Abstract

1 State of the art
Do chief executive officers (CEOs) with a history of entrepreneurial experience receive a higher pay? The finance literature has often sought to understand the determinants of CEO compensation and why some CEOs earn a higher pay than others. Current research shows that the structure of CEO compensations varies across firms and industries (e.g. Cremers and Grinstein, 2014), and that it also depends on the characteristics and the performance of the CEOs themselves (e.g. Falato et al., 2015).

2 Research gap
The relationship between CEO pay and their experience is of particular interest. However, the literature has overlooked the role of prior entrepreneurial experience and its potential impact on CEO compensation. I intend to connect the finance and entrepreneurship streams of literature in order to fill in this research gap.

3 Theoretical arguments
Entrepreneurship is an activity in which individuals perform a complex set of tasks in order to run the different areas of their companies. Lazear (2004) argues that entrepreneurs need to possess a wide range of skills in order to manage their firms appropriately, even if they do not need to be experts in any particular skill. It can be assumed, then, that entrepreneurship experience leads to a different human capital accumulation than paid-employment experience. In particular, by running a business, entrepreneurs become generalists, while paid-employees acquire task-specific experience, thus becoming specialists. Interestingly, Custodio et al. (2013) found that those CEOs who gathered a broader set of managerial skills during their past work experience enjoy a higher compensation. Therefore, in this paper, I argue that CEOs with a history of previous entrepreneurial experience should enjoy a higher compensation, as they are more likely to develop general managerial skills than individuals who never ran a business before.

4 Data and methodology
I intend to make use of the Integrated Database for Labor Market Research (IDA), from Statistics Denmark, in order to explore the potential effect of previous entrepreneurial experience on CEO pay. Several problems are associated to an analysis of this type, as individuals who become entrepreneurs are not random, neither are those who become CEOs. In order to alleviate this problem of selectivity and the potential bias it would cause on the estimate of CEO compensation, I will use matching techniques.

5 Results
This project is still in an early stage, so results are
not yet available. However, I expect to have a first set of results before I submit the paper to the Druid Academy Conference.

References
The Impact of Entrepreneurial Experience on CEO Compensation.

Adrian L. Merida
Copenhagen Business School
Department of Innovation and Organizational Economics
almg.ino@cbs.dk

November 2017

[This paper is at a very early stage, please, do not cite, circulate or make it public.]

Abstract

While the relentless growth in executive pay has often been attributed to the ability that chief executive officers (CEOs) have to extract rent from the firm, an alternative explanation suggests that it is also due to a change in the managerial skills required to run modern firms. In particular, general managerial skills have become more predominant in recent years, and the literature shows that generalist CEOs tend to earn a higher pay. General managerial skills can be transferred across firms and industries, and are gathered through a diverse professional background. According to the entrepreneurial literature, generalists are also the type of individuals who are more likely to become entrepreneurs. Therefore, I argue that managers with a history of entrepreneurial experience should earn a higher pay. While this work is at an early stage and, therefore, results are not yet available, descriptive statistics hint at higher income for managers with entrepreneurial experience, albeit they also seem to be a positively selected sample.

JEL classification: G34, L26, J24, J31

Keywords: chief executive officers, executive pay, entrepreneurial experience.
1 Introduction

Executive compensation remains a hot topic in the finance and management literature. In particular, the relentless growth of managerial compensation levels over the last few decades has captured the attention of numerous scholars in the field. While the increasing trend in executive pay has often been attributed to the power that chief executive officers (CEOs) have to influence their own compensation—a phenomenon known as *rent extraction* (Bebchuk et al., 2002)—, a number of studies have shown interest in the role of managerial skills.¹ Murphy and Zabojnik (2004) argue that the trend in CEO pay is also due to a change in the type of managerial skills associated with running modern firms. Specifically, as firms have become more complex, *general managerial skills* have become more necessary among executives. Interestingly, Custódio et al. (2013) report that CEOs with general managerial skills tend to earn a higher compensation. In contrast with firm-specific skills, general managerial skills are those that can be transferred across companies and industries, and are gathered by individuals with a varied educational or professional background. According to Lazear (2004, 2005) such generalist individuals are also more likely to become entrepreneurs. Consequently, it could be expected that managers with entrepreneurial experience earn a higher pay.

