I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 11649

Innovating for the Better? The Role of Advocacy Group Work Experience for Employee Pay

Christoph Grimpe
Ulrich Kaiser
Wolfgang Sofka

JUNE 2018

I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 11649

Innovating for the Better? The Role of Advocacy Group Work Experience for Employee Pay

Christoph Grimpe
Copenhagen Business School

Ulrich Kaiser
University of Zürich, Copenhagen Business School, ZEW and IZA

Wolfgang Sofka
Copenhagen Business School

JUNE 2018

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Innovating for the Better? The Role of Advocacy Group Work Experience for Employee Pay

How valuable is work experience with advocacy groups, e.g. Greenpeace, for new hires of innovative firms? We integrate strategic human capital with stakeholder theory and suggest that this experience creates scarce human capital (knowledge, skills, abilities) facilitating innovations acceptable and legitimate for stakeholders such as regulators or residents. We argue that such human capital is complementary to firm resources and leads to a value surplus. Individuals with advocacy group work experience can subsequently appropriate at least parts of that surplus through higher salaries. Using matched data for 10,303 employees in Denmark, we find that new hires of innovative firms with advocacy group human capital enjoy salary premiums which are stronger in mature and technologically concentrated firms. Our findings have important implications for HR decision making.

JEL Classification: J24, J6, C21

Keywords: scarce human capital, advocacy groups, resource complementarity, stakeholder theory, value creation and capture

Corresponding author:
Ulrich Kaiser
University of Zürich
Department of Business Administration
Chair for Entrepreneurship
Affolternstrasse 56
8050 Zürich
Switzerland

E-mail: ulrich.kaiser@business.uzh.ch

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 for how to bridge the corporate world with society. We had a change in perspectives. Today, we talk more about health economics or patient needs, and less about patents."*
>
> Quote from the senior advisor responsible for the HR strategy of a large pharmaceutical company

The strategic value of human capital is a core theme of strategy research (e.g., Coff, 1997; Campbell, Coff, and Kryscynski, 2012; Chadwick, 2015; Mawdsley and Somaya, 2015). Existing literature suggests that innovative firms create value when they hire R&D personnel (Kaiser, Kongsted, and Rønde, 2015), patent inventors (Rosenkopf and Almeida, 2003; Palomeras and Melero, 2010) or scientists (Tzabbar, 2009). 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 or society at large (Freeman, 1984; Frooman, 1999). In this paper we focus on so-called advocacy groups as an organizational context in which individuals acquire knowledge and develop unique skills, abilities and experiences, subsequently 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 alter organizational behavior (Frooman, 1999; Eesley and Lenox, 2006) as their salience to organiza-

[1] Examples of advocacy groups include Greenpeace and Transparency International or professional industry associations. They are sometimes also referred to as NGOs or Civil Society Organizations.

tions increases (Mitchell, Agle, and Wood, 1997). We conjecture that this particular type of human capital is scarce in the labor market, creates complementarities with the resources of innovative firms and subsequently allows these particular employees to appropriate at least part of the surplus value through comparatively higher salaries when joining innovative firms.

Human capital literature has traditionally questioned whether personnel mobility across industries can improve salaries since parts of the human capital are too specific to the organizational environment in which they were created, i.e. less valuable outside of it (Becker, 1962). More recently, though, research has emphasized how human capital development in organizational contexts such as start-ups (Campbell, 2013) or multinational companies (MNCs) (Sofka, Preto, and de Faria, 2014) can result in positive earnings effects when employees switch to different firms. Mackey, Molloy, and Morris (2014) present a comprehensive model linking the scarcity of human capital and complementarities with hiring firms' resources to increased value creation at the firm level and positive earnings effects for the employee. Their model is based on economic matching theory (Mortensen, 2005; Abowd *et al.*, 2009) and consistent with strategic factor market theory (Barney, 1986; Adegbesan, 2009). We integrate mechanisms from stakeholder theory into this model to establish the scarcity of human capital created in advocacy groups and its complementarities with the resources of innovative firms.

Our reasoning rests on the assumption that individuals and firms are heterogeneous, which is why different combinations of scarce human capital and firm resources create value differentially (Barney, 1986). There is, in other words, heterogeneous resource complementarity (Adegbesan, 2009) for a number of reasons. Innovative firms misjudging stakeholder concerns limit their access to resources (Frooman, 1999), trigger disruption and protests (Clarkson, 1995), or political interference (Harrison and St. John, 1996). Put differently, advocacy groups can provide innova-

tive opportunities that are acceptable to salient stakeholders (Olsen *et al.*, 2016). Hiring former employees of advocacy groups not only provides access to stakeholder knowledge but can also transfer legitimacy to the innovative firms and its novel products, i.e. legitimacy "rubs off" (Baum and Oliver, 1991; Bitektine, 2011). Given these complementarities, we predict that innovative firms can expect to achieve higher firm value when hiring employees with scarce advocacy group human capital, and the surplus in firm value provides opportunities for employees to bargain for higher salaries (Mackey *et al.*, 2014). Moreover, we explore three types of heterogeneity in hiring firms' resources, i.e. R&D intensity, the concentration of its technology base, as well as firm age.

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) in order to identify pairs of comparable employees with and without advocacy group experience who have been hired by an innovative firm. The results support our hypotheses that advocacy group experience is positively related to the earnings of newly hired employees in innovative firms and that this effect is stronger for firms that are more technologically concentrated and more mature. However, the R&D intensity of innovative firms does not significantly condition our baseline relationship. 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

scarce human capital can be created in advocacy groups and recruited by innovative firms. Stakeholder interaction as a source for scarce human capital has been an important gap in strategic human capital theory (Mawdsley and Somaya, 2015). We provide a theoretical model that specifies a particular mechanism from stakeholder theory explaining the origins of scarcity in human capital, the creation of firm value through complementarities with resources of innovative firms, as well as how employees capture some of this value. 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 interviews indicate that there is interest from firms for hiring 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 value of stakeholder-related human capital in innovative firms. Besides, we explore heterogeneities among hiring firms based on their resource endowments. Accordingly, we provide a model that makes human capital creation in advocacy groups as well as its transferability increasingly predictable. Our model can serve as a pathway 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 or scientists (Tzabbar, 2009; Kaiser *et al.*, 2015). Our theoretical model is different in two aspects. First, we show how non-technological human capital acquired in advocacy groups creates complementari-

ties in innovative firms. Studies focusing exclusively on hiring of technological experts may thus suffer from biased results. 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 changing 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.

Logically, 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 in mature innovative firms with focused technology bases. 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 expected salary premiums that potential hires can expect.

THEORY AND HYPOTHESES

Scarce human capital and heterogeneous resource complementarity

We develop a theoretical reasoning which predicts differences in salaries for newly hired employees of innovative firms based on whether they possess human capital acquired while working for advocacy groups. For this purpose, we integrate mechanisms from stakeholder theory into models from strategic human capital theory. Human capital can be defined as the knowledge, skills, abilities and other qualities that an individual is endowed with and that firms can use productively (Molloy and Ployhart, 2012). The strategic value of human capital has been a central

topic in strategy research albeit mostly explaining firm level outcomes (Campbell *et al.*, 2012; Chadwick, 2015). Mackey *et al.* (2014) provide a useful theoretical model based on matching theory from economics (Abowd *et al.*, 2009; Mortensen, 2005) which explains why certain employees will be matched with particular employers resulting in increased value creation at the firm level as well as value appropriation by employees through comparatively higher earnings. We introduce the central mechanisms of this model briefly, scarcity of human capital and complementarity with firm resources, before applying the model to our context for developing hypotheses.

Scarce human capital is characterized as being in short supply relative to demand persistently and having a higher use value than replacement cost (Campbell et al., 2012; Mackey et al., 2014). Chadwick (2015) describes scarcity more precisely as an inelasticity in supply. Often times, scarce human capital is developed over time, for example through the accumulation of experience in a particular context (e.g., Campbell, 2013) and the supply is therefore inelastic. Since the human capital of most individuals is a portfolio of skills, experiences and abilities (Campbell et al., 2012), we will argue that some skills, experiences and abilities are uniquely acquired while working for advocacy groups. The theoretical reference group of individuals shares all other aspects of their human capital. Mackey *et al.* (2014) assume more generally heterogeneity in the human capital of individuals. Within the context of our study this heterogeneity originates more precisely from human capital development of employees working for advocacy groups.

