



JÖNKÖPING UNIVERSITY

*Jönköping International
Business School*

Doctoral Thesis

Post-entrepreneurship Productivity

Emma Lappi

Jönköping University
Jönköping International Business School
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Doctoral Thesis

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Doctoral Thesis in Economics

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Abstract

In recent decades, public policies have been implemented to encourage individuals to become entrepreneurs. However, the individual and social benefits of such policies when some of these individuals eventually leave entrepreneurship are unclear. The purpose of this thesis is to empirically assess the productivity effects arising from the labor market experience of entrepreneurship, measured as self-employment, in subsequent wage employment.

This thesis consists of an introductory chapter and four independent papers. The four papers evaluate the consequences of the self-employment experience either for the individuals' wages or for firm productivity when firms hire such individuals. All the papers compare the self-employment experience relative to wage employment.

The first paper estimates how individuals' earnings are influenced in post-entrepreneurship careers when they return to wage employment. The findings suggest that former entrepreneurs suffer large earnings losses, especially in the first year as employees, and for the higher educated, these losses persist even after seven years in employment. The second paper studies the role of professional ties in entry wages when finding employment after self-employment. The results show that even when using former coworker ties in the hiring process, the former self-employed, except for those who have ties with incumbent employees when they had their own firm, earn significantly lower entry wages.

The third paper evaluates the productivity effects of different labor flows, with an emphasis on hiring former entrepreneurs. The paper finds that new hires who come from entrepreneurship, in general, are just as productive as those employees hired from another firm but are more productive than those coming from unemployment. The fourth paper analyzes how having employees with former entrepreneurship experience is related to firm productivity. The results show that having more former entrepreneurs as employees in a firm increases performance.

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Introduction and Summary of the Thesis

1 Introduction

During the last decades, many countries have implemented public policies to encourage individuals to become entrepreneurs, but the individual and social benefits of such policies are unclear and have been put to question (Acs et al., 2016). In Sweden, approximately 10 percent of the labor force comprises of business owners. This figure varies across countries; for example, the United States has 6 percent, Germany has 10 percent and Italy has 24 percent.¹ From a cohort of individuals who were 30 years old in 1990 in Sweden, 22 percent had at least one year of self-employment experience before the age of 56.² Some of these individuals are new business owners, while some exit self-employment, for example, as shown by the fact that 5 to 10 percent of firms leave the market in a single year (Agarwal & Gort, 2002). Therefore, each year, there are many individuals who stop being business owners and become wage employed (Cowling et al., 2004)

There are a large number of individuals who have had self-employment experience, and there has been a growing interest in the exit from self-employment (Hessels et al., 2011; Wennberg et al., 2010) and the implications of previous business ownership experience for people in the labor market (Daly, 2015; Hyytinen et al., 2013). The central theme of this thesis is to empirically estimate the implications and value of the labor market experience of entrepreneurship in the post-entrepreneurship career. We measure whether there are potential costs or benefits related to the entrepreneurship experience that individuals incur after exiting and whether these align with the productivity effects when firms hire these individuals as employees.

Many, both in public discourse and in research, consider firm closures and individuals who stop being self-employed as failures. This notion, however, has been rather put to question (Wennberg & DeTienne, 2014; Wennberg et al., 2010). Recent literature has shown that the exit from entrepreneurship or business closure does not necessarily indicate failure (Wennberg et al., 2010), and in fact, approximately two-thirds of business closures are considered successful (Headd, 2003). However, the literature on how individuals fare in the labor market provides mixed results. Bruce and Schuetze (2004); Hyytinen and Rouvinen (2008) show that upon re-entry into wage employment, the self-employed experience wage losses. On the other hand, some studies find no loss or even

¹ The values are taken from the OECD database, and self-employment is defined as the employment of employers, workers who work for themselves, members of producers' cooperatives, and unpaid family workers.

² Values taken from micro data from Statistics Sweden.

positive returns conditional on, for example, industry-specific human capital, occupations or other heterogeneous dimensions (Daly, 2015; Kaiser & Malchow-Møller, 2011; Mahieu et al., 2019). Baptista et al. (2012) provide evidence that even if the former self-employed earn less in subsequent wage employment, they progress faster in the firm hierarchy. Moreover, such earnings losses may be associated with discrimination as shown by (Koellinger et al. 2015). The discrimination may be based on, for example, whether the stigma of failure is high or whether the self-employed are seen as riskier hires.