However, the literature on the returns to entrepreneurship rarely report a premium for workers who come back to paid-employment after a spell in entrepreneurship, the exceptions being the works by Campbell (2013) and Manso (2016). Moreover, Hamilton (2000) showed that individuals who become entrepreneurs tend to value the non-pecuniary benefits of managing a firm rather than the potential earnings, which are usually lower and riskier. In fact, Benz and Frey (2008a, 2008b) found that entrepreneurs are more satisfied with their jobs despite the lower earnings mainly because they enjoy the process of running a company. Thus, firms might take advantage of such preferences and hire entrepreneurial managers at a lower cost.

The aim of this paper is, therefore, to estimate the effect of entrepreneurial experience on CEO compensation. In order to do so, I rely on register data from the population of Denmark to identify managers with and without entrepreneurial experience, and to compare the pay they receive. While this work is at an early stage and, therefore, results are not yet available, descriptive statistics hint at higher income for managers with

---

¹ A discussion of alternative explanations that can be found in the literature is provided by Gabaix and Landier (2008).
entrepreneurial experience, albeit they seem to be a selected sample, since they also differ in several other covariates.

2 Related literature

In my view, this study contributes to two different streams of literature, while connecting them at the same time. First, this paper makes a contribution to the entrepreneurship literature, in particular to the line of research devoted to the analysis of the effects of entrepreneurial experience on subsequent earnings and career prospects. Second, this work provides a different perspective on how different types of skills and experience can determine CEO compensation levels, thus contributing to the finance literature as well. Therefore, this section discusses the state of the art in both streams of literature, and how this paper could add to the extant research.

Entrepreneurial experience and subsequent earnings

Whether a history of entrepreneurial experience is a valuable asset or not is still under intense debate in the literature. The idea that entrepreneurial spells could make an impact in subsequent earnings and success in the labor market dates back to at least the work by Evans and Leighton (1989). However, they found no significant difference in subsequent wages among workers who had an entrepreneurial spell compared to those who remained in paid-employment continuously. More recently, results in Williams (2000) pointed to the existence of a penalty only for female workers who had an entrepreneurial spell, in the US. In contrast, Bruce and Schuetze (2004) found that the gap is there only for male employees. In any case, both studies find that there is indeed a penalty for workers with entrepreneurial experience, in contrast with the results provided by Evans and Leighton (1989).

The earnings differential seems to be larger in Europe than in the US (Hyytinen and Rouvinen, 2008). In Denmark, Kaiser and Malchow-Møller (2011) provide evidence that the typical negative effect of entrepreneurial experience is susceptible to become positive when the entrepreneurial spell is successful or when the industry of subsequent paid-employment is the same as the one in which they were running their companies. Baptista et al. (2012) show that a history of past entrepreneurial experience yields lower returns in subsequent paid-employment than a continued wage work experience, in Por-
However, they also find that entrepreneurial experience is associated with higher probabilities to reach managerial positions. Thus, individuals who have acquired managerial skills while running their companies in the past have, in their own words, “an advantage in progressing up the job ladder towards more managerial job levels”.

In contrast with the aforementioned works, Campbell (2013) finds that employees who joined start-ups enjoy a premium in earnings compared to employees without start-up experience. While this approach is slightly different from the papers cited above, as the subject of analysis is an employee who joined a start-up rather than starting up a company themselves, one could argue that employees working in start-ups are likely to develop similar human capital and skills than the entrepreneurs themselves. Furthermore, Manso (2016) demonstrates that lifetime earnings for individuals with entrepreneurial experience are higher than for those who never experiment with entrepreneurship. Moreover, even though most entrepreneurs fail, he finds that they are able to switch back to paid-employment quickly to minimize potential losses, and that the few entrepreneurs who succeed earn substantially more income than individuals who never were entrepreneurs.

What is really interesting about the works by Manso and Campbell, is that they both find that the effect does not reflect firm characteristics (such as success or failure), but rather that it is mainly driven by the characteristics of the individuals themselves. This implies that the human capital gathered while working in a start-up would have a positive impact on their subsequent career earnings. This is in line with the arguments and expectations developed in this paper. Entrepreneurship provides individuals with a more general set of skills which, at least in certain industries, are later appreciated and rewarded by hiring firms. Considering that the tasks associated with the position of the CEO in a company are very similar to those developed by entrepreneurs while running their companies, then it is to be expected that general human capital, and therefore entrepreneurial experience, is even more rewarded among CEOs. Whether this is the case

---

2 Sorensen (2007) finds that workers from small companies are more likely to become entrepreneurs than their counterparts from larger organizations. Elfenbein et al. (2010) refer to this phenomenon as the small firm effect, and show that individuals sorting into small firms possess similar preferences and skills than entrepreneurs, and also develop entrepreneurial skills while working at small firms.

