MNEs and startup growth.
Do good firms breed good startups?

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Abstract

Building on a conceptual framework that links work experience to initial startup quality and post-entry performance through selection and treatment mechanisms, we posit that having individuals with work experience in Multinational Enterprises (MNEs) as a part of the initial startup team positively influences the initial startup size and post-entry performance of new firms. Using detailed Swedish data on over 13,000 new firms over the period 2000-2014, we find support for our conceptual framework. The effect of MNE experience on post-entry growth yet depends on the position the individuals had in the MNE. Our results highlight that MNEs are a specific type of firm that serves as breeding grounds and plays a role as 'anchor' firms; they support the development of startups by indirectly 'feeding' the economy with relevant experiences and skills.

JEL codes: F23, F61, L25, L26
Keywords: startups, firm growth, workers mobility, employer-employee, multinational enterprises, Sweden

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1. INTRODUCTION

A key idea in the literature on industry dynamics and the origins of startups is that incumbent firms are breeding grounds for new entrepreneurs (Klepper 2011, Gompers et al 2005, Agarwal et al 2004, Feldman et al 2019). Employees develop experiences, knowledge, and skills, learn about organizational routines and business practices, and inherit networks to customers and suppliers at their employers. These inputs can provide ideas for business ventures and capabilities to successfully realize those ideas by developing new firms that survive and grow (Agarwal et al 2016, Feldman et al 2019, Klepper 2009, Furlan and Grandinetti 2020, Criaco et al 2021, Basu et al 2015). There is indeed significant evidence that employee spinoffs, i.e. new firms started by employees of incumbent firms, perform better than *de novo* entrants (Eriksson and Kuhn 2006, Andersson and Klepper 2013).

While the role of incumbent firms as 'parents' of employee spinoffs is established, less is known about the characteristics of incumbent firms that provide employees with better opportunities to acquire and develop knowledge, experiences, and capabilities of relevance for founding new successful business ventures (Parker, 2009). Available conceptual frameworks as well as empirical studies suggest varying perspectives on how different traits of parent firms influence the performance of new firms.

The literature shows that the quality of the parent firm conditions the quality of the new firms that employees will form, i.e. 'good firms spawn good spinoffs' (Gompers et al 2005, Klepper 2009). Insofar as larger firms are considered higher quality firms, spinoffs with founders who have work experience in large and resourceful firms should, from this perspective, perform better. Hvide (2009), Andersson and Klepper (2013) as well as Andersson et al (2012) find evidence in this direction. On the other hand, other scholars suggest the contrary (Parker, 2009), also based on the argument that employees in small firms are more likely to develop entrepreneurial human capital (Lazear 2004),[1]

[1]For example, large firms often have a finer division of labor than small firms, and employees in smaller firms are more likely to be exposed to the whole business operations and thus be in a better position to develop balanced skills ('jack-of-all-trades') that bode for successful entrepreneurship (Lazear 2004).

and find evidence that spinoffs from large parents perform worse in terms of longevity of the firm and income of their founders (Sørensen 2007, Elfenbein et al 2010, Sørensen and Phillips 2011). Some studies also show that several aspects concerning the relationship between the parent company and the employee spinoff are relevant to the post-entry performance, including industry and market overlap (Bahoo-Torodi and Torrisi 2022, Chatterji 2009), technology overlap (Bae and Lae 2021), the position in the parent firm (Lazear 2004, Unger et al 2011, Koster and Andersson 2018), as well as disagreements and conflicts between the parent and the spinoff (Klepper and Sleeper 2005, Klepper and Thompson 2010, Walter et al 2014).

In addition, recent studies have questioned the typical focus on founders and their background and have broadened the focus to consider the role of the whole initial team in startups (Rocha and Brymer 2017, Nyström 2021, Choi et al 2023, Esen et al 2023, Koch et al 2013).[2] Choi et al (2023) analyze the impact on startups of a sudden loss of early joiners, defined as "non-founder employees" in the first year of a startup, and find that this has large negative effects on startups, which persist over time. They conclude that a key part of the organizational capital of startups is embodied in early joiners. These results suggest that it is not only important to assess the labor market background of founders; initial employees (or early joiners) also bring knowledge, skills and experiences from their prior employers that can be key resources for the post-entry performance of new firms.

In this paper, we combine perspectives from the international business literature (Dunning and Lundan 2008, Narula et al 2019, Rugman and Verbeke 2003, Pitelis and Teece 2018), the literature on spinoffs and resource inheritance (Agarwal et al 2016, Feldman et al 2019, Klepper 2009, Furlan and Grandinetti 2020) as well as the broad literature on the role of human capital in startups (Colombo and Grilli 2005, Lazear 2004), and posit that having individuals with work experience from

[2]The focus on founders has a long tradition in the literature on startups. In a classic study from the 1970s, Cooper and Bruno (1977, p. 21) state: "for a new, high-technology firm, the primary assets are the knowledge and skills of the founders. Any competitive advantage the new firm achieves is likely to be based upon what the founders can do better than others."

Multinational Enterprises (MNEs) in the initial startup team, as founders and/or early joiners, is a specific asset that has positive influence on the quality and post-entry performance of new firms.

A common argument in international business is that MNEs have both superior resources in the form of proprietary technology and knowledge as well as organizational capabilities in the form of 'management practices' and ways to efficiently coordinate global production (Rugman and Verbeke 2001).[3] Empirical analyses that compare MNEs to non-MNEs confirm that MNEs do have a set of defining characteristics, such as higher productivity, intensity of research and development (R&D), scientific and technical workforce, large intangible assets and significant innovation efforts (e.g. Bellak, 2004; Castellani and Zanfei, 2007). Using a global survey of more than 10,000 firms across 20 countries, Bloom et al (2012) show that MNEs, relative to other firms, tend to be better managed and use more advanced management practices. Employees in MNEs are from this perspective likely to develop knowledge, experiences and skills that are difficult to develop elsewhere, such as specific management practices, knowledge of technology, international sales, or business networks, but are valuable for startups and transferable through labor mobility (Andersson et al 2022, de Faria et al 2021). By founding a startup or joining the initial startup team as an employee, such knowledge, experiences, and skills become available to startups (cf. Holm et al 2020, Balsvik 2011, Girma et al 2015).

We argue that MNE experience has a positive effect on startup quality, as evidenced by initial startup size, and post-entry performance, i.e., survival and employment growth. We develop a conceptual framework that links MNE experience to a selection and a treatment mechanism.[4] The *selection mechanism* maintains that startups whose founders and/or early joiners are individuals who

[3]A typical argument in the international business literature is that MNEs have overcome the 'liability of foreignness' (Hymer 1976, Dunning and Lundan 2008, Zaheer 1995). This implies that MNEs have some kind of firm-specific advantages that are transferable between parent and subsidiaries and allow MNEs to do business globally and compete with local firms, while dealing with obstacles of multinational activity (Buckley and Casson 1985, Caves 1996).

[4] The terms "selection" and "treatment" in this context refers to the ways in which the labor market background of founders and employees with an MNE background influences their decision to join a startup and their actual contribution to its growth. This is not to be confused with "selection" and "treatment" effects in expermental econometric study designs.

previously worked at MNEs are larger at the foundation stage, because they are based on stronger entrepreneurial ideas and have higher market potential or value creation prospects. Our framework identifies two sub-mechanisms behind the selection effect: (i) opportunity costs (MNEs offer good internal career prospects, which suggest that employees are reluctant to leave unless a startup has good prospects), and (ii) idea generation and validation (MNEs constitute environments in which employees are in a better position to come up with high quality ideas for new business ventures and also have better opportunities to validate their ideas). The *treatment mechanism* contends that individuals who left an MNE found or join the initial team of startup that have better chances of survival and growth, because former MNE employees bring skills, mindset, resources and capabilities that impact the early organizational structure of the startup and its market potential and value creation prospects. Three main reasons for this mechanism are put forth: (i) larger financial resources from networks to potential funders, (ii) experience and capabilities in various business practices and technologies, and (iii) professional networks.

We test the empirical relevance of our arguments using detailed Swedish data on over 13,000 new firms that started as incorporated new firms over the period 2000-2014. Matched employer-employee data are used to track the work history of the individuals employed at each firm in its founding year and to identify those who previously worked at an MNE. The richness of the data allows us to control for several confounding factors that may explain startup initial size, survival, and growth as well as MNE experience in the startup initial team. In particular, we develop indicators that capture the average size, productivity, and wage at the prior employer of individuals in the initial startup team. This allows to single out the specific MNE effect, from a generic effect from a 'better' (larger, more productive, paying higher wages) parent. We also control for the overlap between the industry of the new firm and the industry of the prior employer of the members of the initial startup team, as well as the prior job position, gender and age composition of the initial startup team.

Furthermore, the data allow us to address a specific empirical challenge that has to do with selection on individual characteristics in the labor market, i.e. labor market sorting on ability and

ambition. One reason why having individuals with MNE work experience matter for the performance of startups is that MNEs attract good workers. Chatterji (2009) refers to this as the "good people work for good firms" effect. In our empirical context, it means that, unless controlled for, our indicators of MNE experience may reflect the tendency of talented, ambitious individuals to join MNEs, rather than the effect of accumulating knowledge, experiences, and skills within MNEs. Our data allow us to identify the high school Grade Point Average (GPA) of every individual in the startup team and include it as a control in our regression analyses. High school GPA is a recognized proxy for an individual's ability or ambition (Geiser and Santelices 2007, Grogger and Eide 1995) and alleviates potential issues with labor market sorting counfounding the MNE experience effect.

