

Brixy, Udo; Murmann, Martin

Article — Published Version

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Small Business Economics

Provided in Cooperation with:

Springer Nature

Suggested Citation: Brixy, Udo; Murmann, Martin (2024) : Hiring opportunities for new firms and the business cycle, Small Business Economics, ISSN 1573-0913, Springer US, New York, NY, Vol. 64, Iss. 3, pp. 1387-1413,
<https://doi.org/10.1007/s11187-024-00948-6>

This Version is available at:

<https://hdl.handle.net/10419/323545>

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Hiring opportunities for new firms and the business cycle

Udo Brixy · Martin Murmann

Accepted: 24 June 2024 / Published online: 30 October 2024
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Abstract Whether firms founded during or outside economic crises have greater growth potential is an important question for both prospective entrepreneurs and policy makers. Existing research offers conflicting answers, and mostly either focuses on aggregate cohort-level effects or selectively excludes small new firms from the analyses. Using extensive linked employer-employee data on young German firms around and during the Global Financial Crisis, a period of sharply reduced access to external capital and recess-

sion, we show that young firms respond to cyclical conditions in highly heterogeneous ways. Our firm-level results reveal that the average new firm found it easier to hire its first employees when it was founded during the crisis. These firms achieved countercyclical growth by hiring career entrants. More specifically, hiring in very young (<1.5 years) and small to medium-sized (below the 90th percentile) young firms was countercyclical, while this was not the case for older and larger young firms. Thus, the firm-specific effects for young entrepreneurial firms may be very different from those reported in previous research. Our results suggest that market entry during a crisis may facilitate hiring and that policies that promote entrepreneurship may usefully complement policies that encourage labor hoarding by incumbents during recessions.

The research presented in this paper was sponsored by the SEEK research program. Both authors declare that they have no relevant material or financial interests that relate to the findings of this paper.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11187-024-00948-6>.

U. Brixy
Institute for Employment Research (IAB), Regensburger
Str. 100, Nuremberg, Germany
e-mail: udo.brixy@iab.de

U. Brixy
Ludwig-Maximilians-Universität, Munich, Germany

M. Murmann (✉)
Bern University of Applied Sciences, Brückenstr. 73, Bern,
Switzerland
e-mail: martin.murmann@bfh.ch

M. Murmann
University of Zurich, Zurich, Switzerland

M. Murmann
Leibniz Centre for European Economic Research (ZEW),
Mannheim, Germany

Plain English Summary Crisis-founded startups provide employment opportunities for entry-level workers. We investigate whether startups founded during economic crises perform better than those founded in stable times. Contrary to conventional wisdom, we show that crisis-born startups exhibit unique growth patterns. Examining young German firms during the Global Financial Crisis, we find that crisis-born startups experienced easier hiring processes, particularly attracting career starters. This suggests that there may be advantages to entering the market during crises. The findings also highlight the need for nuanced policies to support entrepreneurship in difficult economic environments, as support for new firms may usefully complement policies that encourage labor hoarding in incumbent firms, such as short-time work schemes.

Keywords Firm growth · Hiring · Entrepreneurship · Business cycle · Global Financial Crisis

JEL Classification D22 · E32 · J23 · L11 · L25 · L26 · M13

1 Introduction

How do economic crises shape the conditions of entrepreneurial entry? This is a much-debated question in both academic and policy circles. In the aftermath of the Global Financial Crisis and the COVID-19 pandemic, two crises that hit the global economy twice in a short period of time, a growing body of literature examines the differential impact of business cycle conditions on growth in young versus old (Bartz & Winkler, 2016, Fort et al., 2013, Sedláček & Sterk, 2017, Siemer, 2019) and small versus large firms (Lai et al., 2016, Moscarini & Postel-Vinay, 2012, Pedauga et al., 2022).¹ The predominant result of these studies is that crises impact employment in young firms even more negatively than they do employment in established firms. This contradicts the commonly held belief among policymakers that encouraging entrepreneurship is an effective way to promote economic growth and reduce unemployment (e.g., Thurik et al., 2008, Bosma et al., 2011, Haltiwanger et al., 2013, Anyadike-Danes et al., 2015, Audretsch et al., 2020). However, these findings conflict with recent research emphasizing the advantage of seeking to hire talent in a crisis (Fritsch et al., 2018, Lucas et al., 2023).² We argue that one explanation for these conflicting findings is that new firms react heterogeneously to cyclical conditions and extend the literature by comprehensively addressing the firm-level consequences of cyclical conditions on employment growth of young entrepreneurial firms.

An important reason for the finding that the growth of new firms is hampered during crises is that new firms face particular difficulties in attracting external

finance during an economic downturn, as the ventures' prospects of success are highly uncertain (e.g., Siemer, 2019). While such negative effects mainly impact new firms with a high demand for external capital, we argue that this view neglects the distinct advantages for new firms when hiring during an economic crisis. Considerable evidence shows that small and particularly young businesses are disadvantaged when recruiting employees, especially in hiring qualified staff, since they tend to offer lower salaries, less job security, and fewer formal career opportunities (Brown & Medoff, 2003, Fackler et al., 2022, Michelacci et al., 2005, Nyström & Elvung, 2014, Ouimet & Zarutskie, 2014, Schnabel et al., 2011, Sorenson et al., 2021). For these reasons, empirical findings consistently show that new firms often employ workers with a marginal status on the labor market: individuals working for new firms are on average less skilled, have less work experience, and are more likely to have been unemployed before being hired (Schnabel et al., 2011; Nyström 2012; Ouimet & Zarutskie 2014; Coad et al. 2014, 2017; Fackler et al. 2019).

In the present paper, we first derive hypotheses based on the External Enabler Framework (Davidson et al., 2020) and a theoretical model suggesting that the opportunity cost for potential hires to be employed in a new firm changes over the business cycle, leading to fluctuations in the number of individuals willing to work for a new firm (Moscarini & Postel-Vinay, 2013). During crises, well-paid and secure jobs in (large) incumbent firms are rarer than outside of crises (Moscarini & Postel-Vinay, 2012). This affects the opportunity cost of working for a young firm and hence workers' willingness to take up a position in a young firm should increase in times of crisis. Regarding the mechanisms and heterogeneity behind the average baseline effect, we propose that (i) the baseline effect is driven by new firms hiring labor-market entrants, who encounter difficulties in finding employment and starting their careers during a recession; (ii) the baseline effect is strongest for new firms of small to moderate startup size, which are usually the most disadvantaged in the competition for qualified employees and likely to be less affected by other negative externalities of a crisis, such as a financing supply shock, compared to larger new firms with higher capital requirements; and (iii) the baseline effect quickly levels out as firms become more established and their "liabilities of newness" decrease.

¹ Recently, two entrepreneurship journals, *Small Business Economics* and *Entrepreneurship Theory and Practice* published special issues on the impact of the COVID-19 pandemic on young and small businesses (Batjargal et al., 2023, Belitski et al., 2022).

² The opportunities that crises open up are also emphasized by practitioners. Particularly interesting in the context of this paper, practitioners emphasize that hiring, especially top talent, might be enabled during a crisis (see, e.g., talent-works.com, n.d.; Bayasanova, 2020; Joury, 2020; Fernandez-Araoz, 2020, provides a discussion that goes beyond the narrow new-firm context).

On a methodological level, we identify three obstacles to understanding young entrepreneurial businesses' firm-level responses to cyclical conditions that we address in this paper. First, measuring effects at aggregate cohort levels does not permit a clear distinction between cyclical effects on the composition of the founders and cyclical effects on the conditions for new-firm growth. "Push" effects into self-employment during recessions can lead to an increase in entrepreneurial activity, especially among individuals with low skill levels (Carree & Dejjardin, 2020, Koellinger et al., 2012, Thurik et al., 2008). However, the founder's human capital determines the performance of a new firm and fundamentally affects the initial conditions, such as startup size (Colombo et al., 2004, Grilli et al., 2023, Mata & Machado, 1996), access to personal financial resources, or terms of credit (Åstbro & Bernhardt, 2005, Bates, 1990, Cressy, 1996). We address this issue by using comprehensive firm-level data and a systematic strategy to account for selection effects. In the context of this study, we use the terms founder and entrepreneur interchangeably to describe the owner-managers of new ventures. Thus, we focus on those who are actively involved in the ownership and decision-making of new ventures. While the founder level and the firm level overlap and may not be strictly separable in new firms, we understand the founders/entrepreneurs of new firms as the decision-making units whose actions are directly tied to firm-level outcome measures (in our case, employment). Second, many existing studies on the growth of young firms use databases that only contain businesses with employees (in addition to the founder). Restricting empirical analyses to employer firms may result in biased estimates of their average employment growth if the business cycle also affects the share of firms that hire, because the presence of additional small employers can cause a decrease in the average firm size in the sample. This could result in the incorrect impression, that a crisis led to a drop in the average firm size when, in fact, it did not (see footnote for an example).³ In this paper, we show that *small* young firms, in particular, found it easier to hire during

³ The following example illustrates this point: Six firms are founded during a recession, and six are founded during a cyclical upswing. The six firms founded during the upswing have (0,0,0,4,6,2) employees. If we observed only businesses with employees, we would conclude that the average firm size is 4 (instead of the true average of 2). If six firms are founded during

the Global Financial Crisis, meaning that many of these firms increased from zero to one or a few employees. Third, existing research often classifies firms below a certain age threshold (e.g., five years old or younger) as "young firms." We demonstrate that such a definition might not consider important heterogeneity in firm behavior during the first years of business.

For our empirical analyses, we use comprehensive linked employer-employee data on newly founded German firms. These linked data combine interview data from a comprehensive survey of newly founded firms, which covers new firms regardless of their size, with day-to-day administrative data on the new firms' employees (if any). Using these data, we analyze the period of the Global Financial Crisis and are able to compare the performance of firms founded before, within, and after this crisis. The Global Financial Crisis began as a subprime mortgage crisis in the United States. It spread very quickly around the globe, leading to a significant shortage of credit and a subsequent deep recession. The decline in GDP hit European countries harder than the US (Ball, 2014). In Germany, the decline in GDP in percentage points was twice that of the US (Brenke et al., 2013, in Appendix B, we provide detailed information on the cyclical effects on the German economy and the cyclical effects on the German labor market during our sample period). To isolate the firm-level *treatment* effect from the *composition* effect of the business cycle, we use an identification strategy that relies on a combination of creating a suitable synthetic control group by pre-balancing our sample over observable indicators for firm quality and using a direct-control strategy in subsequent weighted multivariate models. We demonstrate the robustness of this identification strategy, considering potential additional unobserved selection factors by restricting the crisis cohort to firms that were founded very early in the crisis before founders became aware of it.