Similarly, Mackey *et al.* (2014) assume heterogeneity among resource endowments of firms. The potential of different combinations of resources to create value depending on the complementarity of the resources is consistent with strategic factor market theory (Barney, 1986;

Adegbesan, 2009). In that sense, the complementarity of human capital and firm resources is specific to each firm accessing such human capital on labor markets. Assuming an efficient labor market, the price of scarce human capital is likely to approximate the value it creates for the hiring firm (Barney, 1986). Some firms can therefore afford to pay a price over and above the value of the scarce human capital in isolation. Based on a game-theoretic model, Adegbesan (2009) finds that these firms can outbid other firms with less resource complementarity although rival firms may be aware ex-ante of the value that can be created. Heterogeneous resource complementarity, more formally, suggests that the combined value of the scarce human capital v(HC) and the hiring firm's resources v(R) is $v(HC \cup R) = v(HC) + v(R) + S_{HC,R}$, where $S_{HC,R} > 0$. The surplus $S_{HC,R}$ depends on the degree of complementarity between the human capital and the firm's resources. As a consequence, hiring firms can realize gains from trade in strategic factor markets although they may have to pay $p(HC) = v(HC)$ for the individual's human capital because $p(HC) \leq v(HC) + S_{HC,R}$.

Adegbesan (2009) further finds that resource owners with superior resource complementarity to other resources will appropriate a minimum level of value ($S_{HC,R} > 0$) relative to resource owners displaying least complementarity ($S_{HC,R} = 0$). Since the distribution of the surplus between the individual and the hiring firm is ex-ante indeterminate, it depends on a mixture of competition and bargaining ability how the residual surplus will be split (Molloy and Barney, 2015). In other words, individuals with scarce human capital can increase their earnings through bargaining with the hiring firm if they can create value that other individuals cannot. Firms with the highest expected gains from resource complementarity will be willing to offer the highest salaries in order to acquire the human capital (Mackey *et al.*, 2014). Given these conditions, matching patterns of employers and employees occur (Becker, 1973). The complementarity be-

tween human capital and firm resources is the mechanism driving the formation of employment relationships and the earnings of newly hired employees.

Scarcity of advocacy group human capital and complementarities with innovative firms

We reason that advocacy groups provide a specific organizational context which allows its employees to build scarce human capital. Previous research has shown how work experience in organizational contexts such as start-ups (Campbell, 2013) or working for subsidiaries of multinational companies (MNC) (Sofka *et al.*, 2014) allows individuals to build up specific knowledge and skills that pays 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.

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, residents or patients (Frooman, 1999). Advocacy groups accumulate stakeholder knowledge, they 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 (Savage *et al.*, 1991; 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 in order 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, such as 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). Hence, the employees of advocacy groups interact with stakeholders on a continuous basis. They learn to understand nuances of stakeholder concerns, develop a shared language or learn to coordinate with volunteers, activists or regulators. Such human capital is scarce, since few alternative avenues for developing it exist. The business development manager of a manufacturing firm condenses his considerations when hiring former advocacy group employees like this:

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

The scarce human capital of employees from advocacy groups has the potential of creating particular complementarities with resources of innovative firms. Two mechanisms for complementarities can be distinguished. First, organizations face pressures to respond to stakeholders and these pressures increase with stakeholders' saliency (Mitchell *et al.*, 1997; Eesley and Lenox, 2006). In fact, examples of firms that turn to advocacy groups for advice are frequent 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 or 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.

Hence, employees with advocacy group human capital 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 push firms to explore possible solu-

tions 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 firms:

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

The senior advisor for the HR strategy of a large pharmaceutical firm corroborates the following view:

> *When I look at an application of 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.*

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). 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 comments as follows:

> *One of my colleagues recently became the head of compliance in a large US 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.*

In sum, we argue that both mechanisms – improving innovation outcomes and signalling legitimacy – underlie the complementarity between scarce human capital and firm resources. Advocacy group experience increases the value of firm resources over and above their value in isolation. As a result, the individuals endowed with such scarce human capital are likely to reap the pecuniary rewards. Our first hypothesis thus reads:

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

Adegbesan (2009) emphasizes the heterogeneity of the resource endowments of firms which explains why firms are heterogeneous in the complementarity effects that they can create when acquiring strategic factors, in our setting by hiring scarce human capital. We explore three of these heterogeneities among innovative firms hiring employees from advocacy groups.

First, scarce human capital can lead to comparatively more complementarities with increasing resource endowments of hiring firms (Mackey et al., 2014). Within our context, all innovative firms invest in some form of research and the creation of new knowledge but they differ widely in their intensity. Firms with low R&D intensities are often times constrained in their ability to fund them. Typical R&D investments have sunk cost character since they are mostly composed of salaries for scientists and engineers and/or specialized laboratories or equipment that is not fungible (Hall, 2005). Besides, the very nature of experimenting with untested approaches and technologies implies considerable outcome uncertainties and many firms forgo R&D investments completely (Cuervo-Cazurra and Un, 2010; Amit, Glosten, and Muller, 1990).

Then again, R&D investments are important mechanisms by which firms can re-configure their technological assets and capabilities (Helfat, 2000). With increasing investments in R&D,

firms increase their ability to respond to changing market conditions and extend the value of existing complementary assets, e.g. production or distribution facilities (Helfat, 1997). Besides, R&D investments enable firms to absorb external knowledge and technologies more successfully (Cohen and Levinthal, 1989). Given prior related knowledge from internal R&D investments, firms increase their capacity to identify, assimilate and exploit external knowledge.

We argue that advocacy group human capital has comparatively more potential for creating complementarities in R&D intensive firms. Firms investing into new or reconfigured capabilities through R&D will benefit most when incorporating innovation inputs from stakeholders. Their R&D outcomes would be less likely to face resistance in implementation or trigger regulation (Olsen *et al.*, 2016). Harrison and St. John (1996) report an example in which the reconfiguration of oil production benefits from advocacy group inputs leading to improved health, safety and environmental policies. The senior advisor to a high-tech firm in pharmaceuticals explains this relationship with new products to us 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.*

More R&D intensive firms also have the absorptive capacities to incorporate such stakeholder inputs in product or process designs. Besides, technologically new processes and products are also particularly likely to suffer from liabilities of newness from customers, regulators, neighbors or other stakeholders. Employees with advocacy group human capital are particularly well equipped to address such concerns early and legitimize technological novelties as appropriate. All of these mechanisms favor stronger complementarities of advocacy group human capital with R&D intensive firms, allowing these employees to negotiate higher salaries. We predict:

> *Hypothesis 2: Newly hired employees with advocacy group experience will earn more than comparable counterparts in innovating firms, and this effect increases with the hiring firm's R&D intensity.*

R&D intensity in itself does not necessarily define the type of innovation outcomes. Strategy and innovation literature has put particular emphasis on how firms combine different technologies (Rosenkopf and Nerkar, 2001). Combinations of technologies enable firms to arrive at more novel products (Katila and Ahuja, 2002), e.g. by combining software engineering with biotech knowledge, or enabling more creativity of R&D personnel (Fleming, Mingo, and Chen, 2007). R&D strategies directed at increasing the diversity of technologies have been defined as having more scope (Katila and Ahuja, 2002), breadth (Laursen and Salter, 2006) or dispersion (Olsen *et al.*, 2016). Alternatively, firms can direct their R&D investments at exploring few technologies deeply. Katila and Ahuja (2002) review mechanisms for why firms prefer concentrating on few technologies. These mechanisms originate from the insight that firms focusing on few technologies can develop a detailed understanding of them which allows more efficient technology management (e.g. by decomposing sub-problems), increased predictability of outcomes as well as a better overview for which technological improvements have high value.

