

# RARE WISDOM OR HOT AIR: DO CONSULTANTS MAKE GOOD MANAGERS?

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## ABSTRACT

This study explores whether firms benefit from hiring former consultants as managers, a phenomenon frequently observed among top managers across industries but hardly addressed in existing management theory. Despite anecdotal evidence about executives with consulting backgrounds in successful firms, concerns persist regarding the transferability of consultants' skills to specific firm contexts. Leveraging unique population-level data from 99,927 manufacturing and service firms in Sweden, we employ a multi-step empirical strategy to better understand the conditions and effects of hiring managers with consulting experience. Applying fixed effects regressions and a Heckman-type selection model with a dynamic panel estimator, our methodology allows for a comprehensive evaluation of the value of former consultants as managers. First, we analyze the hiring stage, revealing that former consultants are recruited to counter declining firm growth. Second, we explore whether former consultants drive changes within hiring firms and find that the number of reorganizations increases after hiring them. Finally, we assess whether such changes are valuable and find that reorganizations induced by the hiring of former consultants yield superior firm performance. Given that the same is not true for managers with traditional career backgrounds, our findings have important implications for theory linking managerial qualities to performance effects.

**Keywords:** management consultants; human capital; external hiring; reorganization; firm performance; microfoundations; strategic change

*Almost three years ago, I was searching for a new business director for professional services. That includes coding, organization, sales. We choose to hire [a former consultant]. He did not have sales experience or had never developed a line of code. But he convinced me that what he really does better than anybody else, is tie all of the elements together commercially.*

The CEO of a Danish software company that hired a former consultant as manager.<sup>1</sup>

*What [consultants] have in common is that, in addition to typically very good training in the consulting environment, they systematically learn the management tools...*

*Characteristics such as social conformity or empathy are often below average.*

Joe Kaeser, former CEO of Siemens, when asked about how consultants compare to other candidates for a management position.<sup>2</sup>

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<sup>1</sup> This quote is taken from explorative interviews with senior executives that we conducted in addition to our quantitative study.

<sup>2</sup> This quote has been translated from German into English and is taken from Merten et al. (2024).

## INTRODUCTION

Management consultancies have emerged as attractive recruiting pools for many successful firms. Top managers of a wide variety of firms and industries, including Morgan Stanley, Google, Facebook, or Tesla, have previously worked as consultants.<sup>3</sup> In Germany, Europe's largest economy, for instance, already one in five top executives across all DAX-listed companies has a background in consultancy (Kewes, 2024). Judging from these prominent examples can easily give the impression that consulting is the ideal training ground for acquiring crucial management skills (Merten, Beil, Kewes, & Mendelson, 2024). Then again, most managers obtain knowledge and skills in firms that will be immediately applicable for their employers, while consultancies are frequently criticized for promoting the latest management trends to generate billable hours, regardless of whether they effectively address the problems of their clients (Sorge & van Witteloostuijn, 2004). Hence, it remains unclear whether firms are better off when they hire consultants as managers.

Extant literature provides arguments both in favor of and against consultancies as workplaces in which individuals develop human capital that is valuable outside of the consultancy context. On the one hand, working as a consultant exposes individuals to a diverse range of clients and their business challenges, allowing them to accumulate broad, relevant knowledge (Canato & Giangreco, 2011) that is rarely publicly available (Glückler & Armbrüster, 2003), and establish extensive professional networks (Cross & Cummings, 2004). Further, these individuals demonstrate that they are willing to work long hours (Blagoev & Schreyögg, 2019) and acquire professional skills for managing complex problems with various stakeholders (Robertson, Scarbrough, & Swan, 2003). On the other hand, these analytical skills might be

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<sup>3</sup> <https://www.theatlantic.com/ideas/archive/2020/02/how-mckinsey-destroyed-middle-class/605878/>; <https://www.mckinsey.com/alumni/news-and-insights/global-news/alumni-news/fast-company-fortune-under-40-2021>; Accessed: 18 December 2024

overrated and merely legitimize often unpopular strategies that the client has already decided to take (Fincham, Mohe, & Seidl, 2013). There is a risk that consultants prioritize sales opportunities through new projects over effective solutions (Sorge & van Witteloostuijn, 2004) and keep progress opaque (Gable, 1996). While consultants gain broad knowledge, they often lack in-depth firm experiences that extant theory considers as foundational for firm success after hiring managers externally (Shen & Cannella Jr, 2002). Consequently, the overarching question remains: Do managers with work experience as consultants genuinely create value for firms hiring them, or are the aforementioned high-profile examples biased or at least not representative of the average firm?