Our results show that having individuals with MNE work experience in the initial startup team (founders or early joiners) has a positive effect on startup size as well as employment growth in the short (3 years subsequent entry), medium (5 years subsequent entry) as well as long run (10 years subsequent entry). They are thus consistent with our conceptual framework that links MNE experience to startup quality and post-entry performance through a selection and treatment effect. However, our analyses also show that the effect of having individuals with MNE experience in the initial startup team (founders or early joiners) on post-entry employment growth depends on the position they had in the MNE. We find that it is primarily experience from holding a high-level position in the MNE that matters for post-entry employment growth, particularly a position as manager. We interpret this to mean that high-level workers in management positions in MNEs are in a better position to learn about management practices and develop skills of relevance to scale up new businesses (cf. Andersson et al 2022, de Faria et al 2021). Managers are often involved in a broad set of decision making tasks and develop an understanding of a broader spectrum of the business operations than employees in more specialized work, and such capabilities are of relevance to scale up a business. Recent empirical evidence also suggests that managerial human capital is transferable between organizations (Sofka et al. 2014). A surprising result is that we find no statistically significant effect of MNE experience on the survival rate of new firms. However, a main determinant in our

analyses of survival is initial startup size and, given the strong association between startup size and MNE experience, we contend that the effect of MNE experience on survival is mediated by startups size.

Our paper makes at least four distinct contributions. First, we contribute to the literature on entrepreneurial spawning (Klepper 2009, Feldman et al 2019, Agarwal et al 2016), by highlighting MNEs as a specific type of firm that serves as a breeding ground for both founders and early joiners. These individuals possess the knowledge, skills and experiences that can support the post-entry performance of startups. Second, our findings add additional perspectives to the literature on entrepreneurial spawning by suggesting that the effect of 'parent firms' is contingent on the positions individuals held at their parent firms (cf. Sofka et al 2014, de Faria at al 2021). Third, by considering the whole initial startup team, i.e., including founders and early joiners, we provide further support to recent literature that emphasizes the key role of early joiners' experiences and characteristics, not just those of founders, in explaining startup performance (Choi et al 2023, Rocha and Brymer 2017). Fourth, our results on the role of prior work experiences in MNEs adds to the literature on the indirect effects of MNEs' local presence in an economy (Castellani and Zanfei 2006, Girma et al 2019, Rojec and Knell 2018). We provide evidence on a previously overlooked mechanism in this literature. Our analyses suggest that MNEs can serve as 'anchor' firms (Agrawal and Cockburn 2003) supporting the development of startups by indirectly 'feeding' the economy with relevant experiences and skills. While the role of large established firm is recognized in the literature on entrepreneurial ecosystem (Mason and Brown 2014), our results provide new evidence on the specific role of MNEs as drivers of local entrepreneurship.

The remainder of the paper is organized as follow. Section 2 describes our conceptual framework that links MNE experience to initial startup quality and post-entry performance. We first introduce the idea of a selection mechanism that links MNE experience to initial startup quality and then discuss the treatment mechanism that outlines how MNE experience influences survival and growth of new

firms. Section 3 presents the data, definition of variables as well as our empirical strategy. Section 4 presents our results. In the last section, we discuss our results and provide concluding remarks.

2. WORK EXPERIENCE IN MNEs, THE INITIAL QUALITY AND POST-ENTRY PERFORMANCE OF NEW FIRMS

The competence based view of new firms (Colombo and Grilli, 2005) holds that the capabilities of new firms' that influence their performance ultimately reside in the knowledge, experiences, and skills of the people in the firm. Many skills and knowledge of relevance for startups are formed by individuals' work experience (Lazear 2004, Unger et al 2011). In this vein, Klepper (2011, p.145) conceptualizes incumbent firms as "natural training grounds for the next generation of entrepreneurs", and there is plenty of evidence that new firms started by people with business and industry experience outperform other types of ventures (Wennberg et al 2011, Eriksson and Kuhn 2006, Andersson and Klepper 2013).

MNEs are especially well-positioned to serve as training grounds for individuals to develop relevant experiences, skills and knowledge that can benefit new firms (Andersson et al 2022, de Faria et al 2021). This is due to the experience and capabilities gained by MNE workers in production technologies, marketing, management processes, and many other business functions (Balsvik 2011, Fosfuri et al. 2001, Girma et al. 2015, Holm et al. 2020, de Faria et al 2021). By leaving MNEs to found, or join, a new firm, the knowledge, skills, and capabilities of the individuals are transferred to the new firm, which is expected to leave footprints on its overall performance.

MNEs can thus be important breeding grounds for high-level employees who can feed startups with the human capital they require for scaling up and growth (Andersson et al. 2022). Employee mobility from MNEs to entrepreneurship may contribute to industrial dynamics through resource reallocation resulting in aggregate productivity growth (Aghion et al. 2015, Audretsch 1995, Altomonte and Colantone, 2008). The relevance of these types of arguments rests on the quality and performance of ventures started by former employees of incumbent MNEs. We posit here that there

are two main mechanisms that link MNE experience to startup quality and post-entry performance: a selection and a treatment effect.

2.1 MNE experience and startup quality: a selection effect

A large literature shows that initial startup quality is an important factor that influence the subsequent performance of new ventures. Initial size has been widely considered as a proxy of the startup quality and prospects. Startups that are larger at foundation differ from smaller ones in their process of formation and the subsequent internal organization (Cooper et al. 1989).

Startups that begin with a larger foundation mobilize more capital, allowing them to pursue more ambitious goals and initiatives. Consequently, entrepreneurs would need to seek funding from sources beyond personal savings. This necessitates the involvement of external funding parties who must be convinced of the commercial viability and prospects of the idea underlying the new venture. These startups also have a solid and well-thought-out structure from the beginning, which can be an enabling factor in a wide range of startup processes such as strategic planning, operations, R&D, talent acquisition, and so forth (Cooper et al. 1994). Startup initial size may be also associated with characteristics of the founding team, composed by the founder(s) along with individuals who join the founder(s) in the early stages to help shape the business (Choi et al. 2023, Roach and Sauermann 2015). These individuals often bring specific skills, industry knowledge, or additional perspectives critical to the startup success (Kim 2018).

We posit that the link between the presence of former MNE employees in the founding team of a startup and its initial size rests on a *selection mechanism* (Bennett and Chatterji 2023). According to this mechanism, startups whose founders and early joiners include individuals who left an MNE, are larger at the foundation stage because they entail better entrepreneurial ideas that have higher market potential or value creation prospects.

The selection mechanism, in turn, consists of two distinct sub-mechanisms: the first one is related to the *opportunity costs* faced by the entrepreneur as well as other early members of the founding

team (Amit et al. 1995, Leibenstein 1968); the second one is related to the *idea generation and validation* processes (Berg 2016).

Opportunity costs

Opportunity costs have different sources (Bates 2005, Cassar 2006, Shane and Venkataraman 2000, Stenard and Sauermann 2016).

First, starting a new venture or be part of it may involve financial stress as many startups take time to generate profits. An employee at an MNE likely enjoys higher-than-average benefits, extending beyond the wage (international compensation packages, global profit sharing programs, cross-border retirement plans, etc.). Quitting a position in an MNE to found or join a startup can lead to a significant reduction in expected income, especially in the early stages of the venture (Conti and Roche 2021, Koellinger and Thurik 2012). These short-run losses should be offset by business ideas with higher market potential or value creation prospects, in turn leading to higher initial startup size (Cassar 2006). Second, MNEs may offer better career potential both nationally and internationally through foreign affiliates that startups, at least in their early stages of development, and other employers cannot offer (see Agarwal et al. 2022 on the relevance of career prospects on new venture formation). In addition, founding or joining a startup also involves a considerable amount of risk, including market uncertainties, competition, financial challenges, and operational complexities (Janney and Dess 2006). Employees in MNEs have the advantage of operating within an established organization, whose chances of financial distress are less likely than average, with reduced personal risk.[5] This higher risk should be compensated by higher market potential or value creation prospects. Startups that have a larger than average initial size are usually those that are also more likely to have higher

[5] The literature on the comparative survival rate of MNE affiliates vs. comparable domestic firms is varied and mainly centered on comparing foreign versus domestic firms (Alfaro and Chen 2012, Mata and Portugal 2002, Kronborg and Thomsen 2009), rather than MNE affiliates (both owned by foreign and domestic MNEs) versus purely domestic firms (Mata and Freitas 2012).

market potential and value creation prospects, therefore we can expect MNE employees to be more likely to found or join startup with larger initial size.

Idea generation and validation

The second sub-mechanism leading to the self-selection of founding teams willing to establish startups that are larger at foundation relates to the idea generation and validation processes (Berg 2016). Having a stronger idea can make the difference between value creation and destruction for any company, but this is especially true for startups, whose very existence depends on introducing innovative products to the market.

Being part of an MNE can potentially facilitate successful idea generation (Mannucci and Perry-Smith 2022). This is because such a setting provides access to new and diverse information, along with an effective idea generation process that relies on an environment fostering learning, discussion, and creativity (Hasan and Koning 2019, Perry-Smith and Mannucci 2017). MNEs are in general much more R&D intensive and engage in innovation related work. Consequently, both the likelihood of coming up with an idea as well as the "quality" of ideas is likely to be better in MNEs (Gruber et al. 2013).