Advocacy group human capital could potentially be valuable for innovative firms with highly novel innovations combining multiple technologies since they could legitimize their use vis-à-vis stakeholders or regulators. Then again, most of the innovation input that former employees of advocacy groups can provide is market related, e.g. which product designs will be acceptable. Knowledge about stakeholder concerns can help reducing the market uncertainty of innovations. This type of uncertainty emerges from the diffusion on the product market and is separate from the technological uncertainty about whether an innovation can be technologically generated (Amit et al., 1990). We believe that the opportunities for complementarities of advocacy group human capital with few, deeply developed technologies are higher since these are more likely to

benefit from market-related inputs. In this context, a business development manager describes the value of advocacy group human capital for us like this:

> *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 ground breaking.*

Put differently, firms exploring new combinations of diverse technologies may find inputs from advocacy group human capital distracting since they are primarily dealing with solving technological problems and uncertainties. The senior advisor on the HR strategy of a pharmaceutical firm describes his concerns for involving employees with advocacy group experience in the creation of highly novel technologies:

> *I would be worried that NGO concerns "pollute" the discussion when you are focusing on technology outcomes.*

Accordingly, we expect that advocacy group human capital will find comparatively more complementarities in innovative firms with a concentrated technology, allowing them to share some of this surplus with the respective employee through higher salaries. We predict:

> *Hypothesis 3: Newly hired employees with advocacy group experience will earn more than comparable counterparts in innovating firms, and this effect is stronger in firms with a more concentrated technology base.*

Finally, differences in resource endowments of firms are often times related to the time that is required for developing them. Dierickx and Cool (1989) emphasize in particular how resource differences between firms emerge if competitors cannot achieve time compression in imitating them. Accordingly, differences in the resources of firms allowing for unique complementarities with human capital (Mackey *et al.*, 2014) can emerge because firms had more time to develop such resources.

Firm age is typically tied to the availability of resources when literature discusses disadvantages of young firms as "liability of newness" (Bruderl and Schussler, 1990). These liabilities

emerge because younger firms need time to develop specific knowledge and functions, are more prone to experience conflict internally and lack trusting relationships with outside partners or customers (Stinchcombe, 1965). Thornhill and Amit (2003) relate resources and capabilities to firm bankruptcies and find that younger firms suffer in particular from shortages of managerial knowledge and financial abilities when compared with mature firms. Accordingly, advocacy group human capital is more likely to find complementarities in mature firms. The senior HR partner of a medical devices producer describes complementarities from HR processes:

> *Mature firms provide more structured processes in terms of HR cycles, that is development opportunities.*

The senior manager for business development describes the complementarity of advocacy group human capital in mature firms like this:

> *NGOs are not necessarily entrepreneurial. Established firms have brands and capabilities. That's a quick fix for achieving impact, not like in a start-up.*

Increasingly mature firms have established routines and relationships that allow them to process the insights from stakeholders that former employees of advocacy groups can bring to a hiring firm. In contrast with younger firms which lack networks with outside partners (Stinchcombe, 1965; Rao, Chandy, and Prabhu, 2008), increasingly mature firms have established stakeholder networks that benefit from incorporating their inputs making resulting innovation acceptable. Finally, the likelihood increases that more mature firms have developed unique firm resources which can be complementary with advocacy group human capital. The HR senior advisor of a mature pharmaceutical firm summarizes these advantages like this:

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

On average, we expect these complementarities to have comparatively higher value in mature firms, allowing for increased earnings of employees with prior work experience from advocacy groups. We propose:

> *Hypothesis 4: Newly hired employees with advocacy group experience will earn more than comparable counterparts in innovating firms, and this effect increases with the hiring firm's age.*

DATA AND METHODS

Data

We use register data provided by Statistics Denmark on the population of wage-employed individuals classified as holding a professional or managerial position (defined by the Danish International Standard Classification Codes, DISCO, one-digit codes 1, 2 and 3) 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; Lyngsie and Foss, 2017). The data are in principle available from 1980 onwards. There is, however, a break in the way Statistics Denmark identifies firms in 1999 which implies that we can only track workplace changes from that year onwards. We restrict our data to individuals aged 20-65 years 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. firms 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 degree in the technical, natural, veterinary, agricultural, or health sciences in a professional or managerial position.

Our raw dataset contains 462,023 observations on 342,546 unique individuals. Missing information on some variables leads to a reduction to 455,493 observations on 338,561 unique individuals hired by 11,294 unique firms. We finally discard observations with the one percent

highest and the one percent lowest wages which leaves us with a dataset comprising 446,384 observations on 333,721 unique individuals hired by 11,222 unique firms. We checked whether these missing observations possibly lead to selection biases by analyzing if individuals left out in our analysis are systematically different from the ones kept in the analysis by comparing key variables of both groups to one another. We did not find any evidence for statistically significant differences between present and previous wages, years of working experience, education, hiring firm size, and hiring firm sector affiliation. Since we exclusively use register data, common method variance is not an issue.

For creating a suitable control group, we focus on newly hired individuals (i) who have been employed by an advocacy group at time t-1 and who join an innovative firm at time t and (ii) who have been employed by a firm at time t-1 and who join the same innovative firm at time t (see section on Estimation Approach below for details). Following Olsen *et al.* (2016), we use the industry classification code NACE (Rev. 1) 91 to identify advocacy groups in our data on the basis of 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 wages earned by the newly hired employees in the year (t) in which they were hired. We take the natural logarithm to account for skewness of the data.

Explanatory Variables

The main explanatory variable is a dummy variable indicating whether a newly hired individual has worked at an advocacy group in the year before being hired by an innovative firm.

R&D intensity is measured as the number of R&D employees relative to the total number of employees. Since we require firms to have at least one R&D employee, this variable is defined for all firms.

We measure the concentration of technologies in the firm as the heterogeneity of firm R&D employees in terms of education, considering 15 different fields of education: natural sciences, mathematics, IT, statistics, physics, chemistry, geology, nanotechnology, biology, medicine, construction technology, engineering, food sciences and pharmaceuticals. We focus on an individual's most recently completed education. We use the Blau index as our measure of diversity (Blau, 1960). It is calculated as one minus the sum of the squared shares of employees with education k, s_k:

$$B = 1 - \sum_{k=1}^{n} s_k^2 ,$$

where n defines the number of employees. The more homogeneous groups of employees are, the closer the Blau index gets to 1 / n. It approaches 1 the more heterogeneous groups of employees are. Because the Blau index is dependent on the number of employees in the firm, we need to correct for firm size by scaling the Blau index as follows:

$$B = \frac{n}{n-1}\left(1 - \sum_{k=1}^{n} s_k^2\right).$$

The rescaled index takes on the value 0 if all employees have the same education and is 1 if they all have different educations.

Finally, we measure firm age as the difference between the present year and the founding year reported in Statistics Denmark data.

Control Variables

The selection of control variables is determined by our econometric approach to identify the effect of advocacy group work experience which we describe in the following.

Estimation Approach

Labor mobility is not a random event. In order to mitigate selection bias we only consider mobile individuals, i.e. individuals who have been employed at a different employer at time t-1 than at time t. We hence discard all individuals who did not change their employer between t-1 and t. To strengthen our identification, we follow Campbell (2013) and consider pairs of newly hired employees in firms. In other words, we compare individuals with advocacy group work experience who join a specific firm with individuals without such experience joining the same firm. This accounts for observed and unobserved differences that determine the decision to join that firm. Subsequently, and to further strengthen our identification of causal effects, we match these two different sets of individuals newly hired by the firm on their observed characteristics. Finally, we run log annual earnings quantile regressions on a dummy variable for joining from an advocacy group and additional control variables. Quantile regression generates outlier-robust estimates and is common practice in labor economics (e.g., Angrist, Chernozhukov, and Fernández-Val, 2006).

To match individuals with and without advocacy group work experience, we use Coarsened Exact Matching (CEM) (Iacus *et al.*, 2012). The basic idea behind 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 subsequent regression analysis. These weights take on the value 0 if

an observation could not be matched and is positive if it could be matched. The better the match is the higher is the weight an observation receives. Better matches hence have a higher importance in our regressions, unmatched observations are discarded.

Our set of conditioning variables for our preferred model consists of the following individual-specific variables: the natural logarithm of the previous wage, years of total working experience, nine dummy variables for the type and length of education, gender, two dummies for occupation (top management team membership and work requiring knowledge of the highest level, as well as work requiring knowledge of an intermediate level, our base category) and age of the individual. We match exactly on education and gender. The preferred model considers only individuals who join the same firm. This in turn implies that we do not have to control for employer-specific variables.

The quantile regressions additionally control for all variables that we do not match on exactly (we apply coarsened exact matching and not exact matching so we need to account for these variables to improve identification). These include the natural logarithm of the previous wage, years of total working experience and its squared term, the two occupation dummies, and the dummy variable indicating that the individual has advocacy group work experience.