3 Campbell (2011) explored the returns of start-up experience on future earnings only in the context of the semiconductor industry, and the author himself warns that results might not be generalizable to other contexts.
or not, i.e. whether entrepreneurial experience boosts CEO pay, is the main contribution that this paper would make to this line of research.

Skills and CEO compensation

There is an ongoing debate as to whether CEO pay depends primarily on firm size or on firm profitability. Presumably, the latter is more likely to reflect the ability of the CEO to run the firm. Thus, the question is ultimately whether CEO compensation is mainly driven by individual characteristics or by firm characteristics. Alternatively, is it *who they are* or the *where they are*?

Agarwal (1981) already pointed to the existence of this debate in the literature, and consequently developed a model of executive compensation in which both individual and organizational variables were included. Results suggested that human capital of the executives is less relevant than organizational aspects such as job complexity or the employer’s ability to pay. More recently, Terviö (2008) and Gabaix and Landier (2008) applied assignment models to represent the market for CEOs, in which managers are assigned to firms within the frame of a competitive market. Both models predict that more talented CEOs are more likely to be hired by larger and more valuable firms, and in both cases CEO compensation increases with firm size. However, the two models predict that differences in CEO ability, albeit small, would lead to relatively big fluctuations in pay, as firms compete to attract individuals from a relatively scarce pool.

Thus, even if firm characteristics account for a large proportion of CEO compensation, individual skills also play a relevant role in explaining pay disparities. In fact, after examining almost 300 CEO departures, Chang et al. (2010) found that the stock price reaction is negatively associated to the performance that the firm showed before departure and the pay that the CEO had. Moreover, the post-departure performance of the CEOs is positively associated to their pre-departure performance, while post-departure of the firm gets worse. This set of results provides further evidence that CEO pay and their ability to run the firm are positively related.

A natural question that arises is which skills matter for determining CEO compensation. This is indeed a topic that requires intense research, as little evidence is currently

---

4 Gabaix et al. (2014) made a follow up paper of Gabaix and Landier (2008) to test the model under the context of the financial crisis of 2008 and found that CEO pay closely follows the upturns and downturns of average firm value.
available in the literature. This is mostly due to the fact that skills are difficult to measure empirically. Falato et al. (2016) provide one of the few attempts to quantify the impact of skills on CEO pay. In their study, they gather biographical information of about 4,000 CEOs of S&P 1,500 firms in order to construct measures of CEO skills based on credentials. These credentials are based on three different aspects of the executives: press coverage (as a signal of reputation), their career track record, and their educational track record. Their results indicate that CEOs with better credentials enjoy a higher compensation, and that credentials on their reputation and their performance are stronger predictors of their subsequent pay than their educational background.

An interesting differentiation between types of skills that are relevant for CEOs was suggested by Murphy and Zabojnik (2004). In their paper, they provided an alternative explanation to the rent extraction mechanism for why CEO pay levels have increased substantially since the 70s’. In particular, they argue that the trend in CEO pay is also due to a change in the type of managerial skills associated with running modern firms. They then introduced the concept of general managerial skills, which they describe as being “transferable across companies, or even industries”, as opposed to firm-specific skills, which are not be transferable to other organizations. Thus, in their model they show that pay is higher for individuals with general managerial skills, as companies from all industries compete to hire them. On a more recent study, Frydman and Saks (2010) found that indeed CEO compensation was lower during the period in which firm-specific skills were more common than general managerial skills, although they warn that the change in pay levels was too abrupt to be solely caused by a change in the type of ability of the CEOs, which would have probably been a much smoother and slow process. Finally, Custódio et al. (2013) also find that pay is higher for CEOs with general managerial skills. In their setup, these skills are acquired through a varied lifetime work experience. In any case, the fact that CEOs with general managerial skills enjoy higher compensation levels may simply reflect the possibility that they improve firm profitability. Indeed, Kaplan et al. (2012) show that corporate performance is positively associated to general ability of the CEO.

