

Signaling Valuable Human Capital

Advocacy Group Work Experience and Its Effect on Employee Pay in Innovative Firms

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**SIGNALING VALUABLE HUMAN CAPITAL: ADVOCACY GROUP WORK
EXPERIENCE AND ITS EFFECT ON EMPLOYEE PAY IN INNOVATIVE FIRMS**

Running Head: Signaling Valuable Human Capital

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Keywords: Human capital, advocacy groups, stakeholder theory, signaling, value creation

SIGNALING VALUABLE HUMAN CAPITAL: ADVOCACY GROUP WORK EXPERIENCE AND ITS EFFECT ON EMPLOYEE PAY IN INNOVATIVE FIRMS

RESEARCH SUMMARY

The ability of innovative firms to create and capture value depends on innovations that are quickly and widely adopted. Yet, stakeholder concerns can establish important barriers to diffusion. We study the human capital aspect of this challenge and investigate whether innovative firms pay salary premiums to new hires with work experience from advocacy groups like Transparency International. We integrate strategic human capital with stakeholder theory and suggest that advocacy group experience creates signals for valuable human capital in terms of stakeholder knowledge and legitimacy transfers to innovative firms. Using matched data for 3,562 employees in Denmark, we find that new hires with advocacy group experience enjoy larger salary premiums at technologically leading firms, in occupations with direct stakeholder interaction, and for advocacy group top management.

MANAGERIAL SUMMARY

Innovation research is increasingly aware of the non-technological factors behind successful innovations. Users, regulators, or public opinion can be benevolent supporters or stingy opponents of innovations. Employees with an understanding of the needs and sensitivities of societal stakeholders should therefore be valuable to innovative firms. We find this to be the case when innovative firms hire employees from advocacy groups representing such stakeholders (e.g. Transparency International). Such employees receive higher salaries than an otherwise comparable reference group. These findings indicate that recruiting needs of innovative firms reward stakeholder experience, not merely technological expertise. They demonstrate how firms can create value in the pursuit of the public interest. Further, advocacy groups emerge as an important career stage allowing individuals to develop credible signals for stakeholder expertise.

Keywords: Human capital, advocacy groups, stakeholder theory, signaling, value creation

INTRODUCTION

“Ten years ago, it was enough to get good a salesman, give him a crash course on a certain disease, and send him out. Today, we need people with an understanding of how to make a bridge between the corporate world and society. We had a change in perspectives. Today, we talk more about health economics or patient needs, and less about patents.”

Senior advisor for the HR strategy of a large pharmaceutical company

The strategic value of human capital is a core theme of strategy research (e.g., Campbell, Coff, and Kryscynski, 2012; Mawdsley and Somaya, 2016). Existing literature suggests that innovative firms create value when they hire research and development (R&D) personnel, patent inventors, and scientists (e.g., Kaiser, Kongsted, and Rønde, 2015; Mawdsley and Somaya, 2016). Yet, the strong focus on technological human capital seems to overlook insights from stakeholder theory, which suggests that firm performance depends on the acceptance and support of an organization’s objectives by important stakeholders, such as regulators, residents, end-users, and society at large (Freeman, 1984; Frooman, 1999). In this article, we focus on advocacy groups as an organizational context in which individuals acquire knowledge and develop unique skills, abilities, and experiences (henceforth referred to as human capital) (Molloy and Ployhart, 2012) when they interact with stakeholders.¹ Advocacy groups represent and organize stakeholders while accumulating stakeholder knowledge, interests, and concerns (Clarkson, 1995; Olsen, Sofka, and Grimpe, 2016). They can alter organizational behavior (Frooman, 1999; Eesley and Lenox, 2006) as their salience to organizations increases (Mitchell, Agle, and Wood, 1997).

¹ Examples of advocacy groups include Greenpeace, Transparency International, and professional industry associations. They are sometimes also referred to as non-governmental organizations (NGOs) or civil society organizations.

In this study, we research how advocacy group work experience is reflected in employee salaries when they are hired by innovative firms and conjecture that the firms perceive this kind of human capital as particularly valuable. To this end, we focus on personnel mobility as a particular channel by which innovative firms interact with public or non-profit organizations. Explaining salary differences for new hires of innovative firms with advocacy group work experience allows us to capture (a) the expectations for value creation that these particular employees can bring to innovative firms and (b) the degree to which the focal individuals can capture some of this value through salary premiums. With regards to expected value creation in innovative firms, advocacy groups have been shown to provide innovation opportunities that are acceptable to salient stakeholders (Olsen *et al.*, 2016). Innovative firms that misjudge stakeholder concerns limit their access to resources (Frooman, 1999) and trigger disruption, protests (Clarkson, 1995), and political interference (Harrison and St. John, 1996), slowing down the development and diffusion of innovations. Hiring former employees of advocacy groups not only provides access to stakeholder knowledge but can also transfer legitimacy to innovative firms and their novel products, i.e., legitimacy rubs off (Baum and Oliver, 1991; Bitektine, 2011). As a result, we suggest that individuals with advocacy group work experience receive higher salaries when hired by innovative firms compared to individuals without such experience.

We draw from human capital literature for theorizing about how employees will appropriate at least some value through salary premiums. Within this theoretical logic, general human capital is a significant determinant of an individual's earnings since employees could move to a different employer and capture the value generated by their general human capital (Becker, 1994). More recently, research has emphasized how the development of human capital in organizational contexts such as start-ups (Campbell, 2013) and multinational companies (MNCs) (Sofka, Preto, and

de Faria, 2014) can result in positive earnings effects when employees switch firms. We put particular emphasis on the signaling value of advocacy group work experience since the underlying quality of an individual's human capital is typically hard to assess by a new employer (Spence, 1973; Connelly *et al.*, 2011). Apart from the general relationship between advocacy group work experience and employee salaries in innovative firms, we investigate three moderating factors for the effect strength based on how close the hiring firm's innovation activities are to the technological frontier, the occupation of the focal employee, and the hierarchy level. These moderator hypotheses allow us to explore conditions in which one or the other mechanism underlying our main hypothesis, i.e., signals for stakeholder knowledge and skills vis-à-vis signals for transfers of legitimacy, is more pronounced.

We test our theoretical predictions empirically using employer-employee population data from Denmark for the period from 1999 to 2004. We employ coarsened exact matching (CEM) to identify pairs of comparable employees, with and without advocacy group experience, who were hired by the same innovative firm. The results support all our hypotheses. Our theoretical reasoning is informed by a series of semi-structured interviews with advocacy group representatives and firm employees in charge of human resources (HR) practices.

We make three contributions to academic research. First, strategic human capital research has explained earnings effects from the transfer of human capital across organizational contexts for start-up and MNC settings (Campbell, 2013; Sofka *et al.*, 2014). Our integration of strategic human capital theory with stakeholder theory allows us to derive novel predictions on how human capital can be created in advocacy groups and signaled to innovative firms. Stakeholder interaction as a source of additional human capital constitutes an important gap in strategic human capital theory (Mawdsley and Somaya, 2016). We provide a theoretical model that specifies a

particular mechanism from stakeholder theory explaining the origins of human capital creation and why this can be perceived as valuable for innovative firms. This theoretical model can serve as a pathway for further theorizing in dedicated studies.

Second, the literature on stakeholder interaction with firms has largely focused on collaborations and partnerships (e.g., Harrison and St. John, 1996; Olsen *et al.*, 2016). Few links exist between stakeholder interaction and the creation of human capital (exceptions include Madsen and Bingham, 2014). Then again, our findings show that job mobility from advocacy groups to innovative firms is not rare, and our illustrative interviews indicate that there is interest from firms to hire employees with these particular types of human capital. Our integration of strategic human capital and stakeholder theory provides a theoretical logic for predictions on the expected value of stakeholder-related human capital in innovative firms. Hence, our model can serve to explore the career opportunities of former advocacy group employees more comprehensively.

Finally, strategic human capital literature focusing on innovative firms has largely investigated the value of technological human capital through R&D personnel, inventors, and scientists (e.g., Kaiser *et al.*, 2015). Our theoretical model is different in two aspects. First, we show how non-technological human capital acquired in advocacy groups is perceived as valuable in innovative firms. Studies focusing exclusively on hiring of technological experts may underestimate the types of human capital that innovative firms perceive as valuable. Second, we provide a theoretical reasoning that predicts salary effects and not technological outcomes (e.g., patenting) or firm-level effects (e.g., productivity). Salary effects are arguably one of the most important motivations for employees to change jobs. Theoretical models allowing these predictions can therefore be influential for informing employees and their career choices. Our model can serve as a basis for future studies modeling earning effects for employees joining innovative firms.