Robustness Checks

While our approach of matching pairs of newly hired individuals to the same firm should mitigate any non-random selection into previous advocacy group employment, it is quite data demanding. Therefore, we consider several additional specifications as robustness checks. Appendix 1 shows the results. Our point of departure is Model A1, in which we consider all newly hired employees without applying any CEM weighting. We control for the entire set of conditioning variables, i.e. the set of education dummies, the gender dummy, the set of year dummies

and the set of sector dummies. We subsequently apply CEM weighting based on matching of employee and employer characteristics in Model A2. We control for all variables as before except for the set of education dummies, year dummies and the set of sector dummies. Finally, we use CEM weights based on exact matches on the employer and previous wages (but no other individual-level variable) in Model A3. The control variables in this model are the education dummies and the female dummy. Our preferred specification, on which our main results are based, uses CEM weights based on exact matches on the employer and a rich set of additional individual-specific variables.

RESULTS

Table 1 shows descriptive statistics for all individuals in our sample and differentiated between those with and without work experience at an advocacy group and without CEM-weights being applied. The table shows that individuals with previous work experience at an advocacy group earn on average 39,151 DKK per year less than individuals without such prior experience. The difference in previous wages is even more substantial and amounts to 117,884 DKK per year. Inspecting Table 1 further indicates why these substantial differences may appear: mobile individuals from advocacy groups are on average less well educated – the level of education is lowest for the dummy variable "Education 1" and highest for "Education 9" – and they more often perform tasks requiring intermediate level knowledge only. There are also strong differences with respect to the sector the new employer is active in. Our empirical approach seeks to take this heterogeneity into account in order to elicit the causal effects of being a joiner from an advocacy group. There are, by contrast, little differences in terms of years of working experience, R&D intensity, age and the number of employees of the new employer.

Table 2 shows the pairwise correlations. We find the correlations among the variables to be low. Moreover, the mean variance inflation factors is 1.33 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 results of our main models. They are based on our preferred CEM model for which we match on pairs of newly hired employees and additionally control for individual-specific effects. Model 1 tests our first hypothesis on the main effect of advocacy group work experience. 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 actually pays off once properly accounting for individual-specific heterogeneity. The coefficient estimates on the advocacy group dummy is 0.107 which translates into an income difference of 11.3% (exp(0.107)-1=11.3). The corresponding standard error and p-value are calculated using the "delta method" (Greene, 2003) as described in the appendix. The corresponding p-value is 0.0001 which implies that we cannot reject Hypothesis 1.

Models 2 to 5 show the results for our interaction hypotheses. We successively add the three contingency variables to first focus on each individually before Model 5 shows the results for all variables under study. Model 2 shows that the interaction between the advocacy group experience dummy and R&D intensity is statistically insignificant while the R&D intensity itself has a statistically and economically significant effect. The sum of both coefficients is statistically significant and positive. Figure 1 in the appendix displays the related income effects of having advocacy group experience conditional on the new employer's R&D intensity. The income difference between individuals with and without advocacy group experience is statistically significant

(and positive) only for R&D intensities below 0.4. The income differences and the confidence intervals are again calculated using the "delta method" (Greene, 2003) as described in the appendix. As a consequence, Hypothesis 2 has to be rejected.

Model 3 includes the Blau index measuring the concentration of technologies in the hiring firm in the period before the new hire. The main effect is statistically and economically significant and positive while the interaction effect is statistically significantly negative. The joint effect is shown in Figure 2 in the appendix which substantiates that individuals with advocacy group experience have an income advantage of 28% for a Blau index of 0 (i.e. a homogenous R&D workforce representing full concentration of technologies) and no income advantage for very heterogeneous R&D workforces (Blau-indices larger than .9). This indicates that individuals with advocacy group experience receive higher salaries in hiring firms in which the existing R&D workforce is rather homogenous, indicating that the hiring firm is concentrated on few technologies. Thus, we cannot reject Hypothesis 3.

Model 4 includes the variable measuring firm age, for which we find a negative main but a positive interaction effect which outweighs the negative main effect for all firm ages larger than one year. This translates into income differences which increase with firm age for individuals with advocacy group experience but decrease for individuals without. Figure 3 in the appendix documents this relationship which also is statistically significant except for very low firm ages. As a consequence, we cannot reject Hypothesis 4.

Finally, we integrate all three contingency variables in Model 5 which generates similar estimates as the separate models for the two significant interactions with the Blau index and firm age. The dummy variable indicating advocacy group experience is statistically insignificant in the full model implying its effect is absorbed by the contingencies.

[Insert Table 3 about here]

Table 4 in the appendix presents our robustness check estimations which focus on the chosen CEM approach. In these estimations we are interested in the main effect of advocacy group work experience. In Model A1 we do not apply any weighting. All other models use CEM weighting based on alternative sets of assumptions. Model A2 uses weights based on individual and employer characteristics, while Model A3 uses weights based on exact matches on the new employer and additionally accounts for previous annual earnings.

The least identified model, Model A1, estimates a statistically insignificant coefficient on the advocacy group experience dummy of -0.033 which translates into a relative income difference between individuals with and without advocacy group experience of -3.27%. Model A2 generates an estimate of the advocacy group experience income effects of 4.3% which is significant at the ten percent level. Model A3 estimates a statistically and economically significant effect of 5.1% with a p-value of 0.037. We consider the latter model as superior relative to the other two robustness checks since it conditions on pairs of individuals workers who join the same firm but our main model shown in Table 3 additionally accounts for a large set of individual-specific factors which should strengthen identification. Table 4 hence suggests that the stronger the identification of advocacy group experience is, the larger and more positive the coefficient estimate becomes.

Interestingly, even though the number of observations and hence the set of individuals involved in the estimations is substantially different across the models, the results for the set of additional control variables are not very different. This indicates that discarding unmatched observations through CEM weighting does not lead to selection biases. The coefficient estimate of previous earnings is around 0.19 which translates into an income elasticity of the same magni-

tude. The coefficients on years of total working experience are quite similar across models and imply decreasing returns to years of experience with maxima outside the relevant experience range. In sum, we are confident that our identification strategy produces reliable coefficient estimates for our key explanatory variables.

DISCUSSION

Integrating mechanisms from stakeholder theory into models from strategic human capital theory, we predict differences in salaries for newly hired employees of innovative firms with and without work experience at an advocacy group. We argue that such work experience can be characterized as scarce human capital whose strategic value to firms has been a central topic in strategy research (Campbell *et al.*, 2012; Chadwick, 2015). Building on the assumption that individuals are differentially endowed with a portfolio of skills, experiences and abilities, and firms are heterogeneous in their resource endowments (Mackey *et al.*, 2014), we suggest scarce human capital and firm resources to be complementary. Consistent with strategic factor markets theory (Adegbesan, 2009; Barney, 1986), different combinations of scarce human capital and resources create value depending on the complementarity of the resources. Because the price of scarce human capital is likely to approximate the value it creates for the hiring firm (Barney, 1986), some firms – those with superior resource complementarity – can afford to pay a price over and above the value of the scarce human capital in isolation (Adegbesan, 2009). Individuals, in turn, can bid up their wages and capture some of the surplus generated through resource complementarity. In that sense, the complementarity between human capital and firm resources is the mechanism underlying the formation of employment relationships and the earnings of newly hired employees.

Our first hypothesis suggests that work experience at an advocacy group is in fact complementary with firm resources. Advocacy groups provide an organizational context which allows its employees to build scarce human capital because they interact with stakeholders in unique ways. In that context, employees of advocacy groups have access to unique pools of knowledge accumulated and aggregated from stakeholders and other sources (Savage *et al.*, 1991; Frooman, 1999; Christmann, 2004). Our results show that advocacy group work experience has a positive effect on the earnings of newly hired employees, indicating that such work experience is indeed valued by the hiring firm. Following our theoretical model, we attribute this effect to the complementarity of the employees' scare human capital and firm resources. Apparently, these employees help identify solutions to innovation problems that satisfy stakeholders' expectations and requirements (Clarkson, 1995; Olsen *et al.*, 2016), they encourage experimentation (Flammer and Kacperczyk, 2016), but they can also help signal the desirability and appropriateness of innovations vis-à-vis relevant stakeholders through an advocacy group's legitimacy (Harrison *et al.*, 2010).

