

## Reconceptualizing Entrepreneurial Exit: Divergent Exit Routes and Their Drivers

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## **RECONCEPTUALIZING ENTREPRENEURIAL EXIT: DIVERGENT EXIT ROUTES AND THEIR DRIVERS**

**Abstract:** We develop a conceptual model of entrepreneurial exit which includes exit through liquidation and firm sale for both firms in financial distress and firms performing well. This represents four distinct exit routes. In developing the model, we complement the prevailing theoretical framework of exit as a utility-maximizing problem among entrepreneurs with prospect theory and its recent applications in liquidation of investment decisions. We empirically test the model using two Swedish databases which follow 1,735 new ventures and their founders over eight years. We find that entrepreneurs exit from both firms in financial distress and firms performing well. In addition, commonly examined human capital factors (entrepreneurial experience, age, education) and failure-avoidance strategies (outside job, reinvestment) differ substantially across the four exit routes, explaining some of the discrepancies in earlier studies.

**Keywords:** Entrepreneurial Exit, Prospect Theory, Human Capital

### **1. Executive Summary**

Entrepreneurship research has paid considerable attention to reasons and methods people use for starting their ventures. Less attention has been paid to the methods people use for exiting their ventures or what factors contribute to their choice of exit route. Most existing models of entrepreneurial exit have conceptualized exit as a utility-maximizing choice and, as a consequence – implicitly or explicitly –have equated exit with the failure of firms or individual entrepreneurs. A utility-maximization lens suggests that the decision to exit is either a sign of entrepreneurial failure or that the opportunity costs to entrepreneurship have risen substantially. However, an emerging body of research acknowledges that entrepreneurial exit may also be a successful outcome.

In this paper we study the exit of individual entrepreneurs from the firm they helped to create. We draw on prospect theory and its recent application in behavioral finance that suggests that exit decisions are contingent on whether an entrepreneurial project is framed as a gain or as a loss. This theory predicts that gain or loss framing will affect not only the probability of exit, but also the type of exit. We argue that exit may be the result of failure as well as success, and research should identify which specific route of exit is utilized rather than

assume that exit equates with either failure or success. We combine two existing theoretical models of entrepreneurial exit to define and investigate four exit routes: exit by liquidation of high or low performing firms (harvest liquidation, distress liquidation) and exit by sale of high or low performing firms (harvest sale, distress sale). We empirically examine the relationship between entrepreneurs' human capital and failure avoidance strategies for each exit route. The value of this approach is that we are able to show why discrepancies in earlier findings related to entrepreneurial experience, entrepreneurial aging, and failure-avoidance strategies are due to an under-conceptualization of the exit decision. Further, such discrepancies may be due to overly relying on models based on expected utility theories, suggesting that complementary perspectives on entrepreneurial exit are needed.

The research setting for this study is the complete population of firms started in 1995 by entrepreneurs in the Swedish knowledge-intensive sectors (N=1,735). We use two longitudinal databases maintained by Statistics Sweden: RAMS, which provides yearly data on all firms, and LOUISE, which provides yearly data on all Swedish inhabitants.

The results provide strong support for our conceptualization of exit routes and also suggest that entrepreneurs' human capital (experience, education, and age) and failure-avoidance strategies (taking an outside job, reinvestment) differentially impact these routes. Entrepreneurial experience increases the likelihood of exiting by harvest sale, but does not affect the likelihood of any other route nor continuation. An entrepreneur's age increases the likelihood of harvest and distress sale compared to both types of liquidation or continuation. Entrepreneurs with higher education are more likely to exit via distress liquidation rather than continuation. Taking an outside job decreases the probability of exiting through distress liquidation or distress sale, but does not affect the other exit routes. Finally, reinvestment into the firm decreases the probability of exit, regardless of exit route taken.

This paper makes two main contributions to the literature. First, viewing entrepreneurial exit jointly as a career choice and a liquidation of an investment, we draw upon prospect theory as applied to investment liquidation to develop and empirically validate a coherent theoretical framework of four exit routes corresponding to different levels of performance.

Second, we empirically examine the factors that affect the choice of exit route. We combine human capital theory and prospect theory to construct more nuanced predictions of how entrepreneurs' human capital and failure-avoidance strategies impact these exit routes, explaining some of the discrepancies in the earlier empirical literature.

For entrepreneurs, our findings provide evidence that the high firm failure rates reported in both the academic and popular press may be, at least partially, based on a misinterpretation of entrepreneurs' positive exit decisions as failures. The findings also indicate the importance of knowing the types of exit available and the decision processes associated with them. For educators, this research validates the importance of considering potential exit routes and what skills are linked with each route so that entrepreneurs can more productively harvest the value from their firms.

## **2. Introduction**

Entrepreneurship scholars have established that people enter entrepreneurship and operate their firms for a wide variety of reasons, including a desire to exploit a perceived opportunity, seeking autonomy or self-realization, or a lack of alternative employment (Carter et al., 2003; Shane and Venkataraman, 2000; Taylor, 1999). It is similarly reasonable to assume that there are several reasons for people to leave entrepreneurship (Storey et al., 2005), suggesting that exit is a multidimensional phenomenon. Yet, little attention has been paid to the different methods people use for exiting their ventures or what factors contribute to their choice of exit route, even though entrepreneurial exit has a significant effect on the entrepreneur, the firm, competitive market dynamics and economies through wealth

redistribution (DeTienne, 2008). In addition, a large portion of previous work assumes that exit is a sign of failure (Brüderl et al., 1992), and that continuation is a measure of success (Brüderl et al., 1992; Pennings et al., 1998). Yet we know that many ongoing businesses are not necessarily successful in terms of operating at a profit (van Witteloostuijn, 1998), and that many entrepreneurial exits are in fact not perceived as failures (Bates, 2005; McGrath, 2006).

In this research we ask two questions: how do entrepreneurs' route of exit relate to differential levels of performance, and what theoretical mechanisms contribute to their choice of exit route? Following Gimeno and colleagues (1997) we argue that a main reason for lack of systematic research progress is that exit has remained an underspecified variable. To date, the literature has not sufficiently made the distinction between different exit routes. For example, Storey et al. (2005) suggest that firms might be sold for a variety of reasons, but no study has distinguished between the sale of more or less successful businesses. Either all types of sales have been viewed jointly (Mitchell, 1994) or they have been separated based on the characteristics of the buyer (Birley and Westhead, 1993) or the future career of the entrepreneur (Holtz-Eakin et al., 1994). Gimeno et al. (1997) showed that factors predicting firm liquidation differ from factors predicting firm sale, but their focus was on liquidated vs. continued firms. Sold firms were excluded from their analysis.

The first contribution of this paper is to conceptually and empirically distinguish among different exit routes. Our basic argument is that research needs to identify the specific exit route used, rather than assuming that exit equates with either failure or success. Equating entrepreneurial exit with either failure or success gives a single-eyed and biased view of the phenomenon. Once this assumption is relaxed, we need a framework for understanding how exit relates to differential levels of failure and success. Viewing entrepreneurial exit jointly as a career choice and a liquidation of an investment, we draw upon prospect theory as applied to

investment liquidation to develop and empirically validate a coherent theoretical framework of four exit routes corresponding to different levels of performance.

The second contribution of this paper is to empirically examining the factors that affect the choice of exit route. We combine human capital theory and prospect theory to construct more nuanced predictions of how entrepreneurs' human capital and failure-avoidance strategies impact these exit routes, explaining discrepancies in the earlier empirical literature.

This paper starts with a theoretical examination of exit from the perspectives of expected utility and prospect theory. In doing so, we discuss specific exit routes that take jointly into consideration firm performance and exit. Next, we develop and test hypotheses as to how human capital and failure-avoidance strategies affect these exit routes. Finally, we discuss our results and the implications for research and practice, and draw conclusions.