Moreover, while an idea for a startup may be compelling, it is crucial to validate and test the concept before committing full time (Berg 2016). By leveraging MNEs' resources and networks, employees in MNEs can explore opportunities to validate their business idea while maintaining their current employment (Soda et al. 2021). This can help mitigate the risk of launching a startup that may not have sufficient market demand or a viable business model. Upon validation and testing, potential founders may be more confident on the value creation prospects of the business idea. This implies that they will be willing to invest a larger amount of resources in it and hence leading to the founding of a larger startup.

The relevance of the selection mechanism may be limited in both time and scope. Firstly, it holds significance in the pre-founding stage of a startup. During this phase, potential entrepreneurs must carefully consider the costs and benefits of their professional choices. The primary components of these choices encompass the opportunity costs associated with initiating a new venture and the anticipated benefits tied to the quality of the idea underlying the new venture. Secondly, the selection mechanism carries greater significance in explaining the initial size of a startup when the founder has departed from an MNE. Despite both founders and individuals joining a startup from an MNE facing substantial opportunity costs, the process of idea generation and validation is more likely to involve potential founders or entrepreneurs as the primary agents.

Based on the arguments above, we develop the following hypothesis:

Hypothesis #1: *Startup size is positively associated with having founders or early joiners in the initial startup team that previously worked at MNEs.*

2.2 MNE experience and post-entry performance: a treatment effect

As argued above, a selection mechanism can explain a link between MNE experience and the initial quality of startups. The initial startup quality sets a potential for the post-entry performance of a startup, but realization of this potential requires additional competences and skills. We posit a *treatment mechanism* responsible for the link between MNE experience and post-entry performance of startups, resting on the idea that individuals who left an MNE to found or join a new venture may found or join one with stronger chances of survival and growth. In fact, in addition to the quality effect, former MNE employees bring from the MNE some skills, mindset, resources and capabilities that impact the early organizational structure of the startup and its market potential and value creation prospects (Andersson and Klepper 2013, Bayus and Agarwal 2007, Colombo and Grilli 2005, Dencker et al. 2009, Groysberg et al. 2008, Kim et al. 2009, Kor 2003, Raffiee and Byun 2020). The

treatment mechanism encompasses a set of three sub-mechanisms that refer to *experience and capabilities*, *financial resources*, and *network and social capital*.

Experience and capabilities

The experiences and capabilities gained as MNE employees can foster startup growth through a diversified array of important channels, ranging from process optimization to innovation orientation, from business development to market related strategy, from agility, adaptability, and scalability orientation to cross cultural competences.

MNEs often have well-established processes and systems to ensure efficiency across their operations. Former MNE employees can leverage their understanding of process optimization methodologies and bring discipline to the startup environment (Sørensen and Fassiotto 2011). They can help startups streamline operations, implement effective workflows, and employ more efficient processes, thus making startups more likely to grow (Haase and Eberl 2019, Qian et al. 2012).

Former MNE employees can contribute their expertise in business development, market analysis, and partnership negotiations to startups (Colombo et al. 2004). They can help identify growth opportunities and develop market entry strategies. In particular, the timing of a startup's entry into new markets and the overall market conditions can influence its survival and growth. Launching a startup during favorable economic conditions or when there is a strong demand for innovative solutions can provide opportunities for rapid growth (Cassiman and Ueda 2006). Along this dimension, the former MNE employee can leverage their insider information on market conditions and opportunities and accordingly choose the right market as well as the right timing to entry.

Startups operate in dynamic and rapidly changing environments, requiring them to be agile and adaptable. MNEs, too, face constant market shifts and need to respond quickly to changing customer demands and industry trends. Former MNE employees can bring their experience in navigating

complex and evolving landscapes, applying their adaptability and flexibility to help startups navigate challenges. At the same time, while MNEs are typically large scale organizations, both startups and MNEs focus on scalability (Reuber et al, 2021; Tippman et al., 2023). Startups aim to grow rapidly and expand their operations, while MNEs seek to scale their existing business models across different markets. Former MNE employees can contribute their knowledge of scaling strategies, processes, and best practices to help startups plan for growth.

While startups typically start with a local or regional focus, they may aspire to expand globally in the future. These startups with global ambitions may encounter cross cultural challenges as they expand into new markets. Former MNE employees who have experience working in diverse cultural settings can bring valuable cross cultural competence to startups (Johnson et al. 2006; Caligiuri and Tarique 2012). They can help navigate cultural differences, develop effective communication strategies, and build relationships with stakeholders from different backgrounds.

Financial resources

The financial resources available to the startup can determine its survival and growth prospect (Chandler and Hanks 1998, Davila et al. 2003). This includes funds raised from various sources such as personal savings, investments from friends and family, angel investors, venture capitalists, or government grants (Bertoni et al. 2011, Colombo et al. 2016). Former MNE employees may have greater access to capital due to higher-than-average individual financial wealth as well as the possibility to rely on a larger network of potential funders built during their position in the MNE (Elston and Audretsch 2010, Hurst and Lusardi 2004, Hvide and Møen 2010).

Capital availability allows startups to invest in infrastructure, hire talented employees, develop prototypes, and execute marketing strategies on a larger scale, thus impacting prospect growth. Certainly, the capability to mobilize significant financial resources from the early stages of startup development can influence its initial size (Hvide and Møen 2010). However, given that capital

requirements are likely to evolve throughout the startup life cycle, the availability of capital is more critical as a channel influencing treatment rather than as one influencing selection.

Network and social capital

Former MNE employees can usually leverage larger and more diversified networks as well as a higher valued social capital. Former MNE employees often have extensive professional networks built during their tenure with the MNE. They can leverage these networks to connect startups with potential customers, investors, mentors, and industry experts (Carias et al. 2023). Their existing relationships can provide valuable resources and opportunities for the startup to accelerate its growth. Networks and social capital can also be exploited as key resources to foster strategic partnerships and alliances, both commercial and in the realm of R&D (Aharonson et al. 2020). Partnerships and alliances with established companies or key stakeholders can impact startup growth. Collaborations with strategic partners can provide access to resources, distribution channels, or customer bases, enabling startups to achieve a higher grow by leveraging MNEs' existing networks (Gaonkar and Moeen 2023).

Differently from what happened for the selection mechanism, the relevance of the treatment mechanism is limited in time but not in scope. In fact, it is significant in the post-founding stages of the startup life cycle, but it involves both founders and other members of the founding team. Just as founders inherit from the MNE knowledge, competences and/or additional perspectives key to the startup success, so do other members of the founding team.

Based on these arguments above, we develop the following hypothesis:

Hypothesis #2: *Survival and growth of startup are positively associated with having founders or early joiners in the initial startup team that previously worked at MNEs.*

3. DATA AND EMPIRICAL STRATEGY

3.1. Sources and data construction

The dataset utilized in this study is constructed from various audited register databases accessed through Microdata Online Access (MONA) at Statistics Sweden. With a unique anonymized identification number, we construct a matched employer-employee dataset by linking individual employees from the Longitudinal Integrated Database for Health Insurance and Labour Market (LISA hereafter)[6] and their employing firms from the Structural Business Database *(Företagens ekonomi)*. The LISA database contains information about the employee's salary, occupation, and education level, among others. The Structural Business Database contains accounting information of registered firms, such as profits, turnover, total employees, and industry classification codes.

We, then, complement this dataset by merging it with the Business Register Database *(Företagsregistret)* to identify the location of the firms; the Corporate Group Register *(Koncernregistret)* to identify the ownership structure, i.e., whether a firm belongs to an MNE; Company and Establishment Dynamics Register *(Registren för Företagens och arbetsställenas dynamik)* to distinguish new firms and establishments based on employment flows; and Foreign Trade in Goods Database *(Utrikeshandel med varor)* for firm's exporting and importing activities.

The study period spans from 2000 to 2014. However, we include data from 1999 to capture employees' MNE experience from their prior employers before 2000; and data from 2015-2019 to construct the 5 year firm size growth variable beyond 2014.

3.2. Definition of startup and variables

New firms

[6] For a description of the databases mentioned in this section, please refer to Statistics Sweden's website: https://www.scb.se/vara-tjanster/bestall-data-och-statistik/register/ (in Swedish).

The identification of a startup relies on a combination of new firm ID codes (organization numbers) and information on employee flows at the establishment level each year. We employ a well established method to identify genuinely new firms in the register data.[7] Specifically, a startup is identified by the presence of both a new organization number and a new establishment.

We also impose two main restrictions. First, we only consider new firms that start as incorporated entities. One reason for this is the heterogeneous nature of new firms, as research indicates that those starting as self-proprietorships often have different characteristics and motives compared to those starting as incorporated entities. New firms with growth ambitions typically start as incorporated business (Fairlie and Miranda 2017) and generally possess higher 'quality' than self-proprietorships (Levine and Rubinstein 2017), suggesting that incorporated startups more closely align with entrepreneurship in the Schumpeterian tradition (Henrekson and Sanandaji 2014). By focusing our sample on incorporated new firms, we avoid comparing 'apples to oranges' and direct attention towards those more likely to pursue growth ambitions.

Second, we limit our analyses to new firms with at least five employees in their initial year of operation. The reason for this is technical, but also driven by previous empirical analyses. We are interested in how the labor market background of individuals in the initial startup team, i.e. founders and early joiners, affects startup performance. Consequently, firms without employees (i.e., only consisting of a founder) are less pertinent to our hypotheses. A minimum startup size also minimizes heterogeneity, as extant research shows that new firms that hire are typically more growth oriented, and have stronger business assets and intellectual property (Fairlie and Miranda 2017).

