootstrapping activity (Social cooptation: b = 2.96, p = 0.004; Real options reasoning: b = 3.98, p = .006; Resource usage: b = 3.33, p = .000). In contrast, the bootstrapping mindset constructs arguing for a minimizing orientation (Asset parsimony, Independence) turn out to be insignificant.

We also suggested that RB can be explained based on exogenous resource constraints. The indicators related to the evidence of the RDT show a differentiated picture. Environmental hostility is positively associated with RB activity (b = 3.34, p = .002), and the same is true for the nascent status (b = 11.18; p = .008). However, contrary to previous remarks (Ebben, 2009), we find that financial constraints do not significantly evoke RB activity. Access to external financial capital or little initial funding was found to be non-significant.

As for the human capital variables, we find that the specific education that the entrepreneur underwent as preparation for running his venture, in contrast to his academic educational level, is
significant for explaining higher RB activity ($b = 3.63, p = .032$). It is initially surprising that prior industry experience has a highly positive significant association with the DOB ($b = 4.84; p = .013$), while entrepreneurial experience does not.

As expected, we find evidence that social capital is an antecedent of RB activity ($b = 0.88, p = .046$). A detailed analysis of social capital reveals that only weak ties seem to have a positive significant effect on RB ($b = 1.40, p = .099$).

**DISCUSSION**

This work asked: *Is resource bootstrapping a proactive deliberate strategic pattern of entrepreneurs or a forced reaction?* The primary contribution of this research comes from examining and extending the role of bootstrapping within the resource dependence and resource management theories. Our empirical findings indicate that RB activity is determined by a strategic pattern, a proactive maximization orientation that can be derived from the RDT (H1a). Consequently, we suggest to theoretically perceiving RB as a distinct resource management approach constituted by an economic mindset built on the principles of picking only necessary resources, possibly under market value, and extracting maximum value out of them. Hence, from the perspective of Sirmon et al. (2007), RB could be seen as a cohesive approach to structure, bundle and deploy a venture’s resource portfolio by identifying precise resource needs, cost-effective resource acquisitions, determining the most appropriate configuration of resources, and ensuring the most effective and efficient resource leverage.

The second research focus analyzed the RDT as providing exogenous contingency factors (H2) and human capital as internal drivers (H3) to explain RB activity. This analysis revealed that environmental hostility (H2a) and nascent venture status (H2c) are positively associated with a higher DOB. However, financial constraints (H2b) and venture type characteristics are not. Hence, we suggest that RB is context-dependent but not to such a degree so as prior research indicated. Rather, we found evidence for an individualistic aspect of RB because both industry experience and specific educational measures are related to a higher DOB. This understanding suits to recent findings by Winborg (2009) claiming that bootstrapping is not a matter of last resort that is mainly driven by a lack of financial resources (Ebben, 2009). Nevertheless, we surprisingly discovered that entrepreneurial experience (H3a) is not related to higher RB activity. This might be because bootstrapping a venture is a tedious effort, and many entrepreneurs who have founded a venture and potentially accumulated a comfortable level of wealth prefer their current venture to be supported by external investors, immediately building on professional pillars than on own means.

We also discovered interesting nuances regarding the role of social capital in RB (H4). First, as expected, we noted that overall social capital (H4a) is strongly associated with a higher DOB. However, when splitting overall social capital into weak and strong tie networks, we only found a significant association between weak tie networks (H4b) and DOB. Thus, it appears that weak ties might be more relevant for bootstrappers in acquiring resources than strong ties. This finding is important for the vibrant debate on the value of weak and strong tie networks for entrepreneurs (e.g., Davidsson & Honig, 2003; Hoang & Antoncic, 2003). Our findings indicate that certain entrepreneurs seem to avoid leveraging family and relatives as resource providers. One reason could be that acquiring resources through a personal network is accompanied by stronger personal obligations. Because the monitoring activity of resource supporters (Hanlon & Saunders, 2007) in strong-tie networks could be higher, using such sources may carry a risk of conflicts at some point. Bootstrappers might not want to carry this potential conflict into their close circle and might thus actively seek business interactions in their weak tie network. These insights also align with
the findings of Chua, Ingram, & Morris (2008), who demonstrated that cognition-based trust in networks is positively associated with the provision of economic resources, in contrast to affection-based trust (which is predominantly present in strong-tie networks).

Implications

RB seems to be driven by the individual rather than a forced reaction, and it is supported by weak network ties. The obvious but important implication is that at given unfavorable levels of resource endowment, strong tie networks and external circumstances, entrepreneurs still have a decisive influence over how their ventures creatively handle resource dependencies to ensure development (Holcomb, Holmes, & Connelly, 2009).

Our successful linkage of salient strategic orientations from the strategic management literature and activity-based RB conceptualization from the entrepreneurship literature has further implications for the development of theory in both domains. Kuratko & Audretsch (2009) suggest that the extent to which the firm acts entrepreneurially is related with dimensions of strategic management. Our research provides a vivid example of how this critical intersection can be further developed, thereby stimulating research in the currently emerging and highly controversial body of strategic entrepreneurship literature.

As an interesting side note, we noticed that educators in public organizations that intend to facilitate entrepreneurial activity usually do not highlight the bootstrapping concept in their programs. As our results implicate that RB is a learnable strategic pattern, we believe that there is substantial potential to improve RB quality among nascent entrepreneurs and with that their chances of a successful venture initiation.