### **3. Theoretical Development**

In entrepreneurship research there has been some confusion whether research on exit deals with the exit of the entrepreneur or the exit of the firm they operate (Davidsson and Wiklund, 2001). Often firms and entrepreneurs exit simultaneously, for example, when entrepreneurs liquidate their firms. But entrepreneurs can also exit a firm that continues operations, such as when an entrepreneur sells the firm to another owner who continues the business. In this study we examine situations in which the individual exits the firm, and what exit route is taken. We do not consider what individuals do subsequent to exiting their firms.

#### *3.1 Expected Utility and Prospect Theories on Entrepreneurial Exit*

An entrepreneur's exit can be viewed both as a career choice and as liquidation of a financial investment. These perspectives are linked to two partly competing theoretical perspectives. The expected utility framework views career choices such as choosing between employment and self-employment as an individual's attempt to maximize returns on her/his

human capital (Becker, 1964). This framework dominates research on entrepreneurial career choice, including entrepreneurial exit (e.g. Douglas and Shepherd, 2000; van Praag, 2003).

Conversely, behavioral finance research on investment liquidation does not always assume utility-maximization (e.g., Kyle et al., 2006). Based on Kahneman and Tversky's (1979) prospect theory, this research argues that financial gains or losses are examined relative to a reference point (Shefrin and Statman, 1985). We find the notion of reference points valuable for theoretical examinations of entrepreneurial exit decision since it explicitly states that the utility loss for realizing a loss of a certain size is greater than the utility gain from realizing a gain of the same size, and that the marginal utility of gains (losses) diminishes with the size of the gain (loss). This explains why the entrepreneurial exit decision might be differentially related to financial performance. For example, entrepreneurs with low performing firms might try to sell these to recoup some of the losses rather than liquidate the firm (van Witteloostuijn, 1998). The only study to date that incorporates the notion of reference points in the entrepreneurship literature is Gimeno et al. (1997), who investigated how entrepreneurs' human capital has both direct and indirect effects on firm liquidation.

### *3.2 Exit Routes*

Prior research on exit has shown that firm sale is distinct from firm liquidation (Gimeno et al., 1997; Mitchell, 1994), but there is little theoretical guidance suggesting what types of liquidations or sales entrepreneurs consider, and why (Storey et al., 2005). In this paper we differentiate between liquidation and sale, on the one hand, and between high and low performance, on the other hand, to arrive at four different types of exits. To distinguish between exit from firms that are performing well or poorly, we rely on prospect theory's reference point logic, which in our case corresponds to continuation of the firm. In the language of prospect theory, a high-performance exit is equivalent to exit in a gain situation

performing above the reference point, and a low-performance exit is equivalent to exit in a loss situation performing below the reference point (Kahneman and Tversky, 1979).

Kyle et al. (2006) develop a model that considers the conditions under which investors liquidate investments in gain and loss situations, considering exogenous events that may force the investor to liquidate. This is a highly relevant addition in the context of entrepreneurial exit because events outside of the control of the entrepreneur (forced bankruptcy, closure of major client) may influence her possibilities to continue. Consistent with prospect theory and observations of investments (Shefrin and Statman, 1985), their model suggests that in gain situations investors rapidly convert investments into cash, but delay liquidations in loss situations. Taking potential exogenous events into account, the following outcomes are most likely: (i) if a project is successful, this will accelerate liquidation; (ii) if a project is unsuccessful, liquidation will be delayed; and (iii) because unsuccessful projects lead to delayed liquidations, exogenously forced liquidation events are more likely to affect unsuccessful than successful projects.

Van Witteloostuijn (1998) makes some valuable additions to this model by discussing firms in distress. He notes the difference between liquidating and selling a business as two distinct forms of exit. Second, he suggests that firms performing under a reference point may engage in failure-avoidance strategies to avoid liquidation. Third, he notes that flight from losses – the sale of an unprofitable firm to recoup some of the investments – is different from the worst case where the firm must be liquidated or put into bankruptcy at greater loss.

Taken together, these two models suggest that: (i) exit (sale or liquidation) could occur in both gain and loss situations; (ii) sales and liquidation under losses both reflect poor performance, but they do likely reflect different performance levels with liquidation under loss being the lowest-performing category; (iii) because people delay cutting their losses, exogenous forced events (such as forced bankruptcy) are most closely associated with the low



performing liquidations, and can be placed under the same heading. Applying the combined frameworks to entrepreneurial exits where both high and low performance is considered suggests a model with four exit routes differentiating between liquidations and sales of firms that are performing well (above a reference point) or firms that are performing poorly (below a well-defined reference point). We denote these four outcomes as (i) *Harvest Sale* of a profitable business, (ii) *Distress Sale* of a firm under financial distress; (iii) *Harvest Liquidation* of a profitable business, (iv) *Distress Liquidation* of a firm under financial distress, all in addition to the baseline reference point (0) *Firm continuation*. We show this simple framework of liquidations or sales of firms that are performing well (above the reference point) or poorly (below the reference point) in Figure 1 as a two-by-two matrix:

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### 3.2.1 *Harvest Sale*

Harvest sale refers to a situation where the firm continues while the entrepreneur exits as majority owner. Harvest sale extracts some or all the economic value from the investment (Petty, 1997). While research has noted that entrepreneurs may have many unique motivations for new venture creation, individual wealth creation is often viewed as a defining objective for entrepreneurship (Certo et al., 2001). Yet, most of the wealth created by the entrepreneur remains embedded in the firm until the time of the harvest (DeTienne, 2008). Just as with an investor's purchase of stock, the value remains unrealized until the business is sold (Petty, 1997). Although a venture may create wealth during its lifetime, "a central part of the new venture value creation efforts hinges on the ability to harvest that value at some point(s) in the future" (Holmberg, 1991, p. 203). The sale of this equity allows the entrepreneur to realize

some portion of the firm's wealth creation (Certo et al., 2001) while allowing the firm to continue. We therefore define the sale of a highly performing firm as a harvest sale.

### *3.2.2 Distress Sale*

Storey et al. (2005) suggest that there might be several distinct types of firm sales. Prior research has identified sales with reference to the characteristics of the buyer (Birley and Westhead, 1993; DeTienne and Cardon, 2006). Implicit in this literature is that sale of a firm is equal to harvesting its value. However, firm sale may also be a preferred alternative to avoid bankruptcy or liquidation of a poorly performing firm. If a firm is starting to generate losses and the entrepreneur is unable to turn the situation around, he or she has the option to sell the business before it accumulates further losses, what Van Witteloostuijn (1998) refers to as "flight from loss". We define distress sale as the sale of a firm under financial distress.

### *3.2.3 Harvest Liquidation*

Liquidation refers to the termination of the firm and the distribution of the value of its assets to the owner(s) and creditors. If this occurs in profitable firms, we refer to this as harvest liquidation. Many reasons may exist for why entrepreneurs would choose harvest liquidation, including (but not limited to) divorce, desired career change, and retirement. One might question why entrepreneurs would liquidate a profitable firm when sale may provide a better financial return. Valid reasons might include a desire for expediency, aging or obsolete technology, inability to recognize a strategic buyer, or a capital-intensive firm with most of the value residing in marketable assets. Thus, liquidation may also occur in profitable firms.

### *3.2.4 Distress Liquidation*

Finally, a firm in distress may be liquidated. In this study we do not discriminate between liquidations and bankruptcies, but instead discriminate between high-performing (profitable) and low-performing (near-bankruptcy, i.e. in distress) liquidations. Whether to liquidate or put a failing firm in bankruptcy is largely a choice of the entrepreneur. Since bankruptcy is associated with outright failure, which may have a stigma attached to it (Pretorius and Le Roux, 2007), entrepreneurs often choose to supply the firm with equity to avoid bankruptcy

and instead liquidate it, sell the assets, and pay off creditors (Thorburn, 2000). In an earlier study of bankruptcies, in 90% of the cases the firm, rather than creditors, filed the application (Thorburn, 2000), and a majority of firms re-appear after the bankruptcy settlement freed from debts, often under the same CEO (Eckbo and Thorburn, 2003). This suggests a high degree of volition in bankruptcy, implying that the theoretical performance distinction should be drawn between firms in distress vs. other firms. To validate the suggested model, we now turn to theorizing about how human capital and failure-avoidance strategies will impact these exit routes.

