Should we be Conservative or Aggressive? SME Managers' Responses in a Crisis and Long-Term Firm Survival

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ABSTRACT   Past research shows that during a crisis, managers of publicly-held firms often adopt a 'conservative' approach focused on protecting the existing core of their firms by decreasing investments and hoarding precautionary cash. By doing so, managers decrease firms' short-term failure rates. However, the literature says little about how managers of private, Small and Medium-sized Enterprises (SMEs) (should) act during a crisis. To address this question, we draw on the Conservation of Resources (COR) theory. Empirically, we use longitudinal data from 38,885 Belgian SMEs' responses to the 2008–09 financial crisis. Consistent with our expectations, we find that an 'aggressive' approach focused on resource investment during the crisis decreases SMEs' failure rates for up to a decade after the crisis. Further, younger SMEs, and especially those in industries with more growth opportunities, adopt aggressive approaches. Overall, the results show that SMEs need to be aggressive during the crisis to ensure their long-term survival. Moreover, contrary to current depictions of younger SMEs as being vulnerable, and especially so in crises, our evidence highlights that they are surprisingly aggressive when being confronted with a crisis, relative to their older peers.

Keywords: conservation of resources, financial crisis, firm age, SMEs, strategic approaches, survival

INTRODUCTION

Sometimes firms face crises, such as the 2008–09 financial crisis, which compel managers to take actions to guarantee firm survival (Bradley, 2015; Bradley et al., 2011a; Shepherd and Williams, 2022). Evidence from public firms suggests that 'the most

common strategy that managers select in response to crisis' (Wenzel et al., 2020, V15) is a 'conservative' approach. This entails that managers reduce investments and hoard precautionary cash to protect the existing core of firms. Consistent with this view, public US firms reduced their workforce and capital expenditures during the 2008–09 financial crisis (e.g., Campello et al., 2010; Duchin et al., 2010; Kahle and Stulz, 2013) and those that did so (while maintaining R&D and CSR investments) performed better in 2010–11 (Flammer and Ioannou, 2021).

However, as Flammer and Ioannou (2021, p. 1277) argue, despite the severity of the financial crisis, 'we know little about its impact on … how firms adjusted their resource base in response'. More broadly, strategic management theories do not 'focus on firms' adaptation to extreme events' (Agarwal et al., 2009, p. 478). Rather, most of what we know (1) comes from publicly-listed firms while Small and Medium-sized Enterprises (SMEs) are largely ignored but represent about 90 per cent of the firms in any modern economy,[1] (2) focuses on the short-term effects of the responses taken during the financial crisis, and (3) largely ignores firm heterogeneity on the responses taken. In this paper, we address these issues. Therefore, we ask: *which responses by private SMEs during the global financial crisis are more or less beneficial for their long-term survival?* And, relatedly, *which SMEs take more beneficial responses during the crisis?*

Theoretically, we embed our study in the conservation of resources (COR) theory (e.g., Hobfoll, 1989). A central idea in COR theory is that when people get confronted with threats or (possible) resource loss they either (1) protect their current resources (i.e., a 'conservative' approach focused on loss-aversion) or (2) engage in resource investment (i.e., an 'aggressive' approach focused on investing to increase resource stocks) (e.g., Doern, 2017; Halbesleben et al., 2014; Hobfoll et al., 2018; Williams and Shepherd, 2016). Understanding how such distinct responses taken during the crisis by SME managers influence firms' survival prospects is important for a number of reasons.

Notably, what we already know about strategic crisis responses from public firms (e.g., Chakrabarti, 2015; Flammer and Ioannou, 2021) is unlikely to generalize to private SMEs. First, the financial crisis was more threatening for the survival of private SMEs than it was for public firms (e.g., Carletti et al., 2020; Cowling et al., 2012). In fact, Demirgüç-Kunt et al. (2020, p. 1) show that the financial effects of the crisis were much weaker among listed firms, which 'benefit from the "spare tire" of easier access to capital market financing', than for private SMEs. Accordingly, the threats linked to the financial crisis were more acute for private SME managers, and the very essence of COR theory is exactly to explain how people react to such situations. Second, managers in public firms and private SMEs are subject to different pressures, have different time horizons, and have different objective functions (e.g., Quigley et al., 2022). For instance, managers in public firms are pressured to consider how their responses will impact next quarter earnings, analyst ratings and investor expectations. Therefore, they often have shorter time horizons. These managers also need to consider their own compensation, which often includes stock option plans. Conversely, managers in private SMEs are not subject to capital market pressures, but have much of their personal wealth concentrated in their firms, and therefore have a longer time horizon. Thus, managers in private SMEs could adopt different responses during the crisis and care more about the longer term effects of their responses. Practically, it is also important to recognize that private SMEs represent the

most common organizational form in any modern economy (George, 2005). Therefore, understanding the effects of these firms' responses during a crisis on their survival has serious societal implications.

Moreover, there is a particular need to study the effects of private SME managers' responses taken during the crisis on their longer-term survival. As argued above, managers of private SMEs have longer term horizons but as Bradley (2015, p. 2) argues 'the longer term implications of jolts are understudied'. However, the responses that work in the short-term could not be (the most) effective in the longer-term (Wenzel et al., 2020). COR theory suggests that while more conservative, resource protection approaches can bring short-term benefits, managers need to adopt a more aggressive, resource investment approach to thrive in the longer term (Doern, 2017). Moreover, COR theory highlights that 'it is not necessarily the one with the most resources that thrives but the one that is best able to allocate those resources to maximize their fit with their environment' (Halbesleben et al., 2014, p. 1339). Accordingly, we anticipate that a more aggressive approach will be especially beneficial for the longer-term survival prospects of private SMEs.

Finally, a natural extension is to ask which types of SMEs take a more aggressive (or, conversely, more conservative) approach? SMEs are often depicted as a homogenous set of firms that are the most vulnerable to crises. Most of the research on firms' responses during a crisis is conducted 'without any consideration of firm heterogeneity' (Roper and Turner, 2020, p. 506; see also Agarwal et al., 2009). However, COR theory suggests that some firms can be more 'vigorous' than others, and therefore could be able to respond more aggressively to environmental changes (Hobfoll et al., 2018). We anticipate that younger SMEs, with less institutionalized structures, fewer embedded routines, and with fewer resources (e.g., Stinchcombe, 1965), will be especially capable to pursue an aggressive approach and pursue new opportunities during a crisis and also experience more pressures to do so, relative to their older counterparts. We further expect that younger SMEs will be especially likely to take an aggressive approach when they operate in industry environments with more growth opportunities.

We test our predictions using a unique sample of 38,885 Belgian privately-held SMEs. We were aided by an important advantage of the Belgian context where all firms (irrespective of their size or age) with limited liability of the shareholders are required by law to file detailed yearly financial accounts in a predefined format (Neckebrouck et al., 2018). The data provides a rich picture of the cash holdings and investment levels of these firms before (2006–07) and during (2008–09) the financial crisis. The fact that the financial crisis happened more than a decade ago now also provides an opportunity to measure failure rates in the long-term after the crisis. We have data on the survival of firms for up to ten years (2019) after the crisis. Our empirical evidence provides broad support for our hypotheses and we further document the robustness of our findings (for example, to issues such as endogeneity).

Overall, in this study, we address calls for more theoretical and empirical insights into the consequences of firms' responses during the financial crisis on their long-term survival (Bradley, 2015; Flammer and Ioannou, 2021). Our study makes three contributions. First, it has been observed that 'strategic management scholars have not theorized on how firms can successfully … react to [major shocks]' (Agarwal et al., 2009, p. 478). Certainly, there is

some empirical evidence that is derived from public firms that suggests that a conservative approach, including cutting capital expenditures and workforce to protect the core of the firm, increases short-term performance and survival during or very shortly after a financial crisis (e.g., Chakrabarti, 2015; Flammer and Ioannou, 2021). In contrast, our study focuses on private SMEs; its results show that there are significant positive effects of the aggressive approaches these firms take during the crisis on survival from about three to ten years after the crisis. Our results, based on private firms, draw on COR theory and are consistent with the theory's premise that when being confronted with threats, managers need to take an aggressive (focused on resource investment) approach to thrive in the long term (Doern, 2017).

Second, our study provides evidence on the survival effects of responses taken during the crisis for up to a decade after the crisis. It also adds to the underexplored role of 'time and temporality' in theories on how firms react to crises (Wenzel et al., 2020, V14). While we find limited effects for the responses taken during the crisis in the very short term, we find positive effects of aggressive approaches on firm survival from 3 years up to a decade after the crisis. Our results indicate that SME managers have difficulties to undo their actions taken during the crisis, and that they might gradually enter into positive or negative spirals (Halbesleben et al., 2014). Our results suggest that once the business environment stabilized, it is not just that managers can revert back to 'business as usual'. Actions taken during the crisis have surprisingly long-lasting and seemingly difficult to reverse effects on longer-term firm survival rates.

Third, it has been noted that 'strategic management theory needs to extend its focus on heterogenous capabilities … of handling … shocks' (Agarwal et al., 2009, p. 477) as we do in this study. Indeed, it is important to understand how firms react to, adapt to, and are influenced by a crisis (Bartz and Winkler, 2016; Mudambi and Treichel, 2005; Venkataraman and Van de Ven, 1998). The idea that especially younger SMEs are subject to 'liabilities of newness', because they lack established routines and are strapped for cash resources and, thereby, become more vulnerable to failure, is recognized in the literature (Stinchcombe, 1965). Such firms are also often depicted as being even more vulnerable in turbulent, crisis environments (e.g., Carletti et al., 2020). However, our study shows that especially younger SMEs grow employment and pursue new investments in crisis periods to the benefit of their longer-term survival. Thus, younger SMEs are surprisingly aggressive when coping with crises and are more crisis-resistant than commonly depicted in the literature.

THEORY

The Financial Crisis, COR Theory, and Distinct Responses to the Crisis

The 2008–09 global financial crisis significantly affected the business environment in which firms operate, making external funding more difficult to obtain and excessively expensive. Further, consumer demand collapsed (Flammer and Ioannou, 2021).

When confronted with such threats and (possible) resource losses, COR theory highlights two broad approaches that managers can undertake (Hobfoll, 1989). First, they can engage in resource protection, a more *conservative approach* that focuses on loss-aversion and protecting existing resources. Second, managers can engage in resource

investment, adopting a more *aggressive approach* to pursuing new opportunities. Resources are defined broadly as 'anything perceived by the individual to help attain his or her goals' (Halbesleben et al., 2014, p. 1338), including objects (e.g., a business), conditions (e.g., employment), personal (e.g., self-esteem) and energy (e.g., money, time) resources (Doern, 2017; Hobfoll, 2011). A key process in COR theory is the primacy of resource protection because resource loss is more salient than resource gain (Halbesleben et al., 2014; Hobfoll et al., 2018). A second process is that of resource investment: people need to invest resources to protect against resource loss, recover from losses, and gain resources (Halbesleben et al., 2014; Hobfoll et al., 2018). COR theory has been applied in entrepreneurship (e.g., Doern, 2017; Lanivich, 2015; Williams and Shepherd, 2016) and management (e.g., Halbesleben et al., 2014) research.

Corroborating the two approaches recognized by COR theory, existing research highlights two fundamentally different approaches that managers generally take during a crisis (see Wenzel et al., 2020, for an overview). First, they can take a conservative approach focused on protecting the firm's existing core. In a crisis, managers often act conservatively because they perceive environmental changes as threatening (Amburgey and Miner, 1992; Bruton et al., 2003). As such, managers tend to favour 'loss aversion' (Tversky and Kahneman, 1974). Consequently, when confronted with environmental threats, managers tend to reduce or postpone investments, taking a wait-and-see attitude (e.g., Marcus and Kaufman, 1986; McDonald and Siegel, 1986; Yang et al., 2004). Managers often prefer to wait for the environment to return to a favourable state under the assumption that they can adapt better during 'normal times' (Grandori, 2020).

Moreover, finance and strategy researchers have argued that a 'reduction in workforce and capital expenditures is intuitive' because of firms' constrained access to finance during the financial crisis (Flammer and Ioannou, 2021, p. 1288). During a crisis, managers may primarily focus on cutting investments, reducing cash outflows, and removing excess resources from existing operations (Lai et al., 2016). They may do so to protect the firm's core resources, but also because they want to hold *more* cash resources as a precautionary hedge against environmental unpredictability and the possibility that frictions will prevent them from obtaining external finance (Brav, 2009). Research shows that in periods when uncertainty increases, firms generally prefer to keep larger cash holdings (Bates et al., 2009). Thus, managers can take a more conservative approach to protect the firm's existing core resources by stockpiling precautionary cash and decreasing their investment levels in the height of a crisis.

Second, an aggressive approach suggests that firms will invest their available cash to deal with and act upon environmental turbulence. Some firms emphasize turning 'crisis-enforced changes into opportunities rather than threats' (Klyver and Nielsen, 2021, p. 1; Wan and Yiu, 2009). On 'rainy days', such financial reserves, including high-discretionary cash resources, allow firms to quickly deal with crisis-enforced changes (e.g., Bromiley, 2005) and are a key mechanism for developing resiliency (Wildavsky, 1988). By investing cash, managers can be more responsive to a rapidly changing environment (Sharfman et al., 1988). Cash serves as a valuable strategic asset (Kim and Bettis, 2014) to address environmental adversity, counteract reductions in profits, and/or acquire tangible or human resources that can lead to competitive advantages (e.g., Bromiley, 2005; Wan and Yiu, 2009). Accordingly, when

taking an aggressive approach, firms invest actively during crises, that is, they become crisis exploiters (Klyver and Nielsen, 2021). Clearly, managers can take an aggressive approach by investing cash and maintaining, or even increasing, firms' investment levels, even during the height of a crisis.