THEORY AND HYPOTHESES

We develop a theoretical reasoning that predicts differences in salaries for newly hired employees of innovative firms based on whether they possess human capital acquired while working for advocacy groups. We start out by outlining how working for an advocacy group creates and reveals human capital. We will subsequently reason that work experience at advocacy groups sends signals about the value of this human capital to innovative firms. The signal allows innovative firms to form expectations about the value of the human capital for the firm and, as a result, increases the market value of the individual.

Advocacy Group Work Experience and Its Value for Innovative Firms

Advocacy groups provide a specific organizational context, which allows their employees to build a particular type of human capital. Previous research has shown how work experience in organizational contexts such as start-ups (Campbell, 2013) or working for subsidiaries of MNCs (Sofka *et al.*, 2014) allows individuals to acquire and reveal particular knowledge and skills that pay off in terms of the individuals' earnings in other contexts. Advocacy groups provide such an organizational context because their employees interact with stakeholders in unique ways. The theoretical reference group of individuals shares all other aspects of their human capital.

In stakeholder theory, stakeholders constitute “any group or individual who can affect or is affected by the achievement of the organization’s objectives” (Freeman, 1984: 46). Advocacy groups have been characterized as secondary stakeholders representing the interests of primary stakeholders such as employees, customers, residents, and patients (Frooman, 1999). Advocacy groups accumulate stakeholder knowledge, can voice concerns, and mobilize media, politics or the general public. Employees of advocacy groups have access to these unique pools of

knowledge from stakeholders and other sources (Frooman, 1999; Christmann, 2004). They acquire a deep understanding of the matter that stakeholders are concerned with and build up repositories of specialized knowledge. Patient advocacy groups are a case in point in that they collect patient information on treatment and pharmaceutical effects to support and educate individuals with a certain condition (Terry *et al.*, 2007).

In that regard, stakeholders are in an existing or potential relationship with an organization, for example, patients with a pharmaceutical firm (Mitchell *et al.*, 1997; Bosse and Coughlan, 2016), and have a legal, moral, or presumed claim, or the ability to influence an organization in such a way that it addresses a certain problem (Christmann, 2004). The employees of advocacy groups interact with stakeholders on a continuous basis. They learn to understand nuances of stakeholder concerns, develop a shared language, and learn to coordinate with volunteers, activists, and regulators. Human capital literature emphasizes how human capital acquired in one organization can be valuable to other organizations, if it is general in nature, i.e., not specific to the original context in which it was developed (Becker, 1994). While parts of the human capital that employees acquire when working for advocacy groups remain specific to this context, other parts can be valuable to innovative firms in themselves or create complementarities with innovations.

The commercial success of innovative firms depends crucially on the degree to which their innovations are adopted. Rogers (1995) describes prominently the differences in the degree to which innovations diffuse widely. Many technological novelties find early adopters, but innovations differ in the speed and degree to which they diffuse broadly. A major element of the diffusion of innovation is the social system in which customers decide or decline to purchase an innovation (Katz, Levin, and Hamilton, 1963). Barriers to the diffusion of innovation can stem from religious or cultural beliefs, e.g., on food products or contraceptives (Rogers, 1995), or social

stigmas preventing, for example, patients from adopting new treatments (Olsen *et al.*, 2016).

While customers are central actors in the diffusion process of innovations, this view disregards the influence of other stakeholders on innovation diffusion. In other words, diffusion barriers may be related to multiple stakeholder groups, and innovative firms need to sufficiently understand and address the demands of all relevant stakeholders (Talke and Hultink, 2010). Stakeholders associate uncertainty with the consequences of an innovation and the fit with their values and goals. Innovations that offend these values and goals may lead to protests, complaints, image loss, or legal regulations, which in turn significantly hinder diffusion, while supportive advocacy groups can positively influence public opinion and political or regulatory decision making (Hill and Jones, 1992; Talke and Hultink, 2010).

Two mechanisms for why advocacy group work experience is perceived as valuable by innovative firms can be distinguished. First, organizations face pressures to respond to stakeholders and these pressures increase with the salience of stakeholders (Mitchell *et al.*, 1997; Eesley and Lenox, 2006). In fact, there are many examples of firms that turn to advocacy groups for advice since advocacy groups can grant or deny access to knowledge (Eesley and Lenox, 2006). Harrison and St. John (1996) refer to oil companies that seek to adopt practices unlikely to cause protests and to consumer goods producers that ask for advice on environmentally friendly packaging. Olsen *et al.* (2016) show that advocacy groups are included in consortia of organizations searching for solutions to innovation problems because advocacy groups, through their knowledge of stakeholder concerns, help identify solutions that will receive stakeholder acceptance and support. The senior advisor for the HR strategy of a large pharmaceutical firm explains the importance of stakeholders like this:

We have responsibilities in the world and need to interact with key opinion leaders, patients, end-users, all kinds of stuff. Today, it's not enough that you have the best product. We have to be aware of patient needs and demands.

In this context, a business development manager in a manufacturing firm describes for us the value of advocacy group human capital as follows:

From a distance, everything looks bad in Africa. But these people are not lazy. It takes somebody to go there and learn what they need. This creates business back home. Understanding the context is important. Technologies do not have to be groundbreaking.

Hence, employees with advocacy group human capital can create complementarities for innovative firms that other employees cannot. They help identify solutions to innovation problems that satisfy stakeholders' expectations and requirements (Clarkson, 1995; Olsen *et al.*, 2016). They bring a stakeholder perspective to innovation activities that pushes firms to explore possible solutions to innovation problems more comprehensively. Flammer and Kacperczyk (2016) show that stakeholder orientation fosters innovation by encouraging experimentation. This view is confirmed by the representative of an advocacy group who has frequently seen colleagues move to other firms:

Firms have become increasingly aware of civil society concerns. They would like to know where things are going, particularly before they start launching new products or services on the market.

The senior advisor mentioned earlier for a large pharmaceutical firm corroborates the following views:

When I look at an application by somebody who has worked for an NGO, I see somebody who has worked with problems and challenges that are special, resulting in bigger insights and a broader understanding of the dynamics in the world. This person will understand these mechanisms.

We bring money, professionalism, brands. When NGO employees enter into our business environment, there is another power behind it.

Second, individuals with advocacy group work experience can help identify legitimate solutions to innovation problems in the sense that they are acceptable to relevant stakeholders and fulfill responsibilities. Advocacy groups – in their role as stakeholder representatives – have been ascribed legitimacy (Olsen *et al.*, 2016), defined as “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995: 574). Former employees of advocacy groups can transfer such legitimacy to innovative firms so that it can rub off (Baum and Oliver, 1991; Bitektine, 2011). As a consequence, firms can signal the desirability and appropriateness of innovations vis-à-vis relevant stakeholders (Harrison, Bosse, and Phillips, 2010). Legitimacy, in that sense, reduces the uncertainty that stakeholders associate with innovations and helps overcome diffusion barriers. Conversely, firms that appear to disregard broader stakeholder or societal interests in their innovation activities, i.e., “illegitimate” firms, will likely have difficulties hiring individuals from advocacy groups. The advocacy group representative states:

One of my colleagues recently became the head of compliance in a large U.S. technology company. It was clear they wanted to signal that they take these issues seriously. I think that our brand and reputation helped her get the job.

Signaling of Human Capital Acquired in Advocacy Groups to Innovative Firms

Hiring firms can offer higher salaries to particular job applicants, if they can expect these individuals to create superior value for the firm. Yet, labor markets are fraught with information asymmetries between hiring firms and applicants (Spence, 1973). We reason that, while individuals can acquire stakeholder knowledge and legitimacy in various ways, earnings effects will be the result of the signal that advocacy group work experience provides in order to reduce information asymmetries. The value of this signal can be traced back to the decision to join an advocacy group in the first place, which typically comes at substantial opportunity costs in alternative careers.

These opportunity costs emerge from the composition of compensation that makes advocacy groups attractive employers for some individuals. The total compensation includes both pecuniary and non-pecuniary rewards, and – according to the theory of compensating differentials – individuals search for the combination of rewards that affords them the greatest utility (Smith, 1979). Intuitively, we would expect advocacy groups to offer a comparatively higher proportion of non-pecuniary rewards than firms. Advocacy groups oftentimes rely on endowments, donations, membership fees, and other types of contributions, limiting their ability to offer pecuniary rewards. At the same time, advocacy group employees are likely to derive considerable psychological rewards from their interaction with stakeholders, such as satisfaction from helping particular individuals and groups (e.g., children, elderly, patients, or immigrants), or from working creatively on societal problems or grand challenges (Burbano, 2016; Olsen *et al.*, 2016).