Based on this empirical strategy, we find evidence that supports our hypotheses. Compared to new firms founded before or after the Global Financial Crisis, new firms founded during the Global Financial Crisis

the crisis, and one additional solo entrepreneur hires an employee leading the business to appear in the database, the firms now have (0,0,1,4,6,2) employees, which, despite hiring an additional employee during the crisis, reduces the average firm size in the observed data to 3.25 (instead of the true increase from 2 to 2.167).

were more likely to have at least one employee at the end of their first year in business. Moreover, these new firms hired qualified career entrants disproportionately more often than firms founded outside of the recession. Both results can be generalized when measuring cyclical impacts in more detail. Over the whole sample period, firms that were founded when GDP was lower, hired more frequently and were disproportionately more likely to hire qualified career entrants.

We extensively explore the mechanisms behind these findings in order to reconcile and explain differences between our results and those obtained by prior studies. Through an in-depth analysis of the size of firms founded during the Global Financial Crisis, we show that the crisis promoted the growth of small and medium-sized new firms, but not of fast-growing new firms, those above the 90th percentile of the new-firm-size distribution after one year in business. This is consistent with the logic that small to medium-sized new firms are less dependent on the supply of external capital than larger firms. Therefore, the credit crunch during the Global Financial Crisis improved the relative position of this typically most disadvantaged group of firms in the competition for talent in the labor market. By examining longer-term employment growth in young firms, we find that new firms founded during the Global Financial Crisis expanded their size advantage considerably in subsequent business years. Finally, when we continue to monitor the cyclical effects on young firms as they grow older and become established firms, we reveal that firms up to the age of approximately 1½ years old grow stronger countercyclically, whereas older firms grow stronger procyclically. This result suggests that firms' responses to cyclical conditions already change at a very early stage in their lifespans.

Our findings substantially expand on previous work by Bartz & Winkler (2016), Moscarini & Postel-Vinay (2012), Sedláček & Sterk (2017), Siemer (2019), Ouimet & Zarutskie (2014), and Moreira (2017) and, therefore, offer important implications for managers and policy makers. In particular, our finding that new firms were, on average, more likely to hire first employees during the crisis is new and partially contradicts previous results. Importantly, we can show that whether or not we control for sample selection does indeed fundamentally change our results. When we ignore composition effects in the type of founder during the crisis and delete businesses without employees from our sample, our results are in line with previous studies.

Our findings further imply that if firms of up to five (or sometimes even ten) years of age are categorized as “young firms,” as is frequently the case in the existing literature, the choice of cut-off points strongly affects the results and influences whether the analysis detects a procyclical or a countercyclical growth pattern.

These results should encourage nascent entrepreneurs. Crises can offer newly founded businesses opportunities for hiring employees—in particular, recent graduates—who would not be available during an economic upswing. Encouragingly, the improved starting conditions also have a positive effect on the new firms' longer-term growth. For policy makers, our results suggest that young firms can actually make important contributions to stabilizing aggregate employment during a crisis. More specifically, during a crisis, new firms of small to moderate size can provide jobs for labor-market entrants whose entry into incumbent firms is blocked. This finding corroborates results by Fritsch et al. (2018) and Lee & Mukoyama (2015), who also suggest that new-firm entry has stabilizing effects on the economy. Consequently, at least as a short-term solution, policy measures that encourage entrepreneurship might usefully complement such policies as short-time work subsidies, which encourage labor hoarding behavior among incumbent firms during crises but cause hurdles for labor-market entrants.

We proceed as follows. In Section 2, we discuss previous important findings on the impact of the business cycle on young-firm growth. In Section 3, we derive hypotheses that lead our empirical analyses. Then, in Section 4, we present our data, empirical strategy, and models. In Sections 5, 6, and 7, we present our empirical results and discuss the conclusions.

2 Literature: New firm growth and the business cycle

Despite the managerial and economic importance of the topic, there is no conclusive evidence on how aggregate economic conditions affect new-firm growth. Bartz & Winkler (2016) divide existing studies into studies of firm growth and business cycle research. As in the present study, the former group focuses on the firm-level consequences of aggregate conditions, whereas the latter group is primarily interested in cyclical effects on the aggregate outcomes of groups of firms, such as different size or age classes. The majority of stud-

ies on the impact of aggregate shocks on new-firm growth reveal a procyclical relationship. The underlying reasons for this finding include reduced demand and difficulties in accessing financial resources, which was especially the case in the Global Financial Crisis (Chodorow-Reich, 2013, Robb & Robinson, 2014).

We summarize the key literature we draw on in this paper in Table 1. Fort et al. (2013) emphasize the importance of firm age rather than firm size in understanding cyclical impacts on firm performance. They present evidence that the net employment growth rates of small *young* firms decrease more during recessions than those of older larger businesses.⁴ This conclusion is largely confirmed by the results obtained by Bartz & Winkler (2016), Zarutskie & Yang (2017), Moreira (2017), and Sedláček & Sterk (2017). The latter analyze job creation at the cohort level and note that a cohort's job creation is largely driven by the stronger growth potential of new firms founded during boom periods and not by changes in the number of firms over the business cycle. Examining the mechanisms behind these results, Siemer (2019) find that the negative effect of the Global Financial Crisis on employment growth in young firms was mainly driven by young firms in sectors with a high reliance on external finance.

However, other studies contradict research that supports a procyclical relationship. Lee & Mukoyama (2015) analyze U.S. manufacturing plants and conclude that plants founded in recessions are significantly larger in terms of employment and more productive than corresponding plants founded during an economic upswing. Focusing on a comparison of small versus large firms, rather than young versus established firms, Moscarini & Postel-Vinay (2012) present evidence that the net job creation of large firms reacts more sensitively to the business cycle than that of small firms. They show that, relative to smaller employers, larger employers destroy more jobs when unemployment is high and create more jobs when unemployment is low. In line with our reasoning, Moscarini & Postel-Vinay (2012) argue that high unemployment eases the

restrictions experienced by small employers on labor markets to a disproportionately large extent compared to larger employers.

Nevertheless, none of the studies mentioned above permit robust conclusions regarding our main point of interest, namely, the firm-level consequences of aggregate economic conditions for young entrepreneurial businesses. With a focus comparable to the present study's, Zarutskie & Yang (2017) and Bartz & Winkler (2016) use firm-level survey-panel data that make it possible to control for firm heterogeneity. Zarutskie & Yang (2017) follow the cohort of firms founded in 2004 and compare the development of these firms before, during, and after the Global Financial Crisis. Therefore, their study does not focus on comparing companies of different ages or companies founded during and before the crisis. Bartz & Winkler (2016) theoretically contrast a demand-driven Friedman view, according to which young and small firms are disadvantaged during crises because they lack stability in the economy, and a supply-side driven Schumpeter view, in which young and small firms benefit during times of crises due to resource reallocation, to analyze new firm growth during the recession. Their empirical evidence lends support to the Friedman view. However, their study concentrates on analyzing cyclical effects on *revenue growth* among firms of the German *Mittelstand* (SMEs), which might yield very different results compared to analyzing *employment growth* in newly founded businesses. In fact, Bartz and Winkler explicitly stress that their main result—that the Global Financial Crisis had a disproportionately large negative impact on younger businesses—does not hold for sole proprietorships or for employment growth in director-founder firms, two types of firms that constitute the majority of new-firm entry. In a related contribution, Fritsch et al. (2018) analyze new-firm entry (and not growth) in Germany over the business cycle and find that large-scale industries experience increased entry during times of high unemployment, an association attributable to a better labor supply for these new entrants (as we also suggest in this paper).

Lee & Mukoyama (2015) and Moreira (2017) are also interested in micro-level outcomes but concentrate on the plant-level and, therefore, do not primarily investigate entrepreneurial entry. Lee & Mukoyama (2015) use plant-level data on U.S. manufacturing firms, which

⁴ They define a cyclical downturn as a period of contraction in the economy measured either by increases in the unemployment rate or decreases in the output or net employment growth rate (Fort et al., 2013, p. 3).

Table 1 Overview of key related literature

Paper	Type of data	Econometric approach	Key results
Studies with firm- or establishment-level analysis			
Bartz & Winkler (2016)	Firm-level survey panel data of the German “Mittelstand” from the Kreditanstalt für Wiederaufbau (KfW bank) from 2003 to 2012.	Pooled OLS regressions, robustness checks with quantile and fixed effects panel regressions.	Small firms generally have a relative growth advantage over larger firms. The growth of young firms in the German Mittelstand is significantly lower during the Global Financial Crisis than in stable times.
Lee & Mukoyama (2015)	Establishment-level data from the U.S. Census Bureau’s Longitudinal Research Database (LRD) from 1972 to 1997.	Total Factor Productivity estimates and descriptive and correlational documentation.	The average size and productivity of new plants is significantly larger in recessions than in expansions.
Moreira (2017)	Establishment-level data from the U.S. Census Bureau’s Longitudinal Business Database (LBD) and Business Register (BR) from 1976 to 2013.	Predictions from a calibrated firm dynamics model with endogenous entry and exit.	Firms founded during economic downturns start smaller and stay smaller as they age.
Zarutskie & Yang (2017)	Firm-level data from the Kauffman Firm Survey, which has surveyed firms founded in 2004 for eight consecutive years.	Comparison of weighted means of firm-level measures. Linear (panel data) models examining the evolution of firm-level outcomes.	Firms in the 2004 cohort experienced slower growth in sales, employment, and assets, and faced tighter financing conditions in the Global Financial Crisis than before.
Studies with aggregate-level analysis			
Fort et al. (2013)	Data from the U.S. Census Bureau’s Business Dynamic Statistics (BDS) from 1981 to 2010.	Documentation of correlations and panel VAR analysis.	Net employment growth rates of small young firms decrease more during recessions than those of older larger businesses.
Moscarini & Postel-Vinay (2012)	Data from the Business Dynamic Statistics (BDS) of the U.S. Census Bureau covering 1978 to 2009; matched employer-employee datasets from Denmark and France; aggregate publicly available data from the UK and Canada.	Documentation of correlations.	Negative correlation of the growth differential between large and small employers and the level of aggregate unemployment (i.e., small firms suffer less in terms of employment growth than large firms during periods of high unemployment).
Sedláček & Sterk (2017)	Data from the U.S. Census Bureau’s Business Dynamics Statistics (BDS) from 1979 to 2013.	Predictions and decompositions based on a calibrated general equilibrium firm dynamics model.	Aggregate employment in cohorts of new U.S. firms depends procyclically on aggregate conditions at the time of entry. Cohort-level differences in employment persist over years and are largely driven by differences in firm size (rather than the number of firms).