To date, research only has *begun* to provide answers to questions of how managers respond to crises and the consequences of their responses taking during crises (Wenzel et al., 2020, V7). Below, we develop specific hypotheses, focusing first on the consequences of SME managers' responses during the crisis and post-crisis survival. We then theorize on the types of SMEs in which managers are more likely to take more conservative or aggressive responses.

Longer-Term Survival Consequences for SMEs of Conservative Versus Aggressive Approaches Adopted During the Financial Crisis

Managers often adopt a conservative approach during a crisis, seeking to protect the current core of the firm (Wenzel et al., 2020). However, COR theory argues that in the longer-term, strategies for recovery from threatening or hostile events will be *un*successful when managers do not use the resources available by taking a more aggressive, resource investment approach focused on investing, identifying, and mobilizing new resources (Doern, 2017). COR theory highlights at least three related reasons why SME managers that take a more aggressive, resource investment approach during the financial crisis can better protect their longer-term survival prospects.

First, a crisis changes the business environment in which firms operate (Meyer et al., 1990). Firms need to have a fit with their environment and as environments change 'adaptation is central to an organization's ability to capture value from environmental change' (Bradley, 2015, p. 2; see also Colombo et al., 2021). COR theory underscores that managers with access to more resources are not necessarily better at dealing with a crisis; rather, those who subsequently thrive allocate or invest their resources to better maximize their fit with the (new) environment (Halbesleben et al., 2014; Williams and Shepherd, 2016). For example, in and after the 2008–09 financial crisis, consumer behaviour changed markedly, as consumers gained experience with cheaper products (Bohlen et al., 2009). Such crisis-induced changes can make existing strategies suboptimal, undermining the attractiveness of protected positions and the appropriateness of developed routines (Audia et al., 2000; Bradley et al., 2011a; Dowell and Swaminathan, 2006; Ruef, 1997). SME managers who take a more aggressive approach during the crisis and work towards increasing their firms' fit with the new environment are rewarded as such fit is expected to increase firms' post-crisis survival prospects. Thus, for managers who employ an aggressive approach, the crisis catalyses action (Sine and David, 2003); these managers are likely to invest their firms' cash and pursue new investment opportunities for value creation (Colombo et al., 2021; Liu et al., 2007; Wan and Yiu, 2009). Still, some managers adopt a conservative approach, take an inward view by focusing more on efforts to cut investments and costs to hoard precautionary cash buffers and protect the firm's existing core. By doing so, firms adopting a more conservative approach are more likely to lose their fit with the changed environment.

Second, firms also have to meet the possibly changed expectations of different stakeholders in their environment to reach their goals (Pólos et al., 2002). For example,

during the crisis, old and possibly outdated products, services, processes, and habits might need to be replaced by other (and better) ones that address new market needs. COR theory suggests that managers who take an aggressive, resource investing approach are more likely to do so, while managers who take an conservative approach will focus on protecting these existing resources (Doern, 2017). Firms following a more aggressive approach will invest despite environmental turbulence. Hence, they are more likely to meet the expectations of their stakeholders, including employees, customers, suppliers, or society in general. However, firms that respond to the financial crisis more conservatively by simply protecting the existing operations with cutbacks and layoffs will deplete their relational reserves. Such an approach might lead to further losses, vulnerability, and 'loss spirals' more broadly, which are very difficult to revert (Doern, 2017; Hobfoll et al., 2018; Williams and Shepherd, 2016). Conversely, by avoiding layoffs, de-investments and staying more closely connected to stakeholders, SME managers who take a more aggressive, resource investment approach during the financial crisis are more likely to maintain (or even strengthen) relationships, which might ensure higher levels of commitment, productivity and innovative responses after the financial crisis, leading to 'gain spirals' (Hobfoll et al., 2018).

Third, in threatening environments, COR theory highlights that managers who adopt aggressive, resource investment approaches will focus on investments especially in those areas where the firm currently lacks resources and is vulnerable and by doing so, they generate new options (Doern, 2017). At high levels of uncertainty in firms' environment, the creation of new growth options is usually more valuable than deferment options (Folta and O'Brien, 2004). In this case, speed can be crucial because a resource, product or service must be rare to realize sustainable competitive advantages and to avoid other firms from copying ideas (Hoffmann et al., 2009). If the crisis enhances the possibility of a significant advantage or creates growth options, opportunity costs of moving late by SMEs that take a more conservative approach can be substantial (e.g., Argyres et al., 2019; Folta and O'Brien, 2004; Lieberman and Montgomery, 1988). SMEs pursuing an aggressive approach are less likely to miss opportunities to capture economies of scale and scope, develop brand recognition or reputation, or establish dominance in their networks, which can give them a substantial advantage and increase their survival odds in the longer run. Indeed, COR theory suggests that when managers take a more aggressive resource investment approach, managers increase their response repertoire and flexibility, which increases firm resilience (Doern, 2017). Conversely, when managers take a conservative, resource protection stance they use a narrow response repertoire, which diminishes flexibility and ultimately brings distress to SMEs and their managers (Doern, 2017).

Combined, these above discussed effects can enhance the longer-term survival prospects of those SMEs that follow an aggressive, resource investment approach, compared to SMEs that take a conservative, resource protection approach during the crisis. Thus, we hypothesize:

> *Hypothesis 1:* SMEs that pursue an aggressive approach during the financial crisis will have lower rates of failure in post-crisis years, relative to SMEs that pursue a more conservative approach.

Which SMEs Respond More Aggressively or Conservatively to the Crisis?

Prior research acknowledges that there is significant heterogeneity in how firms strategically respond to crises (e.g., Klyver and Nielsen, 2021). Still, as Roper and Turner (2020) have observed, how firms respond to the global financial crisis is often examined without any consideration of firm heterogeneity. Therefore, we propose that *within* SMEs, it is important to look past the size distribution because most SMEs are 'small' (e.g., over 90 per cent of SMEs in Europe have less than 10 employees), while SMEs have significant heterogeneity in age. Age is also a theoretically important dimension. Younger firms are typically described as experiencing 'liabilities of newness' (Stinchcombe, 1965). They are at a disadvantage because they lack existing relationships, developed routines, and access to external financial resources. However, some scholars have also argued that environmental shocks can effectively reset the liability of newness clock for all firms (Amburgey and Miner, 1992; Bradley, 2015).

In COR theory, some organizations are expected to be more 'vigorous' in their actions, taking a more aggressive, resource investment posture when being confronted by environmental change (e.g., Hobfoll et al., 2018). There are good reasons to anticipate that younger SMEs will have innate characteristics that make them *better fit* or capable to take an aggressive approach and act more vigorously relative to older SMEs. To pursue an aggressive approach and to seize the opportunities presented by a crisis, firms must be able to react and adapt quickly (e.g., Hitt et al., 2021). However, adaptation becomes more difficult and unlikely with rising organizational age (Hannan and Freeman, 1984).

Younger SMEs organize their operations in ways that ensure efficiency, agility and speed in responding to changing market conditions (Zahra et al., 2009). As younger SMEs usually have more flexibility, they can more easily pursue new opportunities because they can adapt more quickly to environmental changes (Klepper and Simons, 1997), have less rigid routines (e.g., Brüderl and Schüssler, 1990; Freeman et al., 1983), have less formalized structures (Sine et al., 2006), and have not yet made large investments in fixed assets (Battisti and Deakins, 2017). Their flexibility enables younger SMEs to adapt current processes more quickly to environmental change or develop new ones by moving more decisively than older SMEs. Conversely, older SMEs suffer more from organizational pathologies (i.e., familiarity, maturity, and propinquity traps; see, Ahuja and Lampert, 2001) that have a negative influence on the ability to plan and put in action the changes needed to meet new opportunities (Colombo et al., 2021). It makes them less likely to invest their cash and invest in new business opportunities. Managers in older SMEs find it more difficult to adapt to events that require nonroutinized actions (such as crises). They must often overcome greater bureaucratic constraints, while managers in younger SMEs have greater freedom to invest resources to meet the new demands raised during a crisis.

Although younger SMEs are typically more constrained in their access to external financial resources, not only older SMEs but also younger SMEs do hold cash resources. Contrary to common wisdom, cash resources in younger SMEs can be sizable. For instance, Samuelsson et al. (2020) show that in their sample of new ventures just over 20

per cent of assets represent cash and cash equivalents. Brav (2009) also shows that exactly those firms with less access to external funding hold more cash in good times and invest their cash holdings faster in bad times. Cash resources allow firms to pursue new opportunities more quickly during a crisis (Wan and Yiu, 2009). Combined, we expect that younger SMEs are more likely to pursue an aggressive, resource investment approach during the financial crisis, investing their cash, investing in capital expenditures, and investing in workforce, to pursue new opportunities.

Further, according to COR theory, managers in younger SMEs simply have fewer existing business resources to protect, relative to managers in more established SMEs. Thus, managers in younger SMEs are *pushed* towards taking a more aggressive, resource investment approach. More specifically, managers in younger SMEs still need to further build their business and establish new relationships because they lack well-developed relationships (Choi and Shepherd, 2005; Freeman et al., 1983). Therefore, managers in younger SMEs may be pushed to invest whatever resources (e.g., cash) they have available given that they are particularly prone to limited access to external resources (Chandler and McEvoy, 2000; Choi and Shepherd, 2005). The entrepreneurship literature suggests that younger SMEs are used to working under resource constraints (e.g., Anderson and Eshima, 2013; Baker and Nelson, 2005; Wiklund et al., 2010; Winborg and Landström, 2001). Managers in younger SMEs could still act, invest, and pursue opportunities despite external resource constraints by, for example, engaging in using financial bootstrapping techniques – creative techniques that provide firms with access to resources without relying on traditional outside investors – (Winborg and Landström, 2001) or making do with their limited resources at hand (i.e., bricolage; see Baker and Nelson, 2005).

Conversely, managers in older SMEs have more resources that need to be protected (such as a stronger market presence) (Lei et al., 1996; Levitt and March, 1988), which pushes them to take a resource protection attitude, especially given that resource loss is more salient than resource gain in COR theory (Hobfoll et al., 2018). Furthermore, older SMEs are expected to have accumulated more inefficiencies and non-essential resources than younger SMEs. Lai et al. (2016), for example, show that in more mature firms, the greater number of employees allows for redundancies (and thus cost-cutting) during an economic downturn. However, such an approach is generally unavailable in younger SMEs. Moreover, due to more loyal staff and closer participation in decision-making in younger SMEs (Artz, 2008), and the fact that younger SMEs still need to establish a track record for being a reliable employer (Williamson, 2000), they might feel stronger pressures to maintain their investments in employees during a crisis. Hence, while managers in older SMEs can often rely on reduced investments in new projects and internal measures to reduce excess costs or inefficiencies to protect firms' existing core, such an approach might not be available to managers in younger SMEs nor might it be sufficient to cover their current and future payment obligations (Latham, 2009).

The above discussion suggests that younger SMEs may be particularly fit or capable, but are also pushed to take a more aggressive, resource investment approach, relative to older SMEs. Thus, we hypothesize that:

> *Hypothesis 2:* During the financial crisis, younger SMEs are more likely to pursue an aggressive approach, while older SMEs are more likely to pursue a conservative approach.

If, as we predict, younger SMEs pursue opportunities during the crisis by following a more aggressive, resource investment approach, there must be growth opportunities available in their environment to do so. Prior research has established that in some industries larger sets of growth opportunities exist relative to other industries (Alessandri et al., 2012). Specifically, industries that are growing faster are likely to have more abundant growth options (Folta and O'Brien, 2004), whereas managers are less able to pursue valuable growth opportunities in industries experiencing slower growth.

Accordingly, more industry growth opportunities can make it particularly possible for younger SMEs to follow an aggressive approach during a crisis. Industries with high growth opportunities usually necessitate rapid decision-making (Baum and Wally, 2003; Eisenhardt, 1989) and require greater discretion of managers in implementing strategic choices (Finkelstein and Hambrick, 1990), elements that are often available in younger SMEs but lacking in older SMEs. Moreover, such contexts may be especially favourable for younger SMEs to pursue an aggressive approach during the financial crisis because of the rapid and frequent changes that occur in technologies, products, customer groups, and the mix of competitors. Hence, we hypothesize that:

> *Hypothesis 3:* During the financial crisis, younger SMEs in industries with more growth opportunities are more likely to pursue an aggressive approach, relative to older SMEs and younger SMEs with fewer growth opportunities.

METHOD

Data and Sample

To test our hypotheses, we use detailed yearly financial statement data of all Belgian SMEs with limited shareholder liability. All these firms, irrespective of their size, have to file detailed financial statement information with the Belgian National Bank. For each year between 2006 and 2009,[2] we select all firms that: have a minimum of one employee (to exclude 'ghost firms' that only exist on paper); are independent (i.e., may not have a firm as a shareholder with an equity stake of more than 25 per cent); have unconsolidated financial accounts; and according to the definition of an SME (European Commission, 2020), have 250 employees or fewer, an annual turnover of €50 million or less, and assets of €43 million or less. We exclude financial firms, not-for-profit firms and public sector firms, which are intrinsically different in their operations, accounting information and regulatory environment. These steps result in a dataset of 155,540 firm-year observations, covering 38,885 SMEs for which we

subsequently also collected data on their status (e.g., active versus bankrupt) for up to 2019.