Individuals are likely aware of the importance of non-pecuniary rewards while working for advocacy groups before joining them. They accept the opportunity costs from potentially higher pecuniary rewards in alternative careers. This cost consideration creates a signal to hiring firms. Individuals who decide to work for advocacy groups are those who most appreciate acquiring stakeholder knowledge and legitimacy. Individuals claiming only superficially that they understand and care about stakeholders would not want to incur the opportunity costs from comparatively lower pecuniary rewards. The business development manager of a manufacturing firm succinctly describes his considerations when hiring former advocacy group employees, stating:

Most people claiming that they have empathy or appreciate diversity have never experienced it. You work for an NGO, you live it.

Wage setting by the hiring firm based on the signal that could be sent by individuals with advocacy group work experience needs to be distinguished from wage setting based on compensating

differentials. An employee's earnings reflect both general human capital and compensating differentials originating from non-pecuniary benefits, as long as the employee works for an organization that can offer those (Rosen, 1986).² Innovative firms seeking to hire employees from advocacy groups are likely aware that the pecuniary benefits at advocacy groups are generally lower because advocacy groups can provide non-pecuniary benefits, such as the psychological benefit of working for the common good (Burbano, 2016). A firm is unlikely to provide the same non-pecuniary benefits. Hence, it will offer a salary that compensates those benefits that an employee could have received while working for an advocacy group. Compensating differentials theory would, therefore, predict that employees of advocacy groups receive higher salaries when they are hired by firms, compared to their salary at the advocacy group. However, if hiring firms would merely compensate the non-pecuniary benefits of former advocacy group employees, they would not need to offer higher salaries to these new employees compared to new hires with similar signals for general human capital, which could be valuable to the hiring firm but was acquired in other firms. Instead, a hiring firm offering salary premiums to former employees of advocacy groups that are larger than what it is willing to pay comparable new hires from other firms must receive additional signals for value that these particular employees bring to it. We reason that these additional signals are based on stakeholder knowledge and legitimacy, which can be valuable to innovative firms.³ Our first hypothesis thus reads:

Hypothesis 1: Newly hired employees with advocacy group experience will earn more than comparable individuals in innovating firms.

² Pecuniary benefits may also compensate non-pecuniary disadvantages of a job, e.g., hazardous working conditions (Smith, 1979).

³ For this prediction to hold, it is necessary to assume that labor markets are efficient in the sense that observable signals for general human capital, e.g., degrees and diplomas, do not systematically differ between employees of advocacy groups and other firms.

Heterogeneity in Signaling Effects from Stakeholder Knowledge and Legitimacy Transfer

Our reasoning for hypothesis 1 relies on two mechanisms, which are likely to overlap when innovative firms make hiring decisions: signals for stakeholder knowledge and the transfer of legitimacy. We test the presence of both effects by considering contingencies in which one signaling mechanism is likely to be more pronounced than the other. More specifically, we will reason that stakeholder knowledge and skills are particularly valuable for innovative firms operating close to the technological frontier and when individuals work in occupations that are more likely to interact directly with stakeholders. Then again, firms are more likely to perceive potential legitimacy transfers as valuable when individuals have been working as top management team (TMT) members of advocacy groups.

We start out by discussing the effect of a hiring firm's proximity to the technological frontier as a contingency factor in which the signaling of stakeholder knowledge is of central importance. A useful framework for expressing heterogeneity among innovative firms is to describe their innovation activities relative to the maximum of technological opportunity from the most advanced technologies that exists at a given point in time (Mahmood and Rufin, 2005). This maximum level of technological opportunity is typically referred to as the technological frontier (McCain, 1977). Given this hypothetical frontier, firms, industries, or entire countries can be described as being technologically lagging or leading, depending on their distance from a national (Mahmood and Rufin, 2005), or even global, frontier (Kumar and Russell, 2002). The proximity to the technological frontier changes the nature of firms' innovation activities, which in turn affects the value that they can expect to create by hiring employees from advocacy groups.

Firms that innovate increasingly close to the technological frontier can no longer rely on pre-existing knowledge and must independently create novel methods or technologies. This implies

that they face many different technological choices and that the outcomes are increasingly hard to predict (Mahmood and Rufin, 2005). Accordingly, firms close to the frontier have been found to increase their innovation performance through the exposure to foreign markets (Salomon and Jin, 2010) and by cultivating relational ties with partners such as universities (Grimpe and Sofka, 2016). In contrast, the innovation activities of lagging firms have comparatively more aspects of imitation (Mahmood and Rufin, 2005). Lagging firms can follow the pathways of leading firms and reproduce their successful innovation approaches. This implies that their innovation activities occur within a narrower technological search space and are increasingly predictable. Lagging firms can benefit from the emergence of markets for their innovation inputs, enabling efficient transactions (Grimpe and Sofka, 2016).

While all innovative firms are likely to benefit from employees with an understanding of the expectations and requirements of important stakeholders that could otherwise constrain the diffusion of an innovation by organizing protests or political interference (Clarkson, 1995; Harrison and St. John, 1996), we reason that the expected benefits are weaker for firms with innovation activities that are more distant from the technological frontier. These lagging firms can observe the experiences of leading firms with innovations that fail because of stakeholder resistance. Firms innovating closer to the technological frontier cannot rely on these imitation mechanisms. They are comparatively more likely to pioneer an innovation that stakeholders see for the first time. Hence, it is crucial for these leading firms to anticipate stakeholder requirements and reactions. Stakeholder resistance or protests can stigmatize novel products or services before they have had a chance to diffuse widely.

Advocacy groups create knowledge repositories about stakeholder concerns and demands (Mitchell *et al.*, 1997). Employees of advocacy groups can bring this knowledge to innovative

firms and allow them to adjust innovations so that they are unlikely to face stakeholder resistance. We conclude that innovative firms operating close to the technological frontier can expect to extract more value from this stakeholder knowledge than lagging firms, which can learn from the prior experience of other firms. Accordingly, innovative firms closer to the technological frontier are likely to offer higher salaries to new hires with advocacy group work experience. The senior R&D manager of a leading medical devices producer explains his considerations for a recent product innovation to us like this:

These devices are leading edge. They gather lots of [health related] data, which makes them so convenient to use. But we have to be very concerned about data protection and privacy. We are in a phase in which lots of things change, and exploiting these data is controversial. Actually, we would like to wait and see how things pan out. But we don't want to lose ground to our competitors. This is exactly where colleagues who know our stakeholders can help us.

Consequently, our second hypothesis states:

Hypothesis 2: Newly hired employees with advocacy group experience will earn more than comparable individuals in innovating firms, and this effect increases with the proximity of the hiring firm's innovation activities to the technological frontier.

We explore an additional moderating factor in which signals for stakeholder knowledge and skills are likely of central importance by tracing the emergence of human capital from advocacy groups back to the individual level. More precisely, an employee's occupation is an important domain for developing human capital. The occupational human capital of employees is based on the type of experiences that they have and on the skills and knowledge that they develop (Kambourov and Manovskii, 2009; Mayer, Somaya, and Williamson, 2012). We reason that the occupations in which advocacy group employees interact routinely and directly with stakeholders will provide credible signals for employees with stakeholder knowledge and skills. This is corroborated by an advocacy group manager:

When I think of our accountant, why would he bring something extra to a firm? But our campaign managers have real insights.

While advocacy group work experience allows employees to learn about stakeholder needs or preferences, these opportunities are limited in rather generic occupations such as accounting or IT services. Employees of advocacy groups working in occupations dealing regularly with stakeholders, e.g., patients, can much more convincingly signal that they have acquired an understanding of stakeholders. Hence, the signal for how their work experience at advocacy groups leads to stakeholder knowledge and skills is more reliable. Thus, our third hypothesis concludes:

Hypothesis 3: Newly hired employees with advocacy group experience will earn more than comparable individuals in innovating firms, and this effect is higher for occupations that interact with stakeholders.

Finally, we explore a contingency factor for hypothesis 1 in which signals for transfers of legitimacy from advocacy groups are the crucial mechanism by which comparatively higher salaries emerge. For this purpose, we focus on the top management of advocacy groups, which has relatively more potential to transfer legitimacy from advocacy groups compared to the average advocacy group employee. The main effect of top management experience on the development of human capital is well studied. Top management positions provide unique opportunities for individuals to build experience in allocating resources, processing information, or motivating employees (Finkelstein, Hambrick, and Cannella, 2009). We will reason that the top management of advocacy groups has comparatively more opportunities to transfer legitimacy from advocacy groups than the average advocacy group employee because of the status that they have acquired as top managers, which provides them with a symbolic value that they can transfer to other organizations (Higgins and Gulati, 2003). Similar transfers of legitimacy have been studied in the context of top or prestigious managers transferring legitimacy to young firms going public on capital markets (Higgins and Gulati, 2003; Lester *et al.*, 2006).