### *3.3. Entrepreneurial Exit, Human Capital, and Failure-Avoidance Strategies*

The conceptual model developed is only meaningful if it holds up in empirical testing and if the different exit routes (and the alternative of firm continuation) can be explained by relevant theory. We therefore turn to human capital theory to develop a set of hypotheses related to exit routes. Human capital theory has been the main theoretical underpinning of previous exit research, and therefore provides a relevant framework for hypothesis development. Human capital theory uses economic logic to study individual career choices, such as choosing between employment and self-employment (Becker, 1964). It follows economic logic by viewing individuals' choice of occupation or employment as a choice that maximizes their long-term utility. Human capital theory also distinguishes between general and specific human capital. General human capital is made up of skills that are useful in a variety of work settings. Specific human capital is made up of skills that are more specialized and valuable in a particular context or organization, but less valuable in the general labor market. In this study we look at three human capital variables that may be associated with a specific exit route: entrepreneurial experience, age, and education.

#### *3.3.1. Entrepreneurial experience and exit*

Although most applications of human capital theory suggest a positive relationship between experience and entrepreneurial continuation, evidence from empirical studies is

mixed. In a study of 1,361 U.K. entrepreneurs, Taylor (1999) found that previous entrepreneurial experience decreased the probability of exit. Conversely, Jørgensen's (2005) study of 31,000 Danish entrepreneurs revealed that prior experience increased the probability of exit. In other studies, the relationship between prior experience and exit was not statistically significant (Brüderl et al., 1992; Gimeno et al., 1997; Van Praag, 2003). We believe that this mixed evidence is caused by a reliance on expected utility theory in most of these studies, and too narrow a definition of exit routes. For example, the studies by Gimeno et al. (1997) and Pennings et al. (1998) excluded firms that were sold and hence could not investigate the role of experience for entrepreneurs that sell their firms. The studies by Taylor (1999) and Van Praag (2003) distinguished between firms that exited due to bankruptcy and firms that were discontinued, but found no distinct difference between these groups in terms of entrepreneurial experience.

So what makes experience important? Research on entrepreneurial learning suggests that the skills and knowledge relevant to successfully managing and operating a business are mainly experiential in nature (Politis, 2005; Starr and Bygrave, 1992). Although other aspects of human capital may have an impact on an individual's entrepreneurial ability, the learning literature would suggest that previous entrepreneurial experience is likely to be the most important aspect of human capital in predicting entrepreneurial success. This argument is supported by social learning theory (Bandura, 1977), which states that one of the most powerful ways of learning is through enactive mastery (i.e. learning by doing). Specifically, the studies of habitual entrepreneurs have highlighted the importance of previous experience for the successful sale of an entrepreneurial venture (e.g. Ucbasaran et al., 2003), suggesting that the experience of operating a previous business assists in the management of subsequent ones. Repeat entrepreneurs are likely to have larger amounts of personal financing and greater access to external sources of financing (Wright and Westhead, 1998), and they tend to create

firms with higher growth potential (Colombo and Grilli, 2005). Venture capitalists view also entrepreneurial experience favorably for investment decisions because it reflects greater ability to build a high-potential venture and to be capable of successful exit (Tyebjee and Bruno, 1984). Hence, previous entrepreneurial experience also signals a willingness to let go of previous businesses. Thus we hypothesize the following:

**Hypothesis 1:** Entrepreneurial experience has a positive effect on the probability of making a harvest sale relative to continuation, liquidation, distress liquidation and distress sale.

### *3.3.2. Age of the Entrepreneur and Exit*

Several utility theory arguments such as human capital productivity (Harada, 2004) and life-time risk preferences (Morin and Suarez, 1983) suggest that older entrepreneurs should be more likely to exit. Empirical evidence is however mixed with some studies indicating that older entrepreneurs are more likely to exit (Holtz-Eakin et al., 1994; Taylor, 1999; Bates, 1990), and other studies showing they are less likely to exit (Gimeno et al., 1997; Van Praag, 2003). Similarly to entrepreneurial experience, we believe that these discrepancies in the literature are intimately related to the underspecification of exit routes, and the predominant role of expected utility theory in prior theorizing about the role of aging.

To modify the predictions of expected utility theory we draw upon prospect theory and Becker's (1965) economic theory of time allocation. The latter theory suggests that the opportunity cost of time increases with age because a smaller period of life remains. This influences the subjective value of the discounted future cash flow of a profitable business relative to selling the business so that, all else equal, older entrepreneurs place a lower value on the discounted future cash flow (Lévesque and Minniti, 2006). Behavioral finance studies of entrepreneurial exit relying on prospect theory make similar predictions by depicting entrepreneurs as 'hyperbolic discounters' rather than 'utility-maximizers' – i.e. they prefer '\$1 today rather than \$2 tomorrow' (Grenadier and Wang, 2007). Both theoretical frameworks suggest that an older entrepreneur should place a higher value on a bid for her firm. All other

things equal, the chance of a harvest sale would increase with age, compared to firm continuation. Conversely, if the firm is performing poorly and substantial effort is needed to turn the firm around, older entrepreneurs would be more likely to sell the business (distress sale) rather than continue operations because they would be more concerned about immediate financial gains and losses. Risk aversion might attract them to the certain outcome of a distress sale rather than the uncertain outcome of continued operations (van Witteloostuijn, 1998). If an entrepreneur chooses to continue operating a poorly performing firm, the eventual outcome may well be liquidation, suggesting that the probability of both continuation and liquidation decrease with age. Since some aspects of human capital may increase with age (such as accumulated life experience) but others may decrease (such as stamina), there is no clear indication that age should be positively or negatively associated with performance. Hence, we do not expect age to be associated with one particular type of sale over the other. These arguments suggest that older entrepreneurs should be more likely to prefer the sale (harvest as well as distress) of the business over continued operations and liquidation:

**Hypothesis 2:** Age has a positive effect on the probability of making a (a) harvest sale, or (b) distress sale relative to continuation, harvest liquidation, or distress liquidation.

### *3.3.3. Education and exit*

Previous research has shown that education has a positive effect on firm performance (Cooper et al., 1994). Individuals with higher levels of education usually have greater access to resources such as financial and social capital (Davidsson and Honig, 2003), and therefore are more likely to be able to mobilize those resources to enhance the performance of the firm. Some studies indicate that higher education decreases the probability of exit (Bates, 1990; Brüderl et al., 1992). Other studies show that education increases the probability of exit (Taylor, 1999) or reveal insignificant results (Arum and Muller, 2004). A likely reason for this conflicting evidence is that while education is associated with access to financial and social capital, education also increases the options open to the entrepreneur to sell their

business regardless of its current performance. Gimeno and colleagues (1997) argued that those with greater education have more job options available to them outside of their current venture, or after they exit their current venture. Because of this, they have higher opportunity costs associated with sticking to an underperforming firm. Highly educated entrepreneurs may therefore be more likely to demonstrate a “flight from losses” (Van Witteloostuijn, 1998) and sell the firm at the first sign of low performance to their high standards.

The positive effect of education on performance coupled with the higher opportunity cost suggests that while educated people are less likely to manage their business under a given level of performance, they also require higher performance for remaining in entrepreneurship. Thus education should have a positive effect on the ability of the entrepreneur to build a business that is harvestable as well as increase the preference for harvesting the business.

**Hypothesis 3:** Education has a positive effect on the probability of making a harvest sale relative to continuation.

#### *3.3.4. Taking an outside job and exit*

The hypotheses developed above refer to how the *ability* and *preferences* of entrepreneurs influence their choice of exit route. Consistent with the suggestions of Van Witteloostuijn (1998) we also explicitly examine the use of failure-avoidance strategies and their relationship with the different exit routes identified. As most exits occur when firms are small, we look at failure-avoidance strategies relevant to entrepreneurs in these kinds of firms.