The 2008–09 Financial Crisis

A chain of unexpected events in the USA in the aftermath of the US subprime mortgage crisis, including the collapse of Bear Stearns in March 2008 and the bankruptcy of Lehman Brothers in September 2008, created turmoil that spread around the globe.

The Belgian economy was also hit strongly by the crisis. The Belgian banking sector was dominated by four banks that provided some 80 per cent of the total outstanding credit in the country (Deloof and Vanacker, 2018). After the bankruptcy of Lehman Brothers, the Belgian government, together with other European governments, had to bail out all four major banks. Banks' deteriorating liquidity position, increasing costs and limited ability to access market financing contributed greatly to the tightening of credit standards. The crisis further affected the level of consumer confidence, which plummeted (European Commission, 2009). Belgian GDP growth dropped from 2.6 per cent and 3.7 per cent in 2006 and 2007, respectively, to 0.4 per cent in 2008 and −2.0 per cent in 2009.[3] The number of firm bankruptcies also increased during the crisis. While the number of bankruptcies remained stable at approximately 7600 firms in 2006 and 2007, the number of bankruptcies increased gradually to some 8500 firms in 2008 and over 9400 firms in 2009. Moreover, the crisis altered the behaviour of consumers (Bohlen et al., 2009; Flatters and Willmott, 2009). As some consumers had no choice but to be thrifty, this recession has made discretionary thrift acceptable – even fashionable. Consumers also started to prefer lower-priced brands.

The financial crisis is generally considered to have ended by 2010 (e.g., Deloof and Vanacker, 2018; Flammer and Ioannou, 2021). From 2010 onwards, Belgian GDP growth rates became positive again: GDP growth was 2.9 per cent and 1.7 per cent in 2010 and 2011, respectively. However, consistent with the idea that 'the new equilibrium after major disruptions continues to change thereafter' (Hitt et al., 2021, p. 1), one may remember that after the global financial crisis, the European sovereign debt crisis emerged. Still, the GDP growth statistics above show that this event was less impactful for Belgian firms, relative to firms in southern European countries.[4]

Measurement of Variables

Dependent variables. The dependent variable for tests of Hypothesis 1 is firm failure. It is measured as a dummy; whether or not a firm went bankrupt after the financial crisis, before the end of 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018 or 2019, respectively. Firm *failure in 2010* was measured as a dummy variable coded 1 if the firm failed in 2010, and zero otherwise. Firm *failure in 2011* was measured as a dummy variable coded 1 if the firm failed in 2011 or before, and zero otherwise. We created similar dummy variables *failure in 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019*, respectively.

To test Hypotheses 2 and 3, we used three different dependent variables. The first, *cash*, is measured as the ratio of cash and cash equivalents scaled by total assets

(Deb et al., 2017; Kim and Bettis, 2014; Vanacker et al., 2017). Cash and cash equivalents represent the most easily redeployable resources and provide managers with the greatest discretion in allocating them to alternative uses (George, 2005; Paeleman and Vanacker, 2015). The second, *investments in fixed assets*, is measured as the difference in fixed assets such as property, plant and equipment from year t-1 to year t scaled by total assets of year t (Carney and Gedajlovic, 2002). The third, *investments in employees*, is measured as the difference in employment cost from year t-1 to year t scaled by total assets of year t.[5]

Independent variables. The key explanatory variables for Hypothesis 1 are Cash$_{crisis-pre-crisis}$, Investments in fixed assets$_{crisis-pre-crisis}$ and Investments in employees$_{crisis-pre-crisis}$. We measured *Cash$_{crisis-pre-crisis}$* as the mean ratio of cash holdings for the crisis years (i.e., 2008–09) minus the mean ratio of cash holdings for the years before the financial crisis (i.e., 2005–07). When positive, this variable indicates that firms have followed a conservative approach, implying that they have hoarded cash resources during the crisis. When negative, this variable indicates that firms have followed an aggressive approach, implying that they have invested cash resources during the crisis.

Investments in fixed assets$_{crisis-pre-crisis}$ is measured by taking the mean ratio of investment levels in fixed assets for the crisis years (i.e., 2008–09) minus the mean ratio of investment levels in fixed assets for the years before the financial crisis (i.e., 2005–07). When positive, this variable indicates that firms have followed an aggressive approach, indicating that they have increased investment levels in fixed assets during the financial crisis. Conversely, when negative, this variable indicates that firms have followed a conservative approach, implying that they have decreased investment levels in fixed assets during the financial crisis.

Investments in employees$_{crisis-pre-crisis}$ is measured as the mean ratio of investment levels in employment for the crisis years (i.e., 2008–09) minus the mean ratio of investment levels in employment for the years before the financial crisis (i.e., 2005–07). When positive, this variable indicates that firms have followed an aggressive approach, implying that they have increased investment levels in employment during the financial crisis. When negative, this variable indicates that firms have followed a conservative approach, implying that they have decreased investment levels in employment during the financial crisis.

Our key explanatory variables for Hypothesis 2 are financial crisis and firm age. Consistent with prior research, financial *crisis* was dummy coded 1 for the years of the financial crisis, namely, 2008 and 2009, and 0 otherwise (Chakrabarti, 2015; Chang et al., 2016). *Firm age* was measured as the natural logarithm of the number of years since formal incorporation plus one. To test our hypotheses, we interacted financial crisis with firm age.

Our key explanatory variables for Hypothesis 3 are financial crisis, firm age, and industry growth opportunities. *Industry growth opportunities* was measured as the average financial performance of firms operating in the same industry (four-digit industry code) in the years before the financial crisis (i.e., 2005–07) as a sample firm. Profitability is an established proxy for growth opportunities (e.g., Brav, 2009). Performance was measured as gross profit scaled by total assets (Vanacker et al., 2017). We abstained from using net

income to minimize accounting effects (e.g., depreciation) and tax treatments on our results (George, 2005). To test our Hypothesis 3, we included the three-way interaction between financial crisis, firm age and industry growth opportunities.

Control variables. Analyses also included several control variables. First, we included multiple variables that controlled for a firm's internal resource set. We controlled for *firm size*, measured as the natural logarithm of the number of employees (in full-time equivalents) plus one (Kim and Bettis, 2014). We included *firm performance*, measured as gross profit scaled by total assets (Vanacker et al., 2017). We also included *recoverable slack*, measured as inventories and accounts receivables scaled by total assets (Bradley et al., 2011b). We further included potential slack as a control variable that represents firms' remaining borrowing capacity (Deb et al., 2017). However, firms with high debt ratios have less potential to attract additional debt. *Potential slack* is the leverage ratio, or the ratio of debt scaled by total assets (Deb et al., 2017). We multiply this measure by −1 so that higher values indicate more potential slack. We further controlled for *government subsidies*, measured as a dummy variable when the firm has received subsidies (exploitation, capital and interest subsidies) (Paeleman et al., 2017). As a measure of strategically valuable resources, by virtue of their inherent inimitability (Anderson and Eshima, 2013), we included the *intangible assets ratio*, defined as the ratio of intangible assets (including R&D expenses and the value of patents, trademarks, and brands) to total assets.

We also controlled for firm creditworthiness, which may be important for shaping firm-level legitimacy (Stinchcombe, 1965; Wiklund et al., 2010). We measured *creditworthiness* by using a default risk indicator from Graydon (the market leader in credit and debt management in Belgium), based on the Ooghe-Joos-De Vos (OJD) score which is somewhat similar to the Altman's Z score, but adapted to the Belgian context (see Ooghe et al., 1995). However, to avoid constructed correlations, we excluded cash related measures (directly related to our dependent variable) from this score. Theoretically, the creditworthiness variable ranges between 0 (financially distressed or low creditworthy firms) and 1 (financially healthy or highly creditworthy firms).

We also included industry control variables (George, 2005). *Size of competitors* was measured as the average of the natural logarithm of the number of employees of firms operating in the same industry (four-digit industry code) and year as the sample firm (George, 2005). *Industry complexity*, as a Herfindahl's index of homogeneity in industry competition and concentration of resources (George, 2005), was measured by summing the square of total assets market share of firms operating in the same industry (four-digit industry code) and year as the sample firm (Vanacker et al., 2017). This measure takes a value of 0 to 1, where lower values equate to greater competition and higher values indicate greater monopoly-like conditions.

In the models testing Hypothesis 1, we also controlled for firm age and industry growth opportunities. *Industry fixed effects*, using two-digit industry codes, are also included to capture any remaining heterogeneity at the industry level. To test Hypothesis 2 and 3, we also controlled for the *other dependent variables*, i.e., investments in fixed assets and employees (cash), in the models with dependent variable(s) cash (investments in fixed assets and

employees). To minimize concerns over reverse causality, all control variables are lagged one period in the models testing Hypotheses 2 and 3.

Estimation Methodology

To test Hypothesis 1, we estimate probit models with dependent variables that are dummy coded as one when firms failed (and zero otherwise) for one up to ten years after the 2008–09 financial crisis. These models allow us to assess the impact of $Cash_{crisis–pre-crisis}$, Investments in fixed assets$_{crisis–pre-crisis}$ and Investments in employees$_{crisis–pre-crisis}$ on firm failure up to ten years after the financial crisis. Control variables are measured in 2009. We employ robust standard errors. We test the hypotheses and interpret the results in terms of the average marginal effects of the independent variables (Hoetker, 2007). A marginal effect refers to the change in the probability of firm failure due to a one-unit change in the independent variable (Hoetker, 2007).

To test Hypothesis 2 and 3, we estimate a series of firm fixed-effects regressions with the dependent variables cash, investments in fixed assets and investments in employees, respectively.[6] Fixed effects regression models allow us to control for *all stable* firm characteristics, whether measured or not (Allison, 2005). This is accomplished by using only within-firm variation to estimate the regression coefficients (i.e., each firm is used as its own control). We report robust standard errors clustered at the firm level.

RESULTS

Summary Statistics

Table I, Panel A presents descriptive statistics for our main variables. On average, firms are 17.69 years old (median = 16) and have 8 (median = 4) employees (note, we use natural logarithms of these variables in all our tables and regressions). The average level of cash in pre-crisis years (i.e., 2006–07) is 0.165 and in crisis years (i.e., 2008–09) is 0.172. This finding indicates that, on average, the level of cash is higher during the financial crisis, consistent with the idea that the average firm hoards precautionary cash resources. The average level of firm investments in fixed assets in pre-crisis years (i.e., 2006–07) is 0.086 and in crisis years (i.e., 2008–09) is 0.076, which indicates a decrease. The average level of firm investments in employees in pre-crisis years (i.e., 2006–07) is 0.020 and in crisis years (i.e., 2008–09) is 0.005, which also indicates a decrease. These differences between pre-crisis and crisis years are statistically significant (p < 0.01). Table I, Panel B also presents the mean failure rates one to ten years after the financial crisis. Unsurprisingly, the mean failure rates increase over time. Appendix A in supporting information presents a correlation table. The fact that none of the Variance Inflation Factors (VIFs) were above 1.82 minimizes concerns regarding multicollinearity.

Main Results

The longer-term survival effects of SMEs responses during the crisis. In Table II, we examine the effects of taking an aggressive versus conservative approach during the financial crisis.

Table I. Descriptive statistics and correlations

Panel A

	All_years			Pre-crisis			Crisis			T-test (mean)
	Obs.	Mean	S.D.	Obs.	Mean	S.D.	Obs.	Mean	S.D.	Diff (p-value)
1 Cash	155,540	0.168	0.184	77,770	0.165	0.178	77,770	0.172	0.189	0.000
2 Investments in fixed assets	155,540	0.081	0.121	77,770	0.086	0.123	77,770	0.076	0.119	0.000
3 Investments in employees	155,540	0.012	0.113	77,770	0.020	0.110	77,770	0.005	0.116	0.000
4 Crisis	155,540	0.500	0.500	77,770	0.000	0.000	77,770	1.000	0.000	–
5 Firm age	155,540	2.737	0.634	77,770	2.658	0.678	77,770	2.816	0.577	0.000
6 Firm size	155,540	1.708	0.820	77,770	1.667	0.822	77,770	1.749	0.815	0.000
7 Firm performance	155,540	0.559	0.436	77,770	0.558	0.431	77,770	0.559	0.441	0.452
8 Recoverable slack	155,540	0.466	0.254	77,770	0.468	0.253	77,770	0.465	0.255	0.024
9 Potential slack	155,540	0.725	0.241	77,770	0.722	0.241	77,770	0.729	0.242	0.000
10 Government subsidies	155,540	0.049	0.216	77,770	0.050	0.217	77,770	0.049	0.215	0.354
11 Intangible assets ratio	155,540	0.014	0.058	77,770	0.016	0.063	77,770	0.013	0.053	0.000
12 Creditworthiness	155,540	0.797	0.219	77,770	0.792	0.217	77,770	0.801	0.222	0.000
13 Size of competitors	155,540	1.583	0.297	77,770	1.587	0.303	77,770	1.580	0.292	0.000
14 Industry complexity	155,540	0.072	0.144	77,770	0.075	0.150	77,770	0.069	0.139	0.000
15 Industry growth opportunities	155,540	0.533	0.176	77,770	0.533	0.176	77,770	0.533	0.176	1.000

Panel B

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Mean failure rates	0.10%	0.49%	1.56%	3.19%	5.98%	7.62%	9.46%	11.53%	13.85%	16.37%

Note: Panel A illustrates differences between observations in pre-crisis period and crisis period using t-tests (mean). P-values are reported. Results are similar when controlling for unequal variances in t-tests. Panel B presents the mean failure rates.