This paper contributes to this area of investigation by providing evidence of the impact on CEO pay of entrepreneurial skills, which is a type of skill that has been overlooked until now in the analysis of CEO compensation levels.
3 Theoretical arguments

This section develops the main expectations in relation to the effect of entrepreneurial experience and managerial compensation. To the best of my knowledge, this is the first paper to consider that relationship, so there is no previous evidence to directly support my arguments. However, it is possible to draw a few expectations based on the different pieces of evidence provided in the literatures of entrepreneurship and finance, which have been summarized in the previous section.

A premium for entrepreneurial experience

Lazear (2004, 2005) described entrepreneurs as *jacks-of-all-trades (JAT)*, in the sense that they need to perform a wide range of tasks which often differ substantially in terms of the type of knowledge and ability required. Thus, even though entrepreneurs do not necessarily become specialists in any of the tasks they carry out, they must be competent on a wide variety of them. Consequently, individuals who possess a more diverse educational or professional background are more likely to become entrepreneurs, as the potential return to their generalized skills should be higher than in paid-employment. Evidence in favor of the positive relationship between diverse educational background and entrepreneurial entry is provided by Lazear (2004, 2005) himself by using data on Stamford alumni. Similarly, Elfenbein et al. (2010) argue that workers employed in smaller firms engage in more varied activities than those working for larger organizations, where tasks are more narrowly defined. This makes the former more likely to become entrepreneurs than the latter, as they gather managerial knowledge and develop more balanced skills.

There is, however, an alternative explanation for the association between diversity and self-employment engagement. If would-be entrepreneurs already have an innate taste for diversity, then they would be more prone to engage in diverse training and occupations. In this sense, Silva (2007) shows that breadth of experience becomes irrelevant in a panel data setup, which would point to a selection into entrepreneurship based on unobserved characteristics, such as a preference for variety.

Whether innate or acquired, the fact that balanced skills are associated with a higher likelihood to become an entrepreneur seems to be consistent. However, it is not clear that general skills are also positively related to subsequent earnings. Åstebro and Thompson (2011) use Canadian data to show that individuals with a more diverse back-
ground are more likely to engage in entrepreneurship, but they also have lower income levels. The penalty for diversity is also present for wage employees, although to a lesser extent. Conversely, results in Bublitz and Noseleit (2014) point to a premium for a diverse background, both for entrepreneurs and for employees. Given the mixed evidence concerning the returns to general ability, it is not simple to draw any concrete expectation as to whether entrepreneurial experience will be positively or negatively associated with subsequent earnings in managerial positions.

Nevertheless, the results provided by Custódio et al. (2013) indicate that there is indeed a premium associated with general managerial skills for the case of CEOs. The premium for generalist CEOs is particularly high when they are hired by firms in industries hit by shocks or facing complex situations such as mergers or acquisitions. Therefore, if individuals who run their own firms tend to possess or develop a broader set of skills, then firms would interpret entrepreneurial experience as a signal of general managerial ability, and would therefore be willing to offer a higher pay in order to hire such individuals—especially if these firms are confronting one of the aforementioned situations. Therefore, the main expectation is that managers with a history of entrepreneurial experience should earn a higher pay.

Further considerations and counterarguments

A potential weakness for the argument developed above arises from a potential conflict in the concept of general skills. In the finance literature, general skills are usually opposed to industry-specific and firm-specific skills. Thus, general managerial skills are applicable across firms and industries, industry-specific skills are transferable across firms operating in the same industry, and firm-specific skills are only valuable in a particular firm. However, the entrepreneurship literature explains that entrepreneurs often have general skills as opposed to task-specific skills. Although they may look similar, these two concepts refer to two different comparisons. In fact, entrepreneurial skills are not exactly the same as general managerial skills. For example, an entrepreneur may have gathered experience on a varied set of skills that he or she can only apply to his or her own company, and that are not transferable to other firms. If this is the case, then entrepreneurial experience may no longer be a valid signal of general managerial skills.

Nevertheless, entrepreneurial experience by itself may be a valuable asset for firms in search of a top manager, even if it does not perfectly reflect that the candidate has
general managerial skills. In fact, the degree of success that the entrepreneurial candidate had in his or her own venture may be a stronger predictor of CEO pay by itself than how generalizable his or her skills are across industries and firms.

