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Going, going, gone. Exit forms and the innovative capabilities of firms

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ABSTRACT

Although innovation is essential to build a competitive advantage and survive in the long run, some firms choose to exit, through mergers and acquisitions (M&As), or radically change their business portfolio and identity. This paper examines how innovative capabilities influence the decision of a firm to exit, among business closure, M&A, and radical restructuring. Using an analysis of a large and rich panel of Dutch manufacturing firms, we find that product and process innovation are equally important to lower the probability to close down activities, and this effect is stronger when product and process innovations are pursed in combination. We also find that process innovation reduces the probability of exit by radical restructuring, while product innovation, when not supported by process innovation, especially increases the probability of exit by M&As. Our findings suggest that exit strategies are intimately bound to the nature and synergies of innovative efforts.

1. Introduction

Staying in the market is a basic requisite for firm success. Traditionally, industrial economic studies have used the likelihood of survival (as opposed to exit) as an indicator of firm performance (Audretsch, 1995; Caves, 1998; Klepper, 2002). Management studies, on the other hand, highlight firm exit as part of an overall strategy (Graebner and Eisenhardt, 2004; Villalonga and McGahan, 2005). As well as closing down activity or declaring bankruptcy, both signs of failure, a firm can choose to exit the market by merging with or selling out to another company. In these cases, exit does not equate with failure (Freeman et al., 1983; Headd, 2003). In other circumstances firms engage in a process of restructuring that radically transform their identity and structure (Hoskisson and Turk, 1990). Because firm exit can take different forms, exit behavior can be shaped by different factors (Schary, 1991). The decision over whether to close down a business or to sell out to another company is influenced by firm specific characteristics, such as mode of entry, age and size (Mitchell, 1994), by industry-specific factors, such as industry growth potential, and by the macro-economic conditions (Buehler et al., 2006).

According to Schumpeter (1934), innovation driven competition is what ultimately leads to the emergence in the market of winners and losers. Innovation explains '*especially in a competitive economy . . . the process by which individuals and families rise and fall economically and socially and which is peculiar to this form of organization*' (Schumpeter, 1934, p. 67). Several studies have examined the effects of the innovative activities of the firm on its probability to survive (Hall, 1987; Bruderl et al., 1992; Banbury and Mitchell, 1995; Doms et al., 1995; Christensen et al., 1998; Colombo and Delmastro, 2001; Esteve-Perez et al., 2004; Cefis and Marsili, 2005, 2006; Bayus and Agarwal, 2007; Ortega-Argiles and Moreno, 2007; Buddelmeyer et al., 2010). In general innovative firms are found to be more viable, although some evidence suggests that investments in radical innovation can increase (rather than decrease) the probability to exit (Buddelmeyer et al., 2010).[2] However, most of

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[2] Studies in Industrial Organization with a focus on the post-entry performance of newborn firms have also shown that, at the individual level, the innovative capabilities of the founder gained through pre-entry job experience, and the motivation to start a company to introduce new products or processes, significantly contribute

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these studies measure the length of survival until the discontinuance of the firm, independent of whether this event consists in the disbanding of the firm or a M&A, often because the data available do not allow distinctions to be made among different modes of exit (Agarwal and Audretsch, 2001). Some studies concentrate on the effects of innovative activities on one specific form of exit, such as the closure of the firm (Banbury and Mitchell, 1995) or the occurrence of a M&A (Lehto and Lehtoranta, 2004). Recent studies have started to explore the relationship between innovation and exit, distinguishing the liquidation of the business from a possible acquisition, with a focus on high-tech and new firms in specific industry settings (Fontana and Nesta, 2009; Cockburn and Wagner, 2010; Cefis and Marsili, 2011). While these studies indicate that innovation can influence survival and exit, we need to know more about how the configuration of innovative capabilities of firms shape the overall choice of exit paths.

In this paper, we examine three different forms of exit: (a) exit by closure; (b) exit by acquisition or merger with another company; and (c) exit by radical restructuring. All these events produce the termination of activities of the firm in its current identity. We consider the innovative resources and capabilities of the firm (Nelson and Winter, 1982; Dosi, 1988; Barney, 1991; Teece et al., 1997) as factors influencing the decision to exit and the choice among different ways of exiting. In particular, we argue that two factors shape the relationship between innovation and exit: the *nature* of innovative capabilities, which can be acquired though product or process innovation, and the *synergies* existing between the two types of innovation. In linking innovative capabilities to the exit behavior of firms, we draw insights from formal models of Schumpeterian competition, and especially the model proposed by Nelson and Winter (1982), and the resource-based view (RBV) of the firm (Barney, 1986, 1991; Winter, 1987; Nelson, 1991; Eisenhardt and Martin, 2000).