Table II. Probit models predicting firm failure

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
					DV = Failure in…					
Independent variables										
H1: Cash $_{\text{crisis·pre-crisis}}$	−0.001	0.008*	0.022***	0.041***	0.054***	0.067***	0.071***	0.068***	0.065***	0.064***
	(0.002)	(0.004)	(0.008)	(0.011)	(0.013)	(0.015)	(0.017)	(0.018)	(0.019)	(0.020)
H1: Investments in fixed assets $_{\text{crisis·pre-crisis}}$	0.001	−0.002	−0.016***	−0.031***	−0.042***	−0.054***	−0.056***	−0.059***	−0.060***	−0.056***
	(0.001)	(0.003)	(0.006)	(0.008)	(0.010)	(0.011)	(0.012)	(0.013)	(0.014)	(0.015)
H1: Investments in employees $_{\text{crisis·pre-crisis}}$	−0.002**	−0.011***	−0.025***	−0.030***	−0.044***	−0.049***	−0.057***	−0.058***	−0.068***	−0.080***
	(0.001)	(0.002)	(0.005)	(0.007)	(0.009)	(0.010)	(0.011)	(0.012)	(0.013)	(0.014)
Control variables										
Firm age	0.000	0.001*	0.003**	0.004**	0.009***	0.008***	0.008***	0.006*	0.004	0.007*
	(0.000)	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Firm size	0.000	−0.002***	−0.006***	−0.014***	−0.029***	−0.032***	−0.036***	−0.036***	−0.037***	−0.040***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Firm performance	−0.001***	−0.002**	−0.005***	−0.007***	−0.008***	−0.007*	−0.003	−0.006	−0.005	−0.007
	(0.000)	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)
Recoverable slack	0.001*	0.002	0.013***	0.030***	0.040***	0.065***	0.083***	0.108***	0.134***	0.156***
	(0.001)	(0.002)	(0.003)	(0.004)	(0.005)	(0.006)	(0.006)	(0.007)	(0.008)	(0.008)
Potential slack	0.002**	0.007***	0.015***	0.025***	0.054***	0.059***	0.062***	0.062***	0.066***	0.072***
	(0.001)	(0.002)	(0.003)	(0.004)	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.008)
Government subsidies	0.000	−0.008*	−0.009**	−0.020***	−0.031***	−0.042***	−0.044***	−0.047***	−0.045***	−0.044***
	(0.001)	(0.004)	(0.004)	(0.006)	(0.008)	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)

(Continues)

Table II. (Continued)

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
					DV = Failure in…					
Intangible assets ratio	−0.005	0.004	0.013	0.010	0.005	0.016	0.005	0.025	0.022	0.033
	(0.004)	(0.007)	(0.012)	(0.018)	(0.024)	(0.027)	(0.029)	(0.032)	(0.034)	(0.037)
Creditworthiness	−0.002***	−0.006***	−0.023***	−0.052***	−0.079***	−0.106***	−0.137***	−0.171***	−0.205***	−0.238***
	(0.001)	(0.002)	(0.003)	(0.004)	(0.005)	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)
Size of competitors	0.000	0.001	0.008**	0.012**	0.021***	0.015**	0.016**	0.020**	0.018*	0.010
	(0.001)	(0.002)	(0.003)	(0.005)	(0.007)	(0.007)	(0.008)	(0.009)	(0.010)	(0.010)
Industry complexity	0.000	0.002	0.008*	0.006	0.013	0.022**	0.018	0.027**	0.027*	0.021
	(0.001)	(0.003)	(0.005)	(0.007)	(0.010)	(0.011)	(0.012)	(0.013)	(0.014)	(0.015)
Industry growth opportunities	−0.002	0.002	0.005	0.016	0.053***	0.073***	0.090***	0.117***	0.146***	0.182***
	(0.001)	(0.004)	(0.008)	(0.010)	(0.014)	(0.016)	(0.017)	(0.019)	(0.020)	(0.022)
Industry dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Number of observations	38,885	38,885	38,885	38,885	38,885	38,885	38,885	38,885	38,885	38,885
Log pseudolikelihood	−259.38	−1122.41	−2945.69	−5147.46	−8280.55	−9819.00	−11,396.56	−13,004.11	−14,605.39	−16,157.29
Pseudo R²	0.119	0.065	0.057	0.062	0.059	0.063	0.064	0.065	0.066	0.068

Note: Marginal effects (only) are presented so that the economic significance is shown alongside the statistical significance. Robust standard errors in parentheses.
***p < 0.01; **p < 0.05; *p < 0.10.

We present the results for firm failure one to ten years after the financial crisis.

In terms of the control variables in Table II, the average marginal effects indicate that older SMEs are generally more likely to fail in post-crisis years. Larger firms and firms receiving subsidies are generally less likely to fail after the crisis. Unsurprisingly, firms having higher performance in the crisis are also less likely to fail after the crisis, although the significance of this effect disappears in the longer-term. Firms holding higher levels of recoverable slack and firms with more potential slack are more likely to fail after the crisis. Highly creditworthy firms are less likely to fail after the crisis. When the size of a firm's competitors is large, firms are generally more likely to fail after the crisis. Firms in industries with more growth opportunities are generally more likely to fail in the longer-term after the financial crisis.

Hypothesis 1 stated that SMEs that pursued an aggressive approach during the financial crisis will have lower rates of failure in post-crisis years relative to firms that pursued a more conservative approach during the crisis. An aggressive approach has three manifestations: decreasing cash holdings, and increasing or maintaining investments in fixed assets and in employment. A conservative approach has the opposite manifestations: increasing cash holdings, and decreasing investments in fixed assets and in employment.

First, we expect that SMEs that decreased cash holdings during the crisis will have lower rates of failure in post-crisis years than SMEs that increased cash. In Model 2 to Model 10, we find positive and statistically significant estimates of $\text{Cash}_{\text{crisis–pre-crisis}}$ on firm failure two to ten years after the financial crisis. For example, a one-unit increase in $\text{Cash}_{\text{crisis–pre-crisis}}$ increases the probability of failure in 2011 by 0.8 per cent, and in 2019 by 6.4 per cent.

Next, we expect that SMEs that increased investments in fixed assets during the crisis will have lower rates of failure in post-crisis years than SMEs that decreased investments in fixed assets during the crisis. In Model 3 to Model 10, we find negative and statistically significant estimates of Investments in fixed assets$_{\text{crisis–pre-crisis}}$ on firm failure three to ten years after the financial crisis. For example, a one-unit increase in Investments in fixed assets$_{\text{crisis–pre-crisis}}$ decreases the probability of failure in 2012 by 1.6 per cent and in 2019 by 5.6 per cent.

Lastly, we expect that SMEs that increased investments in employment during the crisis will have lower rates of failure in post-crisis years than SMEs that decreased investments in employment during the crisis. In Model 1 to Model 10, we find negative and statistically significant estimates of Investments in employees$_{\text{crisis–pre-crisis}}$ on firm failure one to ten years after the financial crisis. For example, a one-unit increase in Investments in employees$_{\text{crisis–pre-crisis}}$ decreases the probability of failure in 2010 by 0.2 per cent and in 2019 by 8.0 per cent.

Overall, we find statistical support for Hypothesis 1: all else being equal, SMEs that pursued an aggressive approach by investing cash and increasing investments in fixed assets and employees during the financial crisis have lower rates of failure in post-crisis years, relative to SMEs that pursued a more conservative approach by hoarding cash and decreasing investments in fixed assets and employees during the financial crisis.

Accounting for potential endogeneity. Firms' strategic approaches (i.e., aggressive vs. conservative approaches) taken during a crisis are not random events. Rather, they are actions chosen by management and thus can be endogenously determined (e.g., Shaver, 1998). Therefore, we considered several tests to assess the possibility that our results are susceptible to potential endogeneity bias. The results of these tests are reported in Appendix B in supporting information.

First, we examine the potential for endogeneity in our models by using the robustness of inference to replacement (RIR) approach (Busenbark et al., 2022). This approach makes counterfactual changes to the data and 'provides insight into the percentage of a parameter estimate that would need to be biased in order to invalidate causal inference…' (Busenbark et al., 2022, p. 23). Specifically, 'the RIR can indicate how much of a given effect size must be biased in order to overturn an otherwise statistically significant parameter estimate' (Busenbark et al., 2022, p. 44). The resulting interpretation can account for all sources of bias from any source of endogeneity and is not limited to omitted variables only (Frank et al., 2013). We used the *konfound* command in Stata and assessed the effects of our three predictors on the probability of failure in the years after the financial crisis. The RIR results (Appendix B, Table B.1) indicate that the bias from endogeneity has to be very large to drive our results. For instance, for the model with dependent variable the probability of failure in 2013, we find that for Cash$_{\text{crisis–pre-crisis,}}$ 49.65 per cent of the estimate would have to be due to bias to make our results insignificant. This bias corresponds to 19,306 cases that would have to be replaced with cases for which there is a zero effect to make our results insignificant. For Investments in fixed assets$_{\text{crisis–pre-crisis,}}$ we find that 59.47 per cent of the estimate would have to be due to bias to make our results insignificant. For Investments in employees$_{\text{crisis–pre-crisis,}}$ we find that 74.82 per cent of the estimate would have to be due to bias to make our results insignificant. While there are no hard threshold percentages (Pollock et al., 2023), the percentages we find are higher than thresholds accepted in prior work (e.g., Rieger et al., 2022; Thatchenkery and Katila, 2023). A very large proportion of our sample would have to be substituted by cases with zero effect to invalidate our findings (Busenbark et al., 2022). Thus, endogeneity bias would have to be very sizable to overturn our results.

Second, we further followed other recent studies (e.g., O'Sullivan et al., 2021; Zolotoy et al., 2022) by using a 'frugal instrumental variable' approach proposed by Lewbel (2012, 2018) to address endogeneity concerns. It is often problematic to find an appropriate instrument. Indeed, as Bettis et al. (2014, p. 951) state: good 'instruments can be hard to find, and a bad instrument is worse than no instrument'. Fortunately, Lewbel (2012) proposed another technique to identify structural parameters in regression models with endogenous or mis-measured regressors in the absence of traditional instruments. We ran instrumental variable regressions using heteroscedasticity-based instruments using the Stata *ivreg2h* command that can be applied in case of binary dependent variables (Baum and Schaffer, 2012). Our results (Appendix B, Table B.2) show that the coefficients and significance levels of our independent variables are in line with our main models.

Third, to confirm that our results are not due to some mechanical factor that would also operate from actions taken in non-crisis years, we select 'placebo' crisis years (i.e.,

years without an actual crisis) (e.g., Duchin et al., 2010). When we would obtain the same results as those reported in our main results, this entails that our results are not crisis-specific but driven by a mechanical factor that also operates in years without a crisis. Accordingly, our main results should *not* hold in placebo crisis years. We use the same sample selection criterion, the same specifications, and the same variables as before. We measured our independent variables as the difference in cash, investments in fixed assets, and investments in employees between year t (i.e., the placebo crisis year) minus year t-1 (i.e., another non-crisis year). As placebo crisis years (t), we used 2016, 2017, and 2018 (years with positive GDP growth that was gradually increasing in Belgium). Our results (Appendix B, Table B.3) show no significant effects of the independent variables ($Cash_{t—t-1}$, Investments in fixed assets$_{t—t-1}$ and Investments in employees$_{t—t-1}$) on firm failure three years after a placebo crisis. In the robustness tests here, we focus on failure up to three years after the placebo crisis, a period from which we do find very consistent results in our main results. Thus, these additional findings limit the possibility that our main findings are driven by a mechanical factor that also operates in non-crisis years.

Taken together, while each of the above individual tests might have its own limitations, combined, they present a much stronger case that endogeneity bias alone is unlikely to drive our findings.

Which SMEs take a more aggressive approach during the crisis? In Table III, we report the results of our fixed effects regression models. Models 1 to 3 show the results with dependent variable cash. Models 4 to 6 show the results with dependent variable investments in fixed assets. Models 7 to 9 show the results with dependent variable investments in employees. Models 1, 4 and 7 include the control variables, crisis, age and industry growth opportunities. Models 2, 5 and 8 add the interaction between crisis and age. Models 3, 6 and 9 are the full models capturing a three-way interaction between crisis, age and industry growth opportunities.

Hypothesis 2 stated that during the financial crisis, younger SMEs are more likely to pursue an aggressive approach whereas older SMEs are more likely to pursue a conservative approach. Therefore, we expect that during the financial crisis, cash holdings will decrease more strongly in younger SMEs than in older SMEs. Model 1 shows a positive and statistically significant relationship between crisis ($\beta = 0.005$, $p < 0.01$) and cash. In Model 2, we find that the interaction term between crisis and firm age is positive and statistically significant ($\beta = 0.013$, $p < 0.01$), indicating that the increase in cash during the financial crisis is larger for older SMEs relative to younger SMEs. We plotted this interaction effect in Figure 1. While old SMEs (i.e., mean + 3 S.D. or about 100-year-old SMEs) in our sample increase their level of cash by 9 per cent on average during the crisis, young SMEs (i.e., mean − 3 S.D. or 2-year old SMEs) use their cash and the level of cash decreases by 29 per cent on average during the crisis. Thus, we find statistical support for the prediction that during the financial crisis, younger SMEs are more likely to pursue an aggressive approach by investing cash, while older SMEs are more likely to pursue a conservative approach by hoarding cash.