The finding of the thesis is that the self-employed are not less productive than employees who are hired from wage employment, but they are paid less. In the long term, employing workers who have been self-employed even increases firm productivity. This implies that upon their re-entry into the labor market as wage employees, the market does not fully compensate these individuals for their productivity. This thesis adds to the existing knowledge on labor economics and the entrepreneurship literature but also offers policy implications. If a labor market experience in self-employment leads to substantial increases in human capital that individuals and firms can appropriate after the self-employment experience, public policy promoting entrepreneurship might bring about productivity increases in the aggregate. According to the results, individuals bear long-term costs of trying out entrepreneurship, while firms gain, as they can pay these employees less than their true productivity is worth. This means that policies can create this cost when encouraging individuals to become business owners when the individuals would be better off staying as wage employment. Making the labor market more flexible would be beneficial to both firms and individuals, as corroborated by Eslava et al. (2010), who show that eliminating frictions in factor adjustments would result in substantial productivity improvements. For example, if firms could have more flexibility in hiring but also firing employees, the risks associated with new hires would decrease. This decrease in risk would entail that entry wages would not have to be adjusted downwards to the same extent. This might benefit those who exit entrepreneurship in the form of higher entry wages.

The rest of this chapter is organized as follows. Section 2 discusses the role of human capital for individuals. Section 3 considers how labor market mobility influences human capital and more specifically describes the mobility of the self-employed. Section 4 reviews what human capital means for firms and their production. In addition, the section reviews when the marginal product of labor does not equal wages. Section 6 highlights the contribution of the thesis and describes the papers included.

2 Individuals and Human Capital

Human capital can be defined as an individual's innate and acquired skills (Schultz, 1963). In the seminal contributions to human capital theory (Becker, 1962; 1964; Mincer, 1958), the concept of human capital is composed of three

components: innate ability, the qualifications and knowledge acquired through formal education, and the skills and competencies learned on the job. The last is composed of both learning-by-doing and job-training provided by the firm. The standard analysis states that the costs and the returns of job training will be shared by both the worker and the employer, motivated by the uncertainty of the postinvestment behavior of both parties (Becker, 1962). Sharing the costs and returns has implications for the turnover of labor and the wage determination of workers (Hashimoto, 1981). Individuals' human capital can also depreciate, likely in relation to age, experience, size and vintage (Mincer, 1974). Some have also recorded decreasing returns to excessive investments in human capital (Hanoch, 1967; Vaillancourt, 1995).

According to Becker (1962), (1964) and Mincer (1958), the accumulation of human capital is an investment decision where the individual forgoes some income during training or education for increased future earnings. Therefore, the individual would invest in human capital if the costs associated with the investment are compensated by sufficiently high future earnings, see Blundell et al. (1999) for a review. The returns on the investment in human capital bring pecuniary and nonpecuniary gains that will be realized in the future. Individuals invest in human capital over the life cycle, and more than half of the lifetime human capital is accumulated through postschool investments (Heckman et al., 1998). This suggests that measuring human capital solely through acquired formal education is insufficient. An alternative measure can be different labor market experiences, for example, including self-employment.

The general human capital of the individual can be transferable across firms, but the firm-specific human capital, on the other hand, is nontransferable (Becker, 1962). This implies that if the individual decides to leave the firm, those skills will not have any market value to other firms. In contrast, studies emphasizing the importance of industry-, occupation-, and task-specific human capital have emerged in the literature, where traditional firm-specific human capital is seen as less crucial. All these different types of specific human capital can be at least partially transferable across employers. For example, Kambourov and Manovskii (2009) and Shaw (1984, 1987) focus on occupation-specific skills, where individuals weight their gains to both firm- and occupation-specific skills when making decisions about occupation and firm changes. On the other hand, Neal (1995) and Parent (2000) argue that industry-specific skills can constitute an essential component of individuals' human capital stock. Alternatively, Gathmann and Schönberg (2010) and Gibbons and Waldman (2004) state that the human capital an individual acquires on the job is specific to the tasks that are performed; i.e., human capital is specific to the nature of the work instead of specific to the firm.

The private and social returns from human capital do not necessarily align, and there might be a nonoptimal investment in human capital for society. For example, there can be substantial long-term spillovers from human capital (Kugler et al., 2015). A part of these spillovers can be knowledge externalities (Acemoglu & Angrist, 2000; Moretti, 2004). One way the externalities arise is from higher

education, which favors the discovery and adaptation of new technology (Foster & Rosenzweig, 1996). This means that higher human capital via innovation and technology adaptation leads to growth (Aghion & Howitt, 1998; Nelson & Phelps, 1966). Other reasons why the private and social returns to human capital might differ are, for example, health, criminal behavior, labor mobility, and better institutions (Currie, 2009; Hanushek, 2002; Lochner, 2020).