Failure results from the inability of the firm to generate sufficient revenues to cover its costs, eventually leading to depletion of the firm’s working capital (Shepherd, 2003). If attempting to avoid liquidation, changes in the business aimed at reducing the costs of the firm are more immediate than attempts to increase revenues. A common strategy of entrepreneurs in this situation is to diversify their personal streams of income (Rosa, 1998). This reduces the costs of the business and simultaneously makes the entrepreneur less dependent upon his or her firm. Studies have found that income diversification by taking up a

paid job is common: According to the Panel Study of Entrepreneurial Dynamics (PSED), as much as 80 percent of nascent entrepreneurs concurrently hold some type of outside job (Gartner, et al., 2004). Carter et al. (2006) found that a major motivator for taking an outside job among U.K. entrepreneurs was to keep down costs of the business, thus avoiding liquidation. Similarly, Gimeno et al. (1997) found that those with an outside job withdrew less income from their firm and were willing to continue operations with lower performance, supporting the role of income diversification as a means of avoiding liquidation. These findings are fully consistent with van Witteloosuijn's (1998) model suggesting cost reduction as one of the major strategies for avoiding failure. Conversely, there is little reason for entrepreneurs with a high-performing firm to divert time away from that firm by taking on outside employment. Thus, taking an outside job should buffer against the probability of low performance exits but be unrelated to high-performance exit:

**Hypothesis 4:** Taking an outside job has a negative effect on the probability of (a) distress liquidation and (b) distress sale, relative to continuation, harvest liquidation and harvest sale.

### *3.3.5. Additional equity investment and exit*

An alternative strategy for an entrepreneur attempting to save a firm that is potentially facing failure is through additional infusions of cash, i.e., increasing shareholders' equity. Although we know that initial capital – both debt and equity – lowers the probability of exit (Bates, 1990; Delmar et al., 2006), the consequences of increases in equity have been little explored in the literature. For low performing firms we expect that increases in equity should buffer against the probability of exit. For high performing firms financial pecking order theory suggests that retained earnings should be the preferred source of financing (Carpenter and Petersen, 2002). Countries with high tax regimes, such as Sweden, further dissuade equity investments of private capital into closely held firms relative to reinvesting retained earnings. Payouts of salaries or dividends to owners are taxed multiple times before they can be reinvested into the firms, whereas retained earnings remain untaxed. These are strong



incentives not to make additional equity investments into high performance firms, should the entrepreneur consider harvest sale. We therefore expect a negative association between equity investments and a harvest sale. In sum, albeit driven by different mechanisms, we expect that additional investments are associated with lower probabilities of all types of exits:

**Hypothesis 5:** Additional equity investments have a negative effect on the probability of (a) firm sale (distress or harvest) and (b) liquidation (distress or harvest) relative to continuation.

## **4. Methods**

### *4.1. Sample and data sources*

A problem in the entrepreneurship literature is that new firms and their founders are extremely heterogeneous, ranging from mom and pop retail stores to venture-capital backed start-ups (Davidsson and Delmar, 2009). In order to provide robust models with some claims for generalizability, empirical studies need to control for this heterogeneity (Davidsson and Delmar, 2009; Wennberg, 2005). To decrease unobserved heterogeneity on the individual level we excluded spin-offs from existing businesses and sampled only ‘de novo’ firms owned by a single firm founder. We also excluded sole proprietorships because this is not an entity separate from its owner in legal terms and in Sweden proprietorships cannot be transferred to a new owner through a sale, which limits the potential exit routes. Excluding proprietorships was also motivated by the need to exclude part-time and miniscule firms for which exit may be “a trivial decision” (Gimeno et al., 1997, p. 760; Wennberg et al., 2006).

To decrease unobserved heterogeneity on the industry level, where survival rates, barriers to entry and exit, access to opportunities (Shane, 2003) and business models (Carter et al., 1997) are different, we only sampled firms in the knowledge-intensive sectors. The selection of knowledge-intensive sectors follows Eurostat and OECD's classification, which is based on the R&D intensity being higher than the mean of the overall economy (Götzfried, 2004). These industries comprise about 60% of all firms started in Sweden (ITPS, 2006), and include

most ‘rapidly growing’ industries (chemicals/medicine, telecom, finance, business services, information technology, education and research) except for agriculture and retail.

The data source in this project is a combination of two longitudinal databases maintained by Statistics Sweden: RAMS, which provides yearly data on all firms registered in Sweden, and LOUISE, which provides yearly data on all Swedish inhabitants. We used RAMS to sample all Swedish privately owned firms started as incorporations or partnerships during 1995. We chose 1995 since this was a year when start-up rates were at their decennial average, and the economy was neither in recession nor booming.

To ensure that individual entrepreneurs have discretion over the firm’s future, 14 firms where no individual with a majority stake could be identified (less than 1% of the sample) were excluded.<sup>1</sup> The result is a sample of 1735 firms, amounting to approximately 40% of all independent start-ups in these sectors. We linked longitudinal data on the firms and their development until 2002 to data on their founders from LOUISE. Individual-level data includes founders’ career histories, education, family and other sociodemographic variables. Firm level data includes full balance sheets as well as exit codes that in combination with the individual data allow us to differentiate between the distinct exit routes.

#### *4.2. Dependent variables*

Our dependent exit variable can take on five values each year: (0) continuation, (1) harvest sale, (2) distress sale, (3) harvest liquidation, and (4) distress liquidation. We used year to year transitions of firms and individuals in order to classify continuation and the different exit events. To distinguish firms in financial distress from more well performing firms we used Altman’s Z-score model of financial distress (Miller and Reuer, 1996). The Z-score model builds on variables reflecting a firm’s financial health to separate low from high performing firms using indicators of size, leverage, liquidity and performance as predictors of

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<sup>1</sup> Exclusion of these ‘team start-ups’ was theoretically motivated by our human capital framework which focuses on individuals’ career choices, and methodologically necessary since we cannot compare the human capital of an individual entrepreneur with that of a two- or three-member team of entrepreneurs in any logical way.

‘financial distress’, based on Altman’s (1968) optimization of the model’s predictive abilities. Following Altman and subsequent literature, we used the following variables and notations:

$$\text{Z-Score} = A*3.3 + B*0.99 + C*0.6 + D*1.2 + E*1.4$$

$A = \text{Earnings Before Interest \& Taxes} / \text{Total Asset}$  (measures productivity of firm assets),  $B = \text{Net Sales} / \text{Total Asset}$  (sales generating ability of firm assets),  $C = \text{Book Value of Equity} / \text{Total Liabilities}$  (measures potential for insolvency),  $D = \text{Working Capital} / \text{Total Assets}$  (measures net liquid assets relative to total capitalization), and  $E = \text{Retained Earnings} / \text{Total Assets}$  (measures amount of reinvested earnings and/or losses in the firm<sup>2</sup>). The convention for interpreting the ZScore in the literature and in practice is: ‘safe’ for Z Scores above 3.0, ‘alertness’ for Z-Scores between 2.7 and 2.99, ‘good chances of the company going into distress’ for Z-Scores between 1.8 and 2.7, and ‘high probability of financial embarrassment’ for Z-Scores below 1.8. Thus, values below 3.0 signal some level of financial distress. Out of 245 (894) sold (liquidated) firms in our sample, 97 (460) had Z-Scores below 3.0, 91 (436) had Z-Scores below 2.7, and 78 (410) had Z-Scores below 1.8. Following the terminology of Altman (1968) and subsequent research indicating Zscores below 2.7 as “good chances of distress,” we report the results for a Z-score cutoff of 2.7.