Clarifying this question is important for firms which could target consultancies as a promising hiring pool and a discernable quality characteristic on labor markets, or as a misguided attempt to recruit managers who excelled in the consultancy environment but cannot transfer their strengths to other firms. From a theoretical perspective, studying the hiring of former consultants as managers and their performance effects is important because extant research has mostly compared external hires with internal promotions (Bidwell, 2011; Bidwell & Keller, 2014; DeOrtentiis, Ployhart, Van Iddekinge, & Heetderks, 2018). Within this stream of research external hires are disadvantaged because they need to adjust or create human and social capital so that the hiring firm can integrate and utilize them (Raffiee & Byun, 2020). Then again, the heterogeneity among external hires for going through these adjustments is not well understood. Consulting experience might be one of the rare career experiences in which individuals learn to understand the organizational context of their varying client firms quickly and establish social relationships or communication channels. Hence, this repeated experience

might put former consultants in a position to become more quickly productive for their new employers than the average externally hired manager can.

In this study, we approach the issue of whether former consultants create value as managers for firms that hire them as an empirical question. We structure the analysis into three steps that allow isolating individual instances of potential value creation. First, we investigate the hiring stage and probe whether high-growth or low-growth firms are more likely to hire consultants as managers. This exploration helps to ascertain if consultants are hired to correct declining growth trajectories or to respond to business needs arising from strong growth. Second, we explore whether former consultants are more likely to instigate changes within the firms that have hired them, which we capture by the reorganizations of the firm's plants<sup>4</sup>. Finally, we investigate whether these reorganizations result in superior firm performance. Taken together, we discern under what conditions former consultants are hired and whether the consultant human capital results in promising changes in their hiring firm or remain ineffective because of a lack of traditional firm experience.

To execute this empirical strategy, we leverage a unique data opportunity using population level data of firms and employees in Sweden. We rely on longitudinal population employer-employee data for 99,927 manufacturing and service firms that had, at least once in the observation period, more than five employees in Sweden observed between 2007 and 2015. This dataset allows us to observe the work experience of consultants, their career trajectory towards becoming managers in other firms as well as plant reorganizations in the hiring firm and their performance effects.

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<sup>4</sup> We use the term "plant" in a broader sense referring to any physical location where the firm engages in the production of goods or services, including any fixed asset or property owned by the firm, such as office buildings, warehouses, and other facilities necessary for the company's operations.

Our estimation approach reflects the multi-stage nature of the empirical strategy. To analyze the question of how the direction of firm growth affects the hiring of consultants, we estimate fixed effects regressions. For the effects on reorganization and performance, we address endogeneity concerns resulting from the initial selection of hiring managers by relying on the combination of a Heckman-type selection model and a dynamic panel estimator. This empirical design allows us to assess the value that former consultants create for firms hiring them as managers reliably. Subsequently, we use these empirical findings and relate them back to existing theory linking managerial qualities for reconfiguring firm resources and their performance effects.

## **THE VALUE OF CONSULTANCY WORK EXPERIENCE OF MANAGERS**

### **External Hiring of Managers and the Dilemma of Firm-specific Human Capital**

The recruitment of former consultants as managers falls into a broader stream of research that has dealt with the external hiring of managers per se (Bidwell, 2011). While many firms hire managers from other firms or even other sectors to bring in new knowledge and skills, the findings for the effects on hiring firms are mixed. On a generic level, hiring from other firms can be an effective way to bring new knowledge and network connections to a firm (Agrawal, Cockburn, & McHale, 2006; Jain, 2015). However, there are also countervailing factors resulting from the fact that external recruits lack human capital that is specific to the hiring firm (Coff, 1997). Managers acquire human capital in an external firm context, for example, by gaining experience in tandem with particular colleagues (Huckman & Pisano, 2006), and develop an understanding of appropriate, professional behavior (Dokko, Wilk, & Rothbard, 2009). When these managers are hired by another firm, only parts of their existing human capital can be usefully transferred to the specific context of the new employer or it takes time to build up new

human capital that is specific and valuable for the new employer (Bidwell, 2011). It is therefore not a priori clear whether the external hiring of managers is an overall beneficial firm strategy.

### **The Distinct Nature of Consultant Human Capital**

An important dimension determining the degree to which external hires can create value for hiring firms is the type of organization for which they have worked before. Some workplaces are so distinct that they convey a type of human capital that will be both valuable for the hiring firms but hard to acquire through alternative means such as education or training. While prior research has for example isolated the reputational benefits of prior work experience at leading investment banks (Bidwell, Won, Barbulescu, & Mollick, 2015), entrepreneurial skills of former startup owners (Campbell, Ganco, Franco, & Agarwal, 2012; Distel, Sofka, de Faria, Preto, & Ribeiro, 2022) or the understanding for societal concerns by former employees of advocacy groups (Grimpe, Kaiser, & Sofka, 2019), the value of managers with work experience at consultancies remains largely unexplored. This is surprising given the active recruitment of consultancies and the fact that the majority of consultants do not remain in the profession for their entire career but become managers in other sectors (Miner, 1973; Kewes, 2024). Beyond the practical importance of hiring former consultants as an empirical phenomenon, understanding the value of consultancy work experience is also theoretically intriguing because consultancies constitute a unique work environment that enables their employees to obtain a variety of knowledge and professional skills that are hard to acquire in other contexts. At the same time, the consultancy context might also be quite atypical in that consultant human capital cannot be easily applied in other sectors. Hence, it is useful to delineate the distinct nature of consultancies as workplaces.