also classify mergers, acquisitions, and divestitures as “entries.” Such restructuring, which is more likely to occur in an economic downturn than in an upswing, might lead to abrupt changes in a plant’s age. Accordingly, the new plants appearing in their sample have an average size of more than 50 employees and are much larger than the usual entrepreneurial entrant. Moreira (2017) use establishment-level data from the Longitudinal Business Database and the Business Register of the U.S. Census Bureau to examine how the cycle affects the size and performance of newly founded firms over their entire lifespan. They find that firms established during economic downturns start smaller and remain smaller when they grow older. However, firms must have at least one paid employee to be included in the database used for their study, and they must assume that firms are founded at the time when they first hire paid employees. Therefore, unlike the present study, the study of Moreira (2017) does not address cyclical effects on the early growth of new firms from zero to one or a few employees. As argued in detail in the introduction, analyzing early growth from zero to one or a few employees is a crucial step toward developing a comprehensive understanding of cyclical effects on new firm growth because cyclical conditions are also likely to affect whether firms hire at all and thus become included in samples that only contain employer businesses. This issue becomes even more relevant when considering the fact that it is not uncommon for some time to pass between the foundation of a new firm and the recruitment of its first worker (e.g., Fairlie & Miranda, 2017, only about half of the firms in our sample had hired personnel by the end of their first year in business).

Finally, in contrast to the focus of the present study, Moscarini & Postel-Vinay (2012), Fort et al. (2013), and Sedláček & Sterk (2017) focus on aggregate-level rather than firm-level outcomes. As a consequence, only employer businesses are relevant for their analyses, and they do not need to differentiate between selection and treatment effects at the firm level. As discussed in the introduction, this limitation restricts the firm-level managerial and policy advice that can be formulated from their results. In addition, whereas Moscarini & Postel-Vinay (2012) compare small and large rather than young and old firms, Sedláček & Sterk (2017) analyze cohorts of firms and Fort et al. (2013) categorize all firms up to five years of age as “young” firms. We uncover managerially important firm-level

heterogeneity within these aggregated groups of firms in the present paper.

3 Hypotheses

To formulate theoretical expectations, we rely on the External Enabler Framework introduced in Davidsson et al. (2020) and refined in Kimjeon & Davidsson (2022). The External Enabler Framework formalizes how changes in the business environment can drive the creation, shape, and outcomes of new ventures at the firm level. According to Davidsson et al. (2020), such changes, which may include regulatory, environmental, or macroeconomic changes, can act as enablers for some ventures with favorable characteristics but could bring disadvantages for other firms, i.e., external enablers are defined as disequilibrating changes that asymmetrically affect different types of ventures. At its core, the External Enabler Framework specifies how certain characteristics of external changes (i.e., their spatial, temporal, and sociodemographic scope) and the predictability of their onset enable firm-level outcomes via situation-specific mechanisms. This may require integrating external enabler thinking with additional mechanism-specific theories (Davidsson et al., 2020). The External Enabler Framework recognizes that a focal firm’s ability to take advantage of an external enabler depends on the characteristics of its agents, leading to differences in how they perceive, evaluate, and respond to changes in the business environment. In addition, the enabling dynamic can be moderated by contextual characteristics.

We adapt this theoretical framework to argue that the Global Financial Crisis acted as a macroeconomic enabler that had a temporal enabling effect on the hiring-prospects of new firms. We deliberately abstract from the enabling effects of economic crises on firm formation and control for selection into entrepreneurship over the business cycle in our empirical strategy. We do not consider the predictability of the onset of the Global Financial Crisis in deriving our hypotheses, as we argue that the presented enabling mechanisms should hold regardless of whether founders anticipate hiring opportunities due to a crisis or not. However, we treat the suddenness of the onset of the Global Financial Crisis as an important dimension in our empirical strategy because it allows us to separate the enabling effects of the Global Financial Crisis on firm growth from its

effects on firm selection. We follow a recent application of the External Enabler Framework by Lucas et al. (2023), who argue that policy interventions during the COVID-19 pandemic increased the responsiveness of job seekers to job postings by certain high-tech firms. In their context, Lucas et al. (2023) characterize policy interventions as enablers that positively affect firm-level outcomes of technology firms through the mechanism of expanding the human resources available to them. Specifically, they argue that the policy interventions created uncertainty about the availability of jobs in other firms, tightening labor markets for job seekers and making them relatively more interested in working for a focal technology firm.

Following this logic, we apply the External Enabler Framework to the broader question of how macroeconomic crises themselves can have enabling effects on the hiring and growth of new firms, and derive boundary conditions that clarify for which type of workers and new firms such an enabling effect can occur. To this end, within the External Enabler Framework, we apply a theoretical model that explains how economic downturns exert asymmetric effects on firms' employment growth, depending on firm characteristics (Moscarini & Postel-Vinay, 2012, 2013). In what follows, we first derive a baseline hypothesis regarding the *firm-level* relationship between cyclical conditions and hiring in young firms, arguing that crises allow for an expansion of the human resources available to the average new firm by lowering the opportunity cost of working in these firms. Based on this baseline hypothesis, we propose three contingencies for the average effect to hold, which emerge from the boundary conditions defined in the External Enabler Framework. The dimensions include (i) cyclical differences in the characteristics of hired workers, (ii) differences in responses to cyclical conditions by firm size, and (iii) differences in responses to cyclical conditions by firm age. This is consistent with recent calls for in-depth exploration of the heterogeneity of research findings across different types of firms in order to formulate targeted management and policy advice (Wennberg & Anderson, 2020).

Next, we extend the External Enabler Framework by theorizing how an economic crisis may alter the availability of human resources for newly founded firms. This theoretical argument for a mechanism builds on the theoretical model and argument of Moscarini & Postel-Vinay (2012) and Moscarini & Postel-Vinay (2013), who formalize the idea that cyclical effects

on the availability of jobs in large firms change the opportunity costs for job seekers of accepting a job in a small firm, i.e., falling opportunity costs for workers strengthen the position of *small* employers in labor markets during crises. Larger firms tend to be more productive and pay higher wages. These advantages allow them to attract employees independent of the business cycle and the availability of unemployed workers by, for example, poaching workers from smaller competitors. In contrast, smaller firms are more restricted when it comes to hiring in general and, therefore, profit disproportionately during economic downturns when larger firms hire less or dismiss workers (i.e., individuals' chances of finding employment decrease).

We infer that the effect that Moscarini & Postel-Vinay (2012, 2013) demonstrate for *small* firms should be even stronger for *young* firms. Competing with well-known incumbent firms for skilled personnel is one of the largest problems young firms face (Castro-Silva & Lima, 2023). They offer jobs with lower pay and a lower level of security than established firms do. During the time it takes to get the new business up and running successfully, most young firms pay less because they earn less (Brixy et al., 2007, Brown & Medoff, 2003, Michelacci et al., 2005, Nyström & Elvung, 2014). Jobs in young firms are less secure than those in incumbent firms; young firms have a high risk of failure and do not yet offer clear career paths (Fackler et al., 2022, Ouimet & Zarutskie, 2014, Schnabel et al., 2011, Sorenson et al., 2021). Reduced opportunity costs for workers during crises should lower the thresholds for accepting jobs in new ventures. In other words, "recession-push" effects should apply not only to entrepreneurs but also to workers' willingness to accept jobs in new firms. Hence, during a crisis, *ceteris paribus*, the available pool of workers willing to accept a job in a newly founded firm will likely be larger than during an economic upswing. Conditional on the firm founders' human capital (i.e., controlling for composition effects on founders over the business cycle that might have opposing effects on new firm growth), during a recession, a new firm should be able to accumulate a stock of human capital that it would find unaffordable in more prosperous times. Following Moscarini & Postel-Vinay (2012, 2013), this notion should hold true particularly for *small* new firms, which constitute the overwhelming majority of new-firm entry.

It is important to note that some job seekers might prefer to work for a new firm, while others might favor

an established firm (Roach & Sauermann, 2015). However, the resulting sorting has been shown to be imperfect, highlighting that even if job seekers have preferences for either working for a new firm or an incumbent firm, they strongly consider external factors (such as the availability of jobs and concerns regarding job security) in their ultimate employment decisions (Roach & Sauermann, 2023, Sauermann & Roach, 2018). Therefore, individual preferences for work in an established firm might attenuate the effect of cyclical conditions on job seekers' likelihood to accept work in a newly founded firm but not eliminate it. We thus propose our first hypothesis, which is conditional on founders' human capital.

Hypothesis 1: *Entrepreneurs are more likely to hire employees when starting up during a recession than when starting up during an expansion.*

The external enabler framework emphasizes that, in addition to its temporal and spatial scope, an enabler's reach may be constrained by sociodemographic factors. Since the argument leading to Hypothesis 1 is based on the opportunity cost to the individual of being hired in a new firm, we next discuss what this implies for the types of workers who are pushed into new firm employment. This also seems critical from a management perspective, as early hiring decisions are very important for the later success of a new firm (Choi et al., 2023, Coad et al., 2017, Koch et al., 2013, Rocha et al., 2019, Sauermann, 2018). Policies to combat unemployment during crises tend to focus on keeping incumbent workers employed, thereby blocking the labor-market entry of young workers (Cockx, 2016, Lazear & McCue, 2017). This situation should lead to "recession-push" effects on career entrants, with entrants either becoming self-employed or facing reduced opportunity costs of accepting relatively unattractive job offers, such as those typical of newly established firms. Thus, we suggest that the increased hiring in newly founded firms during recessions, as proposed above, is mainly due to the increased likelihood that these firms will hire career entrants during the crisis.