If a firm exists for two consecutive years but the individual coded as majority owner the first year is not majority owner the next, this is considered as an exit by sale. To separate these into harvest sales and distress sales we used the bankruptcy prediction model described above, where Z-Scores below 2.7 were coded as *distress sales* and those above were coded as *harvest sales*. If a firm exists in the RAMS database in one year but not in the next, this is classified as an exit by liquidation. We again used the Z-Score model to classify liquidations

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<sup>2</sup> Altman (2000) notes that the model was originally developed for publicly listed firms where equity was based on market rather than book value. He suggest the weights ( $A*3.107 + B* 0.998 + C*0.420 + D*0.717 + E*0.847$ ) if using book value of equity. Using these weights slightly increased the number of firms classified ‘in distress’ but did not alter our model estimates. We therefore maintained the original weights commonly used in the literature.

with a Z-Score below 2.7 as *distress liquidation* and those above as *harvest liquidation*. The RAMS database carries a high reliability since firms cannot disappear for reasons such as a change in address or legal status; however, a firm may disappear because it is merged with another firm, which is denoted as ‘merger’ in RAMS. Depending on the ownership and management of the newly merged entity, mergers may represent continuation or exit. We do not consider merger as a case of exit if the same entrepreneur continues to hold a controlling stake, and the firm is his or her primary workplace. This occurred in 23 cases. In unreported models we excluded these cases from the analyses, with no qualitative differences in results. Note that "harvest sales" and "distress sales" are inferred from actual performance data and are not perceptions of success. It is possible that a firm could have been sold with a profit even though the firm was in financial distress according to the Altman Z-score. As robustness checks we therefore used alternative cut-off points using the full range of values in the Z Score model from 1.8 to 3.0. Only 7.6% of sold firms and 5.6% of liquidated firms changed category depending on whether a Z-score below 1.8, 2.7., or 3.0 was used, suggesting that most firms being sold operate at levels far away from the cut-offs values and that our distinction between firms in distress and well-performing firms is robust.

### *4.3. Independent variables*

#### *4.3.1. Entrepreneurial experience*

We used data from LOUISE on individuals’ career histories to create a variable of prior entrepreneurial experience, denoting the number of years of experience between 1989 –1995. The variable was thus truncated above 6, although it is possible that individuals involved in entrepreneurship in 1989 were so also prior to this. Truncation of independent variables can be problematic since there is a risk of underestimating the effect of the variance in the variable at the positive end of the distribution (i.e. we cannot distinguish between 10 and 6 years of experience), increasing the likelihood of type-2 errors. However, only 4.5% of the sample had six years of entrepreneurial experience, indicating low risk of systematic bias. In

addition and more importantly, there was strong empirical support for the effect of prior entrepreneurial experience in our model. Any bias caused by the truncation of this variable should therefore underestimate the effect of entrepreneurial experience, not overestimate it.<sup>3</sup>

#### *4.3.2. Age and education*

All individuals living in Sweden receive a personal identification number based on their date of birth. This information was used to calculate age (number of years) of the individual. We measured level of education as the number of years in education. This is the most common operationalization of general human capital in the entrepreneurship literature and consistent with previous studies examining entrepreneurial exit (Arum and Muller, 2004; Brüderl et al., 1992; Van Praag, 2003). The variable was operationalized from education codes in LOUISE describing the length and type of an individual's highest education.

#### *4.3.3. Taking an outside job*

We used data on personal earnings in LOUISE to distinguish between earnings from entrepreneurship (dividends or salary drawn) and earnings from other jobs. With this information we created a dummy variable coded 1 if a person took up an outside job during the time he was engaged in entrepreneurship during our study time period.

#### *4.3.4. Reinvestment of capital*

We measure reinvestment of new capital as the percentage increase or decrease in equity from one year to another. The sources of additional capital could be retained earnings or additional investments by the entrepreneur. In unreported models, similar to McCarthy et al. (1993), we included both additional equity and debts, which had an identical but stronger effect. For conservative reasons, we include only the equity measure. Since we do not hypothesize any temporal aspect of equity, and because it is possible that additional investments might affect exit routes both immediately and in the intermediate term, we

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<sup>3</sup> To ensure robustness we also ran models with a dummy for persons with 6+ years of experience. This slightly decreased effects sizes but significance levels were still well below 5%. Further, we used an out-of-the sample cohort of entrepreneurs starting in 1998 where the entrepreneurial experience variable was truncated above 9 instead of 6. Initiation of our model on this sample provided similar but stronger results for the entrepreneurial experience variable, indicating that results are robust to variable truncation (models available on request).

collapsed all equity raised during the firm's inception until its exit or until 2002. Because of high non-linearity, we used the logarithmic version of this variable in the regression models.

#### *4.4. Control variables*

We included a number of controls including industry experience, gender, parental entrepreneurship, county tenure, industry, legal form, and age and size of business. To create a variable of industry experience, we used data from LOUISE on individuals' career histories denoting the number of years of prior work experience in the same industry as the current venture (SIC-2 digit level) between 1989 and 1995. Hence, also this control variable was truncated. Since prior research indicates that female entrepreneurs have higher exit rates than male entrepreneurs (e.g. Arum and Muller, 2004), we included a dummy variable coded 0 for men and 1 for women. Growing up in a family firm environment might affect the propensity to engage in entrepreneurship (Arum and Muller, 2004; Gimeno et al. 1997, Hence, we included a dummy variable for family firm background. The variable is from LOUISE and Statistics Sweden's cross-generation database ('flergenerationsregistret'), which provides data on the labor market activities of all Swedish residents living in the same household from 1960 to 2002. We also used data on the parents' last place of work to control for the chance that entrepreneurs were taking over firms directly from parents, and used the cross-generation database to determine if the firms were sold to children or spouses, but found no such cases. To proxy for a person's social network, we follow Dahl and Sorenson (2008) by including a variable counting the number of years that she has lived in the same county. Similar to the experience variables, county tenure was ordinal scaled from 0 to 6, truncated above this level. We controlled for the industry of a firm with eight dummy variables for each two-digit SIC code. The most common category was business services, followed by software, real estate, health care, media, financial services, high-tech manufacturing and research and development. To control for legal form a dummy variable coded one if a firm is incorporated was included.

To control for duration dependence in entrepreneurs' exit rates (e.g. Brüderl et al., 1992) we include dummies for each year in business. As a firm started by a single owner-manager grows, we may expect the impact of the entrepreneur to diminish over time. We therefore included a variable for firm size, measured as number of employees in the year before exit. In unreported models, we excluded the largest 5% of firms, with no difference in results.

#### **4.5. Statistical analyses**

To validate the model and test hypotheses we follow earlier exit research using a discrete choice framework. These are 'disaggregated' models, assuming individual discretion over the decision at hand (Ben-Akiva and Lerman, 1985). Given our focus on the exit decisions made by entrepreneurs, this is a suitable approach. We estimate a series of multinomial logit models to statistically distinguish between the different types of exit events, where continuation is the base category. This also allows us to analyze the relative impact of different human capital variables and failure-avoidance strategies on different types of exit. Since the data constitute a cross-sectional time-series, panel data estimation with competing outcomes was considered. However, such estimations are computationally difficult for discrete time series in yearly form since it violates the assumption of tied events in data – i.e. two competing events should not be able to happen simultaneously (Yamaguchi, 1991, p.16). For discrete time series, multinomial logit models with time indicators are preferable and statistically close to identical (Yamaguchi, 1991, p.170). We therefore relied on this model. The multinomial logit is a normal probability model conditional on the usual assumptions of random heterogeneity, inclusion of all relevant variables, and non-heteroscedasticity of the error term. Because heterogeneity is a well-know property of most data sets on entrepreneurs (Davidsson and Delmar, 2009; Shane, 2003), and there may be omitted variables affecting the choice probabilities of entrepreneurs' exit routes, we conservatively used the robust estimation

procedure allowing us to obtain consistent standard errors derived from the Huber/White estimator of variance.

## 5. Results

Descriptive statistics and correlations are shown in table 1. Mean values for the five outcome variables (continuation, distress liquidation, harvest liquidation, distress sale, harvest sale) indicates that out of all entrepreneurs starting in 1995, 34% remained in business in 2002, 26% exited by harvest liquidation and 25% by distress liquidation, 8% went through a harvest sale and 6% experienced a distress sale. The continuation rate of 34% is close to that reported earlier studies (Arum and Muller, 2004; Jørgensen, 2005; Gimeno et al., 1997).