Table III. Fixed effects regression models predicting cash, investments in fixed assets, and investments in employees

	M1	M2	M3	M4	M5	M6	M7	M8	M9
	DV: Cash	DV: Cash	DV: Cash	DV: Inv. in fixed assets	DV: Inv. in fixed assets	DV: Inv. in fixed assets	DV: Inv. in employees	DV: Inv. in employees	DV: Inv. in employees
Independent and moderator variables									
Crisis	0.005***	−0.036***	−0.042***	−0.005***	0.004	−0.016	−0.002**	0.033***	−0.005
	(0.001)	(0.003)	(0.009)	(0.001)	(0.004)	(0.011)	(0.001)	(0.004)	(0.013)
Firm age	0.011***	0.043***	0.083***	−0.029***	−0.036***	0.018	−0.039***	−0.067***	0.011
	(0.003)	(0.004)	(0.011)	(0.004)	(0.005)	(0.015)	(0.005)	(0.006)	(0.017)
H2: Crisis × Firm age	—	0.013***	0.013***	—	−0.003**	0.004	—	−0.011***	0.003
		(0.001)	(0.003)		(0.001)	(0.003)		(0.001)	(0.004)
Industry growth opportunities	—	—	—	—	—	—	—	—	—
Crisis × Industry growth opportunities	—	—	0.009	—	—	0.039*	—	—	0.075***
			(0.017)			(0.022)			(0.027)
Firm age × Industry growth opportunities	—	—	−0.069***	—	—	−0.096***	—	—	−0.138***
			(0.020)			(0.027)			(0.034)
H3: Crisis × Firm age × Industry growth opportunities	—	—	−0.000	—	—	−0.013*	—	—	−0.028***
			(0.005)			(0.007)			(0.008)

(Continues)

Table III. (Continued)

	M1	M2	M3	M4	M5	M6	M7	M8	M9
	DV: Cash	DV: Cash	DV: Cash	DV: Inv. in fixed assets	DV: Inv. in fixed assets	DV: Inv. in fixed assets	DV: Inv. in employees	DV: Inv. in employees	DV: Inv. in employees
Control variables									
Firm size	−0.019***	−0.019***	−0.019***	−0.029***	−0.028***	−0.029***	−0.094***	−0.094***	−0.094***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Firm performance	0.045***	0.045***	0.045***	0.071***	0.071***	0.071***	−0.131***	−0.131***	−0.131***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
Recoverable slack	0.032***	0.032***	0.032***	0.362***	0.362***	0.363***	−0.036***	−0.036***	−0.036***
	(0.004)	(0.004)	(0.004)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
Potential slack	0.084***	0.084***	0.084***	0.134***	0.134***	0.133***	0.040***	0.040***	0.039***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Government subsidies	−0.001	−0.001	−0.001	−0.009***	−0.009***	−0.009***	0.000	0.000	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Intangible assets ratio	−0.007	−0.011	−0.011	0.350***	0.350***	0.351***	−0.087***	−0.083***	−0.082***
	(0.015)	(0.015)	(0.015)	(0.019)	(0.019)	(0.019)	(0.025)	(0.025)	(0.025)
Creditworthiness	0.025***	0.025***	0.024***	0.021***	0.021***	0.021***	0.100***	0.100***	0.099***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.006)	(0.006)	(0.006)
Size of competitors	0.004	0.010*	0.010*	0.012**	0.011**	0.010**	0.019***	0.013***	0.013***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Industry complexity	0.008**	0.007*	0.008**	−0.005	−0.005	−0.004	−0.004	−0.004	−0.001
	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)
Cash	—	—	—	0.413***	0.414***	0.414***	0.007	0.008	0.009
				(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)

(Continues)

Table III. (Continued)

	M1	M2	M3	M4	M5	M6	M7	M8	M9
	DV: Cash	DV: Cash	DV: Cash	DV: Inv. in fixed assets	DV: Inv. in fixed assets	DV: Inv. in fixed assets	DV: Inv. in employees	DV: Inv. in employees	DV: Inv. in employees
Investments in fixed assets	−0.166***	−0.166***	−0.166***	–	–	–	0.070***	0.070***	0.069***
	(0.003)	(0.003)	(0.003)				(0.004)	(0.004)	(0.004)
Investments in employees	0.008***	0.009***	0.009***	0.060***	0.060***	0.060***	–	–	–
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)			
Constant	0.055***	−0.042***	−0.049***	−0.202***	−0.181***	−0.190***	0.227***	0.308***	0.297***
	(0.013)	(0.014)	(0.014)	(0.015)	(0.017)	(0.016)	(0.016)	(0.018)	(0.017)
Number of observations	155,540	155,540	155,540	155,540	155,540	155,540	155,540	155,540	155,540
Number of firms	38,885	38,885	38,885	38,885	38,885	38,885	38,885	38,885	38,885
R-squared	0.056	0.058	0.058	0.190	0.190	0.190	0.101	0.102	0.103

Note: Robust standard errors in parentheses. Industry growth opportunities did not vary over time and was therefore dropped in the fixed-effects models.
***p < 0.01; **p < 0.05; *p < 0.10.
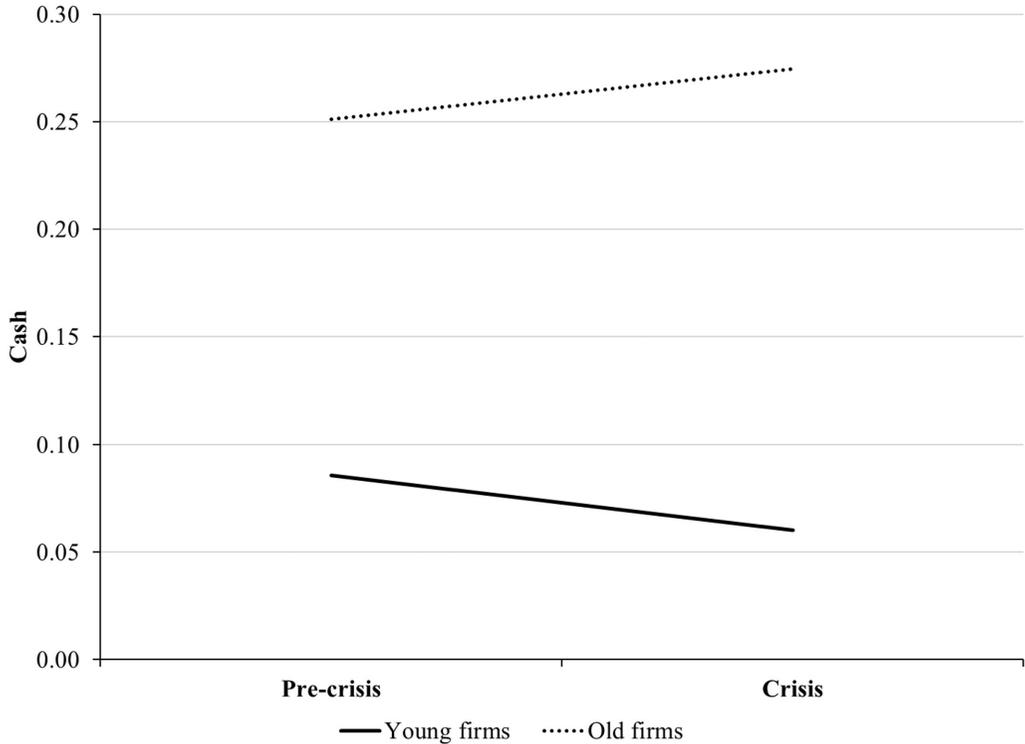
Figure 1. Interaction effect of financial crisis and firm age on cash (Hypothesis 2)

Based on Hypothesis 2, we also expect that during the financial crisis, new investments in fixed assets will decrease less strongly in younger SMEs than in older SMEs. Model 4 shows a negative and statistically significant relationship between crisis ($\beta = -0.005$, $p < 0.01$) and investment levels in fixed assets. In Model 5, we find that the interaction term between crisis and firm age is negative and statistically significant ($\beta = -0.003$, $p < 0.05$), indicating that the financial crisis has a more negative effect on investments in fixed assets for older SMEs relative to younger SMEs. Figure 2 graphically shows the interaction effect. Results are economically significant as well. While old SMEs in our sample decrease their level of investments in fixed assets by 60 per cemt on average during the crisis, young SMEs increase their level of investments in fixed assets by 1 per cent on average during the crisis. Thus, we find support for the prediction that during the financial crisis, older SMEs are more likely to pursue a conservative approach by decreasing their investments in fixed assets more strongly compared to younger SMEs.

Based on Hypothesis 2, we also expect that during the financial crisis, investments in employees will decrease less strongly in younger SMEs than in older SMEs. Model 7 shows a negative and statistically significant relationship between crisis ($\beta = -0.002$, $p < 0.05$) and investment levels in employees. In Model 8, we find that the interaction term between crisis and firm age is negative and statistically significant ($\beta = -0.011$, $p < 0.01$), indicating that the financial crisis has a more negative effect on investments in employees for older SMEs relative to younger SMEs. The plot of this interaction effect
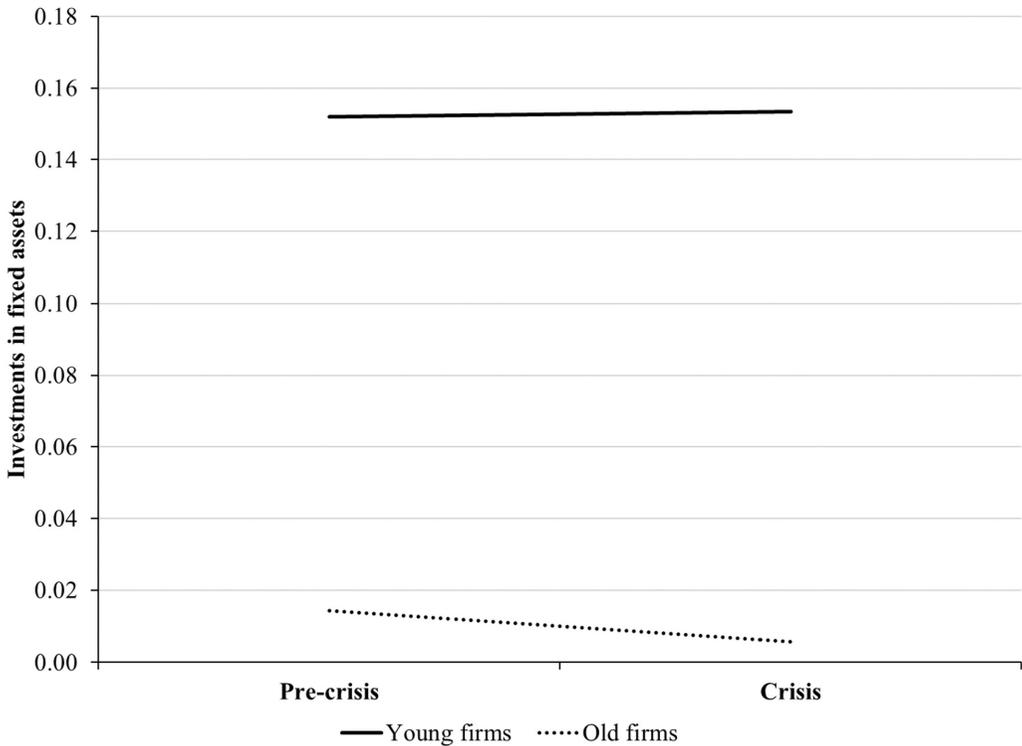
Figure 2. Interaction effect of financial crisis and firm age on investments in fixed assets (Hypothesis 2)

in Figure 3 shows a more positive relationship between the crisis and the level of investments in employees when SMEs are young relative to SMEs that are old. These results are again economically significant. For instance, while old SMEs decrease their level of investments in employees by 15 per cent on average during the crisis, young SMEs increase their level of investments in employees by 17 per cent on average during the crisis. Thus, we find support for the prediction that during the financial crisis, younger SMEs are more likely to pursue an aggressive approach by increasing their investments in employees, while older SMEs are more likely to pursue a conservative approach by decreasing their investments in employees. Combined, our findings support Hypothesis 2.