In the empirical context investigated in the present paper (i.e., the period in and around the Global Financial Crisis in Germany), short-time working schemes were widely used and impeded labor-market entry, especially for career starters. We expect that, at least in the short term, these restraints short-time working schemes

placed on career entrants' job prospects are highly comparable and transferable to other types of labor market policies during crises, such as an expansion of employment protections. Until the beginning of the COVID-19 pandemic, the Global Financial Crisis was, by far, the most severe crisis in many decades for most countries worldwide. In Germany, it was the most serious economic downturn since World War II. Its effects on the German labor market were severe and led to a remarkable increase in the use of short-time working schemes that incentivize firms to hoard labor (Krause & Uhlig, 2012). Due to this policy, there was hardly any increase in unemployment. However, as long as firms use short-time working schemes, they are prohibited from hiring new staff.⁵ Therefore, we expect that young people who entered the German labor market during the Global Financial Crisis inevitably faced increased difficulties in finding employment, as was the case in most Southern European economies, and that their opportunity cost of taking a job in a newly established firm was particularly low.

Hypothesis 2: *Entrepreneurs are more likely to hire employees when starting up during a recession than when starting up during an expansion, and this effect is driven by the new firms' increased recruitment of qualified career entrants during recessions.*

As a boundary condition, the External Enabler Framework models how enabling effects can be moderated by contextual characteristics. Since our main mechanism explains that employers who are disadvantaged during economic upswings will find it relatively easier to hire during economic downturns due to lower opportunity costs for employees, we theorize moder-

⁵ Short-time working schemes are a common measure to fight unemployment during crises and were used by 25 of the 33 OECD countries to stabilize employment during the Global Financial Crisis (Balleer et al., 2016). Because these schemes succeeded in curbing unemployment in Germany during the 2008/09 crisis, Giroud & Mueller (2017) recently strongly recommended the improvement and expansion of short-time working schemes in the United States. In the empirical analyses, we use detailed regionally disaggregated data on the use of short-time working schemes instead of unemployment figures to measure cyclical impacts on the German labor market during the Global Financial Crisis. In this manner, our study contributes to a better understanding of the externalities associated with the use of these schemes.

ating effects of the two main sources of hiring disadvantages faced by newly founded firms: their liabilities of smallness and liabilities of newness (Gimenez-Fernandez et al., 2020, Stinchcombe, 1965, Yang & Aldrich, 2017).

First, with respect to liabilities of smallness, we consider firm size as a boundary condition for the effect of business cycle conditions on new firm hiring. Growth outcomes of young businesses are extremely heterogeneous (e.g., Nightingale & Coad, 2013), and firm size affects firm responses to cyclical conditions (Moscarini & Postel-Vinay, 2012). The remarkable stability over time of the aggregate number of employees in a cohort of firms is only achieved because “the decline of employment in a cohort due to exiting firms ... is more or less compensated by the growth of survivors of the same cohort” (Wagner, 1994, see also Schindele & Weyh, 2011). Importantly, high-growth firms, often called “gazelles,” disproportionately drive the average employment growth of a cohort of young firms, whereas the median young firm remains small or grows only moderately (e.g., Acs & Mueller, 2008; Henrekson & Johansson, 2010; Haltiwanger et al., 2017).⁶ Therefore, gazelles often receive the most attention from economists, politicians, and the media. Thus, understanding differences in cyclical effects dependent on firm size also seems crucial to formulating well-targeted managerial and policy advice for high-growth, as well as ordinary, new firms.

The lower end of the new firm size distribution consists of two types of nonemployer businesses: firms that may have a demand for labor but cannot (yet) afford to hire and could be enabled during a crisis, and firms that have no growth intentions and therefore no labor demand (Coad et al., 2017, Fairlie & Miranda, 2017, Patel, 2019). Accordingly, only a fraction of firms at the lower end of the new firm size distribution are likely to change their hiring patterns over the business cycle. In contrast, one might intuitively assume that an increase in the supply of labor resulting from a recession would provide good opportunities for expansion, particularly for rapidly growing young companies with high labor demands on the upper end of the new

firm size distribution. However, this advantage conflicts with several other factors that a recession negatively affects, such as a decline in demand or more difficult access to credit, on which high-growth firms might depend more heavily than smaller firms. Moreover, high-growth new firms are more likely to have attracted outside capital previously (e.g., venture-capital backing) and, therefore, can pay competitive wages sooner than other new firms (Kim, 2018). As a result, following Moscarini & Postel-Vinay (2012), their ability to pay competitive wages outside of crises should make them less likely to significantly react to a reduction in labor demand by large established firms during crises. Therefore, we propose that the evolution of the relationship between cyclical conditions over the new firm size distribution follows a hump shape. On average, firms with moderate labor demand should benefit more from increased supply during a crisis than very small and very large entrants.

Hypothesis 3: *Entrepreneurs are more likely to hire employees when starting up during a recession than when starting up during an expansion, and this effect is strongest for new firms of moderate size.*

Finally, to understand how new firm’s liability of newness moderates whether they can profit from enabling effects during a crisis, we turn to firm age as a boundary condition for the effect of cyclical conditions on new-firm employment. In the argumentation leading to Hypothesis 1, we expect heterogeneous responses to cyclical conditions among incumbent firms and young firms. However, such different responses to cyclical conditions that vary over the firm-age distribution are unlikely to occur only at threshold values for defining “young” firms. Rather, we can expect them to change much more granularly as new firms grow older. We have already pointed out that many studies describe companies as “young” if they are up to five years old, and sometimes even up to ten years old (e.g., Fort et al., 2013). However, entrepreneurship research calls into question whether such high age thresholds are adequate since the “liabilities of newness”—the characteristics of young firms that lead them to fail quickly—decrease after a relatively short time (Stinchcombe, 1965). Most importantly for our context, the majority of young firms do pay lower wages, but this effect declines

⁶ Depending on the definition used, the share of firms within a cohort that are labeled as high-growth firms usually varies between 4 % and 10 %. For example, Decker et al. (2016) regard the largest 10 % of firms as high-growth firms.

rapidly over their first years in business (Brixy et al., 2007). Thus, as founders become experienced in hiring and young firms become recognized as employers, the described disadvantages of newness should quickly decrease. Therefore, hiring should become easier since the risk of working in a young company decreases for individuals. From this, we infer the following:

Hypothesis 4: *Entrepreneurs are more likely to hire employees when starting up during a recession than when starting up during an expansion, and this effect decreases with firm age.*

4 Empirical strategy, data, and measures

4.1 Data and variables

To investigate cyclical effects on new-firm growth empirically, we use new and very extensive data that cover entrepreneurial firms before, during, and after the Global Financial Crisis and contain information on the performance of young firms as well as biographical data on their founders and employees. For this analysis, we match employer data from the IAB/ZEW Start-up Panel with employee register data from the German Federal Employment Agency's employment statistics (see also Grimpe et al., 2019). The IAB/ZEW Start-Up Panel (formerly KfW/ZEW Start-Up Panel) is a joint research project conducted by the Institute for Employment Research of the German Federal Employment Agency (IAB); the Centre for European Economic Research (ZEW); and Creditreform, Germany's largest credit rating agency. Formerly, KfW Bank, Germany's publicly owned development bank was a foundational partner of the project (see Fryges et al., 2010, for details on the sample design of the dataset; for a recent application of the firm-level panel data, see e.g., Vaznyte & Andries, 2019, who also discuss the survey's sample response, which they rate as sufficiently good).⁷ The survey data provide information on the firm founders' human capital and prior employment status.

The survey dataset consists of a random sample of young German firms from almost all industries (excluding the primary sector and the public sector). The sample is taken from the Mannheim Enterprise Panel, which contains basic information on almost all firms in Germany, including firm foundations (Bersch et al., 2014). Information is collected via a yearly telephone survey (computer-aided telephone interviews). The sample of the IAB/ZEW Start-up Panel is stratified according to three criteria: the year the firm was formed, the sector, and whether or not the firm received support from the KfW Bank. Stratification is controlled for by including dummy variables for the stratification cells in all regressions. The first survey wave was conducted in 2008 and collected data on firms founded between 2005 and 2007. Each year, new firms founded during the previous three years are added to the sample. To reduce the risk of survivorship biases caused by firms that have already existed two or three years before being included in the sample, we concentrate on firms that were first interviewed in the spring or summer after the year they were founded. This approach leads to our main regression sample of 6,963 firms founded between 2007 and 2012. We describe our testing for remaining survivorship biases in the empirical section. We use the full sample of 15,300 firms founded between 2005 and 2012, including those that already existed two or three years when they were first surveyed, for robustness checks and find that our results remain robust when the full sample is used.

The linked register data from the German Federal Employment Agency's employment statistics yield information on the education and vocational qualifications of all reportable employees, their occupational status (including full-time or part-time employment), as well as the start and end dates of all employment and unemployment spells in each individual's employment history. The data are reported by the employing establishment and collected by the social security agencies. Due to their high level of detail, they have been widely used in scientific research (examples include von Wachter & Bender, 2006; Dustmann et al., 2009; Schmieder et al., 2016). Employing establishments are matched with firms in the IAB/ZEW Start-up Panel using a text-search algorithm via firm/establishment names and addresses (further details on the dataset and the matching procedure are provided in Appendix C.4). We can thus observe in detail the accumulation of a

⁷ Detailed information on the survey response for each wave of the panel dataset is provided in yearly technical reports in the section "Downloads" on <https://www.gruendungspanel.de/en/zew-start-up-panel/home>.

workforce in each new firm and can link it with each worker's employment history. Since the data on the individual employees are collected continuously, we can observe all individuals who were employed in one of the matched firms for at least one day in the linked employer-employee dataset.

One important advantage of this aspect of our approach is that there is no panel attrition other than from closed businesses. Once matched with the register data on employees, the employment growth of the firms in the sample can be observed on a daily basis even if the firms refuse to take part in subsequent waves of the survey. Since the firms' survival status is known at any given time, we are able to formally test for potentially different survivorship biases over the business cycle. In summary, the data therefore allow us to closely examine the period of the Global Financial Crisis and enable us to understand the mechanisms that drive hiring in new firms over the business cycle in great detail.