Dependent variables

Our analyses focus on the initial startup size, survival, and post-entry growth. We thus utilize three dependent variables: *InitialStartupSize* is the number of employees in the first year of operation of

[7]Statistics Sweden has developed the so-called FAD (Företagens och Arbetsställens Dynamik) coding scheme for establishments to distinguish various types of new firms based on worker flows and this has been employed in several empirical studies (see e.g., Andersson and Klepper 2013).

the startup; *Survival* is the number of years the startup has remained in operation (up to the year in which our study period ends); *EmploymentGrowth_3years*, *EmploymentGrowth_5years*, and *EmploymentGrowth_10years* are the percentage change in the total number of employees in the startup from the founding year, *t*, to *t*+3, *t*+5, and *t*+10, respectively.

Explanatory variables

We construct several explanatory variables that are motivated by our conceptual framework. Our focus is on whether having individuals in the startup team who previously worked at MNEs has an impact on startup size, survival, and employment growth, respectively. To construct indicators of MNE experience, we first have to define the initial startup team. The initial startup team is defined as all employees in the new firm in the founding year, *t*. This definition implies that the initial startup team includes both founders as well as early joiners.

MNE experience

We use the longitudinal matched employer-employee dataset to identify the prior employer of all individuals in the initial startup team. MNE experience in the startup team is measured by a dummy variable that is 1 if anyone in the initial startup team worked in the previous year at an MNE, 0 otherwise.

We also assess if the effect of MNE experience depends on the position an individual had at an MNE. A large literature suggests that the accumulation of relevant knowledge, experience and skills depends on the position an individual has at a firm (Lazear 2004, Unger et al 2011, Koster and Andersson 2018). Individuals in managerial and other high-level positions are often claimed to be able to develop a broader set of skills that are transferable across firms, making them valuable assets for other companies (Andersson et al 2022, Sofka et al 2014, de Faria at al 2021). Against this backdrop, we develop another set of indicators that identify the position an individual held while working at an MNE. Using information from the data on broad occupational categories (ISCO-88, 1-

digit), we differentiate between the following types of positions within MNEs:[8] *MNE_Manager* is a dummy that is 1 if any member of the initial startup team previously worked at an MNE as a manager (major group 1 according to ISCO-88), 0 otherwise; *MNE_ProfessionalTechnician* is a dummy that is 1 if any member of the initial startup team previously worked at an MNE as a professional, technician or associate professional (major group 2 oir 3 ISCO-88), 0 otherwise; *MNE_OtherProfession* is a dummy that is 1 if any member of the initial startup team previously worked at an MNE with any position other than major groups 1, 2, or 3, according to ISCO-88, 0 otherwise.

In addition, we also construct indicators that inform about the combination of individuals' education, serving as a proxy for human capital, and MNE experience. The indicators are: *MNE_TertiaryEducated*, a dummy that is 1 if any member of the initial startup team has a university education (more than 3 years) and previously worked at an MNE, 0 otherwise; *MNE_NonTertiaryEducated*, a dummy that is 1 if any member of the initial startup team who does not have a tertiary education previously worked at an MNE, 0 otherwise. [9]

Finally, we also construct indicators of the overlap between the industry of the startup and the industry of the establishment where individuals worked within the MNE. A large literature shows that having founders with experience from the same industry as the startup boosts post-entry performance (Chatterji 2009, Klepper 2011, Delmar and Shane 2006). These indicators are: *MNE_SameIndustry*, a dummy that is 1 if any member of the initial startup team previously worked at an MNE within the same 2-digit NACE industry as the startup, 0 otherwise; *MNE_DifferentIndustry*, a dummy that is 1 if any member of the initial startup team previously worked at an MNE in another 2-digit NACE industry than the startup, 0 otherwise.

[8] https://ec.europa.eu/eurostat/documents/1978984/6037342/ISCO-88-COM.pdf

[9] As a consequence of this definition, we can have 3 cases: i) founding teams composed of all tertiary educated employees (*MNE_TertiaryEducated*=1 and *MNE_NonTertiaryEducated*=0); ii) founding teams composed of all non-tertiary educated employees (*MNE_TertiaryEducated*=0 and *MNE_NonTertiaryEducated*=1); iii) founding teams composed of a combination of non-tertiary and tertiary educated employees (*MNE_TertiaryEducated*=1 and *MNE_NonTertiaryEducated*=1).

Other control variables

We control for several characteristics of individuals in the startup team.

First, we control for the average age of the individuals in the initial startup team (*AverageAge*). Prior research shows that the average age of a firm's employees is one determinant of innovation (Schubert and Andersson 2015, Pfeifer and Wagner 2014). One explanation for this is that younger employees are more inclined to adopt and adapt to recent technological skills or join firms with greater innovation potential (Ouimet and Zarutskie 2014). Furtermore research shows that younger CEOs tend to have higher propensity to risk and more incentives to grow their firm (Barba Navaretti et al 2022; Serfling 2014). Using Swedish data, Andersson and Klepper (2013) show that the average age of employees in a startup has negative influence on employment growth. Second, we control for the proportion of individuals in the startup team that has tertiary education, i.e., university education of at least three years, (*TertiaryEducatedShare*) with the expectation that startups with a higher proportion of highly educated individuals perform better (Colombo and Grilli 2005). Third, we include average high school GPA of the individuals in the startup team (*AverageHighschoolGrade*). High school GPA is a recognized proxy for an individual's ability or ambition (Geiser and Santelices 2007, Grogger and Eide 1995) and alleviates potential issues related to the fact that MNE experience may reflect labor market sorting (Chatterji 2009).

The empirical analyses also control for several aspects of the labor market background of the individuals in the startup team. To control for general industry experience beyond experience gained from working in an MNE operating in the same industry as the startup, we compute the proportion of individuals in the startup team who previously worked in the same industry as the startup (*SameIndustryShare*). We also include the proportion of individuals in the startup team who previously worked in a high-tech industry (*HightechShare*). Many MNEs operate in high-tech industries and such industries often represent contexts in which employees learn about new technology and R&D operations. An additional control is the average wage that individuals in the startup team earned at their prior employer (*AveragePreviousWage*). Average wage is a 'catchall'

variable that, conditional on average high school GPA and other controls, informs about the average prior positions and human capital value of the startup team members.

Prior literature shows that experience from large and productive firms can boost the post-entry performance of new firms (Andersson and Klepper 2013, Hvide 2009, Maliranta and Nurmi 2018). We compute the average employment size (*AverageSizePreviousFirm*), productivity (*AverageProductivityPreviousFirm*), and turnover (*AverageTurnoverPreviousFirm*) of the prior employers of individuals in the startup team. As MNEs are often large and productive, these control variables are also important to ensure that the indicators of MNE experience do not merely reflect the general effect of work experience from large and productive firms. Likewise, we include the proportion of individuals in the startup team who previously held positions as managers, professionals, or technicians. These variables are included to control for the general effect of having held a managerial or professional position.

Finally, we control for whether the startup engages in export (*Exporter*) or import (*Importer*) activities, as well as the size of the labor market in the region where the startup is located (*TotalEmployment_LA*). A large literature shows that export and import activities are associated with firm performance and growth (e.g. Cassiman and Golovko 2018, Castellani and Fassio 2019; Halpern et al 2015). The size of the local labor market is a control variable motivated by a large literature on the influence that agglomeration economies have on firm performance (Rosenthal and Strange 2004, Andersson and Lööf 2011). The overall size of a region is a 'catchall' variable that reflects the combined net effect of two opposite forces – a positive influence from agglomeration economies through various types of local externalities and a negative effect from tighter competition in agglomerated areas with a higher density of (competing) firms.

3.3. Descriptive statistics

Table 1 presents the number of firms per year as well as the number of firms that are founded each year. On average, about 870 firms are founded each year during the 2000-2014 period. We have in

total 13,196 observations of new firms in the dataset. There is rather small variation in the number of firms that are founded each year, though it is evident that the number of new firms fell in the aftermath of the IT-crisis in the early 2000s as well as in the aftermath of the financial crisis after 2007/2008.

Table 1: Firm cohorts by year of establishment

Year	All firms*	Firms at Establishment Year	Startups as a share of all firms
2000	10117	1228	12.1%
2001	6827	762	11.2%
2002	6315	688	10.9%
2003	5373	585	10.9%
2004	5403	624	11.5%
2005	5975	717	12.0%
2006	6378	791	12.4%
2007	8230	1025	12.5%
2008	7118	924	13.0%
2009	6269	827	13.2%
2010	6716	968	14.4%
2011	6750	1050	15.6%
2012	5909	986	16.7%
2013	5467	1006	18.4%
2014	4950	1015	20.5%
Total	**97797**	**13196**	

Note: Own computations based on audited firm-level register data from Statistics Sweden (SCB). * All firms denote all non-affiliated incorporated firms with 5-49 employees in their establishment year.

Table 2 presents descriptive statistics for all variables in the empirical analyses. The average startup size is about 8 employees, with minimum of 5 (by definition) and a maximum just below 50 employees. Only a few startups are exporters (14%) or importers (27%). Considering the number of observations on employment growth, it is evident that many firms do not survive throughout the entire period of analysis. We have 10,549 observations for the short run employment growth (3 years), 8,477 observations for the medium run (5 years), and 3,942 observations for the long run (10 years). The average employment growth is 6.8% at 3 years, 14.6% at 5 years and 27.3% at 10 years.