Hypothesis 3 stated that the effect of Hypothesis 2 will be stronger for younger SMEs with more growth opportunities. In Model 3, we find that the three-way interaction term between crisis, firm age and industry growth opportunities is not significant. In Model 6, we find that the three-way interaction term between crisis, firm age and industry growth opportunities is negative and significant ($\beta = -0.013$, $p < 0.10$). We plotted this interaction effect in Figure 4. Importantly, the slope difference tests confirm that all individual slopes are statistically different from each other (at $p < 0.10$ or better) (Dawson and Richter, 2006). As shown in Figure 4, during the financial crisis, investments in fixed assets increase most strongly in young SMEs with high industry growth opportunities. For the other combinations, investments in fixed assets either decrease or increase less strongly during the crisis.
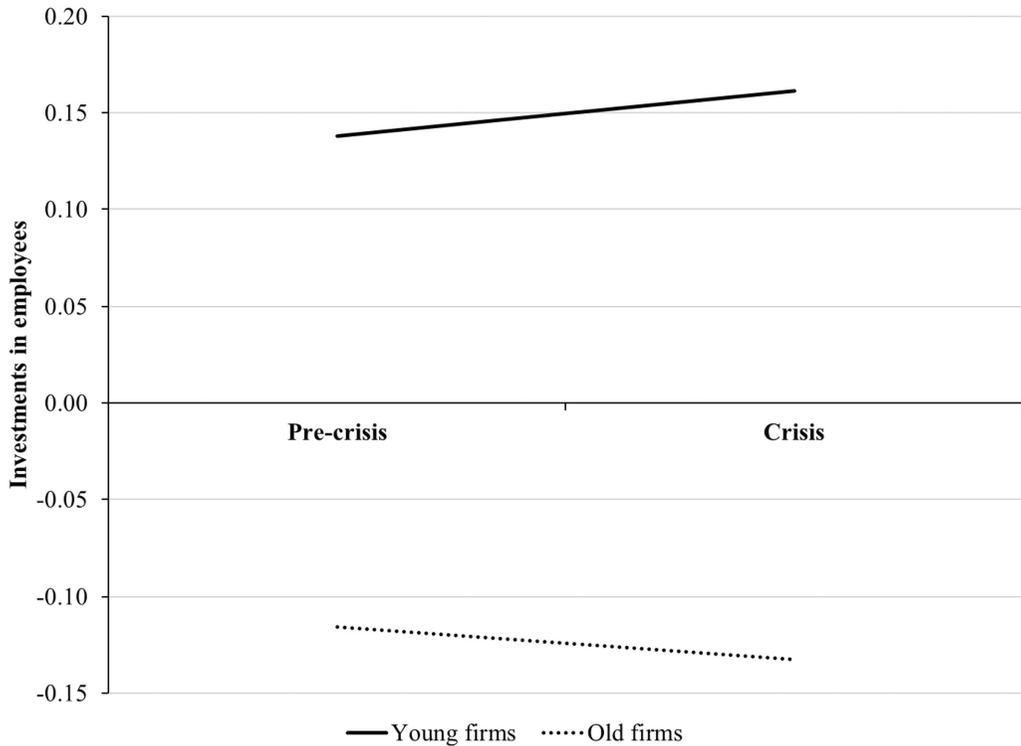
Figure 3. Interaction effect of financial crisis and firm age on investments in employees (Hypothesis 2)

In Model 9, we find that the three-way interaction term between crisis, firm age and industry growth opportunities is negative and significant ($\beta = -0.028$, $p < 0.01$). We plotted this interaction effect in Figure 5. Again, the slope difference tests confirm that all individual slopes are statistically different from each other (at $p < 0.05$ or better) (Dawson and Richter, 2006). As Figure 5 shows, during the financial crisis, investments in employment increase most strongly in young SMEs with high industry growth opportunities. For the other combinations, investments in employment either decrease or increase less strongly during the crisis.

Combined, we find partial support for Hypothesis 3. Young SMEs with high levels of industry growth opportunities are more likely to follow an aggressive approach, especially concerning their investments in fixed assets and employees.

Additional Robustness Checks

We also conducted several additional tests to check the robustness of our results. These tests are described below and their results appear in Appendix C in supporting information.

Subsample analyses. One may wonder whether the relationships between SMEs' responses taken during the crisis and longer-term survival are different for younger versus older SMEs and/or between SMEs in industries with more or fewer growth opportunities. To
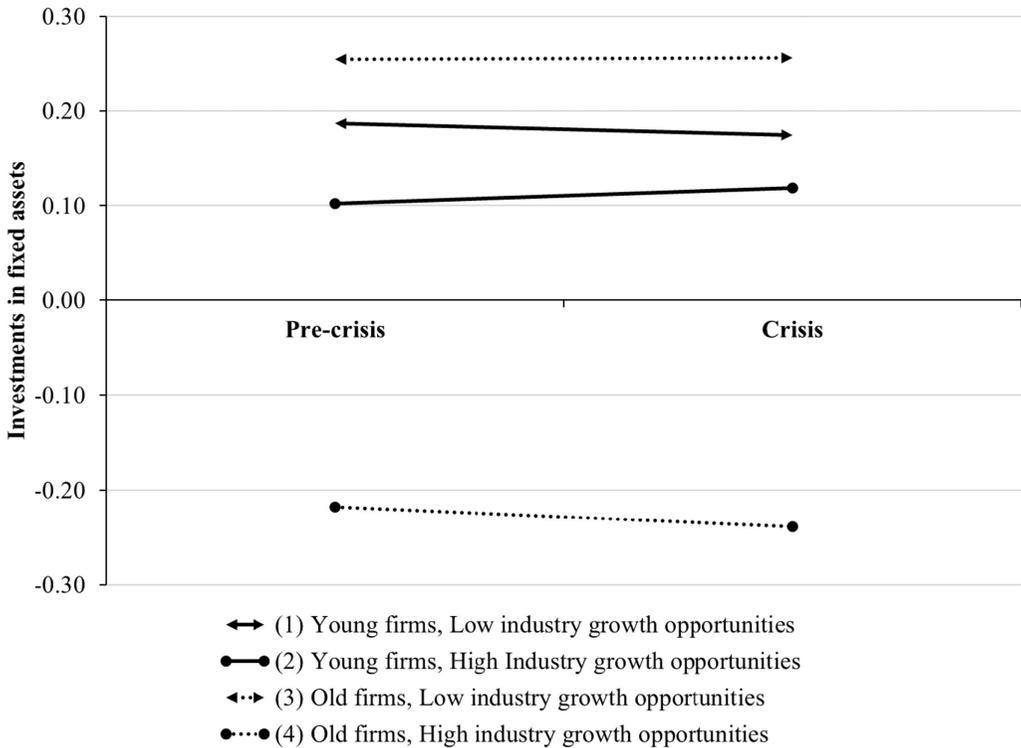
Figure 4. Three-way interaction effect of financial crisis, firm age and industry growth opportunities on investments in fixed assets (Hypothesis 3)

examine this point, we reran our regressions from Table II on subsamples. Our results are generally consistent for both subsamples of younger (i.e., age below sample mean) and older (i.e., age above sample mean) SMEs (Appendix C, Table C.1). The results are also generally consistent for both subsamples of SMEs that operate in industries with higher versus lower growth opportunities (Appendix C, Table C.2).

Alternative failure measures. In our main analyses, we measure firm failure as a dummy variable indicating whether or not a firm went bankrupt after the financial crisis. As a robustness check, we constructed an alternative measure for firm exit in which we consider, besides bankruptcies also mergers and acquisitions. Mergers and acquisitions (M&A) can involve very successful firms but also unsuccessful firms (i.e., fire sales). Only 3 per cent (1176 out of 38,885 firms) of our sample is involved in an M&A exit. Additional descriptive statistics show that firms involved in an M&A exit have on average a lower pre-exit firm performance (0.519) than firms involved in a bankruptcy exit (0.633) between 2006 and 2009. We found similar results when running probit models using this alternative measure in which we consider both exit by bankruptcies and exit by M&A as firm failures (Appendix C, Table C.3).[7]

Alternative specifications. SMEs established during the 2006–09 period and SMEs disappearing within this timeframe are not included in the primary analyses because
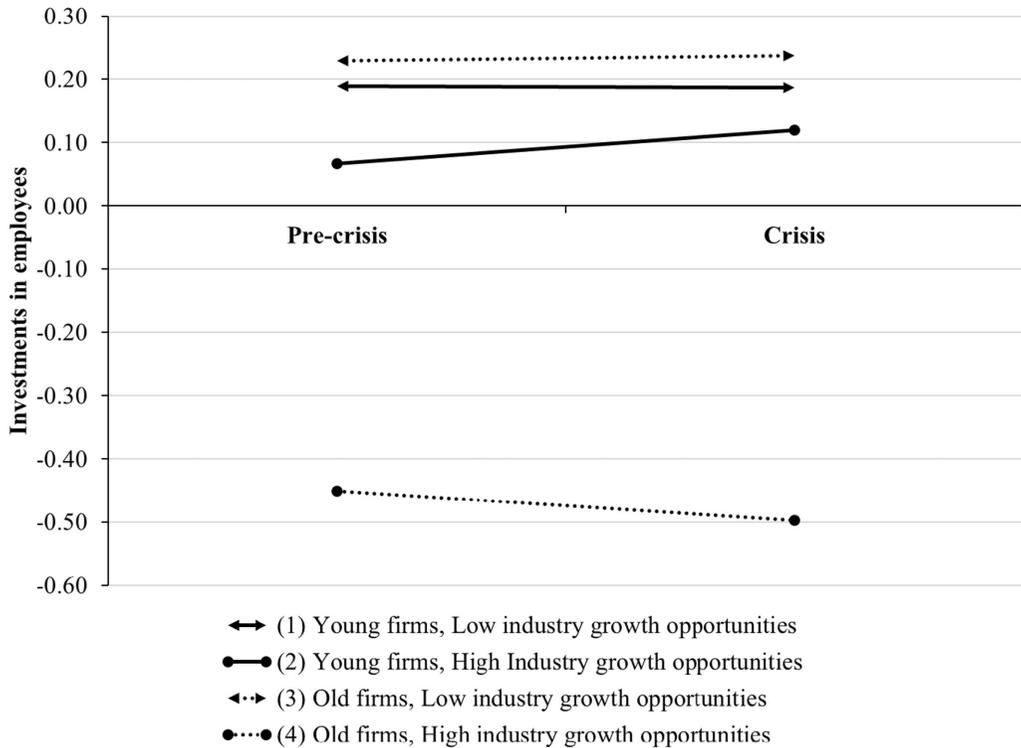
Figure 5. Three-way interaction effect of financial crisis, firm age and industry growth opportunities on investments in employees (Hypothesis 3)

we are particularly interested in the effects of responses taken *during* the crisis (which we measure as the difference in cash holdings and investments between pre-crisis and crisis years) on firm failure *after* the financial crisis. This implies that we restricted our sample to firms that are active for at least four data points, namely from 2006 until 2009. By definition, we cannot see how the actions taken during the *entire* crisis period influence SME failure during this crisis period. However, we can include in our sample observations that failed (or failed and were taken over) in 2009, to see if actions taken early in the crisis (2008) influence failure later in the crisis (2009). To conduct this test, the independent variables use data from one crisis year (i.e., 2008) – thus, we capture responses of SMEs in 2008, the first crisis year. For instance, we measured Cash$_{crisis–pre-crisis}$ as the mean ratio of cash holdings for the crisis year (i.e., 2008) minus the mean ratio of cash holdings for the years before the financial crisis (i.e., 2006–07). With this approach (Appendix C, Table C.5), we again find support for Hypothesis 1.

Next, we also run a survival model in which we examine the probability of failure conditional on survival. Given that we rely on yearly data and know only the year of failure, such data makes the use of discrete-time methods more appropriate than continuous time methods (Allison, 1995). We use GEE discrete-time survival models with a complementary log–log-link function. For a similar approach and more detailed description,

see, for example, Haveman and Nonnemaker (2000). We again found similar results and further support for Hypothesis 1 when using this alternative econometric approach (Appendix C, Table C.6).

DISCUSSION AND CONCLUSION

Crises are significant events that can threaten firms' survival. Managers must act swiftly to mitigate the impact of a crisis and 'weather the storm'. However, it is challenging for managers to react and, moreover, multiple approaches (i.e., conservative versus aggressive approaches) with unclear outcomes can be taken. Our research addresses calls to unpack the relationship between different strategic responses in a crisis and their effects on firm survival (e.g., Agarwal et al., 2009; Flammer and Ioannou, 2021; Wenzel et al., 2020). We do so by drawing on COR theory and focusing on unique data from privately-held SMEs, a subset of firms that are usually depicted as being the most vulnerable to crises (Demirgüç-Kunt et al., 2020). Our results challenge and bring nuance to this commonly held view by showing remarkable differences in the approaches taken by younger versus older SMEs – and especially the aggressiveness of younger SMEs in response to the financial crisis and the long-term survival benefits of such aggressive approaches.

Theoretical Contributions

Our findings make several theoretical contributions. First, we advance our understanding of how SME managers respond (in)appropriately to a crisis (van der Vegt et al., 2015; Wenzel et al., 2020). What we know about firms' responses to crises is based on analyses of publicly-held or large established firms that have slack resources and access to financial markets. Such research has argued that conservative approaches focused on protecting the existing resource base are very common (Wenzel et al., 2020), while aggressive approaches are risky and increase short-term failure rates during a crisis (Chakrabarti, 2015). Although privately-held SMEs are most disadvantaged by the financial effects of the financial crisis (Demirgüç-Kunt et al., 2020), we know considerably less on the strategic responses during a crisis of private SMEs that have fewer existing firm resources to protect. These firms, however, benefit from having owners as managers, who focus on the long-term objectives that extend beyond short-term survival. Our results indicate that SMEs that use an aggressive approach that focuses on resource investment to exploit new opportunities during the financial crisis are more likely to have lower rates of failure up to ten years after the crisis, compared to SMEs that pursue a more conservative approach. Accordingly, while aggressive approaches have been viewed as riskier than conservative approaches in the short-term, our findings suggest that it is risky for longer-term survival to avoid a new reality and focus on the protection of existing resources during a crisis by taking a conservative approach.

Second, our study extends the literature by showing the longer-term implications of SMEs following either a conservative or an aggressive approach. Wenzel et al. (2020) underscore the need for research on the temporal dynamics related to strategic responses

and crises, especially because the longer-term consequences of crises are understudied (Bradley, 2015; Bradley et al., 2011a). This lack of research is unfortunate because, 'many firms chose to focus on survival in the short term, yet, they still face pressures to identify different strategies to succeed in the long term' (Hitt et al., 2021, p. 261). While COR theory suggests that a conservative approach focused on resource protection might have short-term benefits, it also highlights that an aggressive, resource investment approach is essential for long-term outcomes (Doern, 2017). We provide a first-time glimpse into the impact of approaches taken during a crisis on survival in the longer-term, thereby capturing a time span of a decade post-crisis.