4.2 Dependent and main independent variables

We choose our dependent variables to disentangle cyclical effects on firms transitioning from nonemployer to employer businesses, on the characteristics of the employees hired, and on the employment growth of new firms. The dependent variables are (1) a binary indicator that takes a value of one if a new firm has hired any employees at the end of its first year in business (i.e., is an employer business), (2) a binary indicator that takes a value of one if a new firm has hired any *qualified* employees at the end of its first year in business (i.e., employees with a university degree or a state-recognized vocational certificate with compulsory schooling), (3) a binary indicator that takes the value of one if a newly born firm hired any *qualified* employees who were career entrants at the end of its first year in business (i.e., starting their first job after obtaining their highest degree), (4) the total number of dependent employees after up to four years in business, and (5) the absolute month-to-month growth of new firms.⁸

⁸ We use absolute month-to-month growth as dependent variable because many firms start with zero employees and using a relative measure would have resulted in a fragmented time series dimension of our panel.

Our main independent variables are measures for aggregate cyclical conditions. We demonstrate the consistency of our results using a variety of business-cycle indicators that allow for differences in industry-specific and region-specific cyclical impacts. Our main measures are (1) a binary variable that identifies the quarters with a negative change in overall GDP in Germany relative to the previous quarter (i.e., from April 2008 to March 2009) to quantify the effects on firms founded during the Global Financial Crisis of 2008/09, (2) a time series of a quarterly GDP index (in constant prices; we use industry-specific series as an extension) for Germany to control for economic development in more detail, and (3) the use of short-time working schemes to measure cyclically driven changes in the supply of labor for young firms in particular. In addition, we check the robustness of our results by using a monthly time series from the Ifo Business Situation Indicator as a further measure of the business cycle. The Ifo Business Situation Indicator is one of two components of the Ifo Business Climate Index, a highly regarded early indicator of economic developments in Germany and, unlike GDP series, available on a regular monthly basis. We provide a further explanation of these measures in Appendix C.1.

4.3 Further measures and summary statistics

Detailed information on the derivation of the most important measures used in this study is provided in Table A.1 in Appendix A. We report summary statistics and pairwise correlations of the main dependent and control variables of our regression sample in Tables A.2 and A.3 in Appendix A. Summary statistics are calculated for each firm at the end of the first business year. Our total sample consists of 6,963 firms (first column). Of these firms, 5,816 were founded outside of the Global Financial Crisis (second column) and 1,147 during the Global Financial Crisis (third column), that is, between the second quarter of 2008 and the first quarter of 2009. Furthermore, 47 % of the firms had at least one dependent employee at the end of their first year in business; the average number of dependent employees after one year is 1.8. We take all reportable employees into account and do not restrict our sample to "regular" full-time employees subject to social security

contributions since young firms might rely on atypical forms of employment to a disproportionate extent. As a robustness check, we restricted our sample to “regular” full-time employees and found that our results remained qualitatively similar. To safeguard against potentially distorted results due to outliers, we cut the largest percentile of firms whenever we use the number of employees as the dependent variable.

An inspection of the pairwise correlations indicates a high correlation between the linear and the squared term of founder age, which are both included as control variables at the founder level. We exclude the squared term of founder age in a robustness check and find no considerable changes to our results. Consistently, the variance inflation factor takes an average value of 4.27 in our main specification and a value of 1.58 when we exclude squared founder age. Both values are below usually applied critical levels.

4.4 Empirical strategy

As argued in the introduction, we consider composition changes to the type of founder over the business cycle as a main empirical challenge to making firm-level implications (i.e., giving founders advice as to what they could expect if they found a business during or outside of a crisis). In order to consider selection on observables and to identify firm-level effects, we combine a balancing approach with a direct control strategy in multivariate models. To achieve covariate balance between treated (firms founded during the Global Financial Crisis) and non-treated observations (firms founded before or after the recession), we pre-process our data and calculate sampling weights by means of entropy balancing. Entropy balancing achieves balance across specified statistical moments of selected covariates by deriving sample weights which are then used in subsequent weighted estimations (Hainmueller & Xu, 2013). Intuitively, this process can be understood as creating a synthetic control group by re-weighting observations in the control group. Unlike other related methods, such as propensity score weighting, entropy balancing induces covariate balance directly, rather than as a result of a propensity score matching procedure that requires iterative re-specification of the propensity score estimation to achieve covariate balance. Entropy balancing has been applied for control group re-weighting in a

number of recent studies (see e.g., Stanton & Thomas, 2015; Satyanath et al., 2017; Bansak et al., 2016, see Appendix C.2 for technical details on the derivation of the entropy-balancing weights).

We balance our sample over the mean, the variance, and the skewness of the founder’s age (or that of the oldest founder in the team) and the founder’s years of industry experience (or that of the most experienced founder in the team). In addition, we balance the sample over the means of a binary variable indicating whether at least one founder has a university degree, a binary variable showing whether at least one founder made a transition from unemployment when founding the firm, and a binary variable indicating whether at least one of the founders made a transition from dependent employment when founding the firm. We find that these measures cover the main founder-related factors that have been shown to affect firm growth in previous research. Founder age is also included to control for a potentially increasing number of career starters who might set up businesses of their own during a crisis⁹ and might prefer to employ young workers of their own age (Ouimet & Zarutskie, 2014).

When assessing the cyclicity of the German economy and cyclical effects on the German labor market during our observation period (Appendix B), we do not find evidence for strong changes in startup rates during the Global Financial Crisis in Germany but an increase of firm foundations using a newly introduced form of limited liability corporation. To ensure that our results are not biased by this policy change regarding firms’ choices of legal forms, we also induce covariate balance with respect to different forms of limited liability corporations. We consider any potential remaining bias due to unobserved composition changes to be small. First, we are able to balance our sample for up to three statistical moments of a wide range of relevant founder characteristics. Second, since the effect of the Global Financial Crisis on startup rates was limited, this does not suggest major composition changes in the type of firms found during the crisis in general. We test these assumptions more in a robustness check using Google Trends data described below.

⁹ For instance, Levesque & Minniti (2006) and Liang et al. (2018) demonstrate that a higher availability of young individuals in an economy is closely related to higher rates of firm creation.

4.4.1 Overview of the estimated models

Based on the strategy described above, we first analyze the impact of the aggregate economic conditions *at the time of firm foundation* and examine in detail the growth and skill structure of firms that entered the market during the Global Financial Crisis of 2008/09. Since more than half of the young firms in our sample did not employ any personnel when they were founded, we first turn to the question of whether new firms hire at all. Using Probit models, we test whether the Global Financial Crisis affected the probability of new firms having at least one employee after one year in business and whether new firms were more or less likely to recruit *qualified* personnel and *career starters*. We then extend our analysis to new firm size and growth in absolute numbers and also consider later business years to assess whether a new firm's longer-term growth potential is affected by cyclical conditions at the time of its foundation. For this assessment, we predict the number of employees conditional on the founders' human capital from OLS models. We estimate Poisson and Tobit models as well as quantile regression models in robustness checks.

In the final step of our empirical analysis, we aim to overcome the problem of modeling cyclical effects either on a very rough yearly level or only once at a fixed point in time in the firm's life (e.g., the time of startup). This enables us to more precisely understand the mechanisms underlying cyclical effects. For this step, we explore cyclical influences on firm growth in more detail by using a fine-grained monthly growth model in which we correlate business-cycle measures with the *simultaneous* month-to-month growth (in absolute terms) of new ventures. In the monthly growth model, we interact the business-cycle measures with firm age to test for differing impacts of aggregate conditions on firms of different ages. As month-to-month growth can be positive or negative, we estimate OLS and linear fixed effects models for this purpose. We use heteroskedasticity-robust standard errors in all models. Additional technical details on model specifications are provided in Appendix C.3.

4.4.2 Further empirical challenges

Further empirical challenges might stem from selection on unobserved characteristics, such as the strategic

behavior of prospective founders concerning their decision to enter the market during the crises because they anticipate an increase in available employees. The External Enabler Framework we apply in this study distinguishes between enablers with a predictable onset, which could be strategically exploited, and enablers with a sudden onset, which do not allow economic agents to perceive and act upon the enabling effects in advance. We argue that because the decline in demand during the Global Financial Crisis in Germany was fast and steep and the recovery was sudden and rapid, the beginning and the end of the crisis were largely unexpected. Therefore, we regard anticipatory behavior as an unlikely driver of our empirical results.¹⁰ We find more formal support for this view when analyzing time series of Google searches for the keywords "crisis," "financial crisis," and "economic crisis" in Germany (Fig. 1). Consistent with the Global Financial Crisis's progression from a financial to an economic crisis, searches for the term "financial crisis" first increase and peak in September 2008 (following the insolvency of the Lehman Brothers investment bank). Searches for the term "economic crisis" peak approximately six months later. The more general term "crisis" exhibits a higher baseline level and two peaks but can be considered less precise since it can apply to a variety of problems. Importantly, searches for all crisis-related keywords did not start to rise until August 2008, although, as we know retrospectively, GDP had already begun to decrease from the second quarter of 2008 onwards (a fact that was not yet known due to measurement and reporting lags). Thus, we argue that it was not until August 2008 that founders became aware of the imminent economic crisis. We use this observation to conduct a robustness check of our results. To address concerns regarding selection on unobserved factors (e.g., founders' risk preferences) and strategic market entry, we compare firms founded during the crisis but before August 2008 to firms founded before the crisis began. For the founders of these firms, the enabling effects on hiring were arguably sudden and could not be strategically acted upon at the time of entry.

¹⁰ We provide further background information on the cyclicity of the German economy and cyclical effects on the German labor market during our sample period in Appendix B.