Table 2: Descriptive statistics at the establishment year

Variable	Obs	Mean	Std. Dev.	Min	Max
EmploymentGrowth_3years	10549	0.068	0.787	-3.850	3.708
EmploymentGrowth_5years	8477	0.146	0.901	-3.784	4.379
EmploymentGrowth_10years	3942	0.273	1.094	-3.526	5.375
InitialStartupSize (ln)	13196	2.039	0.460	1.609	3.892
Exporter (dummy)	13196	0.135	0.342	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Importer (dummy)	13196	0.268	0.443	0	1
AverageAge (ln)	13196	3.472	0.208	2.890	4.251
AveragePreviousWage (ln)	13196	6.938	2.000	0	10.500
AverageSizePreviousFirm (ln)	13196	3.936	2.176	-1.609	9.892
AverageProductivityPreviousFirm (ln)	13196	11.181	4.218	0	16.424
AverageTurnoverPreviousFirm (ln)	13196	17.687	3.595	0	25.387
AverageHighschoolGrade	13196	11.090	4.531	0	20
GradeMissing (dummy)	13196	0.102	0.302	0	1
SameIndustryShare	13196	0.356	0.333	0	1
HightechShare	13196	0.022	0.090	0	1
TertiaryEducatedShare	13196	0.121	0.206	0	1
ManagerShare	13196	0.046	0.123	0	1
ProfessionalShare	13196	0.070	0.185	0	1
TechnicianShare	13196	0.095	0.189	0	1
MNE (dummy)	13196	0.543	0.498	0	1
MNEShare	13196	0.197	0.243	0	1
MNE_Manager (dummy)	13196	0.053	0.225	0	1
MNE_ProfessionalTechnician (dummy)	13196	0.151	0.358	0	1
MNE_OtherProfession (dummy)	13196	0.457	0.498	0	1
MNE_TertiaryEducated (dummy)	13196	0.133	0.340	0	1
MNE_NonTertiaryEducated (dummy)	13196	0.500	0.500	0	1
MNE_SameIndustry (dummy)	13196	0.165	0.371	0	1
MNE_DifferentIndustry (dummy)	13196	0.468	0.499	0	1
MNE_ManagerShare	13196	0.010	0.053	0	1
MNE_ProfessionalTechnicianShare	13196	0.043	0.126	0	1
MNE_OtherProfessionShare	13196	0.144	0.206	0	1
MNE_TertiaryEducatedShare	13196	0.035	0.111	0	1
MNE_NonTertiaryEducatedShare	13196	0.162	0.213	0	1
MNE_SameIndustryShare	13196	0.047	0.130	0	1
MNE_DifferentIndustryShare	13196	0.150	0.212	0	1
TotalEmployment_LA (ln)	13196	12.719	1.518	7.069	14.069

Note: Own computations based on audited firm-level register data from Statistics Sweden (SCB).

Looking at MNE experience we see that the mean of the MNE dummy is 0.543, which implies that just over 50% of the startups has at least one member of the initial startup team who previously worked at an MNE. This figure is somewhat higher than the overall fraction of employees who are employed at MNEs in Sweden. A rather small fraction of startups has individuals in their initial team who previously worked at MNEs in a managerial position. The mean of the *MNE_manager* dummy is 0.053, which means that about 5% of the startups have such individuals in their initial startup team. The fraction is somewhat higher for professionals and technicians (15%), and highest for the remaining category "other professions" (46%). Likewise, the mean of the indicator of MNE experience combined with tertiary education is 13% while it is 50% for non-tertiary education.

3.4. Empirical strategy

To analyze the relationship between MNE experience and startup size and test Hypothesis 1, we employ the following model, estimated via standard OLS:

$$InitialStartupSize_i = \alpha + \beta_1 MNE_i + x_i'\beta + \mu_i + \varphi_t + \varepsilon_i, \quad (1)$$

where the dependent variable is *InitialStartupSize*$_i$, *MNE*$_i$ is the dummy variable identifying startups having at least a former MNE employee among the founders and/or the early joiners of the initial startup team, x_i consists of all control variables (see section 3.2 for description), μ_i is an industry fixed effect. Because each startup is founded in a different year, we also introduce year dummies to capture any effect related to the year in which firm *i* was founded[10]. We include different sets of *MNE* variables in our estimation models. First, we run a model which includes only the *MNE* dummy. The second model includes all MNE profession dummy variables (*MNE_Manager*, *MNE_ProfessionalTechnician*, and *MNE_OtherProfession*). The third model includes education background dummy variables of initial startup team members with MNE experience (*MNE_TertiaryEducated* and *MNE_NonTertiaryEducated*). Lastly, we run a model with dummies indicating the industry of initial startup team members with MNE experience, i.e., whether it is the same or different from the startup (*MNE_SameIndustry* and *MNE_DifferentIndustry*).

Hypothesis 2 has two components, i.e., startup survival and startup growth. To test the relationship between MNE experience and startup survival, we employ the Cox proportional hazard model (Cox 1972). The model formulation is as follows:

$$\lambda(t|X_i) = \lambda_0(t)\exp(\beta_1 MNE_{it} + x_{it}'\beta + \mu_i + \varphi_t), \quad (2)$$

where $\lambda(\cdot)$ denotes the hazard function at time *t* for firm *i*, and all other variables are similar to those in equation (1), except that we include *InitialStartupSize*$_i$ as an additional control variable.

[10] To avoid confusion, we omit the subscript t from the equation, as there is a one-to-one relation between each firm i and the year in which the firm was founded.

Lastly, to test the relationship between MNE experience and startup growth, we examine the growth rate of employment among these startups. In doing so, using the OLS estimator, we estimate the following model:

$$EmploymentGrowth\_T_i = \alpha + \beta_1 MNE_i + x_i'\beta + \mu_i + \varphi_t + \varepsilon_i, \quad (3)$$

where *EmploymentGrowth_T*$_i$ denotes the growth rate of employment size during the first T years (T equal to 3, 5, and 10 years) and the specification is the same as in equation (2).

4. RESULTS

This section presents the results of the estimations of our regression analyses (see section 3.4). We start by presenting results for initial startup size, then survival and lastly post-entry growth.

4.1. Initial startup size

Table 3 presents the OLS estimates of the model in equation (1), i.e., the model investigating the relationship between MNE experience and initial startup size. Starting from the main variables of interest, we find support for our Hypotheses 1 (column 1). There is a statistically significant positive relationship between *MNE* and initial startup size. Startups with individuals who have MNE experience in their initial startup team are larger at foundation. Columns (2)-(5) report results when we separate MNE experience based on broad occupation groups, education, and industry similarity. These results suggest that the estimated relationship between initial startup size and MNE experience is not conditional on which position an individual had on the MNE or their education level. The effect of MNE experience is positive and significant. In Column (5), we simultaneously include all the variables measuring MNE experience as well as past job position, education background, and industry overlap. Results reveal that experience as a manager in a MNE has a stronger effect on initial startup size, but differences with other positions are relatively small. A significant difference seem to emerge between MNE experience of tertiary vs. non-tertirary educated employees. The effect of having

individuals in the initial startup team with prior work experience from an MNE in the same industry as the startup is large and significant, but quantitatively not different from the effect of the experience in other industries. Taken together, these results are consistent with the hypothesis that there is a *selection effect* that links MNE experience to initial startup size.

Turning to the control variables, our results are broadly consistent with prior literature. Younger initial startup teams tend to found larger startups. Having a higher share of the individuals in the initial startup team with experience from the same industry as the startup is associated with larger initial startup size. We also find that the average prior wage and the average size of the prior employer of the members of the initial startup team has a positive and statistically significant association with initial startup size. Startups that are internationalized through importing activity are also generally larger in the founding year. These results indicate that the combined labor market background of the initial startup team influence the initial startup size.

Table 3: OLS regression results on firm establishment size.

VARIABLES	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
MNE (dummy)	0.175***				
	(0.009)				
MNE_Manager (dummy)		0.187***			0.135***
		(0.022)			(0.023)
MNE_ProfessionalTechnician (dummy)		0.152***			0.062***
		(0.014)			(0.020)
MNE_OtherProfession (dummy)		0.198***			0.098***
		(0.009)			(0.019)
MNE_TertiaryEducated (dummy)			0.207***		0.088***
			(0.016)		(0.020)
MNE_NonTertiaryEducated (dummy)			0.186***		-0.034
			(0.009)		(0.021)
MNE_SameIndustry (dummy)				0.200***	0.136***
				(0.013)	(0.019)
MNE_DifferentIndustry (dummy)				0.204***	0.129***
				(0.009)	(0.020)
AverageAge (ln)	-0.153***	-0.152***	-0.156***	-0.148***	-0.149***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
SameIndustryShare	0.037***	0.037***	0.036***	0.015	0.017
	(0.012)	(0.012)	(0.012)	(0.013)	(0.012)
HightechShare	-0.101**	-0.117***	-0.104**	-0.106***	-0.114***
	(0.041)	(0.041)	(0.041)	(0.041)	(0.040)
TertiaryEducatedShare	-0.019	-0.030	-0.103***	-0.036	-0.121***
	(0.023)	(0.023)	(0.025)	(0.023)	(0.025)
AveragePreviousWage (ln)	0.020***	0.017***	0.017***	0.018***	0.016***