The transfer of legitimacy from the top management of advocacy groups follows similar mechanisms but transfers legitimacy from a different domain. Legitimacy is domain specific in

the sense that it is acquired by adopting the norms, standards, practices, technologies, or past actions in a domain such as an industry (Zimmerman and Zeitz, 2002). Along the latter dimensions, the domain of advocacy groups differs significantly from other industries, e.g., in the importance of regulators, political bodies, or other advocacy groups. The top management of advocacy groups has a symbolic value for this particular domain that allows it to attract the attention of important stakeholders and address potential legitimacy concerns (Lester *et al.*, 2006). The manager of an NGO tells us in this regard:

My sense is that firms prefer hiring top NGO people over professional lobbyists. Lobbyists have large networks as well, but they cannot deliver the credibility.

Apart from this symbolic function, top managers of advocacy groups have acquired status while working for the advocacy group. This status facilitates the transfer of knowledge since other high status actors are more likely to interact with them because their own status is advanced by high status interactions (Podolny, 1993). Hence, top management actors are more effective in interacting with important external parties (Lester *et al.*, 2006). For an innovative firm, hiring a top manager from an advocacy group implies that this individual will be more effective than the average advocacy group employee in creating and sustaining interaction with important stakeholders, such as regulators or civil society. A senior program manager at an advocacy group confirms this notion:

I think top managers provide unique access to a network deep inside the NGO world. So, firms can learn at an early stage if something is smoldering.

This leads to our fourth hypothesis:

Hypothesis 4: Newly hired employees with advocacy group experience will earn more than comparable individuals in innovating firms, and this effect is higher for the top management of advocacy groups.

DATA AND METHODS

Data

Our hypotheses predict differences in salaries between employees with and without advocacy group work experience when they switch employers. We focus on the population of individuals moving from one employer to another and address potential non-random selection effects from previous work experience with an advocacy group (treatment) through a matching approach (see details below under the heading Identification Strategy). With regards to the population, we use registry data provided by Statistics Denmark on all wage-employed individuals classified as holding a professional or managerial position⁴ who switched to a new employer during the years 1999 to 2004. It is a matched employer-employee dataset that is well established in the social sciences (e.g., Kaiser *et al.*, 2015).⁵ We restrict our data to individuals 20-65 years of age who are not retired. We discard observations where individuals are employed in the public sector, as well as individuals who join an advocacy group. Moreover, we restrict our data to innovative firms, i.e., ones with at least one employee in R&D. Following Kaiser *et al.* (2015), we define R&D employees as individuals with a master's or a PhD in the technical, natural, veterinary, agricultural, or health sciences in a professional or managerial position.

Since we only consider individuals who changed employers between $t-1$ and t , our raw dataset on this group contains 324,121 person-year observations on 217,291 unique individuals. Missing information on some variables and the focus on innovative firms only reduced the amount to 241,714 observations on 174,195 unique individuals. Following Olsen *et al.* (2016), we use the industry statistical classification code, NACE (Rev. 1) 91, to identify advocacy

⁴ One-digit codes of 1, 2, and 3 as defined by the Danish version of the International Standard Classification of Occupations (ISCO).

⁵ Statistics Denmark compiles the data each year at the end of November.

groups in our data based on the activities in which the organizations are engaged. Specifically, we define organizations as advocacy groups if they cover: “Religious Organizations”, “Foundations”, “Voluntary Health Organizations”, “Human Rights Organizations”, “Environment, Conservation, and Wildlife Organizations”, “Civic and Social Organizations”, and “Business, Professional, Labor, Political, and Similar Organizations”.

Variables

Dependent Variable

Our dependent variable is gross annual income earned by the newly hired employees in the year t in which they are hired. Following Carnahan *et al.* (2012) and Campbell (2013), we take the natural logarithm to account for skewness of the data.

Explanatory Variables

The main explanatory variable to test hypothesis 1 is a dummy variable indicating whether a newly hired individual has worked at an advocacy group in the year $t-1$, i.e., before being hired by an innovative firm. To test the interaction hypotheses, we use the following three variables that are interacted with the dummy variable measuring advocacy group work experience. First, we measure the proximity to the technological frontier as the hiring firm’s R&D intensity (number of employees in R&D divided by the total number of employees) relative to the average R&D intensity of the firm’s two-digit industry in Denmark in $t-1$ (e.g., Hoskisson and Hitt, 1988). Increasing values of the variable indicate that a firm is relatively leading and closer to the technological frontier.⁶

⁶ We experiment with alternative measures, such as a dummy variable indicating a firm’s R&D intensity to be greater than the industry average or a firm’s R&D intensity relative to the average R&D intensity of the firms in the 75 and 90 percent percentiles (i.e., the firms with the highest R&D intensity in the industry), and find consistent results.

Second, we construct a dummy variable which takes the value 1 if the individual worked in an occupation that involved stakeholder interaction at the previous employer in $t-1$. Since there is no validated measure for the likelihood of stakeholder interaction in various occupations, we conduct a validation exercise in which we assemble a group of five labor market researchers with extensive knowledge of the Danish labor market and present them with all two-digit occupation codes from the broad occupational fields 2 and 3 (work that requires knowledge on the highest level and work that requires knowledge on an intermediate level). We start out by conducting three open interviews with the experts to refine the relevance of occupations, to clarify terminology and to prepare a quantitative validation exercise. The experts suggest a task-based perspective in which occupations can be classified based on how likely they are, on average, to include tasks that are administrative, technological, or social in nature. Subsequently, we ask two other experts to rate the likelihood of the average employee in each two-digit occupation code to have typically administrative, technical, and/or social tasks. We use all occupation codes for which the experts assign at least an above average likelihood to include social tasks. These include health professionals (DISCO code 22); teaching professionals (23); legal, social, and cultural professionals (26); health associate professionals (32); sales and service associate professionals (33); and legal, social, cultural, and related associate professionals (34). The experts agree strongly in these ratings, as evidenced by a Krippendorff's (2004) alpha of 0.82. The corresponding occupation reference group is occupations with mainly administrative or technical tasks.

Finally, we construct a dummy variable based on the DISCO codes that takes the value 1 if the individual was a member of the TMT of the previous employer in $t-1$.

Estimation Approach

Identification Strategy

We follow Campbell (2013) and consider pairs of newly hired employees in firms. Our “treatment” group consists of individuals who are employed by an advocacy group at time $t-1$ and who join a new employer at time t . Our “control” group consists of individuals who are employed by a firm at time $t-1$ and who join the same employer as the individual with advocacy group work experience at time t . Subsequently, and to strengthen our identification of causal effects further, we match these two groups of individuals newly hired by the same firm on their observed characteristics (see details below under Matching Approach). Finally, we run log annual earnings quantile regressions on the dummy variable for advocacy group work experience and additional control variables. All variables involved are contemporaneously measured, unless explicitly stated otherwise. Quantile regression generates outlier-robust estimates and is common practice in labor economics (e.g., Angrist, Chernozhukov, and Fernández-Val, 2006).

Matching Approach

To match individuals with and without advocacy group work experience, we use coarsened exact matching (CEM) (Iacus *et al.*, 2012). The basic idea of CEM is to allocate observations into different strata based on a set of conditioning variables, i.e., to coarsen the data. CEM subsequently matches treatment and control observations within these strata and generates weights, which we use in our regression analysis. These weights take on the value 0 if an observation remains unmatched and is positive if it is matched. The better the match is, the higher the weight an observation receives. Better matches, therefore, have a higher importance in our regressions. Unmatched observations are discarded.

The set of conditioning variables in the matching procedure needs to affect both the selection (advocacy group work experience) and the outcome variable (Dehejia and Wahba, 1999), which we confirm by running auxiliary selection and income regressions. An advantage of the CEM approach is that it provides exact matches between treatment and control group observations. This precision comes, however, at the cost of discarding observations that cannot be matched well. Hence, more conditioning variables imply losing observations, which requires us to find a parsimonious, yet rich set of conditioning variables to base our matching on.