Moreover, entrepreneurial experience might simply reflect a taste for the process of running a firm. Entrepreneurs are often willing to stay in entrepreneurship even if the wage they would receive in paid-employment is potentially higher, simply because they enjoy other non-pecuniary benefits (Hamilton, 2000). In fact, entrepreneurs seem to be more satisfied with their jobs because they enjoy the process of managing a firm (Benz and Frey, 2008a; 2008b). If firms have the perception that candidates who were entrepreneurs before are less motivated by the potential compensation, and that their interest in mainly driven by their willingness to run a company, then they might end up offering them a lower pay.

Further arguments for a potential penalty for managers come from the literature on the returns to entrepreneurship. As described in the literature review section, wage employees who engage in entrepreneurship are typically penalized when returning to paid-employment. However, it is worth noting that entrepreneurship entails a set of tasks that are more similar to those developed by workers in managerial positions compared to other types of employees. Indeed, employees are more likely to climb up the ladder to managerial positions after a spell of self-employment (Baptista et al., 2012). Therefore the potential penalty to entrepreneurial experience may be ineffective when the entrepreneur becomes a manager.

Finally, individuals who become entrepreneurs are more likely to come from smaller organizations. While it could be assumed that they choose to work for smaller firms in order to learn how a business is managed, it may also be the case that they have a preference for smaller organizations, where they can have a closer control of all the activities happening in the firm. If this is the case, then one would expect that they sort into smaller firms when deciding to become managers. This would imply that their pay should be smaller, since it is a stylized fact in the finance literature that CEO compensation is positively correlated to firms size (Gabaix and Landier, 2008; Terviö, 2008).

**Potential sources of heterogeneity**

The managerial style of a CEO has a direct impact on firm performance. In fact, Bertrand and Schoar (2003) showed that the decisions, policies and performance of a
firm can be explained by manager fixed-effects. Personality traits of managers are presumably included among those fixed-effects. For instance, overconfident CEOs are more likely to make value-destroying investment decisions like unprofitable mergers and acquisitions (Malmendier and Tate, 2005; 2008), and tend to engage in innovation activities more often (Galasso and Simcoe, 2011); and over-optimism is associated with greater managerial efforts (Hilary et al., 2016). All these decisions can of course affect firm-performance in one way or another.

It therefore follows that generalist and specialist managers should run their firms in different ways. In a recent paper, Hu and Liu (2015) show that firms managed by CEOs with a diverse career background cope better with situations in which internal capital is insufficient. Thus, CEOs with varied experiences would have established a wider network, which would help to reduce information asymmetry and to open access to external financing. They also conclude that the effect is stronger when firms are financially constrained. On the other hand, Custódio and Metzger (2014) find that CEOs with an expertise in finance tend to hold less cash, more debt, are more likely to engage in share repurchases, make investment decisions that are less sensitive to cash flows and are more able to raise external funds. They also find that financial expert managers are usually hired by mature companies. Therefore, it is also plausible that entrepreneurial experience is valued differently depending on the particular situation of the hiring firm.

Another source of heterogeneity comes from the size of the company that former business owners managed while they were in entrepreneurship. One could say that a solo entrepreneur may develop many types of experience related to commercial and accounting activities, among others, but not in terms of human resource management. Usually, a top manager needs to deal with intermediate managers and employees in order to manage the firm. Therefore, entrepreneurs without employees should receive a lower pay than those with employees when they become managers, as they do not have a set of skills as complete as the latter. Conversely, an entrepreneur who employs a large number of workers is less likely to perform tasks related to all the specific areas of a company of that size. Therefore, it is also possible that entrepreneurs who run very large firms end up becoming less generalist. In sum, there might be a non-linear relationship between the size of the company that entrepreneurs run and their subsequent managerial compensation.

A last source of heterogeneity would involve the extent to which the companies they managed when they were entrepreneurs were successful or not. Therefore, other
signals of ability for hiring firms when they consider a CEO with entrepreneurial background might include indicators such as firm value of those entrepreneurial ventures, or whether they were ended due to bankruptcy issues or not.

4 Data and proposed empirical approach

In order to estimate the effect of entrepreneurial experience on the magnitude of CEO compensation, I will make use of the ‘Integrated Database for Labor Market Research’ (typically referred to as ‘IDA’). IDA is a matched employer-employee database provided by Statistics Denmark, and it contains information based on register data of all individuals living in Denmark.