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-- INSERT TABLE 1 ABOUT HERE ---  
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Analytically, we regard these exit routes as Weberian ideal types – that is, theoretical constructs reflecting some common aspects of a social phenomenon. Consistent with the original models by Kyle et al. and Van Witteloostuijn, this view is substantiated that there is a certain range of financial performance, time-risk preferences or failure-avoiding strategies associated with that exit route. We show in Figure 2 a concave prospect theory curve with the exit routes depicted. We also show the mean firms age in each exit route as well as their financial health according to the ZScore model, as well as the percentage of entrepreneurs applying one of the two-failure avoiding strategies investigated. ANOVA tests of the mean age, performance, and percentage of entrepreneur applying a failure avoiding strategy among the 4 groups shows statistical significance ( $p < 0.05$ ,  $p < 0.001$  and  $p < 0.001$ , respectively), indicating that consistent with Kyle et al. (2006), entrepreneurs in loss situations are more



likely to delay exit, and, consistent with Van Witteloostuijn (1998), exit in distress is often preceded by a failure-avoiding strategy, suggesting face validity to our model of exit routes.

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-- INSERT FIGURE 2 ABOUT HERE ---  
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As a major intended contribution of our paper is the development and testing of a conceptual model of entrepreneurial exit, we started out by testing whether our quadripartite exit variable is empirically more or less valid and robust vis-à-vis alternative as follows: (i) Two outcomes, continuation and exit; (ii) Three outcomes: continuation, liquidation and sale; (iii) Four outcomes: continuation, liquidation, distress sale and harvest sale. The BIC value (the most general fit statistic) of our quadripartite model was -9468, superior to alternatives (i) and (ii) (-9004, -9386) but not superior to the tripartite definition (iii) with a BIC value -9782. This raises some empirical concerns and we return to the issue in our discussion section.

To determine the appropriateness of our model we computed a Wald test and found the exit routes to be significantly different. To verify the assumptions of the multinomial model, we used the Hausman test for the independence of irrelevant alternatives (IIA). The test statistics for the exit routes were: harvest liquidation= 24.23, distress liquidation = 21.56, harvest sale = 22.40, distress sale = 20.15, all below the critical value of  $36.42 \left( \chi^2_{24df} \right)^4$ . This provides support for the validity of our model, and suggests that prior work conceptualizing exit as a binary outcome has pooled conceptually as well as mathematically distinct events.

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<sup>4</sup> The alternative Small-Hsiao test provided identical results. The Hausman test statistic is displayed without time and industry dummies for ease of interpretation. A model with time and industry dummies revealed a negative Hausman statistic – also indicating the IIA assumption has not been violated (Long and Freese, 2006, p.244-45). Also the Cramer-Ridder test for pooling states in the multinomial logit model rejected the pooling hypothesis.

-- INSERT TABLE 2 ABOUT HERE --

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Table 2 shows multinomial logit model predicting the four entrepreneurial exit routes, where continuation is the base category. The test of our hypotheses involves not only differentiating between continuation and various exit routes, but also how different variables influence what exit route is chosen. A robust and easy-to-interpret way to verify the differences in relationships between a specific variable and two alternative outcomes in multinomial models is to estimate binary logit models for two different outcomes (Long and Freese, 2006), which forms the tests of our hypotheses. The results of such competing models are shown as a shaded row in Table 2 below each of the variables under examination.

Hypothesis 1 states that entrepreneurial experience should have a positive effect on harvest sale relative to all other categories, summarized in Table 2 as “H1: 3>0,1,2,4”. Binary logit models reveal that entrepreneurial experience positively influences the probability of harvest sale vs. continuation (Marginal Effect (ME) = 1.61%,  $p<0.01$ ), harvest sale vs. liquidation (ME = 1.73%,  $p<0.01$ ), harvest sale vs. distress liquidation (ME = 16%,  $p<0.01$ ), and harvest sale vs. distress sale (ME = 3.65%,  $p<0.01$ ), fully supporting Hypothesis 1.

Hypothesis 2 states that the entrepreneur’s age should have a positive effect on the probability of making (a) a harvest sale or (b) distress, relative to all other categories. This is summarized in Table 2 as “H2a: 3>0,1,2” and “H2b: 4>0,1,2”. Binary models show that age positively influences the probability of harvest sale vs. continuation (ME = 1.93%,  $p<0.01$ ), harvest sale vs. liquidation (ME = 1.70%,  $p<0.01$ ), harvest sale vs. distress liquidation (ME = 0.8%,  $p<0.01$ ), distress sale vs. continuation (ME = 1.29%,  $p<0.01$ ), distress sale vs. liquidation (ME = 1.41%,  $p<0.01$ ) and distress sale vs. distress liquidation (ME = 1.51%,  $p<0.01$ ). This fully supports Hypothesis 2.

Hypothesis 3 states that education has a positive effect on the probability of making a harvest sale relative to continuation (“H3:  $3>0$ ” in Table 2). However, Table 2 shows that education has an insignificantly *negative* influence on the probability of harvest sale vs. continuation (ME = - 1.38%,  $p>0.10$ ), rejecting this hypothesis.

Hypothesis 4 states that taking an outside job has a negative effect on the probability of (a) distress liquidation and (b) distress sale, both relative to continuation, harvest liquidation and harvest sale. This is shown in Table 2 as “H4a:  $0,1,3>2$ ” and “H4b:  $0,1,3>4$ ”, respectively. Competing logit models show that taking an outside job during venturing negatively influences the probability of distress liquidation vs. harvest liquidation (ME = - 9.88%,  $p<0.01$ ), distress liquidation vs. continuation (ME = -7.74%,  $p<0.01$ ) and distress liquidation vs. harvest sale (ME = -10.44%,  $p<0.01$ ). Further, taking an outside job (b) negatively influences the probability of distress sale vs. continuation (ME = -2.01%,  $p<0.01$ ), distress sale vs. harvest liquidation (ME = -7.76%,  $p<0.01$ ) and distress sale vs. harvest sale (ME = -3.84%,  $p<0.01$ ). These results are fully supportive of Hypothesis 4.

Hypothesis 5 states that additional equity investments should have a negative effect on the probability of harvest sale, distress sale, harvest liquidation and distress liquidation, all relative to continuation (“H5:  $0<1,2,3,4$ ” in Table 5). The variable is entered in logarithmic form which makes marginal effects impossible to interpret. We instead compute how *half a standard deviation* of investment affects the different exit routes. Competing logit models reveal that additional equity negatively influences the probability of harvest liquidation vs. continuation ( $\pm 0.5$ .S.d. = -11.78%,  $p<0.01$ ), distress liquidation vs. continuation ( $\pm 0.5$ .S.d. = - 21.08%,  $p<0.01$ ), distress sale vs. continuation ( $\pm 0.5$  S.d. = 3.24%,  $p<0.01$ ) and harvest sale vs. continuation ( $\pm 0.5$ S.d. = 0.76%,  $p<0.05$ ). This provides full support for Hypothesis 5.

## **6. Discussion**

In this paper, we viewed entrepreneurial exit jointly as a career choice and liquidation of a financial investment, combining human capital theory and prospect theory to develop a coherent theoretical framework of four exit routes corresponding to different levels of performance. Any conceptualization of exit benefits from being derived from a parsimonious theoretical framework that identifies theoretically distinct and empirically meaningful exit categories. We believe that our model meets these goals and thus constitutes an important contribution to the growing literature on entrepreneurial exit. The joint consideration of performance level and continuation or discontinuation of the firm constitutes a simple yet powerful framework that should be broadly applicable in future studies.