A key conditioning variable is the identity of the hiring firm since matching on the new employer should, to a large extent, control for observed and unobserved factors that induce individuals to join that specific new employer. A second key conditioning variable is an individual's prior income since it reflects a variety of human capital variables like work experience, age, and education, which are all likely to affect both income and selection out of advocacy group employment. Baltagi, Blien, and Wolf (2009), for example, document the effect of previous income on current income. Previous income is also a major determinant for job switching (e.g., Akerlof, Rose, and Yellen, 1988). We measure income at the previous employer as the income decile in which a mobile worker is positioned. We use within organization salary deciles rather than levels since advocacy group employees may systematically receive lower salaries than firm employees, even when taking into account comparable qualifications, which, in turn, may cause downward biased estimates since their previous level of income may not fully reflect their human capital. Additional conditioning variables include gender (e.g., Brown and Medoff, 1989), education and work experience (e.g., Mincer, 1958), as well as occupation (e.g., Rosenfeld, 1992).⁷

⁷ We measure education by a set of education dummies that combines length and type of education (primary school, high school, high school plus some vocational training, vocational training, short continuing education, bachelor,

The choice of our set of variables for the matching must balance the quality of the matching with the reduction in the number of observations due to the matching. We match on the identity of the hiring firm as well as exactly on income decile (previous employer), gender, education, and occupation, and quantiles of the distribution for years of work experience. This procedure generates a dataset containing 3,562 observations. We experiment with alternative sets of conditioning variables and find consistent results.⁸

Wage Regressions

The CEM approach generates weights for each individual in our data. We use these weights in the second step of the analysis. We estimate augmented Mincer-type income regressions (e.g., Mincer, 1958; Carnahan, Agarwal, and Campbell, 2012; Bhuller, Mogstad, and Salvanes, 2017) by applying those CEM weights. These regressions control for all variables mentioned above. Additionally, we include the individual's age and its squared term, the squared term for the years of work experience, a dummy for whether the individual is an R&D worker, and a dummy variable for Danish citizenship to account for possible discrimination in the labor market (Brown and Medoff, 1989). Regarding the new employer, we also include the stock of citation-weighted patent applications and dummy variables indicating the region where the firm is located in Denmark. Finally, we follow Hill (1979) and include family characteristics like marital status (dummy variables for being widowed, divorced, single, married to a same-sex partner), with the base category being married to a partner of the opposite gender, and the number and age of children, including the number of children in daycare, pre-school, high school, and beyond high-

medium-length continuing education, long continuing education, and research education). An individual's current occupation is measured by dummy variables indicating whether an individual is a TMT member with the new employer, whether their work requires knowledge at the highest level, or whether it requires knowledge at the intermediate level. Work experience is measured as the total number of years an individual has been in employment.

⁸ Details on the different matching specifications are provided in the online appendix.

school age. Additionally, we include the number of years that partners, fathers, and mothers of the individual have worked at an advocacy group. In sum, our wage regressions take the specifications in recent strategy literature as a point of departure (e.g., Carnahan *et al.*, 2012; Campbell, 2013) but include a considerable number of additional control variables, as outlined above.

RESULTS

Table 1 shows descriptive statistics for all individuals in our sample and differentiates between those with and without work experience at an advocacy group. The table shows that individuals with previous work experience at an advocacy group earn, on average, DKK 32,000 (about USD 5,000 or ten percent) per year less at their new workplace compared to individuals who join from a firm. The difference in previous wages is even more substantial and amounts to DKK 65,600 (about USD 10,200 or 19 percent) per year, a difference that is also reflected by the differences in the previous wage decile dummies.⁹ A closer look at Table 1 further indicates why these substantial differences may appear: former advocacy group workers more often perform tasks requiring intermediate level knowledge or less. They also join smaller firms with less patent activity as well as firms and sectors different from the sectors that firm employees choose. Former advocacy group employees, however, are more often R&D workers and tend to be better educated than people without an advocacy group background. There are minor differences in terms of age and years of work experience.

Table 2 shows the pairwise correlations of the variables used in our main models. We find the correlations among the variables to be low. Moreover, the mean variance inflation factor is

⁹ After matching, these differences become much smaller in magnitude. A t-test for the difference in t and $t-1$ earnings between individuals with and without advocacy group experience suggests this difference to be statistically insignificant.

1.57 for our most general model, which is well below the critical value of 10, as suggested by Belsley, Kuh, and Welch (1980).

[Insert Table 1 about here]

[Insert Table 2 about here]

Table 3 shows the abridged results of the test of hypothesis 1 for five different approaches to match individuals with and without prior advocacy group experience.¹⁰ The share of newly hired employees with advocacy group work experience that could be matched varies with the number of conditioning variables included. Table 3 shows that our advocacy group dummy variable is statistically insignificant if we either do not match at all (Model 1), or if we apply the CEM approach but do not condition on the identity of the hiring firm (Model 2). Once we account for the identity of the hiring firm, we find economically and statistically highly significant and positive effects of prior advocacy group work experience, which implies that not controlling for hiring firm identity leads to a substantial downward bias in estimation results. Model 3 accounts for the fewest conditioning variables, while Model 5 accounts for the richest set.

As hypothesized, and in contrast to the purely descriptive evidence presented in Table 1, which does not account for any type of individual-specific heterogeneity, we find that advocacy group experience pays off once heterogeneity across employees is properly accounted for. Model 4 is our preferred choice since its parameter estimate is more conservative than in Model 5 while still rich in the set of conditioning variables. The estimated advocacy group effect on salary premiums is 7.5 percent ($\exp(0.073)-1=0.075$), with a p-value of 0.020. Hence, hypothesis 1 cannot be rejected.

[Insert Table 3 about here]

¹⁰ The online appendix provides details on the five matching specifications.

To test hypotheses 2 to 4, we add interaction terms of advocacy group work experience and the proximity to the technological frontier, the dummy measuring occupations that involve stakeholder interaction at the previous employer, and the dummy indicating TMT membership at the previous employer. The specifications are otherwise based on Model 4 in Table 3. Table 4 presents the abridged estimation results for the variables interacted with the dummy for advocacy group work experience since the inclusion of these additional terms does not considerably affect the estimation results for the other variables.

Model 4a shows the results for the interaction with the firm's proximity to the technological frontier. The coefficient estimate on the interaction term is statistically significant and positive, as predicted by hypothesis 2 ($p=0.071$). Apparently, individuals with advocacy group experience earn higher salaries at firms that are relatively leading and closer to the technological frontier. Hypothesis 3 predicts that the salary premium of employees with advocacy group work experience over comparable other hires of innovative firms is larger for occupations that require stakeholder interaction. Model 4b provides evidence for this hypothesis. The salary difference between individuals with advocacy group work experience in such occupations and those with administrative or technical occupations is 31.4 percent ($\exp(0.273)-1=0.314$), with a p-value of 0.001. Model 4c tests hypothesis 4, which predicted a salary premium for individuals who have advocacy group work experience as TMT members. The coefficient on the corresponding interaction term is 0.299 and, hence, economically substantial as it suggests a salary premium of former TMT members in an advocacy group over non-TMT members from an advocacy group of 34.9 percent ($\exp(0.299)-1=0.349$), with an associated p-value of 0.046, which supports hypothesis 4. We display a joint estimation of all interactions in Model 4d with consistent results.

[Insert Table 4 about here]

Finally, since the estimated coefficients on the technological distance variables do not directly translate into meaningful quantities, we calculate marginal effects, which are functions of the proximity to the technological frontier.¹¹ Figure 1 maps the percentage difference of moving from an advocacy group to a firm conditional on the firm's proximity to the technological frontier. It is based on the most complete specification shown in Model 4d. The figure shows that the effect of joining from an advocacy group is statistically significant and positive for all observed values of technological distance. The other two contingency variables involve dummy variables, which allows for a direct interpretation of size effects. We find that a new hire from an advocacy group with past TMT membership in a stakeholder interaction occupation earns 94.8 percent more than a new hire from another firm, with a p-value of 0.001. Former TMT members in an advocacy group without stakeholder interaction earn 42.5 percent more (p-value 0.034). Employees with advocacy group work experience working in a stakeholder interaction occupation but without a TMT background earn 38.4 percent more (p-value 0.000).

Robustness Checks

We submit our main estimation results to three broad sets of robustness checks available in the online appendix. First, we analyze the effect of choosing alternative salary measures at the previous employer; second, we investigate the potential influence of compensating differentials; and, third, we analyze the importance of defining our sample of innovative firms in different ways. The additional estimations support the findings of our main models.

DISCUSSION

Integrating mechanisms from stakeholder theory into models from strategic human capital theory, we study how advocacy group work experience affects salaries for newly hired employees

¹¹ The online appendix provides details on the calculation of marginal effects.

of innovative firms. We suggest that advocacy group related human capital is perceived as valuable in other organizational contexts, similar to entrepreneurial experience (Campbell, 2013) or work experience at MNC subsidiaries (Sofka *et al.*, 2014).