Moreover, we test differences in the resource endowments of hiring, innovative firms and their effect on the relationship between scarce human capital and the earnings of newly hired employees. First, we argue that scarce human capital can lead to comparatively more complementarities with increasing resource endowments of hiring firms (Mackey *et al.*, 2014), in our context a firm's R&D intensity. While we would have expected that advocacy group related human capital has comparatively more potential for creating complementarities in R&D intensive firms, our estimations cannot substantiate such an effect. Apparently, the benefits of advocacy group work experience do not increase with R&D intensity but accrue to all innovative firms. Since more R&D intensive firms can also be assumed to have higher absorptive capacity (Cohen

and Levinthal, 1989), we speculate that this result indicates that absorptive capacity may have a compensating effect – at least in part – for the knowledge, skills and legitimacy that individuals with advocacy group work experience bring to the firm.

Second, we focus on a hiring firm's combinations of technologies to increase the novelty of their innovations. While firm can strive to increase the diversity of technologies (e.g., Katila and Ahuja, 2002; Laursen and Salter, 2006), they can also choose to concentrate on few technologies to develop a detailed understanding enabling more efficient technology management, higher predictability of outcomes, or better overview. We argue that the opportunities for complementarities of advocacy group related human capital with few, deeply developed technologies are higher because firms with such a technology base are more likely to benefit from market-related inputs that such individuals can provide. In fact, our results indicate this to be the case, underlining the importance of heterogeneous technology portfolios for the earnings that individuals with advocacy group work experience can expect.

Third, we argue that a hiring firm's age constitutes an important contingency variable in that younger firms need time to develop specific knowledge and functions, are more prone to experience conflict internally and lack trusting relationships with outside partners or customers (Stinchcombe, 1965; Rao *et al.*, 2008). Hence, we suggest that advocacy group related human capital is more likely to find complementarities in mature firms because firms had more time to develop valuable resources (Dierickx and Cool, 1989). Again, we find evidence for this hypothesis, suggesting that mature firms can better utilize advocacy group related human capital both as a "quick fix" and valuable complement to their established resource base.

In sum, our findings shed light on the relationship between a particular type of human capital related to advocacy work experience and the wage-earnings of newly hired employees. Simi-

lar 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. 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 scarce human capital can be created and acquired in labor markets in order to put complementarity effects with firm resources into effect. 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 to understand how advocacy group work experience can be a source of value when combined with firm resources. In that sense, our research also contributes to prior literature that investigates the role and value of scarce human capital in new contexts (e.g., Campbell, 2013; Mackey *et al.*, 2014).

On the other hand, our research underlines the 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 sense areas of stakeholder interests as well as concerns and can communicate them within the organization. This in turn enables organizations to take action, to utilize such employees' knowledge and skills as well as 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 they address the "right" problem as perceived by stakeholders. In that sense, our research documents another source of 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.

CONCLUDING REMARKS

While our research provides a number of insights into the relationship between scarce human capital and the wage-earnings of employees, several relevant research questions have remained outside the scope of our study. First, our theoretical understanding of advocacy group related human capital would greatly benefit from a more in-depth analysis of its impact on firm's innovation activities. This could be achieved through longitudinal studies of employees endowed with such experience in focal organizations. In that sense, our research cannot disentangle the twofold role of individuals with advocacy group work experience to provide knowledge about stakeholder interests and concerns, but also to legitimize firm behavior. Future research should therefore assess the relative importance of both mechanisms and study conditions under which one or the other becomes more pronounced.

Second, our research relies on an identification strategy that applies coarsened exact matching with a rich set of individual- and firm-specific control variables. Yet, in order 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) in order to further specify the conditions under which advocacy group related human capital would be most beneficial for firms' value creation.

Third, the complementarity of scarce human capital and firm resources creates a surplus in value for the firm. Salary increases are expected to be stronger if employees are in comparatively stronger bargaining power positions (Mackey *et al.*, 2014; Molloy and Barney, 2015). Our data does not allow us to capture wage negotiations comprehensively. We conduct several interviews

asking experts to reflect on the particular bargaining power of employees with advocacy group work experience. These interviews do not indicate systematic differences in bargaining demands and offers. Still, dedicated studies may be able to focus on bargaining processes and outcomes.

Finally, the coverage of job mobility and earnings in Danish employment data provides a unique opportunity to arrive at generalizable results across industries and individuals. However, comparative studies in other country contexts may provide additional insights and sensitivities of our results.

REFERENCES

Abowd JM, Kramarz F, Pérez-Duarte S, Schmutte I. 2009. A Formal Test of Assortative Matching in the Labor Market, *National Bureau of Economic Research Working Paper Series*, Vol. No. 15546:

Adegbesan JA. 2009. On the Origins of Competitive Advantage: Strategic Factor Markets and Heterogeneous Resource Complementarity. *Academy of Management Review* **34**(3): 463-475.

Amit R, Glosten L, Muller E. 1990. Entrepreneurial Ability, Venture Investments, and Risk Sharing. *Management Science* **36**(10): 1232-1245.

Angrist J, Chernozhukov V, Fernández-Val I. 2006. Quantile Regression under Misspecification, with an Application to the U.S. Wage Structure. *Econometrica* **74**(2): 539-563.

Barney JB. 1986. Strategic Factor Markets. Expectations, Luck, and Business Strategy. *Management Science* **32**(10): 1231-1241.

Baum JAC, Oliver C. 1991. Institutional Linkages and Organizational Mortality. *Administrative Science Quarterly* **36**: 187-218.

Becker GS. 1962. Investment in Human Capital: A Theoretical Analysis. *Journal of Political Economy* **70**(5): 9-49.

Becker GS. 1973. A Theory of Marriage: Part I. *Journal of Political Economy* **81**(4): 813-846.

Belsley DA, Kuh E, Welsh RE. 1980. *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity*: New York.

Bitektine A. 2011. Toward a Theory of Social Judgements of Organizations: The Case of Legitimacy, Reputation, and Status. *Academy of Management Review* **36**(1): 151-179.

Blau PM. 1960. A Theory of Social Integration. *American Journal of Sociology* **65**(6): 545-556.

Bosse DA, Coughlan R. 2016. Stakeholder Relationship Bonds. *Journal of Management Studies* **53**(7): 1197-1222.

Bruderl J, Schussler R. 1990. Organizational Mortality: The Liabilities of Newness and Adolescence. *Administrative Science Quarterly* **35**(3): 530-547.

Campbell BA. 2013. Earnings Effects of Entrepreneurial Experience: Evidence from the Semiconductor Industry. *Management Science* **59**(2): 286-304.