Our study contributes to an emerging area of research that focuses on firm exit as a heterogeneous event, and points out to forms of exit that have attracted less attention in the literature on industry dynamics, than business closure, some of which in fact may signal firm success. We explore the factors influencing the decision to exit by using a detailed classification of exit types, which includes business closure, M&A, and radical restructuring, across a large set of firms of different type and industrial activity. Thus, we provide some insights on two related streams of the literature that focus on the processes of merger and acquisition (M&A) and corporate restructuring. By emphasizing the role of innovative capabilities in the exit strategies of firms, we can identify the contribution of the target firm to the M&A process (Graebner, 2004; Graebner and Eisenhardt, 2004), in terms of the nature of the firm's knowledge resources (Coff, 1999; Ranft and Lord, 2002). We also refine the view that the decision to engage in a corporate restructuring is a response to past poor performance (Hoskisson and Turk, 1990; Bethel and Liebeskind, 1993; Lockett and Thompson, 2001). Innovation may play a role in this strategy, however, only limited evidence exists that the firms under-investing in R&D are more likely to engage in restructuring (Hoskisson et al., 1994).

Furthermore, we highlight the importance of process innovation, and the existence of synergies with product innovation, in shaping the decision of a firm to exit. In the strategy literature, studies on firm survival give the greatest emphasis to the consequences of product technology strategies (Banbury and Mitchell, 1995; Christensen et al., 1998; Barnett and Freeman, 2001; Bayus and Agarwal, 2007). They devote less attention to the implications of process innovation (Doms et al., 1995; Colombo and Delmastro, 2001), or to the combined effects of product and process innovation (Cefis and Marsili, 2005). A possible reason for this is that process innovation is often regarded as 'pedestrian and grubby' (Rosenberg, 1982), as a 'second-order innovative activity, a rather dull and unchallenging cousin of the more glamorous product innovation' (Reichstein and Salter, 2006, p. 653). However, process innovation, and the relationship with product innovation, is an important factor for understanding the dynamic of competition in an industry (Utterback and Abernathy, 1975; Rosenberg, 1982; Cohen and Klepper, 1996; Reichstein and Salter, 2006).

In our analysis, we consider innovation and the nature of the innovation as antecedents to an exit event, within a model that allows their effects on alternative modes of exit (business closure, M&A, and radical restructuring), to be assessed within the same framework. We link two harmonized and comprehensive microeconomic datasets collected by the Central Bureau of Statistics Netherlands (CBS): the general Annual Business Register (ABR) for 1996–2003 and the second Community Innovation Survey (CIS-2), which covers the period 1994–1996. We estimate a competing-risks model in discrete time, and apply alternative specifications of the model for a sensitivity analysis. The model controls for various firm- and technology-specific conditions, which are known to be determinants of exit, such as firm age and size, and technology regime (Audretsch, 1991; Sarkar et al., 2006).

We find that, in general, innovative capabilities lower the likelihood of exit by closing down the business, and this effect is strengthened by the complementarities existing between product and process innovation. The effect differs, and is conditional on the type of capabilities, for other forms of exit. Specifically, innovative capabilities in product development, in particular when not coupled with new process development, increase the probability to exit by a M&A, while innovative capabilities, especially in process development, lower the probability that a firm exits by radical restructuring.

The paper is organized as follows. We first formulate some hypotheses on the effects of product and process innovation on modes of exit, relying on various streams of the literature that addresses the issues of firm survival, the M&A process, and corporate restructuring. We then describe the data and the statistical method used to estimate these effects empirically. Finally, we report the results of the estimations of a competing risks model and assess its robustness, and discuss the implications of our findings.

2. Theoretical background and hypotheses

Economic models of industry evolution explain the exit decisions of firms as the outcome of processes of organizational learning (active and passive learning) and market selection (Jovanovic, 1982; Nelson and Winter, 1982; Iwai, 1984; Winter, 1984; Ericson and Pakes, 1995). Innovation generates asymmetries in levels of 'competitiveness' or 'fitness' of firms, which, in turn, lead to differentials in growth rates and survival probabilities. These models of industry evolution are consistent with the management literature on capabilities and the RBV of the firm (Barney, 1986, 1991; Winter, 1987; Grant, 1996; Teece et al., 1997; Eisenhardt and Martin, 2000). This literature emphasizes that the knowledge underlying the innovation process is a strategic asset that helps the firm to gain a competitive advantage and, ultimately, to survive. Although these models take explicit account of innovation as a source of competitive advantage for the firm, shaping growth and exit behavior, they do not distinguish between different types of innovation, in products or in processes. In addition, they do not account for different forms of exit, they identify exit only with the cessation of production activities, equivalent, in our definition, to firm closure.

to the success of the firm (Vivarelli and Audretsch, 1998; Arrighetti and Vivarelli, 1999).