Future Research Directions

A number of potential avenues for future research can be delineated. On the one hand, future research could juxtapose the concept of RB with other entrepreneurship based theoretical viewpoints to further detail how entrepreneurs approach resource constraints to enhance the chances of their venture’s surviving and subsequently growing. The effectual logic could provide a suitable framework for this approach (Davidsson, Achtenhagen, & Naldi, 2006; Politis, Lindholm-Dahlstrand, & Winborg, 2008). In addition, the concept of bricolage (Baker & Nelson, 2005) - making do with resources at hand - is strongly connected to RB. Wiklund, Baker, & Shepherd (2008) summarized how these concepts, in line with bootstrapping, commonly build on the avoidance of large debt during venture gestation, which benefits the chances of venture survival. On the other hand future research could investigate what implications RB has on the fit between resource selection and their deployment, as our work rather focused on the methods themselves. The strategic management based literature on asset orchestration argues that the alignment between selected resources and their deployment opportunity is crucial for the effectiveness of firms’ strategies (Sirmon & Hitt, 2009).

Our focus in this study is on the conceptualization and antecedents of the bootstrapping phenomena. Bootstrapping research is currently missing an analysis of the impact of RB activity on venture development. Initial attempts have been made by Ebben (2009) and Vanacker, Manigart, Meuleman, & Sels (2010). The newly provided bootstrapping measures on the operational and strategic levels and the identification of bootstrapping antecedents should facilitate research on the impact of RB across the different resource types of a venture on its development. It
would also be interesting to explore the appropriate context for success measurement; for example, is RB a matter of opportunity exploration or exploitation or maybe even both?

CONTACT: Luv Singh; luv.singh@whu.edu; Burgplatz 2, Vallendar, 56179, Germany.

REFERENCES


### Table 1: Operational Bootstrapping Method Constructs

Please state how much you use the following methods (1 = "not at all" to 7 = "very high use").

<table>
<thead>
<tr>
<th>Human resources – Cronbach’s alpha = .68</th>
<th>Financial resources – Cronbach’s alpha = .71</th>
<th>Organizational resources – Cronbach’s alpha = .71</th>
<th>Physical resources – Cronbach’s alpha = .73</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run the business rather understaffed</td>
<td>Offer part-time work contracts</td>
<td>Development of lean and transparent organizational structure</td>
<td></td>
</tr>
<tr>
<td>Emphasize intrinsic motivation and commitment of recruiting candidates</td>
<td>Offer performance oriented compensation (bonus, shares)</td>
<td>Development of decision and implementation oriented culture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development of employees through intense &quot;on the job&quot; training/coaching</td>
<td>Minimization and simplification of business processes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Direct sales to customers</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Usage of „viral marketing” (mouth to mouth, especially over the internet)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Systematic involvement of customers to further develop the products/services</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Systematic involvement of suppliers to further develop the products/services</td>
<td></td>
</tr>
</tbody>
</table>

*Winborg & Landström (2001) used a 5-point likert scale and remarked in their limitations that respondents may have overestimated the use of different methods, hence we used a 7-point likert scale.

### Table 2: Hierarchical Regression Results on DOB

<table>
<thead>
<tr>
<th>(N = 298)</th>
<th>Model 1 (controls)</th>
<th>Model 2 (+ independents)</th>
<th>Model 3 (+ strategic orientations)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>106.55***</td>
<td>65.59***</td>
<td>35.69**</td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of the founder</td>
<td>0.02</td>
<td>-0.14</td>
<td>-0.12</td>
</tr>
<tr>
<td>Business plan contest</td>
<td>1.09</td>
<td>-0.04</td>
<td>-0.97</td>
</tr>
<tr>
<td>Business model_service</td>
<td>2.44</td>
<td>-0.22</td>
<td>-1.32</td>
</tr>
<tr>
<td>Business model_production</td>
<td>-0.60</td>
<td>-1.01</td>
<td>-2.72</td>
</tr>
<tr>
<td>Technology involvement</td>
<td>-3.92</td>
<td>-2.62</td>
<td>-2.47</td>
</tr>
<tr>
<td>Innovativeness</td>
<td>2.57</td>
<td>2.68</td>
<td>0.95</td>
</tr>
<tr>
<td>Human capital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain-specific education</td>
<td>3.83*</td>
<td>3.63*</td>
<td></td>
</tr>
<tr>
<td>Academic education</td>
<td>1.91</td>
<td>1.62</td>
<td></td>
</tr>
<tr>
<td>Venture experience</td>
<td>0.78</td>
<td>1.18</td>
<td></td>
</tr>
<tr>
<td>Industry experience</td>
<td>4.73*</td>
<td>4.84*</td>
<td></td>
</tr>
<tr>
<td>Social capital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total social capital</td>
<td>1.16*</td>
<td>0.88*</td>
<td></td>
</tr>
<tr>
<td>RST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental hostility</td>
<td>3.51**</td>
<td>3.34**</td>
<td></td>
</tr>
<tr>
<td>Initial capital duration</td>
<td>-0.35</td>
<td>-1.11</td>
<td></td>
</tr>
<tr>
<td>External capital access</td>
<td>-1.03</td>
<td>-0.56</td>
<td></td>
</tr>
<tr>
<td>Nascent status</td>
<td>12.17**</td>
<td>11.18**</td>
<td></td>
</tr>
<tr>
<td>Strategic orientations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social cooperation</td>
<td>2.96**</td>
<td>3.98**</td>
<td></td>
</tr>
<tr>
<td>Real options reasoning</td>
<td>3.33***</td>
<td>1.58</td>
<td></td>
</tr>
<tr>
<td>Resource usage orientation</td>
<td>-1.58</td>
<td>-1.58</td>
<td></td>
</tr>
<tr>
<td>Asset parsimony</td>
<td>0.03</td>
<td>0.03</td>
<td></td>
</tr>
</tbody>
</table>

*Coefficients are unstandardized. Control variables (n.s.) for team size and gender are not presented to conserve space.

† p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.001