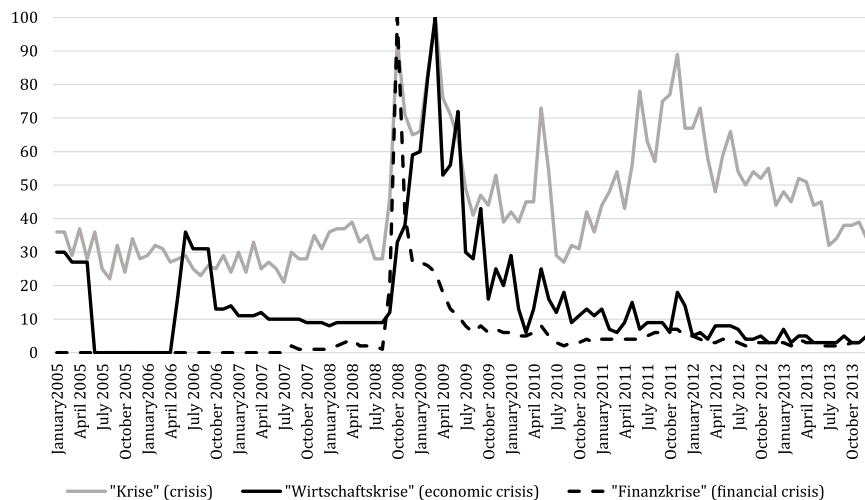


Fig. 1 Google searches for crisis-related keywords in Germany

Notes: All keywords were entered in Google Trends in German. A value of 100 corresponds to the highest number of searches for a keyword during the observation period. As the main text describes in more detail, the figure shows that searches for the term “financial crisis” first increased and peaked in September 2008. Google searches for the term “economic crisis” peaked

approximately six months later. Searches for the more general term “crisis” show a higher base level and two peaks, one in September 2008 (simultaneously with the term “financial crisis”) and the second in March 2009 (simultaneously with the term “economic crisis”). Importantly, there was no increase in the number of searches for any of these terms before August 2008. Source: Google Trends

5 Results

5.1 Economic conditions at the time of foundation and employment growth

5.1.1 *The transition from nonemployer to employer businesses*

The results from balanced probit models confirm our first hypothesis, as they show that, conditional on the founder’s human capital, the probability of having at least one employee by the end of the first year in business is 4.7 percentage points higher for firms founded during the Global Financial Crisis than for those founded before or after the Global Financial Crisis (Column A of Table 2; see Table A.4 in Appendix A for detailed results). This countercyclical effect is confirmed if we measure the state of the business cycle in more detail and use the GDP from the quarter the firm was founded as an explanatory variable in a robustness check: lower GDP values are related to a higher probability of having employees after one year in business (Column B).

In further robustness checks, we address concerns regarding the rather short pre-crisis period in the regression sample and additional unobserved selection factors (e.g., individuals’ risk preferences) or anticipatory entry strategies. First, we include firms from the cohorts 2005 and 2006 in the sample. We excluded these firms in the main analyses to safeguard against survivorship bias because they entered the IAB/ZEW Start-up Panel when they had been in business for at least two years. Second, we restrict the set of firms founded during the crisis to those that were established before August 2008 and compare them to firms founded before the crisis. The rationale behind this robustness check is that, as discussed in Section 4.4, the public only became aware of the crisis in August 2008. Therefore, founders who started their firms before August 2008 are much less likely to have acted strategically and should not be subject to unobserved selection effects that are not covered by our empirical analysis. In all cases, our results remain qualitatively similar.

We do not control for conditions regarding access to external financing in any of the models presented since changes in access to external financing are likely to be

Table 2 Estimation results: Employment after one year in business (yes/no)

Dependent Variable	Dependent Employees (yes/no)	
	A - Probit (EB)	B - Probit
	ME (SE)	ME (SE)
Founded during crisis (y/n)	0.047 (0.015)***	
GDP in quarter of foundation		-0.005 (0.002)**
One founder with higher education	-0.017 (0.018)	-0.016 (0.013)
Age of oldest founder in team in years	0.008 (0.005)*	0.006 (0.004)*
Age of oldest founder in team squared	-0.000 (0.000)*	-0.000 (0.000)*
Industry experience in years (log)	0.033 (0.008)***	0.033 (0.006)***
Founder was self-employed before	0.035 (0.017)**	0.045 (0.013)***
Founder trans. from empl. in priv. sect.	0.078 (0.016)***	0.074 (0.012)***
Control variables	Yes	Yes
Month of foundation fixed effects	Yes	Yes
Constant	Yes	Yes
N / Pseudo R-sq.	6,963 / 0.132	6,963 / 0.122

Notes: Marginal effects (ME) from probit models; heteroskedasticity-robust standard errors in parentheses. Significance levels: *** 1%, ** 5%, * 10%. Baseline category for industries: high-tech manufacturing. Additional control variable in all regressions: funding by KfW Bank. "EB" indicates weighted regressions with weights derived by entropy balancing

a result of changes in aggregate conditions themselves and would potentially confound the effects of aggregate conditions on firm growth. However, we ran additional robustness checks and included an additional control variable to take into account self-reported difficulties in obtaining access to external financing. Including the control variable does not alter our results qualitatively.

Finally, in additional post-hoc checks, we assess whether enabling effects differ between founders with higher or lower education or more or less experience (in terms of industry experience and age), as the External Enabler Framework suggests that agent characteristics may determine whether firms can in fact benefit from enabling effects. To this end, we test the significance of interaction terms between the business cycle measures (the crisis dummy and GDP in the founding quarter) and the human capital measures on the outcome of whether firms hire using both probit and OLS models. We find no evidence of a different impact of the business cycle on founders with more or less education or experience.

The impact of controlling for composition changes in the types of founders

To understand the selection effects on founders over the business cycle in our data, we correlate several measures for founder human capital and firm survival with

the crisis dummy and the GDP in the quarter the firm was founded (Tables A.5, A.6, and A.7 in Appendix A). We find an increase in the number of founders who made the transition from dependent employment to self-employment during the Global Financial Crisis and a decrease in the number who made the transition from unemployment. This result seems consistent with the widespread use of short-time working schemes in Germany during the Global Financial Crisis. Few incumbent workers became unemployed while, at the same time, the opportunity costs of self-employment fell. We find no further significant indications of selection effects when using other measures as dependent variables for founders' human capital and firm survival or when correlating the GDP index series with the measures for founders' human capital, their prior employment status, and firm survival.

To assess the impact of selection control regarding founders' human capital on our results, we estimate the effects without entropy balancing, control variables for the founders' human capital, or control variables that can easily reflect choices made by the founder (Table A.8 in Appendix A). In this case, the effect size of the crisis dummy decreases by approximately 18 % to 3.8 percentage points, and the significance decreases from a p-value of 0.002 to a p-value of 0.018. When

using the GDP in the quarter of firm foundation as an explanatory variable, the effect size drops by approximately 42 %, and the effect can no longer be considered significant (the p-value increases from 0.016 to 0.198). Hence, according to these initial results, without controlling for selection in the type of founder over the business cycle, we detect no robust evidence of counter-cyclical hiring by new firms in our sample, even though the selection effects in our sample seem to be small.

Variations in workforce composition

Re-running the baseline model for qualified employees reveals that the increase in the extensive margin of hiring firms is not driven by firms that hire employees from the lower end of the qualification distribution (Column A of Table 3). The probability of hiring at least one *qualified* employee by the end of the first year in business is 4.4 percentage points higher for firms founded during the Global Financial Crisis. Therefore, this effect is of almost the same magnitude as the overall increase in the extensive margin.

To assess whether the quality of human capital acquired by new ventures varies between firms founded during or outside of the crisis, we concentrate on the human capital composition of firms that had hired at least one employee by the end of their first year in

business. The results in Column B of Table 3 show that when firms founded during the crisis did hire employees, they were not more or less likely to hire *qualified* employees. However, as confirmation of our second hypothesis, young firms founded during the crisis exhibit a disproportionately high probability of hiring qualified *career entrants* (Column C of Table 3). Again, when we include interaction terms between founder human capital and business cycle measures in our models, we find no evidence that enabling effects differ by founder education and experience.

In summary, we find empirical evidence that supports our first two hypotheses. Firms founded during the recession were more likely to hire employees at all and kept the skill structure of the workforce constant. To meet their demand for skilled labor, they hired qualified career entrants. This is the effect we expected given the use of short-time working schemes during the crisis. Again, all results remain qualitatively similar when we use the GDP in the quarter the firm was founded as an explanatory variable to check robustness. However, these findings are only robust when we control for selection in the type of founder over the business cycle and can generally not be obtained using samples that only contain employer businesses.

Table 3 Estimation results: Structure of workforce after one year

Dependent Variable	A - Probit (EB) All firms Qualified Employees (y/n)	B - Probit (EB) Firms with employees	C - Probit (EB) Firms with employees Career entrants (y/n)
	ME (SE)	ME (SE)	ME (SE)
Founded during crisis (y/n)	0.044 (0.015)***	0.003 (0.010)	0.042 (0.018)**
One founder with higher education	-0.014 (0.018)	0.004 (0.013)	0.032 (0.021)
Age of oldest founder in team in years	0.009 (0.005)*	0.001 (0.004)	-0.008 (0.006)
Age of oldest founder in team squared	-0.000 (0.000)*	0.000 (0.000)	0.000 (0.000)
Industry experience in years (log)	0.031 (0.008)***	0.002 (0.006)	0.013 (0.010)
Founder was self-employed before	0.037 (0.017)**	0.012 (0.013)	0.019 (0.020)
Founder trans. from empl. in priv. sect.	0.080 (0.016)***	0.016 (0.012)	0.005 (0.019)
All control variables	Yes	Yes	Yes
Month of found. fixed effects	Yes	Yes	Yes
Constant	Yes	Yes	Yes
N / Pseudo R-sq.	6,963 / 0.127	3,290 / 0.050	3,290 / 0.050

Notes: Marginal effects (ME) from probit models; heteroskedasticity-robust standard errors in parentheses. Significance levels: *** 1%, ** 5%, * 10%. Baseline category for industries: high-tech manufacturing. Additional control variable in all regressions: funding by KfW Bank. "EB" indicates weighted regressions with weights derived by entropy balancing. Column A: all firms. Columns B and C: only firms with at least one employee after one year in business