Self-employment is a labor market experience that implies that individuals potentially gain human capital through learning by doing (Iyigun & Owen, 1998, 1999; Starr & Bygrave, 1992). Learning takes place, for example, through experimentation when individuals are engaged in entrepreneurship (Kerr et al., 2014; Minniti & Bygrave, 2001). This is especially true as serial entrepreneurs are found to be more successful (Gompers et al., 2006; Parker, 2013). On the other hand, labor market experience as an entrepreneur can differ from the experience as an employee when the tasks differ between the two labor market states. Lazear (2004) shows that an individual in wage employment invests in skills and knowledge to become a specialist, while an individual in entrepreneurship becomes a so-called jack-of-all-trades. Acquiring human capital through the entrepreneurship experience is not conditional on the success of the firm, as Minniti and Bygrave (2001) discuss that individuals learn from the experience, from both successes and failures.

When individuals are entrepreneurs, they incur an opportunity cost during their experience. This comes from both the lost wages and the lost human capital gained through on-the-job training and leaning via employment. Similar to the case of unemployment spells, where there is a loss of human capital (Meyer, 1990), the entrepreneurship experience may not increase but rather decrease the overall level of individuals' human capital. This results mainly due to the depreciation of the general transferable human capital, which in the case of unemployment may accelerate as the unemployment spell becomes longer (García Pérez & Rebollo Sanz, 2005). However, Bruce and Schuetze (2004) provide evidence indicating that the extent of depreciation is not as large for the self-employment experience as it is for unemployment spells. Alternatively, it may be that the skills and knowledge gained during the entrepreneurship experience are not valuable for the employer. It may also be the case that the human capital gained from the entrepreneurship experience is occupation-specific in the sense that it is not transferable when the individual exits entrepreneurship.

Evaluating the potential human capital acquisition through labor market experience in entrepreneurship, therefore, is an area where the evidence is sparse and providing somewhat mixed conclusions. The thesis adds to the literature on human capital accumulation through learning-by-doing as an entrepreneur where these potential human capital increases are estimated after the experience via wages and firm productivity.

3 Labor Mobility

3.1 Occupational and Interfirm Mobility

Labor and job flows have been at the center of search models (Mortensen & Pissarides, 1994). Labor churning is a sign of ongoing matching of workers and firms, which increases productivity (Jovanovic, 1979). Large proportions of workers leave their jobs each year (Abowd, Corbel, et al., 1999; Albak & Sørensen, 1998) and can transition to either unemployment, reemployment, or out of the labor force (Blanchard et al., 1990; Frederiksen & Westergaard-Nielsen, 2007). The basic search models predict that job mobility has a positive effect on lifetime earnings (Burdett, 1978). The worker switches jobs if the present value of the earnings in the alternative job exceeds that of the current job. However, when on-the-job training is included, job mobility may imply wage cuts for the worker (Mortensen, 1988).

Job-to-job mobility has been empirically shown to be an important determinant of an individual's wages (Addison & Portugal, 1989; Pfeifer & Schneck, 2012). However, the evidence has shown some heterogeneity in earnings losses or gains from job switching. Individuals' potential earnings gains from changing employers vary depending on the distribution of outside wage offers and firm-specific wage growth (Munasinghe & Sigman, 2004). On the other hand, Nyström and Zhetibaeva Elvung (2015) find that the possible earnings gains or losses depend on whether the individual changes jobs to a new or an incumbent firm.

Similarly, individuals change occupations or employers as they find the current match unsatisfactory (Moscarini & Thomsson, 2007). Individuals continuously learn about their comparative advantages on the job and eventually choose the occupations that best match their abilities (Papageorgiou, 2014). It also matters for wages whether the individual chooses to leave the firm because of another job or because of being fired (García Pérez & Rebollo Sanz, 2005; Jolivet et al., 2006).