Within our reasoning, innovative firms perceive advocacy group related human capital as valuable because of the ability of individuals to improve innovation outcomes and to decrease diffusion barriers (Talke and Hultink, 2010). These employees help identify solutions to innovation problems that satisfy stakeholders' expectations and requirements (Clarkson, 1995; Olsen *et al.*, 2016) and they encourage experimentation (Flammer and Kacperczyk, 2016), but they can also transfer legitimacy vis-à-vis relevant stakeholders (Harrison *et al.*, 2010). Given that individuals accept the opportunity costs from comparatively lower pecuniary rewards when choosing to work for advocacy groups instead of firms, advocacy group work experience can signal additional human capital to innovative firms to overcome information asymmetries in labor markets. Our results show that advocacy group work experience has a positive effect on the earnings of newly hired employees, indicating that the signals from such work experience are indeed valued by the hiring firm.

Moreover, we examine three conditions under which advocacy group work experience is perceived as particularly valuable because either stakeholder knowledge or the transfer of legitimacy is especially important. First, we have argued that stakeholder knowledge and skills are particularly valuable when firms are technologically leading and close to the technological frontier. These firms can no longer rely on pre-existing knowledge and have to create novel methods or technologies themselves, leading to many different technological choices and outcomes that are hard to predict (Mahmood and Rufin, 2005). Our results indicate that individuals with advocacy group work experience enjoy salary premiums in this case. We attribute this finding to these

individuals' understanding of the expectations and requirements of important stakeholders who could constrain the diffusion of an innovation by organizing protests or political interference (Clarkson, 1995; Harrison and St. John, 1996). In contrast, technologically lagging firms can rely more on the experiences of leading firms with respect to innovations that do not diffuse due to stakeholder resistance.

Second, we have argued that individuals who worked in an occupation at the advocacy group that involves direct interaction with stakeholders had particularly good opportunities to build stakeholder knowledge and skills that are perceived as valuable by the hiring firm. Occupational human capital has been argued to be independent from employer-specific human capital and, hence, qualifies as general human capital of potential value to hiring firms (Kambourov and Manovskii, 2009). We find that employees who have experience in stakeholder-related occupations earn comparatively higher salaries, which indicates that such occupations allow individuals to send a particularly convincing signal to new employers.

Third, we have suggested that individuals with advocacy group work experience can send a particularly strong signal to innovative firms when they have worked in a top management position at the advocacy group. The top management of advocacy groups has comparatively more opportunities to transfer legitimacy from advocacy groups than the average advocacy group employee because of the status that they have acquired as top managers, which provides them with a symbolic value that they can transfer to other organizations (Higgins and Gulati, 2003). In fact, we find that these individuals earn comparatively higher salaries, which we attribute to the firm's perception that they can effectively create value by attracting the attention of important stakeholders and addressing potential legitimacy concerns (Lester *et al.*, 2006).

CONCLUSION

Our findings shed light on the relationship between a particular type of human capital related to advocacy work experience and the salaries of newly hired employees. Similar to entrepreneurial experience (Campbell, 2013), we find that advocacy group related human capital is valuable in other contexts, in our case the context of innovating firms. We attribute this effect to the need of innovative firms for advocacy, where individuals with advocacy group work experience can help find solutions to innovation problems acceptable to relevant stakeholders, just as they can help firms benefit from an advocacy group's legitimacy. In that sense, these individuals can signal to hiring firms that they help overcome diffusion barriers of innovation. This has implications for both theory and management practice.

On the one hand, the integration of strategic human capital theory with stakeholder theory allows us to derive novel predictions on how additional human capital can be created that is perceived as valuable by innovative firms. Stakeholder considerations are largely absent from strategic human capital theory, while earnings and job mobility considerations have not been reflected in stakeholder theory. Our research is the first to extend these theories through mechanisms from the respective other theory, leading to a theoretical framework that allows us to understand how advocacy group work experience can be a signal of value when combined with firm resources. In that sense, our research also contributes to prior literature that investigates the role and value of human capital in new contexts (e.g., Campbell, 2013).

On the other hand, our research underlines value creation opportunities for innovating firms, suggesting that firms should pay close attention to the degree their innovation activities touch and affect stakeholder interests and concerns. Employees with advocacy group work experience play a twofold role in that regard. They can identify areas of stakeholder interests and concerns,

as well as communicate them within the organization. This, in turn, enables organizations to take action and to utilize the knowledge and skills of these employees, not to mention their legitimacy, to devise an innovation strategy that appropriately addresses the interests and concerns of relevant stakeholders. As a result, firms can expect to be granted access to resources, to avoid protests, and to improve their innovations in a way that addresses the “right” problem, as perceived by stakeholders. In that sense, our research documents another source of expected value creation for innovating firms, independent from a firm’s technology base and unaccounted for in the theoretical and empirical literature on strategic human capital.

These academic insights have implications for practice. First, we inform individuals who consider working for advocacy groups. We find that their human capital will eventually be valued by innovative firms, should they decide to leave the sector. Second, the earnings potential for advocacy group employees is significantly higher under certain signaling conditions. Individuals can take this heterogeneity into account when comparing potential employers. Finally, we inform the HR management of innovative firms about the attractiveness of advocacy group human capital, as well as about salary premiums that potential hires can expect.

LIMITATIONS AND FUTURE RESEARCH

Several relevant research questions remain outside the scope of our study. They represent additional opportunities for further research. First, our theoretical understanding of advocacy group related human capital would greatly benefit from a more in-depth analysis of its impact on firms’ innovation activities. This could be achieved through longitudinal studies of employees endowed with such experience in focal organizations. Burbano, Mamer, and Snyder (2017), for example, show how the pro bono work of lawyers allows them to demonstrate abilities similar to more

senior lawyers comparatively early in their careers. In that sense, it would be interesting to investigate the long-term career prospects and earnings of individuals with advocacy group work experience once they have moved to a firm. Similarly, our study treats advocacy groups as relatively homogeneous in the degree to which they provide signals for stakeholder knowledge and legitimacy. Future studies may be able to discern between different types and dimensions of advocacy, e.g. environmental, social, local or global, as well as how salient different types of advocacy are for particular hiring firms.

Second, our research relies on three contingency factors to describe the conditions under which one of the two mechanisms – stakeholder knowledge and legitimacy transfers – is more pronounced. Given the data material at hand, we can only conclude that the results for the moderation effects are consistent with the two theoretical mechanisms and we find support for their presence in the qualitative interviews. Nevertheless, it would be desirable to clearly identify each mechanism and to assess its relative strength in driving the salary premium that new hires with advocacy group work experience enjoy.

Third, our research relies on an identification strategy that applies CEM with a rich set of individual and firm-specific control variables. Yet, this approach assumes that labor markets are fairly efficient in translating more human capital into higher wages within the confines of our matching and control variables. Other factors, though, such as the presence of second-best employer or employee alternatives that could affect wage setting cannot be identified using registry data. Hence, to improve our ability to make causal statements, experimental techniques could be applied to verify our reasoning. We see particular potential in field experiments as suitable methodological avenues (Chatterji *et al.*, 2016) to further specify the conditions under which advocacy group related human capital would be most beneficial for the value creation of firms.

Fourth, our theoretical framing is built around the potential value that advocacy group related human capital has for innovative firms, i.e., tailoring innovative products to stakeholder needs, identifying low resistance/opposition innovation designs, or legitimizing new products facing potentially hostile stakeholders. These mechanisms may also hold with other types of hiring firms. However, they are less clear-cut. One could, for example, assume that government agencies or social start-ups benefit from employees with advocacy group work experience, but this heterogeneity in hiring firms is beyond the scope of our study. Instead, we recommend future research to explore heterogeneity among hiring firms and sectors.

Finally, individuals are heterogeneous in their reasons and motivations for changing employers. The descriptive statistics of our study show that some individuals accept salary cuts when switching jobs. This could potentially indicate involuntary job switches or non-pecuniary benefits in new employments. Future research could focus on these differences in motivations for changing employers and extend our models both theoretically as well as empirically.