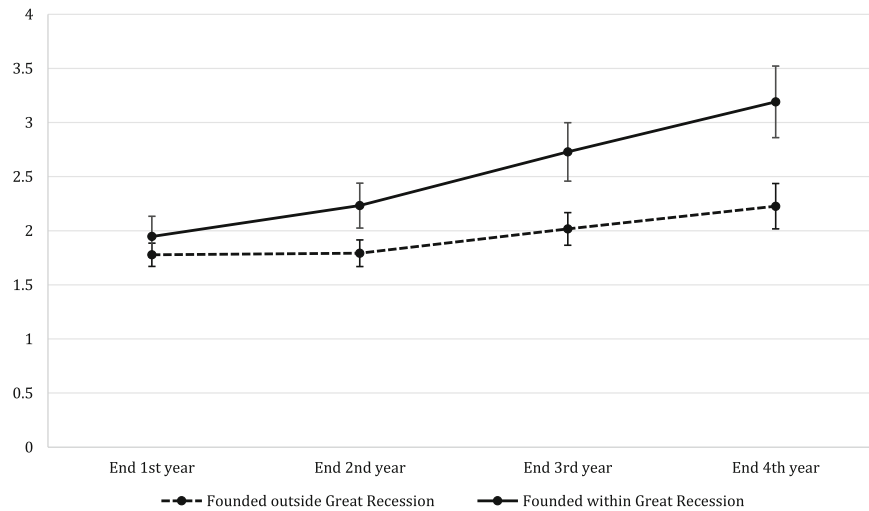


Fig. 2 The development of the predicted number of employees

Notes: Predicted number of employees conditional on firm founders' human capital including a 95% confidence interval. Values fitted from weighted OLS models for crisis and out-of-crisis firm foundations at the mean values of all other covariates. Covariate balance is induced between crisis and out-of-crisis firm foundations for each business year using weights derived from entropy balancing. Marginal effects of the crisis dummy (heteroskedasticity-robust standard errors in paren-

theses) according to the weighted OLS model: 0.157 (0.100) after one year, 0.493(0.116)^{***} after two years, 0.695(0.142)^{***} after three years, 0.973(0.179)^{***} after four years; according to the weighted Poisson model: 0.155 (0.100) after one year, 0.489(0.117)^{***} after two years, 0.696(0.144)^{***} after three years, 0.970(0.177)^{***} after four years; according to the weighted Tobit model: 0.198(0.085)^{**} after one year, 0.648(0.101)^{***} after two years, 0.826(0.123)^{***} after three years, 1.087 (0.154)^{***} after four years. Significance levels: ^{***} 1%, ^{**} 5%, ^{*} 10%

5.1.2 New firm employment growth

Development of the average firm size

It is important to understand whether the detected countercyclical growth pattern of new firms founded during the Global Financial Crisis also translated into long-term growth or whether the growth effect leveled out or was even reversed when the labor demands of incumbent firms rebounded after the recession ended. First, as discussed in the theoretical section, job seekers might not be able to find their preferred type of employment during a crisis. One might therefore assume that employees who prefer working in an established firm but were forced to accept startup employment during a crisis will be likely to leave the new firm when the crisis ends and job opportunities in established firms increase again. More broadly, uncertainty shocks, such as economic crises, can create pronounced decreases and subsequent overshoots in aggregate output and employment that alter the position of young firms on labor markets (Bloom, 2009). In Fig. 2, we follow the number of employees in young firms until the end of the fourth

business year. For Fig. 2, we derive sampling weights using the entropy balancing algorithm and calculate predicted values from weighted OLS regressions separately for firms founded during the Global Financial Crisis and firms founded outside of the Global Financial Crisis. We predict the number of employees at the mean values of all other covariates and run separate regressions with recalculated balancing weights for each business year to allow for a non-linear relationship.¹¹

On average, firms founded during the crisis were slightly larger after one year in business than firms established before or after. Importantly, this effect did not level out after the recession ended and the economy improved again but became stronger in both economic and statistical terms. The crisis cohort was able

¹¹ As the number of business years increases, the number of firms founded post-crisis that can be used for the in-sample predictions decreases. To guarantee a sufficient number of out-of-crisis observations in the comparison group, we repeated the analyses and also included firms founded in 2005 and 2006 as a robustness check. This reiteration yields no qualitative changes in the results.

to transform its initial size advantage into longer-term growth. This finding corroborates literature that emphasizes the importance of starting conditions for long-term firm success. After four years in business, firms founded during the Global Financial Crisis had hired one employee more on average than firms founded outside of the Global Financial Crisis. Given the small size of the average new firm, this result implies that their workforces are approximately 40 % larger. The results of OLS and Poisson models are almost indistinguishable. When estimated by Tobit models, the effects become slightly more pronounced.

The impact of incomplete samples and selection control for founders' human capital

We estimate a series of extensions to assess the potential impact of using selective samples without solo entrepreneurs or the selection control for founders' human capital. This analysis also demonstrates the consistency of our data with prior results and other data (Figs. A.1 and A.2 in Appendix A; detailed regression results are provided in Table A.9 in Appendix A).

To better compare the results across different specifications, we first repeat the analyses for Fig. 2 but calculate predictions from a (single) linear model. For this assessment, we derive sampling weights for the out-of-crisis control group using the entropy balancing algorithm and interact the crisis dummy with firm age in a weighted OLS regression. The resulting predictions for firm size (see Panel (a) in Fig. A.1 in Appendix A) seem reasonably similar to the previous results. Moreover, if we graph the marginal effect of the GDP in the quarter of firm foundation (Panel (a) in Fig. A.2 in Appendix A), we consistently find that the effect becomes increasingly negative over the first years in business.

To simulate datasets that contain only employer businesses (e.g., Moreira, 2017; Sedláček & Sterk, 2017), we remove businesses without employees from our sample (Panel (b) in both figures). For both measures of cyclicity, the countercyclical growth effect vanishes. In addition, if we do not control for selection effects in founders' human capital (Panel (c) in both figures), we even detect an insignificant procyclical pattern for new firm size in the year of firm foundation. In the last step, we weigh each observation according to the number of employees in order to simulate a measurement of the effects that would be found by studies that compare aggregate cohort-level data of employer

businesses (e.g., Sedláček & Sterk, 2017, Panel (d) in both figures). As a result, the procyclical pattern becomes more robust and even becomes significantly positive in the year of firm foundation if GDP is used as a measure of cyclicity.

Hence, if we restrict our sample to employer businesses, we obtain results that are largely consistent with prior research that suggests procyclical new-firm growth. However, if we retain all newly founded firms in the sample and control for selection in the type of founder over the business cycle to consistently obtain firm-level evidence, our results reveal a significant countercyclical relationship at the firm level. This countercyclical relationship seems to be driven mainly by smaller firms. We explore the heterogeneity in young firms' reactions to cyclical conditions in more detail below.

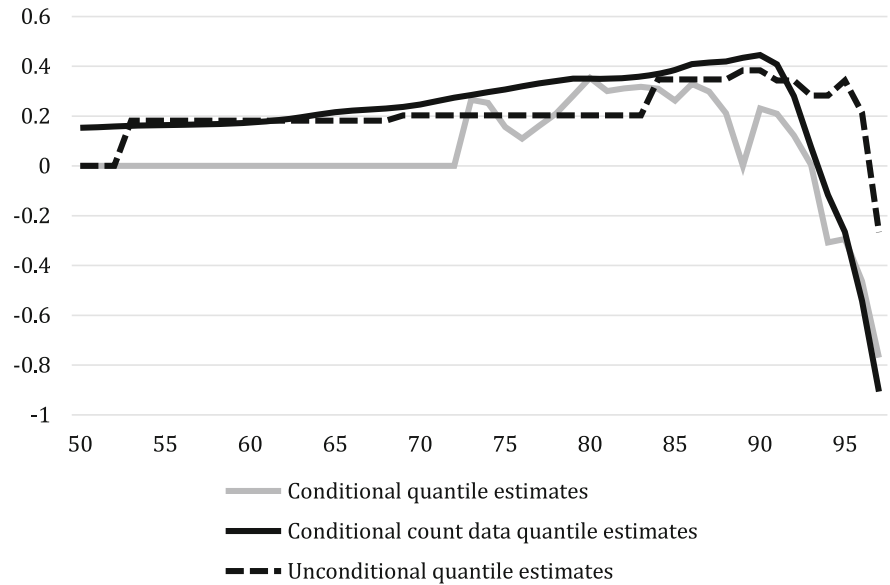
Effects of the recession over the firm-size distribution

As argued in Hypothesis 3, it is unlikely that cyclical conditions affect new firms in the same way across the firm-size distribution. For Fig. 3, we plot the marginal effect of starting a firm during the Global Financial Crisis on different quantiles of the firm-size distribution after one year in business. We plot estimates from three types of models: "traditional" conditional quantile regressions (Koenker & Bassett, 1978), conditional quantile regressions for count data (Machado & Silva, 2005), and unconditional quantile regressions (Firpo et al., 2009). Detailed results, including standard errors, are provided in Table A.10 in Appendix A. We present "traditional" conditional quantile estimates as a reference point. Conditional quantile regressions for count data are our preferred models since our employment counts are highly discontinuous up to the 70th percentile. Quantile estimates for continuous data are unlikely to detect changes in effects for quantiles in discontinuous areas of the distribution. To overcome this problem, we use count data quantile regressions to construct an artificial continuous variable out of the counts through jittering to achieve a smoother distribution. Finally, we add estimates for unconditional quantiles to facilitate a comparison of our results with those obtained in other studies.

Consistent with our third hypothesis, the results of all models suggest the Global Financial Crisis had an increasingly positive impact of up to the 90th percentile on both the conditional and the unconditional

Fig. 3 Estimation results:
Quantile regressions

Notes: Dependent variable: number of employees after one year in business. Vertical axis: marginal effect of “Founded during crisis (y/n).” Horizontal axis: percentiles. Models estimated with all previously included control variables. N = 6,934



firm-size distributions. Above the 90th percentile, the effects gradually become negative and, in some cases, become significantly negative above the 95th percentile of the conditional quantile distribution. However, the effects on extreme quantiles need to be interpreted with extreme caution. Whether robust statistical inference is possible depends on the ratio of observations above the quantile of interest (in the case of extreme quantiles, close to 1) and the number of covariates included (Chernozhukov & Fernández-Val, 2011). We therefore run robustness checks using the whole sample from 2005 onwards and substantially reducing the number of covariates included. According to a rule of thumb developed by (Chernozhukov & Fernández-Val, 2011), this approach should permit robust estimation up to at least the 97th percentile in our study. In the robustness check, the patterns presented in Fig. 3 remain unchanged.

In summary, we conclude that our results present plausible evidence that the Global Financial Crisis (at least) did not have a positive influence on firm growth in the largest decile. Thus, in contrast to small and medium-sized new firms, the crisis had no effect (or even a negative effect) on founders of high-growth businesses. We regard it as likely that, for fast-growing ventures, negative effects due to more difficult access to external sources of finance outweigh the potential benefits resulting from tight labor markets (see e.g., Siemer, 2019).

5.2 Contemporaneous economic conditions and employment growth

In the final step, we move beyond analyzing cyclical conditions at the time of a firm’s foundation to test Hypothesis 4. To this end, we use a more detailed time-scale and estimate the extent to which month-by-month employment growth of new ventures depends on simultaneous aggregate conditions (Table 4 and Table A.11 in Appendix A for detailed results).