3.2 Mobility of Entrepreneurs

The decision to start a business has been modeled as an occupation choice (Jovanovic, 1982; Lucas, 1978)³. The risk associated with the entry decision has received extensive attention (Kihlstrom & Laffont, 1979). Recent evidence

³ Who becomes an entrepreneur and how we can define entrepreneurship has been of interest to economists for a long time, going back to (Cantillon, 1756; Knight, 1921; Say, 1828; Schumpeter, 1934). Even among these authors, there is no consensus on the definitions. There are many different ways to define an entrepreneur, and self-employment or business ownership are the definitions most commonly adopted among economists (Parker 2018).

suggests that individuals with lower risk aversion are more likely to become self-employed, but this is true only if they transition from employment (Caliendo et al., 2009). The literature has also primarily focused on the financial constraints in entry decisions (Evans & Jovanovic, 1989). There are many studies estimating individual-level determinants of starting a businesses; see Parker (2018) for a review of the literature. Hurst and Pugsley (2011) state that half of new business owners reported nonfinancial benefits as a reason for starting their business, while one-third reported income as a motivation, and fairly few intended to provide innovation to the market. Self-employment has also been observed to present an inverse U-shaped relationship with age (Uusitalo, 2001). The evidence between the level of education and entry decisions is somewhat mixed, where many entrepreneurs are found with either very low or very high levels of education (Poschke, 2013). Some evidence exists that the impact of schooling varies by industry (Bates, 1995).

We know that many individuals eventually exit entrepreneurship, as Evans and Leighton (1989) stress that approximately half of new entrepreneurs return to employment within 7 years. Some of these individuals continue to try, launching a new entrepreneurial venture, and become so-called serial entrepreneurs (Holmes & Schmitz, 1990). Some individuals might decide even to retire instead of transition into wage employment (Parker & Rougier, 2007). However, Cowling et al. (2004) show that wage employment is the most common post-entrepreneurship career path, and fairly few entrepreneurs move to unemployment.

Those who leave entrepreneurship cannot always be considered to have failed (Wennberg et al., 2010). Baird and Morrison (2005) find that approximately 10-15 percent of businesses in the US that close down filed for bankruptcy. On the other hand, Bates (2005) and Headd (2003) show that 40 percent of the entrepreneurs who closed their venture define their firm as having been successful at the time of discontinuation. This suggests that equating exit with failure does not hold. Some entrepreneurs exit because they sold their company or possibly received a good job offer and closed down their firm. Taylor (1999) shows that approximately one-fifth of entrepreneurs quit because of bankruptcy and approximately half quit to take another job. Gimeno et al. (1997) also show that it is not the absolute financial performance that is important but the individual-specific threshold level of performance that matters for exit decisions. Many consider an exit to be successful when a firm is bought by an incumbent firm; for example, Andersson and Xiao (2016) estimated that new firms have a 5 percent probability of acquisition up to five years after entry.

There is some evidence on what type of individuals exit entrepreneurship and how they fare in the labor market afterward. They do come from both ends of the ability distribution (Andersson Joonas & Wadensjö, 2013), corroborating that it is both failures and successes who exit. Caliendo et al. (2014) show that different individual traits affect entry and exit decisions, where agreeableness or different values of risk tolerance affect the exit from self-employment, and Hessels et al. (2018) show that depression is correlated with exit. Bates (2005) find that

entrepreneurs who did not have industry experience or were less educated were more likely to have an unsuccessful closure.

The evidence on how individuals' earnings are affected by the entrepreneurship experience has been mixed. Some studies have found positive earnings in wage employment after a spell of self-employment (Evans & Leighton, 1989; Hamilton, 2000), while others have found negative effects (Bruce & Schuetze, 2004; Hyytinen & Rouvinen, 2008). More recent studies find heterogeneous earnings effects of the self-employment experience based on industry switching (Kaiser & Malchow-Møller, 2011), firm or individual performance (Luzzi & Sasson, 2015; Mahieu et al., 2019), and career progression (Baptista et al., 2012) and across a longer time horizon in the post-entrepreneurship career (Daly, 2015).

The thesis focuses on those individuals who transition to employment after a spell in entrepreneurship. The entry nor the exit decisions, therefore, are not in the center of the thesis. However, each chapter tries to control for various entry and exit routes and focuses on the wages and productivity when transitioned to employment.

4 Firms and Human Capital

4.1 The Production Function and Human Capital

The underlying reason why firms invest in an intangible asset of human capital comes from the notion that human capital increases the productivity of the firm, and therefore, it is in the interest of the firm to improve its performance through gaining a more knowledgeable workforce. The neoclassical production function (Solow, 1956, 1957; Swan, 1956) was therefore extended to incorporate endogenous technological improvements (Lucas, 1988; Romer, 1986, 1990). These contributions established a production function for empirical estimation of the following form:

$$Y_t = F(K_t, A_t L_t) \quad (1)$$

where Y is output, which is a function of capital stock K and technology A augmenting labor L , following endogenous growth theories. The growth accounting of such a production function was first established for economies in aggregate and thereafter for firms. The most common functional forms of the contribution of inputs are Cobb-Douglas or CES. In the production function, a firm's labor stock encompasses the human capital that the firm can use in production and, for example, can be divided into skilled and unskilled or high and low-educated labor as per the desired definition of human capital.