Campbell BA, Coff R, Kryscynski D. 2012. Rethinking Sustained Competitive Advantage from Human Capital. *Academy of Management Review* **37**(3): 376-395.
Chadwick C. 2015. Towards a More Comprehensive Model of Firms' Human Capital Rents. *Academy of Management Review*: amr. 2013.0385.
Chatterji AK, Findley M, Jensen NM, Meier S, Nielson D. 2016. Field Experiments in Strategy Research. *Strategic Management Journal* **37**(1): 116-132.
Christmann P. 2004. Mutlinational Companies and the Natural Environment: Determinants of Global Environmental Policy Standardization. *Academy of Management Journal* **47**(5): 747-760.
Clarkson MBE. 1995. A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance. *Academy of Management Review* **20**(1): 92-117.
Coff RW. 1997. Human Assets and Management Dilemmas: Coping with Hazards on the Road to Resource-Based Theory. *Academy of Management Review* **22**(2): 374-402.
Cohen WM, Levinthal DA. 1989. Innovation and Learning: The Two Faces of R&D. *The Economic Journal* **99**(397): 569-596.
Cuervo-Cazurra A, Un AC. 2010. Why Some Firms Never Invest in Formal R&D. *Strategic Management Journal* **31**(7): 759-779.
Dierickx I, Cool K. 1989. Assett Stock Accumulation and Sustainability of Competitive Advantage. *Management Science* **35**(12): 1504-1511.
Eesley C, Lenox MJ. 2006. Firm Responses to Secondary Stakeholder Action. *Strategic Management Journal* **27**: 765-781.
Flammer C, Kacperczyk AJ. 2016. The Impact of Stakeholder Orientation on Innovation: Evidence from a Natural Experiment. *Management Science* **62**(7): 1982-2001.
Fleming L, Mingo S, Chen D. 2007. Collaborative Brokerage, Generative Creativity, and Creative Success. *Administrative Science Quarterly* **52**(3): 443-475.
Freeman RE. 1984. *Strategic Management: A Stakeholder Approach*. Pitman: Boston.
Frooman J. 1999. Stakeholder Influence Strategies. *Academy of Management Review* **24**(2): 191-205.
Greene WH. 2003. *Econometric Analysis* (5 ed.). Prentice Hall: Upper Saddle River, NJ.
Hall BH. 2005. The Financing of Innovation. In S Shane (Ed.), *The Handbook of Technology and Innovation Management*. Blackwell: Oxford: 409-430.
Harrison JS, Bosse DA, Phillips RA. 2010. Managing for Stakeholders, Stakeholder Utility Functions, and Competitive Advantage. *Strategic Management Journal* **31**(1): 58-74.
Harrison JS, St. John CH. 1996. Managing and Partnering with External Stakeholders. *Academy of Management Executive* **10**(2): 46-60.
Helfat CE. 1997. Know-How and Asset Complementarity and Dynamic Capability Accumulation: The Case of R&D. *Strategic Management Journal* **18**(5): 339-360.
Helfat CE. 2000. Guest Editor's Introduction to the Special Issue: The Evolution of Firm Capabilities. *Strategic Management Journal* **21**(10-11): 955-959.
Iacus SM, King G, Porro G, Katz JN. 2012. Causal Inference without Balance Checking: Coarsened Exact Matching. *Political Analysis* **20**(1): 1-24.
Kaiser U, Kongsted HC, Rønde T. 2015. Does the Mobility of R&D Labor Increase Innovation? *Journal of Economic Behavior & Organization* **110**: 91-105.
Katila R, Ahuja G. 2002. Something Old, Something New: A Longitudinal Study of Search Behavior and New Product Introduction. *Academy of Management Journal* **45**(6): 1183-1194.

Laursen K, Salter A. 2006. Open for Innovation: The Role of Openness in Explaining Innovation Performance among U.K. Manufacturing Firms. *Strategic Management Journal* **27**(2): 131-150.
Lyngsie J, Foss NJ. 2017. The More, the Merrier? Women in Top-Management Teams and Entrepreneurship in Established Firms. *Strategic Management Journal* **38**(3): 487-505.
Mackey A, Molloy JC, Morris SS. 2014. Scarce Human Capital in Managerial Labor Markets. *Journal of Management* **40**(2): 399-421.
Madsen PM, Bingham JB. 2014. A Stakeholder-Human Capital Perspective on the Link between Social Performance and Executive Compensation. *Business Ethics Quarterly* **24**(1): 1-30.
Mawdsley JK, Somaya D. 2015. Employee Mobility and Organizational Outcomes: An Integrative Conceptual Framework and Research Agenda. *Journal of Management*
Mitchell RK, Agle BR, Wood DJ. 1997. Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts. *Academy of Management Journal* **22**(4): 853-886.
Molloy JC, Barney JB. 2015. Who Captures the Value Created with Human Capital? A Market-Based View. *Academy of Management Perspectives* **29**(3): 309-325.
Molloy JC, Ployhart RE. 2012. Construct Clarity: Multidisciplinary Considerations and an Illustration Using Human Capital. *Human Resource Management Review* **22**(2): 152-156.
Mortensen D. 2005. *Wage Dispersion: Why Are Similar Workers Paid Differently?* MIT press: Cambridge, MA.
Olsen A, Sofka W, Grimpe C. 2016. Coordinated Exploration for Grand Challenges: The Role of Advocacy Groups in Search Consortia. *Academy of Management Journal*
Palomeras N, Melero E. 2010. Markets for Inventors: Learning-by-Hiring as a Driver of Mobility. *Management Science* **56**(5): 881-895.
Rao RS, Chandy RK, Prabhu JC. 2008. The Fruits of Legitimacy: Why Some New Ventures Gain More from Innovation Than Others. *Journal of Marketing* **72**(4): 58-75.
Rosenkopf L, Almeida P. 2003. Overcoming Local Search through Alliances and Mobility. *Management Science* **49**(6): 751-766.
Rosenkopf L, Nerkar A. 2001. Beyond Local Search: Boundary-Spanning, Exploration, and Impact in the Optical Disc Industry. *Strategic Management Journal* **22**(4): 287-306.
Savage GT, Nix TH, Whitehead CJ, Blair JD. 1991. Strategies for Assessing and Managing Organizational Stakeholders. *Academy of Management Executive* **5**: 61-75.
Sofka W, Preto MT, de Faria P. 2014. Mnc Subsidiary Closures: What Is the Value of Employees' Human Capital in New Jobs? *Journal of International Business Studies* **45**(6): 723-750.
Stinchcombe AL. 1965. Social Structures and Organizations. In JG March (Ed.), *Handbook of Organizations*. Rand McNally: Chicago: 142-193.
Suchman MC. 1995. Managing Legitimacy: Strategic and Institutional Approaches. *Academy of Management Review* **20**(3): 571-610.
Terry SF, Terry PF, Rauen KA, Uitto J, Bercovitch LG. 2007. Advocacy Groups as Research Organizations: The Pxe International Example. *Nature Reviews - Genetics* **8**(2): 157-164.
Thornhill S, Amit R. 2003. Learning About Failure: Bankruptcy, Firm Age, and the Resource-Based View. *Organization Science* **14**(5): 497-509.
Tzabbar D. 2009. When Does Scientist Recruitment Affect Technological Repositioning? *Academy of Management Journal* **52**(5): 873-896.

TABLES

Table 1: Descriptive statistics

	All employees		No advocacy group work experience		Advocacy group work experience	
	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Current annual earnings in DKK	291,889	194,222	292,012	194,271	252,861	173,568
Previous annual earnings in DKK	329,451	227,922	329,727	227,918	242,044	211,843
Years of total working experience	14.23	6.12	14.23	6.12	14.26	5.61
Education 1	0.05		0.05		0.03	
Education 2	0.06		0.06		0.07	
Education 3	0.02		0.02		0.01	
Education 4	0.18		0.18		0.08	
Education 5	0.09		0.09		0.05	
Education 6	0.36		0.36		0.28	
Education 7	0.02		0.02		0.04	
Education 8	0.20		0.20		0.41	
Education 9	0.02		0.02		0.02	
Female	0.50		0.50		0.57	
Top management team	0.06	0.24	0.06	0.24	0.07	0.25
Work req. highest level knowl.	0.42	0.49	0.42	0.49	0.67	0.47
Work req. intermediate level knowl.	0.52	0.50	0.52	0.50	0.27	0.44
Year 2000	0.20		0.20		0.15	
Year 2001	0.24		0.24		0.20	
Year 2002	0.21		0.21		0.21	
Year 2003	0.18		0.18		0.21	
Year 2004	0.17		0.17		0.24	
R&D intensity	0.08	0.11	0.08	0.11	0.08	0.12
# employees	5,215	8,493	5,216	8,490	4,926	9,480
Sector A Agriculture, hunting, forestry	0.02		0.02		0.01	
Sector B Fishing	0.02		0.02		0.01	
Sector C Mining and quarrying	0.05		0.05		0.03	
Sector D Manufacturing	0.04		0.04		0.02	
Sector E Electricity, gas, water supply	0.08		0.08		0.03	
Sector F Construction	0.10		0.10		0.07	
Sector G Wholesale and retail trade	0.06		0.06		0.07	
Sector H Hotels and restaurants	0.03		0.03		0.08	
Sector I Transport, storage, comm.	0.41		0.41		0.50	
Blau index (technology dispersion)	0.63	0.34	0.63	0.34	0.63	0.36
Firm age	27.57	15.64	27.57	15.64	29.69	15.21
Number of observations	446,384		444,977		1,407	