First, we use the value of the GDP index series as the explanatory variable in the month-by-month growth model (Column A). The results reveal a discontinuous response to GDP dependent on firm age. The employment growth of firms aged up to approximately one and a half years follows a countercyclical pattern, whereas the employment growth of older firms reacts procyclically. This result is confirmed when the GDP measure is differentiated by industry (see Table A.11), when we use the Ifo Business Situation Index as a measure of the business cycle (see appendix), and when we use fixed-effects regressions instead of pooled OLS to consider a larger degree of unobserved heterogeneity between firms (Column B of Table 4). For example, the fixed effects regressions can be seen as a robustness check on the impact of firms in our sample that have no growth intentions and therefore never grow (or shrink), i.e., realize only zero results for our measure of employment growth, leading to a

Table 4 Estimation results: Month-by-month growth

Dependent Variable	A - OLS	B - FE	C - OLS
	Employment Growth	Employment Growth	Employment Growth
	ME (SE)	ME (SE)	ME (SE)
Current GDP	-0.801 (0.089)***	-0.306 (0.121)**	
GDP * Firm age	0.482 (0.040)***	0.333 (0.050)***	
Share short-time work in RoR			1.764 (0.542)***
Share s.-t. work in RoR * Firm age			-1.669 (0.273)***
Employment at end of last period	-0.002 (0.001)**	-0.072 (0.004)***	-0.002 (0.001)**
Age of firm in years	-0.517 (0.042)***	-0.342 (0.052)***	-0.014 (0.001)***
All control variables and constant	Yes		Yes
Month of foundation fixed effects	Yes		Yes
Month fixed effects	Yes		Yes
N / R-sq.	309,198 / 0.006	309,198 / 0.045	309,198 / 0.006

Notes: Marginal effects (ME); (cluster-)robust standard errors in parentheses. Significance levels: *** 1%, ** 5%, * 10%. "Firm age" is the age of the firm in days divided by 365.25 and ranges from two months to seven years. The GDP index series is divided by 100 in the month-by-month growth models to better present the results. Baseline category for industries: high-tech manufacturing. Regions are defined as spatial planning regions (German: "Raumordungsregionen"). Additional control variable in all regressions: funding by KfW Bank

bunching of observations at zero in our dependent variable. Controlling for lagged employment size in our models further adjusts for bunching of the dependent variable at zero due to firms that did not yet start to grow.

To approximate the expected supply-side effects more directly, we use the share of the working population in short-time working schemes, split by district and month, as a measure of the career-entry opportunities available to jobseekers (Column C of Table 4). The findings confirm the results for the other business-cycle indicators and support our prior assumption: when the level of short-time work in a region is higher, very young firms experience stronger growth. As they become older (and potentially less financially restricted), negative demand-side effects prevail, and firms do not grow as strongly when aggregate conditions are less favorable. Overall, the results of the month-by-month employment growth models therefore support our fourth hypothesis.

Two effects might contribute to the (longer-term) growth advantage of new firms founded during the Global Financial Crisis in Germany. First, when these firms were very young, they profited from reduced competition in labor markets during the crisis. Second, since the crisis lasted only one year in Germany, new firms were able to profit from increasing

demand immediately as they grew older and the economy improved again simultaneously.

Our results are consistent with those from previous research showing that young firms grow procyclically in general. As long as we do not allow for a discontinuous impact of the business cycle dependent on firm age, our data show a procyclical relationship between aggregate conditions and firm growth (Table A.11 in Appendix A). Hence, treating cohorts of young firms up to several years of age as one homogeneous group overlooks important employment dynamics during the first years of a firm's lifespan.

6 Discussion

Previous research suggests that, in terms of employment, that young firms suffer more severely from crises than larger, established firms (Bartz & Winkler, 2016, Fort et al., 2013, Sedláček & Sterk, 2017, Zarutskie & Yang, 2017). We expand the literature by demonstrating that responses to cyclical conditions among new firms are highly heterogeneous and that sample selection can shape whether procyclical or countercyclical results are detected. In particular, it is only possible to provide a full picture of the effect that cyclical

conditions have on startup employment when using samples that include nonemployer businesses and when considering selection effects related to the types of founders who start firms over the cycle. By analyzing detailed firm- and employee-level data from a cross-industry sample of new firms, we can reconcile and extend the contradictory findings of previous studies.

First, the finding that new firms grow more strongly in adverse economic conditions, which is most likely due to better access to qualified labor, corresponds directly to the results that Moscarini & Postel-Vinay (2012) found for small firms. Moscarini & Postel-Vinay (2012) document the more sensitive reaction of large employers' net job creation to changes in aggregate unemployment compared to smaller firms. They argue that small firms benefit disproportionately from an increase in the supply of unemployed workers during crises, compared to larger employers, which strengthens the *relative* position of small firms in labor markets. Our results suggest that the increased supply of labor during a crisis even has a positive impact, in *absolute* terms, on young firms' employment growth. Second, our result that the new firms' responses to cyclical conditions differ across the firm-size distribution provides a link between the findings of Moscarini & Postel-Vinay (2012) and those of Bartz & Winkler (2016) and Sedláček & Sterk (2017). Sedláček & Sterk (2017) detect a larger aggregate employment-growth potential for cohorts of new firms founded during an expansion and attribute it to variations in the demand conditions for new firms entering the markets over the business cycle. However, their framework does not address whether newly founded firms face supply-side restrictions and can take advantage of an increase in labor supply during crises. Bartz & Winkler (2016) find that the Global Financial Crisis had a comparatively larger negative impact on younger businesses. However, unlike the present study, their main focus is on established SMEs. We find that even though entrepreneurs starting up during a recession find it, on average, easier to recruit staff, this effect does not hold for new high-growth firms. Hence, our findings generate a more nuanced understanding of the conditions under which positive supply or negative demand effects prevail in a recession, thereby corroborating recent findings by Fritsch et al. (2018), who report increased start-up activity in large-scale innovative industries in times of high unemployment. Our study suggests that hiring by small to medium-sized new entrants—firms that are primar-

ily financed by their founders rather than by external sources of capital—was particularly positively affected by the Great Recession. The tight supply of external capital that characterized this period thus appears to have improved their position in the labor market relative to larger (new) firms, which are more dependent on external sources of capital.

Third, our finding that a disproportionately large share of new firms founded during the crisis hired qualified career entrants qualifies the results obtained by Ouimet & Zarutskie (2014). They observe that, in general, young firms disproportionately employ skilled young workers and frequently remunerate young workers better than established firms would, suggesting that young employees are comparatively more productive when employed in young businesses. Therefore, the disproportionately large share of career entrants employed in the crisis cohort could be one reason for this cohort's growing size advantage in subsequent business years.

Finally, our study complements work that suggests the more extensive use of short-time working schemes in the United States to incentivize labor hoarding and avoid unemployment during future economic crises (e.g., Giroud & Mueller, 2017). Our study demonstrates that employment in newly founded firms can be a lever for mitigating the negative externalities that such schemes create for labor-market entrants.

The fact that our sample is drawn from a period covering only one recession may limit the applicability of the results to other settings. However, the rich data we use for this study, coupled with a well-defined empirical setting of an economic crisis characterized by a sharp reduction in access to external financial capital and a subsequent deep recession, allows us to track potential mechanisms that drive hiring in new firms over the business cycle in unprecedented detail. At the same time, we demonstrate the consistency of our results with stylized facts from previous research. Thus, the mechanisms identified in this paper are likely to hold in other crises as well. The extent to which our results are transferable to the economic crisis triggered by the COVID-19 pandemic is an interesting starting point for future in-depth analyses when more extensive time series and linked employer-employee data are available for this period. In general, the mechanisms suggested in the present study can be expected to have been at work during the pandemic as well. In particular, the labor market responses appear similar to those during

the Global Financial Crisis, such as the widespread use of short-time work schemes. However, the main difference between the crisis caused by the COVID-19 pandemic and previous crises is that large parts of the economy have been closed down by law, thus excluding them from market mechanisms. While it is likely that only (new) firms in specific industries that were less affected by the closure measures benefited from the increased labor supply, this overall situation makes it difficult to empirically isolate specific mechanisms.

7 Conclusion

Our findings have important implications for firms' hiring strategies, policy making, and further research. First, for founders and managers of young firms, our results suggest that the majority of new firms may not grow optimally during periods of economic expansion and that they should recognize that they may find it easier to attract talent, especially qualified career entrants, during economic downturns. Since our results are conditional on the human capital of the founders, and our post-hoc analyses suggest that the enabling effects do not differ for founders with low or high education and experience, this advice is not limited to specific groups of founders. However, as implied by the External Enabler Framework used in this study, firms may only benefit from enabling factors if the agents (the founders) have the means to act upon them. This suggests that strategic market entry during a crisis is only advisable if a firm's founders can secure the financial means to survive an initial period of limited demand of uncertain duration. More generally, new-firm management would be well-advised to closely monitor global and local economic conditions and policy regulations (e.g., short-time working schemes) that restrict hiring by incumbent firms and thus provide opportunities for young firms to attract talent.

Second, from a policy perspective, small to average-sized new firms grow countercyclically and thus stabilize aggregate employment during crises. New firms hiring career starters largely drive this effect, suggesting that promoting entrepreneurship may usefully complement policies that encourage labor hoarding during recessions, especially if they target modest size entrepreneurial activity. Policies that encourage labor hoarding create barriers for young career starters, and promoting entrepreneurship can help mitigate these

negative consequences and lead to promising new firms that may promote needed structural economic change.

Third, from a methodological perspective, studies that analyze firms' responses to business cycles and economic and financial uncertainty should understand that these responses begin to change during new firms' first years in business, and the estimated effects might strongly depend on the tailoring of the sample. Combining young firms of different ages (e.g., up to five years old) into one group for comparative studies and omitting young businesses that do not (yet) have employees could blur the results as well as the implications drawn from them.

Acknowledgements The authors thank Rui Baptista, Hugo Castro Silva, Jorge Guzman, Jarkko Harju, Martin Hud, Ulrich Kaiser, Niko Kilian, Georg Licht, Moritz Lubczyk, Joana Mendonça, Simona Murmann, Christian Peukert, Karl Schmedders, Lisa Schrüfer, Bastian Stockinger, Heiko Stüber, Hannes Ullrich, Rosemarie Ziedonis, various conference participants and discussants, and two anonymous referees for their support or helpful discussions.

Funding Information Open access funding provided by Bern University of Applied Sciences.

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