Within the broader conceptualization of general versus firm-specific human capital (Becker, 1962), consultancy experience has distinct characteristics that combine both elements. Fincham et al. (2013, p. 6) define management consultancies as “including any activity that has as its

apparent justification in the provision of some kind of support in identifying or dealing with management problems, provided by individuals, groups, or organizations that are external to the particular management domain and which are contracted by the management on a temporary basis.” Given these characteristics, consultancies are highly knowledge-intensive work environments in which professional knowledge needs to be consistently mobilized and synthesized for addressing changing client problems (Robertson et al., 2003). They stand apart from other work environments based on (a) the type of client projects that they are concerned with and (b) the way in which they approach these projects.

Given this definition, consultant human capital has characteristics of general human capital that is valuable to many firms. Consultancies serve varying clients with a diverse set of project needs and these projects change frequently. Clients typically turn to consultants because they require conceptual and sometimes merely symbolic support for complex problems requiring change (Sorge & van Witteloostuijn, 2004). Consultants can provide interpretative schemes to the challenges of client firms based on their pooled knowledge from serving multiple clients (March, 1991). By doing so, consultants typically acquire confidential information from client firms for performing their tasks (Glückler & Armbrüster, 2003). While they cannot exploit confidential information directly, it provides them with rich access to information, encompassing comprehensive and tacit insights about potentials or challenges. Hence, consultants are uniquely positioned to build up repositories of relevant knowledge for diagnosing the need for change in organizations and drawing from sets of solutions across firms or even industries (Canato & Giangreco, 2011).

Apart from the immediate knowledge acquisition, consultants can draw from a broad professional network for advice from former client firms (Cross & Cummings, 2004). This

network can even constitute a precursor to employment opportunities outside of consulting, as consultants may be familiar with the resource environment of their former clients and former clients can judge their human capital based on prior interactions. In essence, consultants obtain unusually broad knowledge about diverse sets of business problems, but they do not develop traditional career experiences within a single firm. In this regard, consultant human capital might not be firm-specific but valuable because of the industry expertise that consultants develop by focusing on certain sectors. Such industry-specific human capital encompasses an understanding of dominant technologies or value chain configurations that vary across sectors (Mayer, Somaya, & Williamson, 2012; Chuang & Lee, 2004). In this regard, the specific value of consultant human capital is likely to extend to the industry dimension.

Then again, in terms of work approaches, consultants develop distinct skills that reflect the nature of their projects. Consultants typically face complex client problems for which the clients lack sufficient competencies (Sorge & van Witteloostuijn, 2004). Often times, the goals of clients remain ambiguous and progress of consultancy projects is difficult to assess (Gable, 1996). Given such uncertain project conditions (Fincham et al., 2013), consultants learn to structure projects and involve stakeholders selectively. Further, consultancies are important drivers for the dissemination of new analytical tools and approaches as part of acquiring new projects (Canato & Giangreco, 2011). While experience with such novel tools can be valuable, consultancies have been frequently criticized for fueling fads and fashions without significant merits for client firms (Sorge & van Witteloostuijn, 2004). Finally, consultancy work is typically associated with extreme work hours following client requests which is related to substantial personnel turnover rates (Blagoev & Schreyögg, 2019). Such distinct experiences of former

consultants are likely to create consultancy-specific human capital that is not necessarily useful to any particular firm, i.e. is not firm-specific for a hiring firm.

In summary, consultancy employees are uniquely positioned to acquire skills for project, stakeholder, and time management, with the added attribute of credibly signaling to commit substantial amounts of time into work. These skills and attributes are valuable to most firms hiring consultants as managers. However, these skills are designed to be general, industry- or even just consultancy-specific, making them less transferable between consulting clients, often lacking taking responsibility for the implementation of strategy recommendations in a specific firm. Hence, it remains unclear to what degree consultant skills would need refinement to become effective in the specific context of a hiring firm.