	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
AverageSizePreviousFirm (ln)	0.028***	0.019***	0.023***	0.018***	0.016***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
AverageProductivityPreviousFirm (ln)	0.001	0.001	0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
AverageTurnoverPreviousFirm (ln)	-0.002	-0.002	-0.004	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Exporter (dummy)	0.036	0.029	0.030	0.020	0.023
	(0.023)	(0.023)	(0.023)	(0.023)	(0.022)
Importer (dummy)	0.066***	0.057***	0.058***	0.058***	0.054***
	(0.016)	(0.015)	(0.015)	(0.015)	(0.015)
AverageHighschoolGrade	-0.002	-0.003**	-0.003**	-0.003*	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GradeMissing (dummy)	-0.118***	-0.121***	-0.125***	-0.115***	-0.120***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
ManagerShare	-0.091***	-0.173***	-0.106***	-0.103***	-0.172***
	(0.025)	(0.027)	(0.025)	(0.025)	(0.027)
ProfessionalShare	-0.109***	-0.107***	-0.112***	-0.123***	-0.117***
	(0.024)	(0.025)	(0.023)	(0.023)	(0.025)
TechnicianShare	-0.143***	-0.168***	-0.154***	-0.156***	-0.158***
	(0.019)	(0.020)	(0.019)	(0.019)	(0.020)
TotalEmployment_LA (ln)	0.011***	0.010***	0.009***	0.009***	0.009***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	2.004***	2.077***	2.096***	2.056***	2.110***
	(0.094)	(0.093)	(0.093)	(0.093)	(0.093)
Observations	13,205	13,205	13,205	13,205	13,205
R-squared	0.158	0.183	0.178	0.185	0.193

Note: Robust standard errors in parentheses; Two-digit industry codes and year dummies included in all regressions but not reported. *** p<0.01, ** p<0.05, * p<0.1. *GradeMissing dummy* refers to a dummy variable which is one firms in which no member of the initial startup teams has information in high school GPA. This is true for about 10% of the new firms in the sample.

4.2. Survival

Table 4 presents the results of the Cox proportional hazard model described in equation (2). The results show that there is no robust statistically significant effect of MNE experience on the survival rate of new firms. The overall dummy for MNE experience is not significant (Column 1), and this is also true for MNE experience by occupation and education (Columns 2-4). There is only a statistically weak relationship between MNE experience as professional/technician, but the significance of this effect is reduced in the full model when all types of MNE experience variables are included (Column 5). One explanation for this result is that the survival model includes initial startup size as a control variable. As a consequence, the estimated effect of MNE experience on startup survival may go through initial startup size, given the strong association between initial startup size and MNE

experience (see Section 4.1). In other words, conditional on initial startup size, having workers from MNEs in the initial startup team has no independent effect on survival.

Table 4: Cox proportional hazard results on firm survival

VARIABLES	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
MNE (dummy)	0.944				
	(0.082)				
MNE_Manager (dummy)		1.119			1.134
		(0.211)			(0.218)
MNE_ProfessionalTechnician (dummy)		0.719**			0.722*
		(0.100)			(0.130)
MNE_OtherProfession (dummy)		0.993			1.009
		(0.086)			(0.190)
MNE_TertiaryEducated (dummy)			0.918		0.931
			(0.122)		(0.152)
MNE_NonTertiaryEducated (dummy)			0.930		0.815
			(0.078)		(0.156)
MNE_SameIndustry (dummy)				0.922	1.059
				(0.104)	(0.149)
MNE_DifferentIndustry (dummy)				0.990	1.220
				(0.083)	(0.205)
InitialStartupSize (ln)	0.782***	0.788***	0.790***	0.783***	0.786***
	(0.067)	(0.069)	(0.069)	(0.068)	(0.069)
AverageAge (ln)	1.169	1.193	1.173	1.172	1.195
	(0.214)	(0.218)	(0.215)	(0.214)	(0.219)
SameIndustryShare	0.639***	0.640***	0.639***	0.655***	0.655***
	(0.075)	(0.075)	(0.075)	(0.081)	(0.081)
HightechShare	0.598	0.610	0.602	0.588	0.603
	(0.235)	(0.240)	(0.236)	(0.232)	(0.237)
TertiaryEducatedShare	0.780	0.788	0.805	0.780	0.756
	(0.170)	(0.171)	(0.189)	(0.169)	(0.178)
AveragePreviousWage (ln)	0.899***	0.898***	0.899***	0.899***	0.898***
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
AverageSizePreviousFirm (ln)	0.922***	0.922***	0.925***	0.921***	0.923***
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
AverageProductivityPreviousFirm (ln)	0.968*	0.970*	0.968*	0.969*	0.970*
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
AverageTurnoverPreviousFirm (ln)	1.039**	1.038**	1.039**	1.038**	1.037*
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Exporter (dummy)	0.916	0.915	0.916	0.921	0.915
	(0.175)	(0.175)	(0.175)	(0.176)	(0.175)
Importer (dummy)	0.886	0.881	0.891	0.888	0.885
	(0.112)	(0.112)	(0.113)	(0.113)	(0.113)
AverageHighschoolGrade	0.942***	0.943***	0.943***	0.942***	0.943***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
GradeMissing (dummy)	0.755	0.759	0.757	0.755	0.759
	(0.160)	(0.160)	(0.160)	(0.160)	(0.160)
ManagerShare	0.611	0.590	0.615	0.613	0.588
	(0.196)	(0.207)	(0.197)	(0.198)	(0.207)
ProfessionalShare	0.854	1.003	0.860	0.860	1.013
	(0.199)	(0.241)	(0.201)	(0.202)	(0.247)

TechnicianShare	0.601**	0.724	0.605**	0.601**	0.729
	(0.135)	(0.170)	(0.136)	(0.135)	(0.173)
TotalEmployment_LA (ln)	1.050**	1.051**	1.050**	1.050**	1.051**
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
Observations	12,042	12,042	12,042	12,042	12,042
N_fail	987	987	987	987	987
ll	-8376	-8373	-8376	-8376	-8372
r2_p	0.0173	0.0176	0.0173	0.0173	0.0177
chi2	315.9	156383	317.1	315.3	155385

As for the control variables, we find that larger startups are less likely to exit, which is an established finding in prior literature (Agarwal and Gort 2002). We also find that a larger proportion of individuals in the startup with prior work experience in the same industry (2-digit NACE) as the startup is associated with lower hazard, i.e. higher survival rate (Bahoo-Torodi and Torrisi 2022, Chatterji 2009). This result is also consistent with prior literature and points to the role of industry experience in boosting the post-entry performance of startups (Eriksson and Kuhn 2006). In addition, having individuals in the startup team with higher wages at their prior employers and who also previously worked at larger employers appear to benefit survival as well. Furthermore, the average high school GPA of the members of the initial startup team is associated with lower hazard. Taken together, these results are consistent with a positive impact of experience from large resourceful firms, human capital as well as industry experience (Andersson et al 2012, Andersson and Klepper 2013, Hvide 2009).

4.3. Post-entry growth

Table 5, 6 and 7 present results of the OLS estimation of equation (3), where the dependent variable is employment growth over different time horizons (3, 5 and 10 years, respectively). Startups where the founding team include anyone with some previous working experience in an MNE grow 3.8 percentage points faster at 3-year, but no difference is found at 5 and 10 years. However, significant differences are observed when the MNE dummy is broken down by position, education and industry experience. When all dimensions are considered together (Column 5), experience as an MNE

manager within the startup team is the single most important factor that can boost startup growth. Startups where a founder or an early joiner has some previous experience as an MNE manager grow 14.2 percentage point faster than the baseline at 3 years (11.4 at 5 years and 19.8 at 10 years). Results on the 3-year growth are robust to restricting the sample to firms that survive for 5 and 10 years (Table 8).

Control variables have the expected signs. Larger and younger startup grow faster (Coad, 2009). In general, startups with stronger founding teams - such as those with a higher share of tertiary educated founders or early joiners, former managers, who scored higher in their GPAs, and received higher wages in previous jobs - and founding teams with experience in stronger firms - e.g. larger firms experiencing higher productivity levels - also achieve higher employment growth.