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TABLES AND FIGURES

Table 1. Descriptive statistics

| | All employees | | Advocacy group work experience | | No advocacy group work experience | |
|---|---------------|-----------|-----------------------------------|-----------|--------------------------------------|-----------|
| | Mean | Std. dev. | Mean | Std. dev. | Mean | Std. dev. |
| Current annual earnings (DKK) | 343,119 | 249,487 | 311,316 | 215,664 | 343,253 | 249,612 |
| Previous annual earnings (DKK) | 404,191 | 257,529 | 338,836 | 264,280 | 404,467 | 257,465 |
| Focal variables | | | | | | |
| Advocacy group work experience (d) | 0.004 | --- | 1 | --- | 0 | --- |
| Proximity to technological frontier | 2.012 | 5.556 | 2.279 | 5.539 | 2.011 | 5.557 |
| Stakeholder interaction occupation (d) | 0.376 | --- | 0.122 | --- | 0.377 | --- |
| TMT member at previous employer (d) | 0.071 | --- | 0.065 | --- | 0.071 | --- |
| Human capital variables | | | | | | |
| Years of work experience | 16.063 | 5.483 | 15.523 | 5.543 | 16.065 | 5.483 |
| High school+some vocational training (d) | 0.039 | --- | 0.031 | --- | 0.039 | --- |
| Vocational training (d) | 0.014 | --- | 0.011 | --- | 0.014 | --- |
| Short continuing education (d) | 0.159 | --- | 0.087 | --- | 0.159 | --- |
| Medium continuing education (d) | 0.085 | --- | 0.054 | --- | 0.085 | --- |
| Bachelor (d) | 0.019 | --- | 0.040 | --- | 0.019 | --- |
| Long continuing education (d) | 0.226 | --- | 0.459 | --- | 0.225 | --- |
| Research education (d) | 0.023 | --- | 0.027 | --- | 0.023 | --- |
| TMT member at current employer (d) | 0.066 | --- | 0.080 | --- | 0.066 | --- |
| Work requiring highest level knowledge (d) | 0.464 | --- | 0.639 | --- | 0.464 | --- |
| R&D worker (d) | 0.149 | --- | 0.171 | --- | 0.149 | --- |
| Age | 40.806 | 8.881 | 40.375 | 8.810 | 40.808 | 8.881 |
| Income deciles | | | | | | |
| 1st decile earnings distrib. prev. employer (d) | 0.083 | --- | 0.158 | --- | 0.083 | --- |
| 2nd decile earnings distrib. prev. employer (d) | 0.079 | --- | 0.113 | --- | 0.079 | --- |
| 3rd decile earnings distrib. prev. employer (d) | 0.070 | --- | 0.066 | --- | 0.070 | --- |
| 4th decile earnings distrib. prev. employer (d) | 0.064 | --- | 0.066 | --- | 0.064 | --- |
| 5th decile earnings distrib. prev. employer (d) | 0.072 | --- | 0.084 | --- | 0.072 | --- |
| 6th decile earnings distrib. prev. employer (d) | 0.086 | --- | 0.090 | --- | 0.086 | --- |
| 7th decile earnings distrib. prev. employer (d) | 0.103 | --- | 0.094 | --- | 0.103 | --- |
| 8th decile earnings distrib. prev. employer (d) | 0.119 | --- | 0.099 | --- | 0.119 | --- |
| 9th decile earnings distrib. prev. employer (d) | 0.141 | --- | 0.109 | --- | 0.141 | --- |
| Other personal characteristics | | | | | | |
| Danish citizen (d) | 0.975 | --- | 0.977 | --- | 0.975 | --- |
| Female (d) | 0.473 | --- | 0.569 | --- | 0.472 | --- |
| Widowed (d) | 0.007 | --- | 0.006 | --- | 0.007 | --- |
| Divorced (d) | 0.076 | --- | 0.097 | --- | 0.076 | --- |
| Single (d) | 0.301 | --- | 0.309 | --- | 0.301 | --- |
| Cohabiting with same sex partner (d) | 0.003 | --- | 0.008 | --- | 0.003 | --- |
| Marital status unknown (d) | 0.007 | --- | 0.013 | --- | 0.007 | --- |
| # children in daycare | 0.201 | 0.467 | 0.199 | 0.472 | 0.201 | 0.467 |
| # children in kindergarten | 0.186 | 0.425 | 0.196 | 0.428 | 0.186 | 0.425 |
| # children in primary school | 0.449 | 0.755 | 0.433 | 0.755 | 0.449 | 0.755 |

| | All employees | | Advocacy group work experience | | No advocacy group work experience | |
|--|---------------|-----------|-----------------------------------|-----------|--------------------------------------|-----------|
| | Mean | Std. dev. | Mean | Std. dev. | Mean | Std. dev. |
| # children in high school | 0.068 | 0.258 | 0.068 | 0.263 | 0.068 | 0.258 |
| Partner years of advocacy group experience | 0.197 | 1.379 | 0.856 | 2.956 | 0.194 | 1.368 |
| Mother years of advocacy group experience | 0.098 | 1.148 | 0.134 | 1.272 | 0.097 | 1.148 |
| Father years of advocacy group experience | 0.097 | 1.193 | 0.317 | 2.297 | 0.096 | 1.187 |
| Employer characteristics | | | | | | |
| # of employees at current employer | 4,892 | 8,084 | 4,413 | 8,568 | 4,894 | 8,082 |
| R&D intensity | 0.080 | 0.114 | 0.092 | 0.114 | 0.080 | 0.114 |
| Citation-weighted patent application stock | 0.049 | 0.359 | 0.024 | 0.259 | 0.049 | 0.359 |
| Region dummies | | | | | | |
| Greater Copenhagen area (d) | 0.359 | --- | 0.472 | --- | 0.358 | --- |
| Greater Aarhus area (d) | 0.074 | --- | 0.097 | --- | 0.074 | --- |
| Greater Aalborg area (d) | 0.082 | --- | 0.061 | --- | 0.082 | --- |
| Sector dummies | | | | | | |
| Sector fishing (d) | 0.021 | --- | 0.007 | --- | 0.021 | --- |
| Sector mining and quarrying (d) | 0.073 | --- | 0.049 | --- | 0.073 | --- |
| Sector manufacturing (d) | 0.032 | --- | 0.009 | --- | 0.032 | --- |
| Sector electricity, gas, water supply (d) | 0.027 | --- | 0.018 | --- | 0.028 | --- |
| Sector construction (d) | 0.086 | --- | 0.049 | --- | 0.086 | --- |
| Sector wholesale and retail trade (d) | 0.158 | --- | 0.071 | --- | 0.159 | --- |
| Sector hotels and restaurants (d) | 0.195 | --- | 0.318 | --- | 0.194 | --- |
| Sector transport, storage, communication (d) | 0.017 | --- | 0.039 | --- | 0.017 | --- |

Number of observations: 241,714; (d) dummy variable.