Theoretically, we argue that SMEs which follow an aggressive approach will more quickly restore fit with the new environment, pursue growth options presented by the crisis, and retain their stakeholders in the new environment. Certainly, the idea that firms must fit their environments to survive is well-established (e.g., Miller, 1992). However, it is less clear when firms that are confronted with a system-level crisis should start to invest to adjust to the new environment: should they do so aggressively during the crisis? Or should they take a conservative stance during the crisis (and try to restore fit only post-crisis)? Aggressive approaches to response to a crisis might more quickly restore environmental fit, but are often viewed as riskier. Conservative approaches during the crisis are less risky but delay the pursuit of fit with the new environment to post-crisis years, creating new perils for managers and their firms. Our evidence suggests that for SMEs during the financial crisis, the advantages of more aggressive approaches outweigh the disadvantages for SMEs' longer-term survival.

With new firms, scholars often focus on their liabilities of newness (Stinchcombe, 1965) in 'normal' times. If anything, these liabilities are expected to be even more acute in a challenging environment, such as a crisis environment. However, one of the key theoretical insights from our study is that younger SMEs are less vulnerable to crises than often assumed in the literature. We find that younger SMEs are surprisingly aggressive in a crisis, which best resemble younger entrepreneurial firms in their cultures, systems and decision-making. Older SMEs still benefit from following an aggressive approach, but are less likely to do so, probably because they have to address structural inertia in their operations. Davidsson and Gordon (2016) have already shown that there is a surprising persistence in entrepreneurship through a crisis. Autio et al. (2000) have further shown that younger firms enjoy learning advantages in new environments, that is, international markets. Our study complements this 'advantages perspective' on newness: while younger SMEs certainly experience liabilities of newness, they also seem remarkably capable of maintaining or even increasing their investments in fixed assets and workforce during the height of a crisis. Investments that benefit longer-term survival post-crisis.

Limitations and Future Research

Despite its contributions, our study has limitations that both represent the boundaries of its insights and provide opportunities for future research. First, we measure the financial crisis using a dummy variable approach, consistent with prior studies examining the same crisis (e.g., Chang et al., 2016) and other types of crises (e.g., Bradley et al., 2011a;

Chakrabarti, 2015; Wan and Yiu, 2009). Still, future researchers might use other approaches for measuring crisis periods, such as changes in real GDP, stock markets, credit ratings, and exchange rates.

Second, our study considers one specific type of crisis, one that had important, long-lasting and global impacts; i.e., the financial crisis, and allowed us to examine the survival outcomes up to a decade after the crisis. However, crises may vary in their intensity, speed and duration, and these differences could affect our findings. Examining other types of crises, such as the Internet bubble burst, the COVID-19 crisis, or the most recent energy crisis, may thus further clarify how entrepreneurs respond to crises.

Finally, given that firms' cash holdings and investments affect managerial choices engendering experimentation, innovation and risk-taking (e.g., Bourgeois III, 1981; Nohria and Gulati, 1996), an extension of our study would be to explore the effects of the changes in cash holdings and firm investments on other managerial decision-making processes during and after a crisis, such as internationalization or mergers and acquisitions.

Overall Conclusion

Sudden environmental shocks challenge SMEs' managers to craft timely responses. Some of them become more rigid in their strategic choices exhibiting a conservative approach, others are likely to see opportunities and act proactively, exhibiting an aggressive approach. Our findings show that employing an aggressive approach during the financial crisis lowers SMEs' post-crisis failure rates in the longer term. The results underscore the importance of proactiveness, rather than conservatism, in SMEs' response to environmental turbulence. Moreover, while SMEs and especially younger SMEs are generally presented as being very vulnerable to crises, we further show that younger SMEs are surprisingly aggressive, while older SMEs are more likely to pursue a conservative approach during the financial crisis. Moreover, when these younger SMEs are active in industries with high growth opportunities, they become especially aggressive in pursuing opportunities during a major crisis, which benefits their longer-term survival.

ACKNOWLEDGEMENTS

NOTES

[1] We do not argue that there is no research on the impact of the financial crisis on SMEs. Extant work has focused on the financial effects (e.g., access to debt financing) and real effects (e.g., sales growth) of the crisis for SMEs (e.g., Bartz and Winkler, 2016; Cowling et al., 2012). However, such research has not focused on the post-crisis consequences of the different response taken by SMEs during the crisis.

[2] We collected 2005 data in order to calculate the lagged independent, moderator, and control variables.
[3] https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2013&locations=BE&start=2006
[4] See https://www.bruegel.org/policy-brief/high-public-debt-euro-area-countries-comparing-belgium-and-italy. During the sovereign debt crisis, the Belgian government also decides to issue a bond to the broad public. Belgians massively subscribed to these bonds that allowed the government to raise 5.7 billion euro (at a relatively low rate, compared to rates on the international market). This event quickly boosted the confidence of markets and the cost of debt for the Belgian government dropped significantly.
[5] The results are similar when investments in fixed assets and investments in employees are scaled by total assets of year t-1 instead of year t.
[6] The Hausman test for each model confirmed that a fixed effects model is appropriate.
[7] If we run a multinomial logit model to determine the probability of firm exit (0 = survival, 1 = M&A, 2 = bankruptcy), for instance, in 2019, our results (Appendix C, Table C.4) reveal, in line with Hypothesis 1, that following an aggressive approach during the financial crisis will have lower exit rates by bankruptcy in 2019 relative to firms that pursued a more conservative approach. We do not find significant effects of our independent variables on the dependent variable firm exit by M&A in 2019.

REFERENCES

Agarwal, R., Barney, J. B., Foss, N. J. and Klein, P. G. (2009). 'Heterogeneous resources and the financial crisis: Implications of strategic management theory'. *Strategic Organization*, **7**, 467–84.
Ahuja, G. and Lampert, C. M. (2001). 'Entrepreneurship in the large corporation: A longitudinal study of how established firms create breakthrough inventions'. *Strategic Management Journal*, **22**, 521–43.
Alessandri, T. M., Tong, T. W. and Reuer, J. J. (2012). 'Firm heterogeneity in growth option value: The role of managerial incentives'. *Strategic Management Journal*, **33**, 1557–66.
Allison, P. D. (1995). *Survival Analysis Using the SAS System*. Cary, NC: SAS Institute.
Allison, P. D. (2005). *Fixed Effects Regression Methods for Longitudinal Data Using SAS*. Cary, NC: SAS Press.
Amburgey, T. L. and Miner, A. S. (1992). 'Strategic momentum: The effects of repetitive, positional, and contextual momentum on merger activity'. *Strategic Management Journal*, **13**, 335–48.
Anderson, B. S. and Eshima, Y. (2013). 'The influence of firm age and intangible resources on the relationship between entrepreneurial orientation and firm growth among Japanese SMEs'. *Journal of Business Venturing*, **28**, 413–29.
Argyres, N., Mahoney, J. T. and Nickerson, J. (2019). 'Strategic responses to shocks: Comparative adjustment costs, transaction costs, and opportunity costs'. *Strategic Management Journal*, **40**, 357–76.
Artz, B. (2008). 'The role of firm size and performance pay in determining employee job satisfaction brief: Firm size, performance pay and job satisfaction'. *Labour*, **22**, 315–43.
Audia, P. G., Locke, E. A. and Smith, K. G. (2000). 'The paradox of success: An archival and a laboratory study of strategic persistence following radical environmental change'. *Academy of Management Journal*, **43**, 837–53.
Autio, E., Sapienza, H. J. and Almeida, J. G. (2000). 'Effects of age at entry, knowledge intensity, and imitability on international growth'. *Academy of Management Journal*, **43**, 909–24.
Baker, T. and Nelson, R. E. (2005). 'Creating something from nothing: Resource construction through entrepreneurial bricolage'. *Administrative Science Quarterly*, **50**, 329–66.
Bartz, W. and Winkler, A. (2016). 'Flexible or fragile? The growth performance of small and young businesses during the global financial crisis – Evidence from Germany'. *Journal of Business Venturing*, **31**, 196–215.
Bates, T. W., Kahle, K. M. and Stulz, R. M. (2009). 'Why do US firms hold so much more cash than they used to?'. *The Journal of Finance*, **64**, 1985–2021.
Battisti, M. and Deakins, D. (2017). 'The relationship between dynamic capabilities, the firm's resource base and performance in a post-disaster environment'. *International Small Business Journal*, **35**, 78–98.
Baum, C. F. and Schaffer, M. E. (2012). *IVREG2H: Stata Module to Perform Instrumental Variables Estimation Using Heteroscedasticity-Based Instruments. Statistical software components S457555*. Chestnut Hill, MA: Boston College Department of Economics.
Baum, J. R. and Wally, S. (2003). 'Strategic decision speed and firm performance'. *Strategic Management Journal*, **24**, 1107–29.

Bettis, R., Gambardella, A., Helfat, C. and Mitchell, W. (2014). 'Quantitative empirical analysis in strategic management'. *Strategic Management Journal*, **35**, 949–53.

Bohlen, B., Carlotti, S. and Mihas, L. (2009). *How the recession has changed US consumer behavior*. Available at: https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/how-the-recession-has-changed-us-consumer-behavior (accessed 15 May 2023)

Bourgeois, L. J., III (1981). 'On the measurement of organizational slack'. *Academy of Management Review*, **6**, 29–39.

Bradley, S. W. (2015). 'Environmental jolts'. In Cooper, C. L., Morris, M. H. and Kuratko, D. F. (Eds), *Wiley Encyclopedia of Management*. Wiley, 1–3.

Bradley, S. W., Aldrich, H., Shepherd, D. A. and Wiklund, J. (2011a). 'Resources, environmental change, and survival: Asymmetric paths of young independent and subsidiary organizations'. *Strategic Management Journal*, **32**, 486–509.

Bradley, S. W., Shepherd, D. A. and Wiklund, J. (2011b). 'The importance of slack for new organizations facing "tough" environments'. *Journal of Management Studies*, **48**, 1071–97.

Brav, O. (2009). 'Access to capital, capital structure, and the funding of the firm'. *The Journal of Finance*, **64**, 263–308.

Bromiley, P. (2005). *The Behavioral Foundations of Strategic Management*. Malden, MA: Blackwell Publishing.

Brüderl, J. and Schüssler, R. (1990). 'Organizational mortality: The liabilities of newness and adolescence'. *Administrative Science Quarterly*, **35**, 530–47.

Bruton, G. D., Ahlstrom, D. and Wan, J. C. (2003). 'Turnaround in East Asian firms: Evidence from ethnic overseas Chinese communities'. *Strategic Management Journal*, **24**, 519–40.

Busenbark, J. R., Yoon, H., Gamache, D. L. and Withers, M. C. (2022). 'Omitted variable bias: Examining management research with the impact threshold of a confounding variable (ITCV)'. *Journal of Management*, **48**, 17–48.

Campello, M., Graham, J. R. and Harvey, C. R. (2010). 'The real effects of financial constraints: Evidence from a financial crisis'. *Journal of Financial Economics*, **97**, 470–87.

Carletti, E., Grinstein, Y. and Valenzuela, P. (2020). *Public Versus Private Firms: How Different are they During Crises?* Available at: https://drive.google.com/file/d/11IKxF3MuN3rccFzsaIFA55cD5R1A1Gwf/view (accessed 15 May 2023).

Carney, M. and Gedajlovic, E. (2002). 'The coupling of ownership and control and the allocation of financial resources: evidence from Hong Kong'. *Journal of Management Studies*, **39**, 123–46.

Chakrabarti, A. (2015). 'Organizational adaptation in an economic shock: The role of growth reconfiguration'. *Strategic Management Journal*, **36**, 1717–38.

Chandler, G. N. and McEvoy, G. M. (2000). 'Human resource management, TQM, and firm performance in small and medium-size enterprises'. *Entrepreneurship Theory and Practice*, **25**, 43–58.

Chang, S., Kogut, B. and Yang, J. S. (2016). 'Global diversification discount and its discontents: A bit of self-selection makes a world of difference'. *Strategic Management Journal*, **37**, 2254–74.

Choi, Y. R. and Shepherd, D. A. (2005). 'Stakeholder perceptions of age and other dimensions of newness'. *Journal of Management*, **31**, 573–96.

Colombo, M. G., Piva, E., Quas, A. and Rossi-Lamastra, C. (2021). 'Dynamic capabilities and high-tech entrepreneurial ventures' performance in the aftermath of an environmental jolt'. *Long Range Planning*, **54**, 102026.

Cowling, M., Liu, W. and Ledger, A. (2012). 'Small business financing in the UK before and during the current financial crisis'. *International Small Business Journal*, **30**, 778–800.

Davidsson, P. and Gordon, S. R. (2016). 'Much ado about nothing? The surprising persistence of nascent entrepreneurs through macroeconomic crisis'. *Entrepreneurship Theory and Practice*, **40**, 915–41.

Dawson, J. F. and Richter, A. W. (2006). 'Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test'. *Journal of Applied Psychology*, **91**, 917–26.

Deb, P., David, P. and O'Brien, J. (2017). 'When is cash good or bad for firm performance?'. *Strategic Management Journal*, **38**, 436–54.

Deloof, M. and Vanacker, T. (2018). 'The recent financial crisis, start-up financing and survival'. *Journal of Business Finance & Accounting*, **45**, 928–51.

Demirgüç-Kunt, A., Peria, M. S. M. and Tressel, T. (2020). 'The global financial crisis and the capital structure of firms: Was the impact more severe among SMEs and non-listed firms?'. *Journal of Corporate Finance*, **60**, 101514.

Doern, R. (2017). 'Strategies for resilience in entrepreneurship: Building resources for small business survival after a crisis'. In Vorley, T. and Williams, N. (Eds), *Creating Resilient Economies: Entrepreneurship, Growth and Development in Uncertain Times*. London: Edward Elgar Publishing, 11–27.