The productivity of firms has been found to differ even within narrowly defined sectors, and there is a long tail of low-productivity firms (Bartelsman & Doms, 2000; Foster et al., 2018; Van Reenen & Bloom, 2007). Uncertainty,

managerial ability, capital vintage, location, and disturbances and diffusion of knowledge have been proposed to explain this, see Haltiwanger (2000) for a discussion. Other concepts have also been proposed, such as economic competence (Eliasson, 1990), absorptive capacity (Cohen & Levinthal, 1990), weak diffusion of knowledge and slow innovation, low investments in physical and human capital, and measurement problems related to investments in intangible capital (Andrews et al., 2015; Cohen & Levinthal, 1990; Feldstein, 2017; Gordon, 2012).

The characteristics of employees and their human capital have also been discussed as explanations for these productivity differences (Abowd et al., 2005; Blakemore & Hoffman, 1989; Haltiwanger et al., 1999). As an input, human capital has a direct effect on productivity through better decisions, organization of work or supervision (Rosen, 1982); similarly, managers with high human capital make better decisions, and workers with higher human capital stimulate innovation and can have higher returns on learning-by-doing (Ballot et al., 2001). Previous research has also shown that it is not only the skill levels that are important for firm productivity but also the skill composition of labor within a firm (Haltiwanger et al., 2007; Parrotta & Pozzoli, 2012). For example, Bender et al. (2018) show how the human capital of management explains the impact management practices have on firm productivity.

The traditional way for firms to invest in the human capital of their employees is to supply on-the-job training (Bartel, 1994, 1995; Lynch & Black, 1995), where they usually look at the gains of training the labor force in terms of firm performance. The firm can also hire new employees to bring new knowledge to the firm instead of training employees in-house. Outside hiring can be a better choice than internal promotions if the external candidates are more qualified or the internal candidates collude, sabotage, or generally make insufficient effort (Chen, 2005). Knowledge transfer via labor mobility as a source of productivity is known as learning-by-hiring (Parrotta & Pozzoli, 2012; Zucker et al., 1998). These productivity increases emerge as firms and individuals are better matched (Jovanovic, 1979). As hiring productive and knowledgeable individuals can improve the firm's performance, hiring decisions can be vital for the firm's success. When new knowledge embodied in labor enters the firm, established processes and methods can be challenged, and the new knowledge can provide insights, increase efficiency and productivity and lead to new business opportunities (Braunerhjelm et al., 2017).

The previous research has focused on productivity and new hires coming from educationally diverse, patenting, foreign-owned, or productive firms (Balsvik, 2011; Marino et al., 2016; Serafinelli, 2019; Stoyanov & Zubanov, 2012). However, Martins and Lima (2006) find that there is a negative relationship between external recruitment for top management positions and firm productivity. Boschma et al. (2009) find that it matters whether there is an inflow of new skills instead of the hiring of individuals with similar skills who are already present in the firm. Related literature looks at firm performance and the characteristics and

role played by certain key personnel, such as founders/entrepreneurs and managers (Colombo & Grilli, 2005; Mion & Opromolla, 2014).

Instead of estimating the productivity effects of new hires, many have looked at the impact of new hires on innovation (Hoisl, 2007; Kaiser et al., 2008). Labor mobility has been shown to enable efficient transfer of R&D knowledge in especially high-tech industries (Shankar & Ghosh, 2013). Cirillo et al. (2014) show that inventors who join a spinout increase the extent of exploration in their inventive activities. Much of this line of work has focused on the mobility of R&D workers and engineers (Almeida & Kogut, 1999; Braunerhjelm et al., 2018).