Table 2: Pairwise correlations (n = 446,384)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1)	ln(previous wage)	1														
(2)	Years total working experience	0.38	1													
(3)	Education 1	0.02	0.11	1												
(4)	Education 2	-0.10	-0.11	-0.06	1											
(5)	Education 3	-0.01	-0.05	-0.03	-0.03	1										
(6)	Education 4	0.12	0.20	-0.11	-0.12	-0.07	1									
(7)	Education 5	0.03	-0.01	-0.07	-0.08	-0.04	-0.15	1								
(8)	Education 6	-0.05	-0.08	-0.04	-0.04	-0.02	-0.08	-0.05	1							
(9)	Education 8	0.05	-0.09	-0.12	-0.12	-0.07	-0.24	-0.16	-0.08	1						
(10)	Education 9	0.04	0.01	-0.03	-0.03	-0.02	-0.06	-0.04	-0.02	-0.06	1					
(11)	Female	-0.21	-0.13	-0.03	0.00	-0.02	-0.09	-0.01	-0.01	-0.08	-0.04	1				
(12)	Top management team	0.10	0.11	0.04	-0.01	0.01	0.05	-0.02	0.00	-0.01	-0.01	-0.12	1			
(13)	Work requiring highest level knowledge	0.02	-0.05	-0.10	0.00	-0.05	-0.18	-0.14	0.02	0.37	0.13	-0.13	-0.21	1		
(14)	Year 2001	0.02	0.01	0.02	-0.01	-0.01	0.05	0.02	-0.01	-0.02	-0.01	-0.02	0.00	0.00	1	
(15)	Year 2002	0.01	0.01	0.01	0.01	0.00	0.02	-0.01	0.00	-0.02	0.00	0.01	0.01	0.00	-0.29	1
(16)	Year 2003	-0.01	0.03	-0.01	0.00	-0.01	-0.03	-0.01	0.00	0.02	0.00	0.01	-0.02	0.01	-0.27	-0.24
(17)	Year 2004	-0.02	0.03	-0.02	-0.01	0.00	-0.03	-0.01	0.01	0.03	0.01	0.02	-0.02	0.00	-0.26	-0.23
(18)	R&D intensity	0.05	-0.06	-0.07	-0.04	-0.03	-0.12	0.04	0.00	0.28	0.17	-0.05	-0.05	0.19	-0.02	-0.03
(19)	ln(# employees)	-0.09	-0.02	0.02	0.01	-0.02	0.00	-0.12	-0.03	-0.08	0.00	0.14	-0.04	-0.05	0.01	0.05
(20)	Sector A	0.04	0.01	0.01	-0.02	0.01	0.03	0.07	0.01	-0.01	-0.01	-0.03	0.06	-0.07	-0.02	-0.02
(21)	Sector B	0.05	-0.01	-0.02	-0.02	-0.01	-0.03	0.11	0.00	0.04	0.05	0.02	-0.02	0.00	0.01	-0.02
(22)	Sector C	0.07	0.02	0.01	-0.01	0.03	0.08	0.05	0.01	-0.02	-0.02	-0.09	0.04	-0.09	-0.01	-0.02
(23)	Sector D	0.03	0.08	0.12	0.02	0.02	0.05	-0.03	0.00	-0.04	-0.02	-0.08	0.01	-0.08	-0.02	0.08
(24)	Sector E	0.14	0.14	0.03	0.01	0.02	0.24	-0.02	0.00	-0.05	-0.03	-0.06	-0.05	0.00	0.07	0.04
(25)	Sector F	0.13	0.02	0.04	0.03	0.02	0.08	0.02	0.03	0.04	-0.02	-0.18	-0.03	0.03	0.07	-0.03
(26)	Sector G	0.06	0.01	-0.03	-0.04	-0.03	-0.05	0.04	-0.02	0.11	0.09	-0.06	-0.02	0.11	-0.01	-0.02
(27)	Sector H	0.03	-0.03	-0.01	-0.01	0.04	-0.02	-0.01	0.05	0.10	-0.01	-0.05	0.03	0.07	-0.01	-0.02
(28)	Sector I	-0.31	-0.15	-0.08	0.00	-0.06	-0.26	-0.18	-0.04	-0.03	0.01	0.36	-0.13	0.06	-0.06	0.00
(29)	Blau index (technology dispersion)	0.00	0.02	0.00	0.00	-0.02	-0.01	-0.06	0.01	-0.03	0.03	0.01	-0.07	0.07	0.02	0.00
(30)	Firm age	-0.18	-0.13	-0.06	-0.01	-0.03	-0.17	-0.06	-0.01	-0.02	0.02	0.16	-0.01	-0.01	-0.04	-0.05

		(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
(16)	Year 2003	1														
(17)	Year 2004	-0.22	1													
(18)	R&D intensity	0.01	0.03	1												
(19)	ln(# employees)	-0.03	-0.04	-0.30	1											
(20)	Sector A	-0.01	-0.02	-0.06	0.01	1										
(21)	Sector B	-0.02	-0.02	0.14	0.03	-0.02	1									
(22)	Sector C	0.01	0.01	0.00	-0.16	-0.03	-0.04	1								
(23)	Sector D	-0.02	-0.02	-0.11	0.10	-0.03	-0.03	-0.05	1							
(24)	Sector E	-0.06	-0.06	-0.13	0.10	-0.04	-0.05	-0.07	-0.06	1						
(25)	Sector F	-0.01	-0.01	0.09	-0.13	-0.04	-0.05	-0.08	-0.07	-0.10	1					
(26)	Sector G	0.01	-0.01	0.44	-0.16	-0.04	-0.04	-0.06	-0.06	-0.08	-0.09	1				
(27)	Sector H	-0.01	0.00	0.02	-0.12	-0.03	-0.03	-0.04	-0.04	-0.05	-0.06	-0.05	1			
(28)	Sector I	0.05	0.05	-0.10	0.31	-0.11	-0.13	-0.19	-0.18	-0.24	-0.27	-0.22	-0.15	1		
(29)	Blau index (technology dispersion)	0.01	-0.03	-0.10	0.31	0.00	0.08	-0.10	-0.01	0.14	0.07	-0.01	-0.05	0.07	1	
(30)	Firm age	0.02	0.03	-0.05	0.21	0.01	-0.13	0.01	-0.14	-0.24	-0.21	0.01	0.02	0.36	0.01	1

Table 3: Main results

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Control variables					
ln(previous annual wage-earnings)	0.287	0.287	0.289	0.288	0.288
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years of total working experience/10	0.155	0.154	0.162	0.152	0.138
	(0.208)	(0.215)	(0.208)	(0.238)	(0.305)
(Years of total working experience/10)^2	0.009	0.01	0.007	0.013	0.016
	(0.821)	(0.815)	(0.867)	(0.759)	(0.708)
Top management team (d)	-0.227	-0.227	-0.212	-0.23	-0.216
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Work requiring highest level knowledge (d)	0.018	0.018	0.019	0.018	0.019
	(0.542)	(0.538)	(0.540)	(0.567)	(0.530)
R&D intensity	0.581	0.581	0.57	0.579	0.575
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Blau index (technology dispersion)	0.154	0.154	0.171	0.151	0.169
	(0.005)	(0.004)	(0.010)	(0.008)	(0.008)
Firm age	-0.006	-0.006	-0.006	-0.007	-0.007
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Focal variables					
Advocacy group work experience (d)	0.107	0.117	0.232	-0.016	0.132
	(0.000)	(0.000)	(0.000)	(0.734)	(0.067)
Advocacy group work experience (d)		-0.06			-0.081
* R&D intensity		(0.734)			(0.633)
Advocacy group work experience (d)			-0.193		-0.175
* Blau index			(0.018)		(0.023)
Advocacy group work experience (d)				0.004	0.003
* firm age				(0.006)	(0.021)
Constant	8.618	8.619	8.586	8.619	8.608
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Test for sums of contingencies					
R&D intensity plus interaction		15.10			16.63
		(0.000)			(0.000)
Blau index plus interaction			0.20		0.02
			(0.654)		(0.896)
Firmage plus interaction				3.67	11.64
				(0.056)	(0.000)
Number of observations	10,303	10,303	10,303	10,303	10,303
Pseudo R^2	0.1439	0.1439	0.1442	0.1440	0.1445