This dataset offers the possibility to track individuals over time and provides information related to their personal, familiar, educational and professional background. It also allows matching individuals with firms and workplaces in order to combine data at the individual and the organization levels. However, in this early version of the paper I can only provide a brief analysis at the individual level.

The sample considered in this paper is formed by individuals who become top managers for the first time in their careers at some year between 1997 and 2012. Each individual is observed once a year, and the longitudinal aspect of the dataset allows tracking them as far back as 1980. In this first approach, I only consider managers who are externally hired, so individuals who become managers through internal promotion are dropped. Entrepreneurs who become managers of their own firms have also been excluded from the analysis. Table 1 exhibits the composition of the final sample, which consists of 72,041 top managers. Out of them, 11,274 managers spent at least one year in entrepreneurship, which accounts for 15.65% of the total number of individuals.

A person is coded as being an entrepreneur if he or she appears as a self-employed or an employer (incorporated) in the primary occupation variable. Among the managers

---

5 Please, note that the data work is currently at a very early stage and the figures presented in this section are susceptible to change in future versions. The proposed methodology needs to be extended.

6 Note that the focus on their first managerial spell is crucial to avoid potential confounding effects coming from prior experience as top managers in their current CEO pay.

7 The reason why 1997 is the first year considered is due to a change in the codification of the occupational status variable from 1995 to 1996. To avoid identification problems driven by such break in the data, I only consider individuals becoming managers for their first time in 1997 or later.
with entrepreneurial experience in the sample, a total of 8,045 individuals (11.17% of the total sample) have experience as self-employed, and 6,031 (8.37% of the total sample) had an incorporated company, with 2,802 having both types of entrepreneurial experience.

Figure 1 plots a frequency histogram of the number of consecutive years of tenure of these individuals after they become managers for their first time. In the histogram, it appears that the patterns are very similar among managers with and without entrepreneurial experience: the majority of them remain managers for around three years, while very few of them keep their managerial position for more than five.

The distribution of income\(^8\) earned during the first year by the two types of managers is exhibited in Figure 2. The wage distribution of those who were entrepreneurs before becoming managers is slightly more disperse, with more individuals earning very high salaries. This seemingly favorable pattern for entrepreneurial managers is reaffirmed in figure 3. Interestingly, the differences between managers with and without self-employment experience are smaller than the differences with respect to managers with incorporated experience, particularly at the upper tail. In other words, self-employment experience is not as valuable as incorporated experience. This would be in line with the arguments developed by Levine and Rubinstein (2016) that incorporated and unincorporated entrepreneurs are differ in their traits and in the type of tasks they execute.

The differences in wage distributions might be due to the fact that these are different types of individuals. The traits and characteristics that led some of them to become entrepreneurs in the first place might also be related to the wages they earn later as managers. For example, it might be the case that individuals becoming entrepreneurs are drawn from the upper tail of the ability distribution. While ability –as well as other personality traits– cannot be observed in the register data, there are many observable characteristics that can be compared in order to get some insight about the extent to which they are comparable subjects.

\(^8\) Income is defined as total personal income before interests and taxes. It is computed by Denmark Statistics as the sum of corporate income, transfer income, property income and other non-classifiable income attributable directly to the individual, and before deduction of labor market contributions and special pension contributions. All monetary variables are deflated (base year: 2000) and in thousands of Danish kroners (DKK).
Table 2 exhibits the differences in means between managers with and without entrepreneurial experience for some of the most relevant observable characteristics. Unconditional differences in wages between the two groups reveal that managers who were entrepreneurs before show significantly higher income levels in their first year as managers. However, as anticipated in figures 2 and 3, the standard deviation is also substantially larger, so earnings are more spread out than for the other group of managers. In addition, managers with a history of entrepreneurial experience tend to have a higher income before becoming managers, as well as having spent more years in the labor market and being slightly older. Moreover, the proportion of females is even lower in the group of managers with entrepreneurial experience. With respect to the education levels of these two groups, it looks like managers with entrepreneurial experience are less likely to have completed tertiary education and to have studied in the fields of business or STEM. It is interesting that entrepreneurial managers show higher average earnings while being less educated, albeit the reason may be related to their longer labor market experience and not only because of their entrepreneurial spells.