Our empirical validations showed that this model was empirically valid and superior to alternative specifications of exit consisting of one or two exit routes. It was, however, not superior to a specification of three exit routes combining harvest liquidation and distress liquidation into one category. We believe that, at least in part, this result is driven by the empirical context in which the study took place. In Sweden, liquidation is a cumbersome process and harvest liquidation will lead to greater taxation for the entrepreneur than would a harvest sale. Thus, we think that the dimensions we have identified for our conceptual model, i.e., sale vs. liquidation and high vs. low performance, represents a relevant conceptual framework, but national legal systems may affect how well the framework fits empirically.

Statistical tests showed that our quadripartite model was valid and the human capital variables and failure-avoidance strategies that we identified predicted the choice of exit routes in meaningful ways consistent with theory. We posited five hypotheses and received full support for four of them. Importantly, the test of our hypotheses involved the choice of specific exit routes relative to other exit routes and to continuation. In total, twenty of twenty-one hypothesized effects were supported by data, speaking to the validity of our framework.

In terms of specific findings, we made some interesting observations as to the relationships between human capital variables and exit routes that are consistent with theory and our conceptualization of four exit routes, but less so with other conceptualizations of exit. For entrepreneurial experience, it has been argued that entrepreneurs learn on the job and, therefore, previous experience is the most important predictor of entrepreneurial success (Davidsson and Honig, 2003); however, empirical studies have showed mixed evidence as to whether experienced entrepreneurs were more or less likely to exit. Our finer-grained model indicates that entrepreneurial experience was positively associated with a harvest sale relative to continuation and all other exit routes. Each year of experience increases the probability of harvesting the business relative to harvest liquidation by 1.61%, increases the probability of harvesting relative to distress sale by 3.65%, and increases the probability of harvesting rather than having to make a distress liquidation by a massive 16%. The two last figures are particularly interesting since they support the relevance of separating different types of sales. Sale can reflect the ability of the entrepreneur to build a successful business and willingness to harvest its value, but a sale can also be a last resort to avoid an unwanted outcome. The entrepreneurial experience variable also provides strong support for the conceptual model with four exit routes. The analysis with only two outcomes (continuation vs. exit) indicated that entrepreneurial experience had a positive effect on exit. If interpreted from a framework where exit is equated with failure, it would indicate that experienced entrepreneurs perform *worse*. Our model provides a more nuanced view of the impact of entrepreneurial experience on exit, including both positive and negative types of exit. Had we only separated sales from liquidation, we would erroneously have drawn the conclusion that the effects of entrepreneurial experience and age on exit are similar when they are not. Our study suggests that experience enhances entrepreneurs' ability to build value and their willingness to harvest this value. This supports the logic of comparing serial to novice entrepreneurs (Westhead and

Wright, 1998), and for educators to stress the importance of learning-by-doing. For investors, entrepreneurial experience seems to be much more important than other aspects of human capital in differentiating between those making harvest sales and those who do not.

Also for age, our study can explain as to why previous studies relying on the economic utility of human capital have yielded inconsistent findings. Human capital theory suggests that with age comes general experience, which should lower the probability of exit. Conversely, we found that age was positively associated with sales (harvest or distress) compared to continuation and both forms of liquidation. Our interpretation is that age does not necessarily influence the ability of an entrepreneur, but rather their willingness to exit. Each year of age increases the probability of a harvest sale relative to harvest liquidation by 1.7%, distress sale relative to harvest liquidation by 1.4%, harvest sale relative to distress liquidation by 0.8%, and distress sale relative to distress liquidation by 1.5%. These differences can explain why some studies found a positive effect of age on exit (Bates, 1990; Holtz-Eakin et al., 1994; Taylor, 1999), while others found a negative effect (Gimeno et al., 1997; Van Praag, 2003). Where human capital theory posits that age is a proxy for experiences, this study shows that there is also a strong behavioral component of age with a clear affect on entrepreneurs decision-making (Harrisson and Rutström, 2007). Our re-conceptualization of exit and the empirical results thus offers a reconciliation of conflicting findings by offering a more fine-grained approach to exit and its relationship with the entrepreneur's age.

The findings concerning education were surprising in that those with higher levels of education were less likely to harvest their firms relative to exit by distress liquidation. Although this finding is in conflict with our hypothesis, one possible explanation is the overconfidence that often comes with education (Clayson, 2005). Those with more education may assume that they have the knowledge and skills necessary to build a fledging business that is harvestable, but fail to meet expectations. This area is worthy of greater attention.

In support of van Witteloostuijn's (1998) suggestions, we find that a failure-avoidance strategy focused on reducing costs appears appropriate. In this study, entrepreneurs reducing costs of the business by taking an outside job lowered the probability of low performance exits distress sale and distress liquidation. Previous empirical work has shown that entrepreneurs are motivated to seek outside employment to avoid liquidation (Carter et al. 2006). Our findings show that such ambitions materialize.

An alternative failure-avoidance strategy is to invest additional equity. We found that such reinvestments reduced the probability of all exit routes. While previous research on reinvestment also found that reinvestment was not related to well-defined performance levels (McCarthy et al., 1993), it is interesting that it also reduced the odds of harvest sales and harvest liquidations. As a failure-avoidance strategy, reinvestment thus seems to be less effective than cost reduction. Cost reductions have direct effects on firm performance while reinvestments provide a temporary buffer for failing firms. As suggested, there might be disincentives to additional investments if tax laws punish entrepreneurs taking out money as salaries or dividends. If corroborated, this is an important finding for public policy makers.

## **7. Conclusions, limitations and future research**

Exit does not equate with either success or failure (Gimeno et al., 1997). This paper views entrepreneurial exit jointly as a career choice and liquidation of a financial investment, combining human capital theory and prospect theory to develop a theoretical framework of four exit routes corresponding to different levels of performance. Our study finds that entrepreneurs' human capital and failure-avoidance strategies differed across exit routes, explaining why previous research has shown conflicting results. This indicate that scholars need to carefully differentiate between the performance of firms and the career choices of entrepreneurs since both are relevant for understanding the births and deaths of firms as well as entries and exits of entrepreneurs from those firms (Arum and Muller, 2004).

A limitation of this study is that we could not empirically distinguish between bankruptcy and liquidation. The choice between the two depends on legal frameworks (Thorburn, 2000) and culture, such as the stigma of failure. It is unlikely that these categories represent distinct differences in performance or that the choices between them are driven by human capital or failure-avoidance strategies. Nevertheless, being able to show this empirically would have been valuable. Further, restricting our sample to entrepreneurs in knowledge-intensive industries has the advantage of reducing unobserved heterogeneity but also limits generalizability. Replicating the analyses in other industries and countries would be highly valuable. While we found that education had some effects on exit, they were not fully in line with the hypotheses. A likely explanation is that while years of education approximate *length* of experience it says little about the *quality* of experience. More fine-grained assessments of education and experience would be valuable. Another limitation was the lack of distinctive variables predicting harvest liquidation. As mentioned above, legal systems might affect the boundaries between exit outcomes, indicating that cross-national research on exit is needed. A final limitation is that our human capital/career choice framework necessitated that we focus only on individual exit and had to exclude 14 team start-ups.

Viewing exit both as a career choice and a liquidation of a financial investment allows for interesting extensions to this framework. For example, our model's focus on the skills, goals, and actions of individual founders could be extended to explain exit from entrepreneurial teams (e.g. Hellerstedt & Aldrich, 2008; Wennberg, 2009) and exit from family firms. Further, experimental studies indicate that the relative explanatory power of expected utility and prospect theory vary with demographics such as gender, age, and education (Harrison and Rutström, 2007). Such insights could be valuable to future applications of prospect theory to entrepreneur's exit decisions. A final interesting finding is that women entrepreneurs were less likely to exit by harvest sale. This complements prior findings that women entrepreneurs



have different expectancies of performance (Manolova et al., 2007). The role of gender on exit routes is an area worthy of further inquiry.

In sum, this study suggests that future research should be careful to disentangle exit of entrepreneurs from their firm vs. exit of the firm itself. Such work should consider both the type of exit as well as the human capital and behavioral aspects of the entrepreneur that lead to such exits. We hope that this study will encourage additional work in this area.