Table 2. Pairwise correlations ($n = 241,714$)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| (1) Advocacy group work experience (d) | 1.00 | | | | | | | | | | | | | | | |
| (2) Years of work experience | -0.01 | 1.00 | | | | | | | | | | | | | | |
| (3) R&D worker (d) | 0.00 | -0.07 | 1.00 | | | | | | | | | | | | | |
| (4) Age | 0.00 | 0.82 | -0.02 | 1.00 | | | | | | | | | | | | |
| (5) Primary school (d) | 0.00 | 0.12 | -0.08 | 0.10 | 1.00 | | | | | | | | | | | |
| (6) High school (d) | 0.00 | -0.03 | -0.08 | -0.05 | -0.04 | 1.00 | | | | | | | | | | |
| (7) High school+some vocational training (d) | 0.00 | -0.03 | -0.05 | -0.06 | -0.02 | -0.02 | 1.00 | | | | | | | | | |
| (8) Vocational training (d) | -0.01 | 0.18 | -0.18 | 0.11 | -0.09 | -0.09 | -0.05 | 1.00 | | | | | | | | |
| (9) Short continuing education (d) | -0.01 | -0.02 | -0.13 | -0.04 | -0.06 | -0.06 | -0.04 | -0.13 | 1.00 | | | | | | | |
| (10) Medium continuing education (d) | 0.01 | -0.06 | -0.06 | -0.07 | -0.03 | -0.03 | -0.02 | -0.06 | -0.04 | 1.00 | | | | | | |
| (11) Long continuing education (d) | 0.04 | -0.10 | 0.64 | -0.04 | -0.11 | -0.11 | -0.06 | -0.24 | -0.16 | -0.08 | 1.00 | | | | | |
| (12) Research education (d) | 0.00 | -0.03 | 0.31 | -0.03 | -0.03 | -0.03 | -0.02 | -0.07 | -0.05 | -0.02 | -0.08 | 1.00 | | | | |
| (13) 1st decile (d) | 0.02 | -0.18 | -0.03 | -0.14 | -0.01 | 0.05 | 0.01 | -0.05 | -0.01 | 0.03 | -0.01 | -0.01 | 1.00 | | | |
| (14) 2nd decile (d) | 0.01 | -0.14 | -0.01 | -0.11 | -0.01 | 0.01 | 0.01 | -0.04 | 0.00 | 0.01 | -0.01 | -0.01 | -0.09 | 1.00 | | |
| (15) 3rd decile (d) | 0.00 | -0.09 | -0.02 | -0.08 | 0.00 | 0.00 | 0.01 | -0.02 | 0.03 | 0.01 | -0.02 | -0.03 | -0.08 | -0.08 | 1.00 | |
| (16) 4th decile (d) | 0.00 | -0.07 | -0.04 | -0.06 | 0.00 | 0.00 | 0.00 | 0.01 | 0.04 | 0.00 | -0.04 | -0.05 | -0.08 | -0.08 | -0.07 | 1.00 |
| (17) 5th decile (d) | 0.00 | -0.05 | -0.04 | -0.05 | 0.01 | -0.01 | 0.00 | 0.03 | 0.04 | -0.01 | -0.04 | -0.04 | -0.08 | -0.08 | -0.08 | -0.07 |
| (18) 6th decile (d) | 0.00 | -0.03 | -0.04 | -0.03 | 0.00 | -0.01 | 0.00 | 0.03 | 0.02 | 0.00 | -0.04 | -0.04 | -0.09 | -0.09 | -0.08 | -0.08 |
| (19) 7th decile (d) | 0.00 | 0.00 | -0.04 | -0.01 | 0.01 | -0.01 | 0.00 | 0.03 | 0.02 | -0.01 | -0.04 | -0.02 | -0.10 | -0.10 | -0.09 | -0.09 |
| (20) 8th decile (d) | 0.00 | 0.05 | -0.02 | 0.04 | 0.00 | -0.01 | -0.01 | 0.01 | 0.00 | -0.01 | -0.03 | 0.01 | -0.11 | -0.11 | -0.10 | -0.10 |
| (21) 9th decile (d) | -0.01 | 0.12 | 0.02 | 0.10 | 0.00 | -0.01 | -0.01 | 0.01 | -0.02 | -0.02 | 0.01 | 0.06 | -0.12 | -0.12 | -0.11 | -0.11 |
| (22) Danish citizen (d) | 0.00 | 0.11 | -0.06 | 0.02 | 0.02 | 0.00 | 0.01 | 0.02 | 0.01 | 0.00 | -0.05 | -0.04 | 0.00 | -0.01 | -0.01 | 0.00 |
| (23) Female (d) | 0.01 | -0.08 | -0.11 | -0.07 | -0.03 | -0.03 | -0.03 | -0.10 | 0.02 | -0.02 | -0.10 | -0.14 | 0.07 | 0.09 | 0.09 | 0.08 |
| (24) ln(#employees at current employer) | -0.01 | -0.01 | -0.08 | -0.01 | 0.00 | 0.00 | -0.02 | -0.01 | -0.14 | -0.03 | -0.09 | -0.03 | 0.04 | 0.03 | 0.02 | -0.01 |
| (25) Citation-weighted patent application stock | 0.00 | -0.04 | 0.08 | -0.04 | -0.02 | -0.01 | -0.01 | -0.04 | 0.08 | -0.01 | 0.03 | 0.02 | 0.00 | 0.00 | 0.00 | 0.01 |
| (26) R&D intensity | 0.01 | -0.06 | 0.39 | -0.03 | -0.06 | -0.04 | -0.03 | -0.12 | 0.05 | -0.01 | 0.26 | 0.17 | -0.01 | 0.00 | 0.00 | 0.01 |

| | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) |
|---|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| (17) 5th decile (d) | 1.00 | | | | | | | | | |
| (18) 6th decile (d) | -0.09 | 1.00 | | | | | | | | |
| (19) 7th decile (d) | -0.09 | -0.10 | 1.00 | | | | | | | |
| (20) 8th decile (d) | -0.10 | -0.11 | -0.13 | 1.00 | | | | | | |
| (21) 9th decile (d) | -0.11 | -0.12 | -0.14 | -0.15 | 1.00 | | | | | |
| (22) Danish citizen (d) | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 1.00 | | | | |
| (23) Female (d) | 0.06 | 0.04 | 0.02 | -0.02 | -0.09 | 0.01 | 1.00 | | | |
| (24) ln(#employees at current employer) | -0.01 | -0.01 | -0.01 | -0.02 | -0.02 | 0.00 | 0.16 | 1.00 | | |
| (25) Citation-weighted patent application stock | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | 0.03 | 0.11 | 1.00 | |
| (26) R&D intensity | 0.01 | 0.01 | 0.00 | 0.00 | -0.01 | -0.04 | -0.05 | -0.34 | 0.11 | 1.00 |

Table 3. Main results obtained through different matching specifications

| | Model (1) | Model (2) | Model (3) | Model (4) | Model (5) |
|--|--------------------------|-------------------------------|----------------------|------------------|------------------|
| | No matching at all | No match on hiring firm | Match on hiring firm | | |
| | | | Additional controls: | | |
| | | | few | many | most |
| Focal variable | | | | | |
| Advocacy group work experience (d) | 0.032 (0.103) | 0.020 (0.240) | 0.063 (0.000) | 0.073 (0.020) | 0.110 (0.001) |
| Tests for joint significance (p-values) | | | | | |
| Human capital variables | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Previous income decile dummies | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Employer characteristics | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Years of work experience | 0.000 | 0.000 | 0.045 | 0.000 | 0.000 |
| Age | 0.000 | 0.000 | 0.038 | 0.069 | 0.062 |
| Education dummies | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Occupation dummies | 0.000 | 0.000 | 0.331 | 0.372 | 0.000 |
| Region dummies | 0.052 | 0.038 | 0.410 | 0.259 | 0.000 |
| Sector dummies | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Marital status variables | 0.000 | 0.000 | 0.226 | 0.697 | 0.000 |
| # and age of children dummies | 0.000 | 0.726 | 0.680 | 0.135 | 0.158 |
| Parents and partner NGO experience | 0.399 | 0.140 | 0.119 | 0.038 | 0.513 |
| Year dummies | 0.000 | 0.000 | 0.017 | 0.243 | 0.000 |
| Number of observations | 241,714 | 34,952 | 30,110 | 3,562 | 2,259 |
| Pseudo R ² | 0.207 | 0.185 | 0.167 | 0.225 | 0.239 |

p-value in parentheses; (d) dummy variable.

Table 4. Results of the interaction models

| | Model (4a) | Model (4b) | Model (4c) | Model (4d) |
|--|-------------------|-------------------|-------------------|-------------------|
| Focal variables | | | | |
| Advocacy group work experience (d) | 0.018 (0.654) | 0.028 (0.413) | 0.063 (0.033) | -0.024 (0.525) |
| Advocacy group work experience (d) * proximity to technological frontier | 0.024 (0.071) | | | 0.016 (0.050) |
| Proximity to technological frontier | -0.011 (0.313) | | | -0.005 (0.395) |
| Advocacy group work experience (d) * stakeholder interaction occupation (d) | | 0.273 (0.000) | | 0.312 (0.000) |
| Stakeholder interaction occupation (d) | | -0.042 (0.384) | | -0.058 (0.199) |
| Advocacy group work experience (d) * TMT member at previous employer (d) | | | 0.299 (0.046) | 0.342 (0.017) |
| TMT member at previous employer (d) | | | -0.313 (0.001) | -0.287 (0.011) |
| Tests for joint significance (p-values) | | | | |
| Human capital variables | 0.000 | 0.000 | 0.000 | 0.000 |
| Previous income decile dummies | 0.000 | 0.000 | 0.000 | 0.000 |
| Employer characteristics | 0.000 | 0.000 | 0.000 | 0.000 |
| Years of work experience | 0.003 | 0.031 | 0.099 | 0.000 |
| Age | 0.057 | 0.035 | 0.010 | 0.009 |
| Education dummies | 0.000 | 0.000 | 0.003 | 0.000 |
| Occupation dummies | 0.113 | 0.113 | 0.389 | 0.028 |
| Region dummies | 0.084 | 0.084 | 0.420 | 0.133 |
| Sector dummies | 0.000 | 0.000 | 0.000 | 0.000 |
| Marital status variables | 0.015 | 0.348 | 0.294 | 0.577 |
| # and age of children dummies | 0.884 | 0.575 | 0.384 | 0.941 |
| Parents and partner NGO experience | 0.015 | 0.029 | 0.000 | 0.000 |
| Year dummies | 0.043 | 0.032 | 0.001 | 0.057 |
| Number of observations | 3,562 | 3,562 | 3,562 | 3,562 |
| Pseudo R ² | 0.2253 | 0.2261 | 0.2273 | 0.2289 |

p-value in parentheses; (d) dummy variable.

Figure 1. Relative annual income change when moving from an advocacy group to a firm conditional on the present employer's proximity to the technological frontier