Dowell, G. and Swaminathan, A. (2006). 'Entry timing, exploration, and firm survival in the early US bicycle industry'. *Strategic Management Journal*, **27**, 1159–82.

Duchin, R., Ozbas, O. and Sensoy, B. A. (2010). 'Costly external finance, corporate investment, and the subprime mortgage credit crisis'. *Journal of Financial Economics*, **97**, 418–35.

Eisenhardt, K. M. (1989). 'Making fast strategic decisions in high-velocity environments'. *Academy of Management Journal*, **32**, 543–76.

European Commission. (2009). *Economic Crisis in Europe: Causes, Consequencesand Responses*. Available at: https://ec.europa.eu/economy_finance/publications/pages/publication15887_en.pdf (accessed 15 May 2023).

European Commission. (2020). *User guide to SME definition*. Available at: https://op.europa.eu/en/publication-detail/-/publication/756d9260-ee54-11ea-991b-01aa75ed71a1 (accessed 15 May 2023).

Finkelstein, S. and Hambrick, D. C. (1990). 'Top-management-team tenure and organizational outcomes: The moderating role of managerial discretion'. *Administrative Science Quarterly*, **35**, 484–503.

Flammer, C. and Ioannou, I. (2021). 'Strategic management during the financial crisis: How firms adjust their strategic investments in response to credit market disruptions'. *Strategic Management Journal*, **42**, 1275–98.

Flatters, P. and Willmott, M. (2009). 'Understanding the post-recession consumer'. *Harvard Business Review*, **87**, 106–12.

Folta, T. B. and O'Brien, J. P. (2004). 'Entry in the presence of dueling options'. *Strategic Management Journal*, **25**, 121–38.

Frank, K. A., Maroulis, S. J., Duong, M. Q. and Kelcey, B. M. (2013). 'What would it take to change an inference? Using Rubin's causal model to interpret the robustness of causal inferences'. *Educational Evaluation and Policy Analysis*, **35**, 437–60.

Freeman, J., Carroll, G. R. and Hannan, M. T. (1983). 'The liability of newness: Age dependence in organizational death rates'. *American Sociological Review*, **48**, 692–710.

George, G. (2005). 'Slack resources and the performance of privately held firms'. *Academy of Management Journal*, **48**, 661–76.

Grandori, A. (2020). 'Black swans and generative resilience'. *Management and Organization Review*, **16**, 495–501.

Halbesleben, J. R., Neveu, J. P., Paustian-Underdahl, S. C. and Westman, M. (2014). 'Getting to the "COR" understanding the role of resources in conservation of resources theory'. *Journal of Management*, **40**, 1334–64.

Hannan, M. T. and Freeman, J. (1984). 'Structural inertia and organizational change'. *American Sociological Review*, **49**, 149–64.

Haveman, H. A. and Nonnemaker, L. (2000). 'Competition in multiple geographic markets: The impact on growth and market entry'. *Administrative Science Quarterly*, **45**, 232–67.

Hitt, M. A., Arregle, J. L. and Holmes, R. M., Jr. (2021). 'Strategic management theory in a post-pandemic and non-ergodic world'. *Journal of Management Studies*, **58**, 259–64.

Hobfoll, S. E. (1989). 'Conservation of resources: A new attempt at conceptualizing stress'. *American Psychologist*, **44**, 513–24.

Hobfoll, S. E. (2011). 'Conservation of resources theory: its implication for stress, health, and resilience'. In Folkman, S. (Ed), *The Oxford Handbook of Stress, Health, and Coping*. Oxford: Oxford Library of Psychology, 127–47.

Hobfoll, S. E., Halbesleben, J., Neveu, J. P. and Westman, M. (2018). 'Conservation of resources in the organizational context: The reality of resources and their consequences'. *Annual Review of Organizational Psychology and Organizational Behavior*, **5**, 103–28.

Hoetker, G. (2007). 'The use of logit and probit models in strategic management research: Critical issues'. *Strategic Management Journal*, **28**, 331–43.

Hoffmann, V. H., Trautmann, T. and Hamprecht, J. (2009). 'Regulatory uncertainty: A reason to postpone investments? Not necessarily'. *Journal of Management Studies*, **46**, 1227–53.

Kahle, K. M. and Stulz, R. M. (2013). 'Access to capital, investment, and the financial crisis'. *Journal of Financial Economics*, **110**, 280–99.

Kim, C. and Bettis, R. A. (2014). 'Cash is surprisingly valuable as a strategic asset'. *Strategic Management Journal*, **35**, 2053–63.

Klepper, S. and Simons, K. L. (1997). 'Technological extinctions of industrial firms: An inquiry into their nature and causes'. *Industrial and Corporate Change*, **6**, 379–460.

Klyver, K. and Nielsen, S. L. (2021). 'Which crisis strategies are (expectedly) effective among SMEs during COVID-19?'. *Journal of Business Venturing Insights*, **16**, e00273.

Lai, Y., Saridakis, G., Blackburn, R. and Johnstone, S. (2016). 'Are the HR responses of small firms different from large firms in times of recession?' *Journal of Business Venturing*, **31**, 113–31.

Lanivich, S. E. (2015). 'The RICH entrepreneur: Using conservation of resources theory in contexts of uncertainty'. *Entrepreneurship Theory and Practice*, **39**, 863–94.

Latham, S. (2009). 'Contrasting strategic response to economic recession in start-up versus established software firms'. *Journal of Small Business Management*, **47**, 180–201.

Lei, D., Hitt, M. A. and Bettis, R. (1996). 'Dynamic core competences through meta-learning and strategic context'. *Journal of Management*, **22**, 549–69.

Levitt, B. and March, J. G. (1988). 'Organizational learning'. *Annual Review of Sociology*, **14**, 319–38.

Lewbel, A. (2012). 'Using heteroscedasticity to identify and estimate mismeasured and endogenous regressor models'. *Journal of Business & Economic Statistics*, **30**, 67–80.

Lewbel, A. (2018). 'Identification and estimation using heteroscedasticity without instruments: The binary endogenous regressor case'. *Economics Letters*, **165**, 10–2.

Lieberman, M. B. and Montgomery, D. B. (1988). 'First-mover advantages'. *Strategic Management Journal*, **9**, 41–58.

Liu, T. H., Hung, S. C. and Chu, Y. Y. (2007). 'Environmental jolts, entrepreneurial actions and value creation: A case study of Trend Micro'. *Technological Forecasting and Social Change*, **74**, 1432–45.

Marcus, A. A. and Kaufman, A. M. (1986). 'Why it is difficult to implement industrial policies: Lessons from the synfuels experience'. *California Management Review*, **28**, 98–114.

McDonald, R. and Siegel, D. (1986). 'The value of waiting to invest'. *Quarterly Journal of Economics*, **101**, 707–27.

Meyer, A. D., Brooks, G. R. and Goes, J. B. (1990). 'Environmental jolts and industry revolutions: Organizational responses to discontinuous change'. *Strategic Management Journal*, **11**, 93–110.

Miller, D. (1992). 'Environmental fit versus internal fit'. *Organization Science*, **3**, 159–78.

Mudambi, R. and Treichel, M. Z. (2005). 'Cash crisis in newly public Internet-based firms: An empirical analysis'. *Journal of Business Venturing*, **20**, 543–71.

Neckebrouck, J., Schulze, W. and Zellweger, T. (2018). 'Are family firms good employers?'. *Academy of Management Journal*, **61**, 553–85.

Nohria, N. and Gulati, R. (1996). 'Is slack good or bad for innovation?'. *Academy of Management Journal*, **39**, 1245–64.

Ooghe, H., Joos, P. and De Bourdeaudhuij, C. (1995). 'Financial distress models in Belgium: The results of a decade of empirical research'. *International Journal of Accounting*, **30**, 245–74.

O'Sullivan, D., Zolotoy, L. and Fan, Q. (2021). 'CEO early-life disaster experience and corporate social performance'. *Strategic Management Journal*, **42**, 2137–261.

Paeleman, I., Fuss, C. and Vanacker, T. (2017). 'Untangling the multiple effects of slack resources on firms' exporting behavior'. *Journal of World Business*, **52**, 769–81.

Paeleman, I. and Vanacker, T. (2015). 'Less is more, or not? On the interplay between bundles of slack resources, firm performance and firm survival'. *Journal of Management Studies*, **52**, 819–48.

Pollock, T. G., Ragozzino, R. and Blevins, D. P. (2023). 'Not like the rest of us? How CEO celebrity affects quarterly earnings call language'. *Journal of Management*. https://doi.org/10.1177/01492063221150629.

Pólos, L., Hannan, M. T. and Carroll, G. R. (2002). 'Foundations of a theory of social forms'. *Industrial and Corporate Change*, **11**, 85–115.

Quigley, T. J., Chirico, F. and Baù, M. (2022). 'Does the CEO effect on performance differ in private versus public firms?'. *Strategic Organization*, **20**, 652–73.

Rieger, V., Wilken, J. and Engelen, A. (2022). 'Career booster or dead end? Entrepreneurial failure and its consequences for subsequent corporate careers'. *Journal of Management Studies*, **60**, 800–33. https://doi.org/10.1111/joms.12866.

Roper, S. and Turner, J. (2020). 'R&D and innovation after COVID-19: What can we expect? A review of prior research and data trends after the great financial crisis'. *International Small Business Journal*, **38**, 504–14.

Ruef, M. (1997). 'Assessing organizational fitness on a dynamic landscape: An empirical test of the relative inertia thesis'. *Strategic Management Journal*, **18**, 837–53.

Samuelsson, M., Söderblom, A. and McKelvie, A. (2020). 'Path dependence in new ventures' capital structures'. *Entrepreneurship Theory and Practice*, **45**, 319–49.

Sharfman, M. P., Wolf, G., Chase, R. B. and Tansik, D. A. (1988). 'Antecedents of organizational slack'. *Academy of Management Review*, **13**, 601–14.

Shaver, J. M. (1998). 'Accounting for endogeneity when assessing strategy performance: Does entry mode choice affect FDI survival?' *Management Science*, **44**, 571–85.

Shepherd, D. A. and Williams, T. A. (2022). 'Different response paths to organizational resilience'. *Small Business Economics*, **61**, 23–58. https://doi.org/10.1007/s11187-022-00689-4.

Sine, W. D. and David, R. J. (2003). 'Environmental jolts, institutional change, and the creation of entrepreneurial opportunity in the US electric power industry'. *Research Policy*, **32**, 185–207.

Sine, W. D., Mitsuhashi, H. and Kirsch, D. A. (2006). 'Revisiting burns and stalker: Formal structure and new venture performance in emerging economic sectors'. *Academy of Management Journal*, **49**, 121–32.

Stinchcombe, A. L. (1965). 'Organizations and social structure'. *Handbook of Organizations*, **44**, 142–93.

Thatchenkery, S. and Katila, R. (2023). 'Innovation and profitability following antitrust intervention against a dominant platform: The wild, wild west?'. *Strategic Management Journal*, **44**, 943–76.

Tversky, A. and Kahneman, D. (1974). 'Judgment under uncertainty: Heuristics and biases: Biases in judgments reveal some heuristics of thinking under uncertainty'. *Science*, **185**, 1124–31.

van der Vegt, G. S., Essens, P., Wahlstrom, M. and George, G. (2015). 'Managing risk and resilience'. *Academy of Management Journal*, **58**, 971–80.

Vanacker, T., Collewaert, V. and Zahra, S. A. (2017). 'Slack resources, firm performance, and the institutional context: Evidence from privately held European firms'. *Strategic Management Journal*, **38**, 1305–126.

Venkataraman, S. and Van de Ven, A. H. (1998). 'Hostile environmental jolts, transaction set, and new business'. *Journal of Business Venturing*, **13**, 231–55.

Wan, W. P. and Yiu, D. W. (2009). 'From crisis to opportunity: Environmental jolt, corporate acquisitions, and firm performance'. *Strategic Management Journal*, **30**, 791–801.

Wenzel, M., Stanske, S. and Lieberman, M. B. (2020). 'Strategic responses to crisis'. *Strategic Management Journal*, **41**, V7–V18.

Wiklund, J., Baker, T. and Shepherd, D. (2010). 'The age-effect of financial indicators as buffers against the liability of newness'. *Journal of Business Venturing*, **25**, 423–37.

Wildavsky, A. B. (1988). *Searching for Safety*. Piscataway, NJ: Transaction Publishers.

Williams, T. A. and Shepherd, D. A. (2016). 'Victim entrepreneurs doing well by doing good: Venture creation and well-being in the aftermath of a resource shock'. *Journal of Business Venturing*, **31**, 365–87.

Williamson, I. O. (2000). 'Employer legitimacy and recruitment success in small businesses'. *Entrepreneurship Theory and Practice*, **25**, 27–42.

Winborg, J. and Landström, H. (2001). 'Financial bootstrapping in small businesses: Examining small business managers' resource acquisition behaviors'. *Journal of Business Venturing*, **16**, 235–54.

Yang, B., Burns, N. D. and Backhouse, C. J. (2004). 'Management of uncertainty through postponement'. *International Journal of Production Research*, **42**, 1049–64.

Zahra, S. A., Filatotchev, I. and Wright, M. (2009). 'How do threshold firms sustain corporate entrepreneurship? The role of boards and absorptive capacity'. *Journal of Business Venturing*, **24**, 248–60.

Zolotoy, L., O'Sullivan, D. and Martin, G. P. (2022). 'Behavioural Agency and Firm Productivity: Revisiting the Incentive Alignment Qualities of Stock Options'. *Journal of Management Studies*, **59**, 1756–87.

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