Table 5: OLS regression results on 3-year firm size growth

VARIABLES	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
MNE (dummy)	0.038*				
	(0.020)				
MNE_Manager (dummy)		0.164***			0.142***
		(0.035)			(0.037)
MNE_ProfessionalTechnician (dummy)		0.099***			0.059*
		(0.028)			(0.035)
MNE_OtherProfession (dummy)		0.003			-0.049
		(0.020)			(0.038)
MNE_TertiaryEducated (dummy)			0.099***		0.056
			(0.031)		(0.036)
MNE_NonTertiaryEducated (dummy)			0.038*		0.037
			(0.020)		(0.040)
MNE_SameIndustry (dummy)				0.055**	0.023
				(0.023)	(0.031)
MNE_DifferentIndustry (dummy)				0.042**	0.020
				(0.019)	(0.035)
StartupInitialSize (ln)	-0.142***	-0.154***	-0.151***	-0.150***	-0.158***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
AverageAge (ln)	-0.108**	-0.120***	-0.110**	-0.109**	-0.121***
	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)
SameIndustryShare	0.109***	0.105***	0.108***	0.100***	0.102***
	(0.025)	(0.025)	(0.025)	(0.027)	(0.027)
HightechShare	0.039	0.034	0.033	0.039	0.034
	(0.088)	(0.088)	(0.089)	(0.088)	(0.089)
TertiaryEducatedShare	0.202***	0.191***	0.141**	0.198***	0.163***
	(0.049)	(0.049)	(0.055)	(0.049)	(0.056)
AveragePreviousWage (ln)	0.033***	0.031***	0.032***	0.033***	0.031***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
AverageSizePreviousFirm (ln)	0.040***	0.039***	0.039***	0.038***	0.037***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)

AverageProductivityPreviousFirm (ln)	0.009	0.008	0.009	0.009	0.008
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
AverageTurnoverPreviousFirm (ln)	-0.020***	-0.019***	-0.020***	-0.019***	-0.019***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Exporter (dummy)	-0.006	-0.006	-0.007	-0.010	-0.007
	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
Importer (dummy)	0.096***	0.093***	0.092***	0.094***	0.091***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
AverageHighschoolGrade	0.011***	0.010***	0.010***	0.010***	0.010***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
GradeMissing (dummy)	0.158***	0.149***	0.154***	0.158***	0.148***
	(0.054)	(0.054)	(0.054)	(0.054)	(0.054)
ManagerShare	0.325***	0.204***	0.317***	0.321***	0.202***
	(0.060)	(0.062)	(0.060)	(0.060)	(0.062)
ProfessionalShare	0.193***	0.130**	0.187***	0.188***	0.122**
	(0.052)	(0.055)	(0.052)	(0.052)	(0.056)
TechnicianShare	0.012	-0.056	0.006	0.007	-0.056
	(0.046)	(0.049)	(0.046)	(0.046)	(0.050)
TotalEmployment_LA (ln)	-0.002	-0.002	-0.003	-0.002	-0.003
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Constant	0.267	0.374*	0.325	0.299	0.403*
	(0.210)	(0.211)	(0.211)	(0.210)	(0.212)
Observations	10,558	10,558	10,558	10,558	10,558
R-squared	0.077	0.080	0.078	0.077	0.080

Robust standard errors in parentheses; Two-digit industry codes and year dummies included in all regressions but not reported. *** p<0.01, ** p<0.05, * p<0.1. *GradeMissing dummy* refers to a dummy variable which is one firms in which no member of the initial startup teams has information in high school GPA. This is true for about 10% of the new firms in the sample.

Table 6: OLS regression results on 5-year firm size growth

VARIABLES	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
MNE (dummy)	-0.003				
	(0.025)				
MNE_Manager (dummy)		0.132***			0.114**
		(0.046)			(0.048)
MNE_ProfessionalTechnician (dummy)		0.133***			0.114**
		(0.036)			(0.046)
MNE_OtherProfession (dummy)		-0.028			-0.042
		(0.025)			(0.050)
MNE_TertiaryEducated (dummy)			0.111***		0.085*
			(0.039)		(0.047)
MNE_NonTertiaryEducated (dummy)			0.018		0.093*
			(0.025)		(0.054)
MNE_SameIndustry (dummy)				0.053*	-0.017
				(0.030)	(0.040)
MNE_DifferentIndustry (dummy)				-0.011	-0.092**
	-0.162***	-0.176***	-0.175***	-0.166***	-0.176***
StartupInitialSize (ln)	(0.025)	(0.026)	(0.025)	(0.025)	(0.026)
	-0.226***	-0.245***	-0.230***	-0.227***	-0.247***
AverageAge (ln)	(0.055)	(0.056)	(0.056)	(0.055)	(0.056)
	0.093***	0.091***	0.094***	0.072**	0.075**
SameIndustryShare	(0.032)	(0.032)	(0.032)	(0.034)	(0.034)
	0.196*	0.179	0.183	0.203*	0.189

HightechShare	(0.114)	(0.115)	(0.115)	(0.114)	(0.115)
	0.200***	0.186***	0.123*	0.198***	0.167**
TertiaryEducatedShare	(0.064)	(0.064)	(0.070)	(0.064)	(0.070)
	0.030**	0.028**	0.029**	0.030**	0.027**
AveragePreviousWage (ln)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
	0.059***	0.056***	0.055***	0.057***	0.055***
AverageSizePreviousFirm (ln)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
	0.007	0.007	0.009	0.008	0.007
AverageProductivityPreviousFirm (ln)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
	-0.027***	-0.026***	-0.028***	-0.026***	-0.026***
AverageTurnoverPreviousFirm (ln)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
	0.024	0.022	0.024	0.022	0.023
Exporter (dummy)	(0.060)	(0.060)	(0.060)	(0.060)	(0.060)
	0.112***	0.110***	0.107***	0.109***	0.106***
Importer (dummy)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)
	0.000	-0.000	-0.000	0.000	-0.000
AverageHighschoolGrade	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
	0.010	0.002	0.009	0.012	0.002
GradeMissing (dummy)	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)
	0.241***	0.124	0.230***	0.235***	0.126
ManagerShare	(0.082)	(0.086)	(0.082)	(0.082)	(0.086)
	0.335***	0.237***	0.324***	0.328***	0.235***
ProfessionalShare	(0.069)	(0.072)	(0.069)	(0.069)	(0.072)
	0.146**	0.043	0.138**	0.142**	0.044
TechnicianShare	(0.060)	(0.064)	(0.060)	(0.060)	(0.065)
	0.002	0.001	0.001	0.001	0.001
TotalEmployment_LA (ln)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
	0.106	0.100	0.107	0.103	0.100
Constant	0.826***	0.986***	0.918***	0.853***	1.007***
	(0.275)	(0.277)	(0.276)	(0.275)	(0.277)
Observations	8,486	8,486	8,486	8,486	8,486
R-squared	0.083	0.087	0.085	0.084	0.088

Robust standard errors in parentheses; Two-digit industry codes and year dummies included in all regressions but not reported. *** p<0.01, ** p<0.05, * p<0.1. *GradeMissing dummy* refers to a dummy variable which is one firms in which no member of the initial startup teams has information in high school GPA. This is true for about 10% of the new firms in the sample.

Table 7: OLS regression results on 10-year firm size growth

VARIABLES	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
MNE (dummy)	-0.001				
	(0.045)				
MNE_Manager (dummy)		0.260***			0.198**
		(0.083)			(0.087)
MNE_ProfessionalTechnician (dummy)		0.126**			0.022
		(0.064)			(0.083)
MNE_OtherProfession (dummy)		-0.008			-0.102
		(0.045)			(0.088)
MNE_TertiaryEducated (dummy)			0.223***		0.164*
			(0.072)		(0.085)
MNE_NonTertiaryEducated (dummy)			0.035		0.047
			(0.044)		(0.096)
MNE_SameIndustry (dummy)				0.153***	0.118
				(0.054)	(0.073)

MNE_DifferentIndustry (dummy)				0.031	0.028
				(0.044)	(0.082)
StartupInitialSize (ln)	-0.210***	-0.241***	-0.238***	-0.232***	-0.251***
	(0.044)	(0.045)	(0.044)	(0.044)	(0.045)
AverageAge (ln)	-0.517***	-0.543***	-0.524***	-0.522***	-0.545***
	(0.099)	(0.100)	(0.099)	(0.099)	(0.100)
SameIndustryShare	0.184***	0.184***	0.184***	0.137**	0.142**
	(0.056)	(0.056)	(0.056)	(0.060)	(0.060)
HightechShare	0.101	0.084	0.078	0.105	0.097
	(0.177)	(0.179)	(0.178)	(0.177)	(0.179)
TertiaryEducatedShare	0.482***	0.461***	0.331**	0.473***	0.364***
	(0.117)	(0.117)	(0.129)	(0.117)	(0.131)
AveragePreviousWage (ln)	0.057**	0.052**	0.055**	0.055**	0.050**
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
AverageSizePreviousFirm (ln)	0.064***	0.057***	0.057***	0.052***	0.054***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
AverageProductivityPreviousFirm (ln)	0.013	0.012	0.015	0.014	0.013
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
AverageTurnoverPreviousFirm (ln)	-0.031***	-0.030***	-0.034***	-0.030***	-0.031***
	(0.011)	(0.012)	(0.012)	(0.011)	(0.012)
Exporter (dummy)	0.098	0.099	0.106	0.090	0.100
	(0.091)	(0.091)	(0.091)	(0.091)	(0.091)
Importer (dummy)	0.045	0.036	0.034	0.035	0.025
	(0.063)	(0.063)	(0.063)	(0.063)	(0.063)
AverageHighschoolGrade	-0.003	-0.004	-0.004	-0.003	-0.004
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
GradeMissing (dummy)	-0.171	-0.176	-0.176	-0.157	-0.172
	(0.136)	(0.135)	(0.135)	(0.136)	(0.135)
ManagerShare	0.295**	0.087	0.267**	0.275**	0.087
	(0.133)	(0.138)	(0.132)	(0.132)	(0.138)
ProfessionalShare	0.217*	0.127	0.195	0.196	0.113
	(0.123)	(0.129)	(0.123)	(0.123)	(0.130)
TechnicianShare	0.055	-0.034	0.041	0.041	-0.022
	(0.099)	(0.105)	(0.099)	(0.099)	(0.106)
TotalEmployment_LA (ln)	0.012	0.010	0.009	0.009	0.009
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Constant	1.524***	1.775***	1.721***	1.649***	1.858***
	(0.478)	(0.484)	(0.482)	(0.479)	(0.486)
Observations	3,943	3,943	3,943	3,943	3,943
R-squared	0.105	0.109	0.108	0.107	0.111

Robust standard errors in parentheses; Two-digit industry codes and year dummies included in all regressions but not reported. *** p<0.01, ** p<0.05, * p<0.1. *GradeMissing dummy* refers to a dummy variable which is one firms in which no member of the initial startup teams has information in high school GPA. This is true for about 10% of the new firms in the sample.