A potential way for firms to increase their performance is to hire former entrepreneurs. If the entrepreneurs gain human capital during their experience which is transferable across firms, they are a potentially a pool of workers that firms can hire to increase their productivity. This can be true even if entrepreneurs are innately different, for example more innovative, and the firms by hiring these individuals as employees can be experience enhanced performance. Why hiring former entrepreneurs can influence productivity is via better management, and organization, or increased innovation.⁴

4.2 Labor Productivity and Wages

Firms maximize their profits by evaluating their total revenues minus the cost of production. The cost of production includes capital and labor costs. Therefore, when firms decide their desired skill mix of workers, they have to consider the labor costs associated with hiring the employees. For simplicity, considering only labor as an input of production, firms face the following profit (π) maximization problem:

$$\max \pi(L) = p(Y)Y - wL \quad (2)$$

where p is the price of the goods produced Y , w is the wage rate of labor L in production. Y is further defined as $Y=F(L)$. The first-order condition for the marginal product of labor therefore is:

$$\pi'(L) = F'(L)[p(Y) + p'(Y)Y] - w = 0 \quad (3)$$

In the perfect competition case⁵, we obtain the following:

⁴ These arguments and questions are explored in papers 3 and 4.

⁵When the market is not perfectly competitive, the real wage is multiplied by a markup, which is a function of the price elasticity of production, i.e., a measure of the firm's market power.

$$F'(L) = \frac{w}{p} \tag{4}$$

which states that the marginal product of labor is the real wage. This finding means that theoretically, firms should pay wages to employees that reflect the productivity of the worker. However, there are several scenarios when wages do not fully reflect the productivity of labor, for example, in the presence of minimum wages, discrimination, imperfect information, and knowledge spillovers.

In the presence of imperfect information, when employers hire new employees, they cannot appropriate the full productivity of the individual from the conveyed observable characteristics of the individual, which might result in wage differences (Lundberg, 1991; Pinkston, 2003). The uncertainty of the expected quality of the match can translate into lower entry wages, as recruiting and firing is costly for employers (Pfann, 2006). This can be especially true for those who exit self-employment if the employer considers the uncertainty higher for them than for other groups of potential employees. To mitigate such information losses, for example, firms use referrals to gain information and to minimize the risk of hiring (Montgomery, 1991). The prediction is that as the firm learns the true productivity of a worker over time, such wage differentials stemming from asymmetric or imperfect information would dissipate.

Discrimination can be one reason why wages do not fully reflect productivity. Previous studies have focused on, for example, discrimination based on gender, race, and age (Altonji & Pierret, 2001; Goldsmith et al., 2006). If there are signaling values of specific labor market states, for example, the stigma of the unemployment spell, employers might systematically discriminate against a group of individuals based on labor market status (Kroft et al., 2013). This can arise because there is asymmetric information about the quality of workers, which makes firms prefer hiring employed working rather than unemployed individuals (Kugler & Saint-Paul, 2000). However, Eriksson and Rooth (2014) find no evidence that employers discriminate against new hires based on previous unemployment spells. Koellinger et al. (2015) provide evidence showing that the self-employed are discriminated against when searching for employment, implying a negative signaling value of the self-employment experience.

If incumbent employees or new hires create knowledge spillovers, these spillovers are not reflected in the wages of the workers. Stoyanov and Zubanov (2014) show that approximately 60 percent of the output gains through worker mobility are distributed to the firm, approximately 25 percent to incumbent employees and approximately 8 percent to the new hire. Much of the work on knowledge spillovers within firms has focused on the role of trade and foreign direct investment (Bwalya, 2006; García et al., 2013; Keller & Yeaple, 2009). If the self-employed create knowledge spillovers in the firm when they are employees, these spillovers are unlikely to be internalized in their wages.

Wage bargaining can also create differences between the wages and productivity of the worker. The differences in wages can stem, for example, from union membership (Williamson, 1968) or business cycles (Martins et al., 2012).

If the self-employed are not a part of a labor union, they might find themselves in a worse position when negotiating entry wages than an employee who belongs to a union. Additionally, upon employment, individuals can have different reservation wages (Feldstein & Poterba, 1984). The self-employed who transition to employment may therefore be willing to accept lower wages if the threat of unemployment is high (Jacobson et al., 1993).

These above discussed scenarios, where wages do not fully reflect productivity, are potential explanations to why we find that the former entrepreneurs are paid less than their relation to labor productivity. Literature on these aspects are by and large not covering entrepreneurs in the analysis which we try to amend in this thesis.

5 Contribution of the Thesis and a Summary of the Papers

This thesis comprises of four independent papers where all papers use register-based employer-employee data for Sweden spanning the period of 1990 to 2016. These data cover the population of individuals aged 16 and older who can be linked to Swedish registered firms. The availability of such micro-level data across this long period makes it possible to evaluate the consequences of labor market experience in self-employment for both individual- and firm-level outcomes. The transition from entrepreneurship to wage employment is a source of labor mobility which we focus on. Entrepreneurship, or self-employment, is defined as business ownership where at least half of the individuals' income originates from a business that they own.