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**Table 1:**  
**Variable means, standard deviations, and correlation matrix**

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<b>1 Continuation</b>	0.342	0.475																	
<b>2 Harvest Liquidation</b>	0.264	0.441	-0.432*																
<b>3 Distress Liquidation</b>	0.255	0.430	-0.418*	-0.347*															
<b>4 Harvest Sale</b>	0.081	0.272	-0.214*	-0.177*	-0.172*														
<b>5 Distress Sale</b>	0.062	0.241	-0.185*	-0.153*	-0.148*	-0.076*													
<b>6 Entrepr. Experience</b>	1.137	1.711	-0.024	-0.010	-0.026	0.093*	0.008												
<b>7 Entrepreneur's Age</b>	43.637	11.041	-0.042	-0.046	-0.017	0.107*	0.087*	0.019											
<b>8 Education</b>	13.025	2.664	0.051*	-0.016	0.025	-0.074*	-0.021	-0.262*	0.047*										
<b>9 Industry Experience</b>	1.734	1.746	0.120*	-0.029	-0.040	-0.048*	-0.054*	-0.122*	0.039	0.072*									
<b>10 Taking outside job</b>	0.115	0.319	0.095*	0.014	-0.092*	-0.014	-0.055*	0.033	-0.020	0.009	0.037								
<b>11 Reinvestments</b>	7.648	6.069	0.370*	-0.204*	-0.070*	-0.047*	-0.060*	-0.074*	-0.039	0.079*	0.128*	0.046							
<b>12 Gender (1=women)</b>	0.278	0.448	0.021	-0.048*	0.058*	-0.052*	-0.010	0.082*	-0.025	-0.083*	-0.013	-0.018	0.014						
<b>13 Parents owned business</b>	0.168	0.374	0.044	-0.027	-0.007	-0.037	0.013	-0.031	-0.180*	0.016	0.004	0.037	0.021	0.021					
<b>14 Incorporated firm</b>	0.806	0.402	0.232*	0.067*	-0.275*	0.011*	-0.017	-0.023	-0.020*	0.076*	0.086*	0.159*	0.180*	-0.072*	0.016				
<b>15 County tenure</b>	6.283	1.570	0.045	-0.057*	0.016	0.014	-0.019	-0.099*	0.152*	0.075*	0.064*	-0.014	0.039	-0.011	0.005	0.014			
<b>16 Firm age</b>	4.519	2.931	0.857	-0.374	-0.377*	-0.143*	-0.158*	-0.027	-0.023	0.076*	0.137*	0.086*	0.391*	-0.005	0.026	-0.262*	0.049*		
<b>17 Firm size</b>	3.020	11.369	0.146	-0.045	-0.079*	-0.022	-0.038	-0.003	-0.048*	-0.002	0.027	0.008	0.051*	-0.001	-0.003	-0.068*	-0.008	0.145*	

Industry and time dummies omitted. The four dependent variables, Outside job, Gender, and Incorporation dummies represent total frequencies. \* p < 05.

**Table 2:**  
**Multinomial Logit model on Entrepreneurs' Exit Routes**

	<b>Category 1: Harvest Liquidation</b>	<b>Category 2: Distress liquidation</b>	<b>Category 3: Harvest Sale</b>	<b>Category 4: Distress Sale</b>		
Entrepreneurial Exp.	0.001 (0.043)	-0.025 (0.044)	0.149 (0.058)	** -0.010 (0.061)		
			<b>H1: 3&gt;0,1,2,4 **</b>			
Age	-0.006 (0.007)	-0.009 (0.007)	0.023 (0.009)	** 0.028 (0.011)	**	
			<b>H2a: 3&gt;0,1,2 ** H2a: 4&gt;0,1,2 **</b>			
Education	-0.006 (0.028)	0.068 (0.030)	* -0.019 (0.036)	0.001 (0.037)		
			<b>H3: 3&gt;0 N/S</b>			
Taking up outside job	-0.212 (0.196)	-0.641 (0.237)	** -0.278 (0.346)	-0.996 (0.419)	*	
		<b>H4a: 2&gt;0,1,3 **</b>		<b>H4b: 4&gt;0,1,3 **</b>		
Reinvestments	-0.149 (0.013)	*** -0.093 (0.014)	*** -0.161 (0.018)	*** -0.123 (0.019)	***	***
		<b>H5: 1,2,3,4&lt;0 ***</b>				
Industry Experience	-0.059 (0.038)	-0.061 (0.041)	-0.094 (0.040)	* -0.196 (0.080)	*	*
Gender (1=women)	-0.214 (0.157)	0.174 (0.154)	-0.406 (0.202)	* -0.088 (0.257)	*	
Parents owned firm	-0.313 (0.183)	-0.201 (0.185)	-0.352 (0.297)	0.204 (0.295)		
County tenure	-0.087 (0.044)	* -0.026 (0.045)	-0.008 (0.067)	-0.108 (0.072)		
Incorporated firm	-0.315 (0.230)	-1.594 (0.209)	*** -1.083 (0.264)	*** -0.442 (0.312)	***	**
Firm size	-0.063 (0.044)	-0.262 (0.104)	* 0.051 (0.022)	* -0.441 (0.151)	*	**
Number of cases	458	436	154	91		

Log-pseudo likelihood: -1615.6  
 BIC value (fit statistic) -9467.64  
 Correctly classified cases: 73.40%

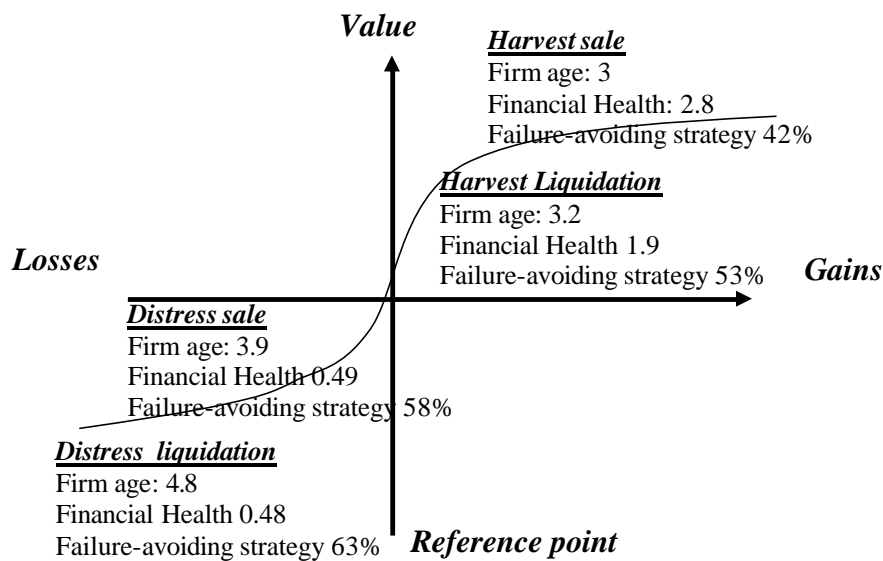
*Note:* <sup>a</sup> p<0.10; \*p<0.05; \*\*p<0.01; (two-tailed). N= 1,735 in all analyses. Coefficients in relation to the omitted category (continuation), with Huber-White standard errors in parentheses. Dummy variables for industry and year of exit not displayed.



**Figure 1: Taxonomy of Exit Routes**

<b>Performance:</b> <b>Exit route:</b>	<i>High</i>	<i>Low</i>
<i>Exit by sale</i>	Harvest Sale	Distress Sale
<i>Exit by liquidation</i>	Liquidation	Distress Liquidation

**Figure 2: Prospect Theory and Entrepreneurial Exit Routes**



ANOVA tests of between-group differences in firms' mean age (F-value: 2.55,  $p < 0.05$ ), firms' mean financial health (F-value: 120.21,  $p < 0.05$ ), and proportion of firm using a failure-avoiding strategies (F-value: 6.02,  $p < 0.001$ )