All in all, these are not comparable samples, as they differ in many observable characteristics before they became managers. Clearly, these are not randomly selected samples, so the effect of having entrepreneurial experience is susceptible to be confounded with other observed and unobserved characteristics. In fact, the analysis is subject to, at least, two empirical complications. Firstly, there is indeed a problem of sample selection, just like the figures in table 2 suggest. Also, individuals who become entrepreneurs are different than the rest, not only in terms of observable characteristics, but probably also in terms of unobserved heterogeneity. Secondly, the sorting of managers into firms is also not random. For example, if entrepreneurs are more able individuals, then they might end up being matched to better firms, on average, thereby enjoying higher wages.

In situations like this one, the ideal case would be to take advantage of longitudinal data in order to account for individual and firm fixed effects, thereby reducing the influence of unobserved heterogeneity, while also controlling for observed characteristics. However, given the time-invariant nature of the independent variable—which accounts for past entrepreneurial experience, so it does not change once the individual becomes a manager—, fixed effects estimations are not possible in this setup.

Alternatively, matching techniques should enable the comparison of individuals who are similar in terms of all relevant pre-treatment characteristics. If the quality of the
matching is sufficiently good, then it would be possible to attribute the effect on the outcome variable to the treatment, rather than to the differences between the two samples. However, this method would not reduce the influence of unobserved heterogeneity, which could explain both selection into the treatment and the outcome itself. For example, if overconfident individuals are more likely to become entrepreneurs, and also run the firms differently when they are managers, thus affecting their wages, then the effect would be confounded and it would not be possible to attribute it to whether individuals had experience as entrepreneurs. In a cross-sectional setup, this endogeneity problem can only be alleviated by means of instrumental variables. The choice of an appropriate methodology is the next step in this project.
References


**Tables and figures**

Table 1. *Sample of managers, by type of entrepreneurial experience*

<table>
<thead>
<tr>
<th>Experience</th>
<th># Individuals</th>
<th>Share of total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without entrepreneurial experience</td>
<td>60,767</td>
<td>84.35</td>
</tr>
<tr>
<td>With entrepreneurial experience</td>
<td>11,274</td>
<td>15.65</td>
</tr>
<tr>
<td>Self-employment experience</td>
<td>8,045</td>
<td>11.17</td>
</tr>
<tr>
<td>Incorporated experience</td>
<td>6,031</td>
<td>8.37</td>
</tr>
<tr>
<td>Both S-E and Inc. experience</td>
<td>2,802</td>
<td>3.89</td>
</tr>
<tr>
<td><strong>Total sample</strong></td>
<td><strong>72,041</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>
Table 2. Differences between managers with and without entrepreneurial experience.

<table>
<thead>
<tr>
<th></th>
<th>Never entrepreneur (N = 60,767)</th>
<th>Entrepreneur before (N = 11,274)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
</tr>
<tr>
<td>Income in the first year as manager</td>
<td>402.85</td>
<td>213.24</td>
<td>444.44</td>
</tr>
<tr>
<td>Income before becoming manager</td>
<td>219.71</td>
<td>125.36</td>
<td>295.05</td>
</tr>
<tr>
<td>Years in labor market before becoming manager</td>
<td>17.42</td>
<td>6.90</td>
<td>20.10</td>
</tr>
<tr>
<td>Age in the first year as manager</td>
<td>39.59</td>
<td>10.16</td>
<td>45.53</td>
</tr>
<tr>
<td>Female</td>
<td>0.34</td>
<td>0.48</td>
<td>0.17</td>
</tr>
<tr>
<td>Secondary education or lower</td>
<td>0.46</td>
<td>0.50</td>
<td>0.61</td>
</tr>
<tr>
<td>Bachelor studies</td>
<td>0.34</td>
<td>0.47</td>
<td>0.23</td>
</tr>
<tr>
<td>Postgraduate education</td>
<td>0.20</td>
<td>0.40</td>
<td>0.16</td>
</tr>
<tr>
<td>Business/STEM diploma vs other fields</td>
<td>0.55</td>
<td>0.50</td>
<td>0.46</td>
</tr>
<tr>
<td>Copenhagen/Zealand areas vs other areas</td>
<td>0.49</td>
<td>0.50</td>
<td>0.49</td>
</tr>
</tbody>
</table>
Figure 1. Tenure in the first managerial position.
Figure 2. Income distributions of top managers in their first year.
Figure 3. Income of top managers, by type of entrepreneurial experience.