This thesis contributes to the growing literature on the productivity effects of labor market experience in self-employment both for individuals' wages and firm productivity. In specific, we evaluate whether the wages paid to former entrepreneurs align with the associated productivity effects found when firms hire such employees. The thesis finds that the wages and productivity do not align. The former entrepreneurs receive wages far lower than workers who change employers whilst being employees. On the other hand, we find that when firms hire, the former entrepreneurs are even slightly more productive than the labor flows from another firm and having employees who used to engage in entrepreneurship are a source for better performance in the long-run. The thesis is the first to show such findings.

The findings also have implications for aggregate growth. In previous studies, entrepreneurship is usually linked to aggregate growth while individuals are engaged in entrepreneurship. We, however, show long-lasting consequences of entrepreneurship experience build on micro-level mechanisms post-entrepreneurship. The results show imply that individuals learn through labor market experience in self-employment, but they bear the cost by lower wages which can persist relatively long time and the productivity increases of such an experience are transferred to incumbent firms.

Post-entrepreneurship Earnings across Education. Authors: Lappi, Eklund, and Klaesson

The paper answers the question of whether the entrepreneurship experience results in earnings gains or losses when individuals enter wage employment. Although the importance of formal education to an individual's earnings is well established, there is evidence suggesting that a large portion of directly marketable skills is not acquired from formal schooling but rather from work experience. One source of work experience is wage employment, but another important type can potentially be the experience acquired from being an entrepreneur. We contribute to the small but growing literature on post-entrepreneurship outcomes by controlling for unobserved ability and by evaluating earnings differently across educational levels and a variety of other heterogeneous dimensions.

We estimate the earnings of individuals using a dynamic difference-in-difference framework and following individuals over time. Individuals are allowed to exit back to regular wage employment within the time window from 2006 to 2010. We include information on the individuals 11 years pre-exit and 6 years postexit where the entrepreneurs start their businesses in different years. As the entry into entrepreneurship is nonrandom, we find an appropriate control group by the use of coarsened exact matching. By doing so, we can compare individuals who enter entrepreneurship with a group of individuals who do not take up entrepreneurship but who are similar in observable characteristics and, with the use of AKM individual fixed effects (Abowd et al., 1999), even in unobservable characteristics.

We find that post-entrepreneurship, those with entrepreneurship experience earn significantly less than the control group. Highly educated individuals earn, on average, 7.1 percent less up to 6 years post-entrepreneurship, while for the less-educated, this earning loss amounts to 2.8 percent. We show that in the first years of being hired, the former entrepreneurs earn approximately 10 to 15 percent less than those who did not try entrepreneurship, but these losses level off after a few years in employment. For the less-educated, it takes approximately 5 years to regain the same earnings levels, while for the higher educated, the earnings losses persist. Additionally, we find that the length of the experience aggravates the earnings losses, implying that the human capital gained via the experience does not compare to that associated with wage employment experience. This does not imply that no learning has taken place during the entrepreneurship experience, but rather that these skills are either not transferrable or not valued in wage employment.

The Use of Coworker and Self-employment Ties When Exiting Self-employment. Author: Lappi

Individuals and firms use their social networks and referrals to mitigate the disadvantage of imperfect information in the job search process (Montgomery,

1991). The focus of the paper is to evaluate whether the individuals who exit self-employment use their professional networks to gain employment and how these networks are related to entry wages. We extend the knowledge on how similar or different the self-employed are in their use of professional networks and the associated potential earnings gains compared to new hires who come from regular wage employment. Additionally, we extend the analysis by incorporating both coworker ties and ties formed while the individual was self-employed.

We evaluate the entry wages of new hires in a time window of 4 years between 2010 and 2013. We control for a large set of individual-level characteristics as well as the sorting of individuals to firms by firm fixed effects. We obtain the unobserved ability by the Abowd et al. (1999) wage equation, where we utilize the panel nature of our data. Professional networks are defined as a common employment history going back to 1990.

The results show that having professional ties is correlated with obtaining higher entry wages for entrants from self-employment and from employment. This means that having professional ties mitigate information imperfections that arise when workers and firms are matched. However, the self-employed earn significantly less than the group of new hires who enter from wage employment. However, we find that the former self-employed who formed links while they owned their business earn higher entry wages than any other new hires. The results imply that the self-employed fare better only when they have networks that are specific to the self-employment experience. This means that professional ties that were formed while in self-employment provide different information than ties formed while co-workers.