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

APPENDICES

Appendix 1: Robustness check estimations

Table 4: Results of different CEM approaches

	Model (A1)	**Model (A2)**	**Model (A3)**
ln(previous annual income)	0.168	0.214	0.161
	(0.000)	(0.000)	(0.000)
Years of total working experience/10	0.300	0.317	0.353
	(0.000)	(0.000)	(0.000)
(Years of total working experience/10)^2	-0.027	-0.052	-0.032
	(0.000)	(0.029)	(0.065)
Female (d)	-0.140		-0.220
	(0.000)		(0.000)
Top management team (d)	0.100	0.021	0.016
	(0.000)	(0.672)	(0.631)
Work requiring highest level knowledge (d)	0.032	-0.097	-0.040
	(0.000)	(0.000)	(0.002)
ln(# employees)	0.101	0.167	
	(0.000)	(0.000)	
ln(# employees)^2	-0.006	-0.012	
	(0.000)	(0.000)	
R&D intensity	0.283	0.853	0.214
	(0.000)	(0.000)	(0.002)
Blau index (technology dispersion)	-0.054	-0.07	0.023
	(0.000)	(0.047)	(0.256)
Firm age	-0.004	-0.009	-0.007
	(0.000)	(0.000)	(0.000)
Advocacy group work experience (d)	-0.033	0.042	0.049
	(0.270)	(0.093)	(0.032)
Constant	9.946	9.186	10.241
	(0.000)	(0.000)	(0.000)
Converted effect of being hired from advocacy group	-0.032	0.043	0.051
	(0.262)	(0.100)	(0.037)
Tests for joint significance			
Years of total working experience	(0.000)	(0.000)	(0.000)
Occupation dummies	(0.000)	(0.000)	(0.000)
ln(# employees)	(0.000)	(0.000)	
Education dummies	(0.000)		
Year dummies	(0.000)		
Sector dummies	(0.000)		
Number of observations	446,384	89,137	205,952
Pseudo R^2	0.2131	0.1197	0.1373

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

Appendix 2: Calculation of marginal effects

The conditional mean function of our most general estimation model, the model with all interactions, is:

$$\hat{W}_i = E[\hat{W}_{it} \mid x_{it}] = \exp\left(\hat{\gamma} W_{it} + \hat{\alpha} D_i + \hat{\beta} D_i C_{1i} + \hat{\gamma} D_i C_{2i} + \hat{\delta} D_i C_{3i}\right) = \exp(...),$$

where $\hat{W}_i$ denotes the predicted annual earning of individual *i*. The term D_i is a dummy variable that is coded 1 if individual *i* has advocacy group work experience. The difference in predicted annual earning of individual *i* with rather than without advocacy group work experience is:

$$\Delta\hat{W}_i = \hat{W}_i[D=1] - \hat{W}_i[D=0] = \hat{W}_i[D=0]\left(\exp\left(\hat{\alpha} + \hat{\beta}\, C_{1i} + \hat{\gamma} C_{2i} + \hat{\delta} C_{3i}\right) - 1\right)$$

This translates into the following relative difference which we display in our body text:

$$\frac{\Delta\hat{W}_i}{\hat{W}_i[D=0]} = \exp\left(\hat{\alpha} + \hat{\beta}\, C_{1i} + \hat{\gamma} C_{2i} + \hat{\delta} C_{3i}\right) - 1.$$

The relative difference of joining from an advocacy group hence depends on the value of all three contingency variables. To facilitate interpretation, we set two contingency variables to their means and let the third one vary. For example, for the first contingency variable we get:

$$\frac{\Delta\hat{W}_i}{\hat{W}_i[D=0]} = \exp\left(\hat{\alpha} + \hat{\beta} C_{1i} + \hat{\gamma}\overline{C_2} + \hat{\delta}\overline{C_3}\right) - 1.$$

We calculate the corresponding standard errors using the "delta method" (Greene, 2003). Let θ denote a vector of parameters with $\theta = \left(\hat{\alpha}, \hat{\beta}, \hat{\gamma}, \hat{\delta}\right)$ and let Ψ denote the corresponding variance-covariance matrix. The variance of the relative marginal effect of skill group k is then given by:

$$V\left[\Delta\hat{W}_i\right] = C(\theta)'\psi\, C(\theta),$$

where $C(\theta)$ denotes the vector of partial derivatives of the relative marginal effect with respect to each element of θ:

$$C(\theta) = \begin{pmatrix} \frac{\partial \Delta \hat{W}_i}{\partial \hat{\alpha}} \\ \frac{\partial \Delta W_i}{\partial \hat{\beta}} \\ \frac{\partial \Delta W_i}{\partial \hat{\gamma}} \\ \frac{\partial \Delta W_i}{\partial \hat{\delta}} \end{pmatrix} = \begin{pmatrix} \exp\left(\hat{\alpha} + \hat{\beta} C_{1i} + \hat{\gamma} \overline{C_2} + \hat{\delta} \overline{C_3}\right) \\ C_{1i} \exp\left(\hat{\alpha} + \hat{\beta} C_{1i} + \hat{\gamma} \overline{C_2} + \hat{\delta} \overline{C_3}\right) \\ \overline{C_2} \exp\left(\hat{\alpha} + \hat{\beta} C_{1i} + \hat{\gamma} \overline{C_2} + \hat{\delta} \overline{C_3}\right) \\ \overline{C_3} \exp\left(\hat{\alpha} + \hat{\beta} C_{1i} + \hat{\gamma} \overline{C_2} + \hat{\delta} \overline{C_3}\right) \end{pmatrix}.$$

We proceed in the same way for the remaining two contingency variables. The marginal effect and the associated standard error for the simple specification that just includes a dummy variable for advocacy group work experience is calculate by setting $\hat{\beta}$, $\hat{\gamma}$ and $\hat{\delta}$ to 0.

Appendix 3: Marginal effects

Figure 1: Annual earnings difference conditional on R&D intensity

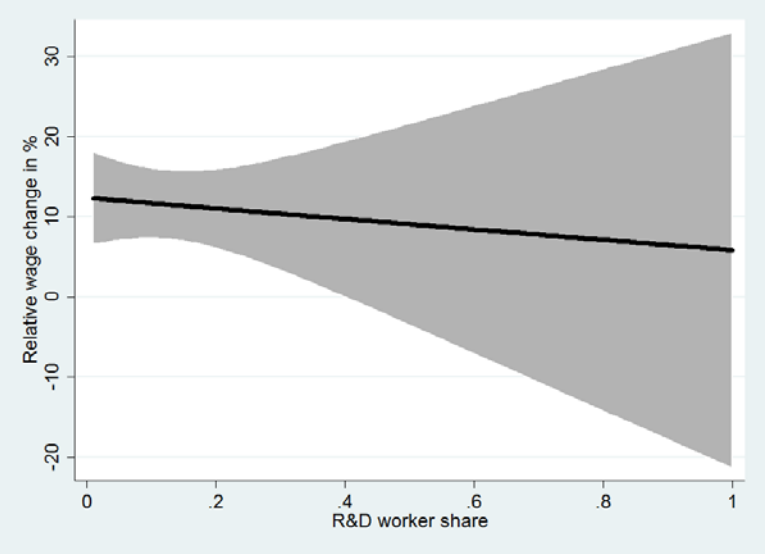

Figure 2: Annual earnings difference conditional on Blau index (technology dispersion)

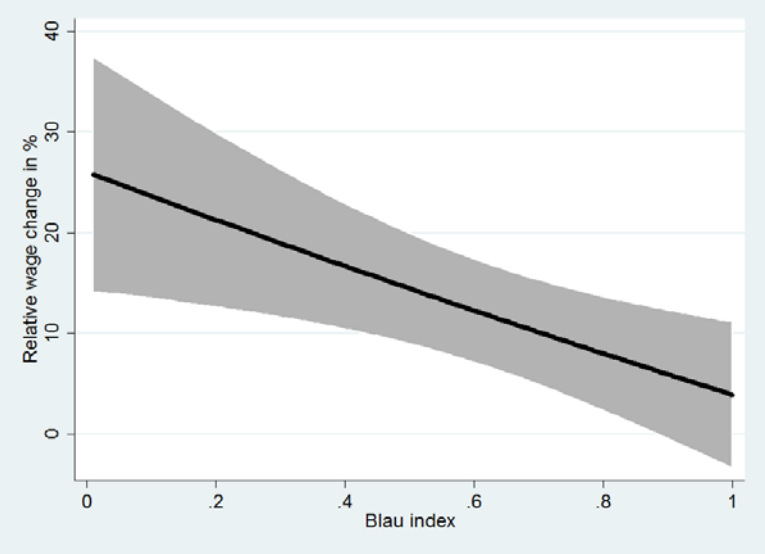

Figure 3: Annual earnings difference conditional on firm age