Table 8: OLS regression results on 3-year firm size growth (different samples)

	Firms surviving 5 years		Firms surviving 10 years	
VARIABLES	**(1)**	**(2)**	**(3)**	**(4)**
MNE (dummy)	0.053***		0.033	
	(0.020)		(0.029)	
MNE_Manager (dummy)		0.106***		0.131**
		(0.036)		(0.053)

MNE_ProfessionalTechnician (dummy)		0.076**		0.009
		(0.034)		(0.051)
MNE_OtherProfession (dummy)		-0.015		-0.051
		(0.038)		(0.055)
MNE_TertiaryEducated (dummy)		0.065*		0.094*
		(0.035)		(0.049)
MNE_NonTertiaryEducated (dummy)		0.055		0.019
		(0.039)		(0.056)
MNE_SameIndustry (dummy)		0.007		0.058
		(0.029)		(0.041)
MNE_DifferentIndustry (dummy)		-0.013		0.043
		(0.034)		(0.049)
StartupInitialSize (ln)	-0.089***	-0.105***	-0.071***	-0.094***
	(0.018)	(0.019)	(0.026)	(0.027)
AverageAge (ln)	-0.166***	-0.181***	-0.235***	-0.250***
	(0.044)	(0.044)	(0.063)	(0.063)
SameIndustryShare	0.080***	0.072***	0.073**	0.059
	(0.025)	(0.026)	(0.036)	(0.039)
HightechShare	0.025	0.015	0.070	0.067
	(0.088)	(0.088)	(0.107)	(0.108)
TertiaryEducatedShare	0.197***	0.164***	0.261***	0.191**
	(0.049)	(0.056)	(0.069)	(0.075)
AveragePreviousWage (ln)	0.023***	0.021**	0.030**	0.026**
	(0.009)	(0.009)	(0.012)	(0.012)
AverageSizePreviousFirm (ln)	0.042***	0.039***	0.033***	0.030***
	(0.008)	(0.008)	(0.010)	(0.010)
AverageProductivityPreviousFirm (ln)	0.001	0.001	0.003	0.003
	(0.005)	(0.005)	(0.008)	(0.008)
AverageTurnoverPreviousFirm (ln)	-0.020***	-0.020***	-0.016**	-0.017**
	(0.005)	(0.005)	(0.008)	(0.008)
Exporter (dummy)	0.014	0.012	-0.021	-0.020
	(0.046)	(0.046)	(0.058)	(0.058)
Importer (dummy)	0.100***	0.095***	0.041	0.030
	(0.030)	(0.030)	(0.043)	(0.043)
AverageHighschoolGrade	0.002	0.001	-0.004	-0.004
	(0.003)	(0.003)	(0.006)	(0.006)
GradeMissing (dummy)	0.079	0.072	-0.016	-0.021
	(0.054)	(0.054)	(0.087)	(0.086)
ManagerShare	0.288***	0.194***	0.333***	0.207**
	(0.063)	(0.064)	(0.089)	(0.089)
ProfessionalShare	0.237***	0.174***	0.242***	0.189**
	(0.052)	(0.056)	(0.073)	(0.076)
TechnicianShare	0.038	-0.026	-0.058	-0.095
	(0.047)	(0.051)	(0.065)	(0.070)
TotalEmployment_LA (ln)	0.001	-0.000	0.011	0.010
	(0.005)	(0.005)	(0.008)	(0.008)
Constant	0.603***	0.747***	0.690**	0.871***
	(0.213)	(0.215)	(0.318)	(0.323)
Observations	8,456	8,456	3,924	3,924
R-squared	0.090	0.094	0.105	0.111

5. DISCUSSION AND CONCLUSIONS

5.1 Discussion of results

In this paper we have shown that individuals with previous experience as employees in an MNE typically join or found startups of larger initial size. We have also shown that startups with individuals with MNE experience in the initial team grow more in the short run. While the association between MNE experience and initial startup size applies to any kind of worker with previous MNE experience, the positive effect of MNE experience on growth mainly applies to workers who previously had a managerial or professional position in the MNE. We do not find a positive effect of MNE experience on startup survival rate. Since startup initial size has a strong and positive effect on survival, and MNE experience is positively related with initial startup size, one interpretation of this is that the effect of MNE experience on survival goes through startup size. Taken together, these results suggest that MNE workers can be an important source of human capital for startups in their initial years after entry, especially MNE workers with managerial competences developed during their previous career as MNE managers.

Our results are in line with our theoretical expectations. We posit the existence of a pre-entry selection effect that drives the choice of MNE employees to join or found a startup and which leads them to leave their existing company for startups of larger initial size. This is due to two reasons. First, because of the high opportunity costs of leaving a career in a large multinational firm: MNE employees choose to leave only when the quality and business potential of a startup outweights those costs, and startup initial size is known to be a good proxy of its quality (Bates 2005, Cassar 2006, Shane and Venkataraman 2000, Stenard and Sauermann 2016). Second, MNE employees may found startup of higher initial size, and hence requiring larger initial investments, because during their spell at the MNE they may be able to generate and validate business ideas of higher quality, for which they are willing to invest a higher amount of financial resources (Berg 2016, Soda et al 2021).

Our second theoretical contribution is related to the existence of a post-entry treatment effect, according to which the presence of individuals with MNE experience in the initial team of a startup is likely to increase its future growth. Conceptually, such a treatment effect has three main motivations. First, MNE employees, especially MNE managers, have accumulated important competences during their work at the MNE which may substantially help them in scaling up a business (Colombo and Grilli 2005). Second, MNE employees may have larger financial resources or may have access to funders known during their previous spell in the MNE: by allowing to hire more qualified workers, have better infrastructure and execute marketing strategies on a larger scale this can also have a positive effect on future growth. Third, the pre-existing network of contacts of MNE employees can be used by startups to build strategic partnerships with the MNE itself or with other actors of the MNE networks, which again can foster the growth of a startup (Davidsson and Honig. 2003).

In addition to establish the effect of MNE experience, our analyses provide additional evidence of how characteristics of prior employers of the members of the startup team influence startup size, survival, and employment growth. First, we find that the average size of the prior employers of the individuals in the initial startup team has a positive influence on startup size, survival as well as employment growth. This supports the argument that large and resourceful firms are important breeding grounds for entrepreneurs (Klepper 2009, Maliranta and Nurmi 2019) as well as early joiners (Agrawal and Cockburn 2003). Second, we find that the average wage of members of the initial team at their prior employer has a robust positive influence on both startup quality, survival, and employment growth. Third, we find that the portion of individuals in the startup team with experience from the same industry as the startup has a positive influence on startup size, survival as well as employment growth. This reinforces previous findings in the literature on the role of industry experience (Delmar and Shane 2006).

5.2 Managerial and policy implications

Our results show that having experienced MNE workers as initial team members can be an important prerequisite for future growth prospects of startups. Startups that wish to recruit MNE workers need to compensate in some ways for their high opportunity costs of leaving their company. Since the offer of very high salary is not easy for startups, another way to do this is to allow former MNE employees to fully participate to the potential gains of the business, i.e. adding the possibility to increase the salary based on the profits or the revenues of the startup or option programmes. Locating closer to establishments of MNEs may be another strategy to increas the chances for startups to attract some of their employers, as this again may decrease their opportunity costs of leaving the MNE.

From a policy perspective it becomes clear that mobility flows between MNEs and startups can bring positive spillover effects, in which the possibility for startups to hire individuals with previous MNE experience (especially MNE managers) leads to the creation of new and successful firms. This highlights the importance to secure labour market regualtions that favor mobility.

Also, policy makers could consider an intervention on the non-compete clauses of employment contracts by MNE employers. Non-compete clauses often deter MNE workers from leaving their companies for other employers. Considering that startups are rarely a direct competitor for MNEs, policy makers may try to make sure that such non-compete clauses do not apply when MNE employees join a startup (see e.g. Marx and Fleming 2012).

These considerations should be kept in mind also when it comes to the attraction of FDIs: policy makers should keep into account that the MNEs that they may attract in a specific region could also train the future workers of the next generation of startups. Hence their choices in attracting FDI should keep in mind not only the short run consequences of having an advanced manufacturer in a region, but also the long run future possible consequences in terms of new firm creation.

5.3 Limitations and avenues for future research

This study is not without limitations, which, as usual, pave the way for future research.

First, our results on the effect of MNE experience within the initial startup team on startup performance do not distinguish between founders and early joiners. This lack of differentiation means that our analysis does not account for potential differences in impact between those who established the startup and those who joined shortly thereafter. Founders and early joiners might bring distinct skills, perspectives, and levels of influence to the startup, potentially affecting performance in different ways. Future research should address this distinction to provide a more nuanced understanding of how MNE experience influences startup success.

Second, our results on the effect of MNE experience within the initial startup team on startup performance may be not generalizable beyond the specific context of our study. This research is based on Sweden, which is characterized as a high-income, small, open economy with a significant focus on high-tech industries. The unique economic and industrial landscape of Sweden may influence the observed outcomes, meaning that similar studies conducted in different economic contexts might yield different results. Therefore, caution should be exercised when applying these findings to startups in other regions or countries with different economic structures and technological emphases.

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