New Hires, Knowledge Transfer, and Productivity – Evidence from the Job Mobility of Entrepreneurs. Author: Lappi

The labor mobility of knowledge workers has been shown to influence firm productivity (Parrotta & Pozzoli, 2012; Stoyanov & Zubanov, 2012) and innovation (Almeida & Kogut, 1999; Braunerhjelm et al., 2018). One potential group of such knowledge workers that firms hire to increase their productivity is former entrepreneurs. This paper answers whether newly hired employees with previous entrepreneurship experience influence the productivity of firms. The productivity increases from hiring such employees originate from these employees being a source for innovation, bringing knowledge and skills learned during their entrepreneurship experience, and creating knowledge spillovers within the firm. We differentiate labor flows from three sources: those who change employers (job-to-job switchers), those who gain employment following unemployment and those who transition from entrepreneurship.

We estimate production functions with quality-adjusted labor by using the commonly used control function approaches of Olley and Pakes (1992) and Levinsohn and Petrin (2003). These estimation techniques control for endogenous input choices by using investments or materials and their inverse demand functions to proxy unobserved productivity shocks. We use data on all private

single establishment firms outside the agricultural sector in Sweden over the period 2004 to 2016.

We find that there are no significant instantaneous effects of new hires in the first year of employment. This implies that new hires face significant adjustment costs when changing employers. These effects are evaluated in various dimensions, such as the skill levels of new hires, the role of technology, and the impact of the productivity of the previous firm. However, the new employees from employment and entrepreneurship have a positive relationship to labor productivity after the first year. Employee flows from unemployment seem to take a longer time to adjust to being productive

Employees' Entrepreneurial Human Capital and Firm Performance.
Authors: Braunerhjelm and Lappi

Intangible capital and human capital specifically have been proposed to explain the productivity differences found in narrowly defined sectors (Haltiwanger et al., 1999). This paper introduces a new refined measure of the quality of the labor firms use in their production, which is embodied in the employees as a form of their previous labor market experience as an entrepreneur. Having employees with such an experience and thus such knowledge and skills increases the productivity of the firm potentially through knowledge spillovers and innovation. We estimate the long-term effects that the entrepreneurship experience has on productivity.

Entrepreneurial human capital is measured as the labor market experience of workers either by the share of employees who have been entrepreneurs in the past or by the actual years of previous entrepreneurship experience these employees have obtained. We include this in a production function framework to impact the firm's production through the technology parameter. We use Olley and Pakes (1992) and Levinsohn and Petrin (2003) estimation techniques to control for the endogeneity of input choices. The data we use are an unbalanced panel of private sector firms from 2004 to 2016.

We find a consistent and positive relationship between employees' entrepreneurial experience and productivity. The findings imply that hiring employees who formerly were entrepreneurs is a source for better performance for firms. However, the results are found to be driven by small firms, and differences are observed across skill levels and within the entrepreneurship experience domain. We show that the entry and exit routes in entrepreneurship matter. The paper contributes to the literature on firm productivity and the connection to the quality of labor.

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Post-entrepreneurship Productivity

In recent decades, public policies have been implemented to encourage individuals to become entrepreneurs. However, the individual and social benefits of such policies when some of these individuals eventually leave entrepreneurship are unclear. The purpose of this thesis is to empirically assess the productivity effects arising from the labor market experience of entrepreneurship, measured as self-employment, in subsequent wage employment.

This thesis consists of an introductory chapter and four independent papers. The four papers evaluate the consequences of the self-employment experience either for the individuals' wages or for firm productivity when firms hire such individuals. All the papers compare the self-employment experience relative to wage employment.

The first paper estimates how individuals' earnings are influenced in postentrepreneurship careers when they return to wage employment. The findings suggest that former entrepreneurs suffer large earnings losses, especially in the first year as employees, and for the higher educated, these losses persist even after seven years in employment. The second paper studies the role of professional ties in entry wages when finding employment after self-employment. The results show that even when using former coworker ties in the hiring process, the former self-employed, except for those who have ties with incumbent employees when they had their own firm, earn significantly lower entry wages.

The third paper evaluates the productivity effects of different labor flows, with an emphasis on hiring former entrepreneurs. The paper finds that new hires who come from entrepreneurship, in general, are just as productive as those employees hired from another firm but are more productive than those coming from unemployment. The fourth paper analyzes how having employees with former entrepreneurship experience is related to firm productivity. The results show that having more former entrepreneurs as employees in a firm increases performance.



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