### **The Research Questions**

We approach the question of whether hiring former consultants as managers creates distinct value for a firm as an unresolved issue that benefits from an empirical analysis. We delineate three aspects of value from hiring former consultants and structure the analysis into three interconnected sub-questions. The first sub-question revolves around the self-selection of firms into hiring former consultants. The decision to hire a consultant as a manager is typically a deliberate choice driven by strategic intent, rather than a random event. Our first question therefore seeks to enhance our understanding of the conditions under which such decisions occur. The second and third sub-questions concern the effects of hiring former consultants on the firm. The second sub-question explores the specific activities that consultants usually engage in, while the third sub-question examines the impact of these activities on firm performance. More specifically, we propose an integrated empirical strategy with the following three logically connected steps, each addressing the sub-questions as follows:

1. *Hiring – When do firms hire former consultants?* We start by analyzing firm heterogeneity in the decision to hire former consultants as managers. In this regard, we focus especially on the growth trajectory of firms. This allows us to disentangle whether hiring consultants is largely the response of firms with low growth rates requiring proven skills for evaluating and changing businesses or whether high growth firms hire former consultants as a response to rapidly increasing needs for management roles.
2. *Reorganization – How does the hiring of former consultants affect firms' reorganization?* Given that consultants' work experience usually involves analyzing problems and suggesting changes (Sorge & van Witteloostuijn, 2004), they may have distinct experiences with initiating productive changes in the firms that hire them. Naturally, these changes could come in various forms. We focus on a type of change that we can reliably observe in our data and that have meaningful consequence for firm performance. Hence, we will focus on the rate of reorganization in the firm's plants as an observable representation of changes in a firm's resources in line with prior research (Karim, 2009; Karim & Capron, 2016). Reorganizations of a firm's plant portfolio are costly, occur less frequently, and may have both higher upside and downside potential for firm growth (cf. Lieberman, Lee, & Folta, 2017). Hence, they are a suitable construct for capturing change in firms.
3. *Performance – How do reorganizations induced by the hiring of former consultants affect firm performance?* Finally, we explore whether firms hiring former consultants as managers will not just experience more frequent reorganizations but whether these reorganizations improve the firm's performance. On the one hand, consultants may bring new knowledge and skills to the firm that enables more productive reorganizations. On

the other hand, former consultants may lack a precise understanding of the firm's specific resources, and any changes may be ineffective. Operationally, we will capture performance as changes in labor productivity which can be reliably tracked across firms and industries (e.g., Distel et al., 2022).

## **DATA AND METHODS**

### **Data**

We benefit from the unique opportunity to study the population of firms in Sweden. Sweden is a particularly fitting empirical setting since the total share of the Swedish work force employed in the consultancy industry, has grown from around 3 percent to more than 6 percent over the last four decades (Giertz, 2011). The management consulting sector in Sweden is dominated by larger international consultancy companies (Giertz, Hjorth, Lindhagen, Engwall, & Gens, 2016). Besides, Sweden provides excellent data opportunities for tracking work experience, hiring, reorganizations, and performance outcomes over time. Our dataset is based on a linked employer-employee dataset on the population of Swedish firms from 2007 to 2015. The data is regularly collected for research purposes by Sweden's statistical office, Statistics Sweden (SCB). SCB provides various types of firm and individual-level information in separated databases, which can be flexibly merged through the use of common firm and individual identifiers.

In this study, we make use of the business statistics database (FEK) and the business group register from which we take firm-level as well as sector-level variables. Moreover, we use the integrated longitudinal database for health insurance and labor market studies (LISA) providing detailed information on each firm's employees including the individual level mobility patterns, educational backgrounds, and occupations both in focal firms and former employers. We restrict the sample to firms that had more than five employees at least once during the observation period. By this restriction, we exclude structural micro firms, particularly a large number of pure

sideline businesses. Furthermore, we focus on non-consultant firms and thereby restrict the sample to firms not belonging to the industry classification code SNI/NACE 70.2 and we exclude agriculture and mining firms as well as public sector firms. In summary, we retain firms from SNI/NACE-sectors 10 to 84 (with the exception of 70.2). Our estimation sample effectively covers the period from 2010 to 2015, while the base period from 2007 to 2009 is needed to construct the consultancy experience variable for the first sample year (see details below). In total, we follow 99,927 firms during 2010-2015, which provides us with 440,223 firm-year observations.

### **Dependent Variables**

Following our empirical strategy, we use different dependent variables for each step of the analysis: For the initial step ('Hiring'), we employ the hiring of consultants, for the second step ('Reorganization') the number of plant reorganizations, and for final step ('Performance') the productivity growth.

*Relative consultant hiring.* We define our measure of hiring of consultants as the hiring of consultants as managers relative to the hiring of non-consultants as managers. This variable can therefore be understood as a hiring composition variable. The reason for not choosing levels in this step is that declining growth rates may imply lower recruitment generally. What is interesting for us is however not the absolute level but whether consultant hiring becomes relatively more prevalent.

*Number of reorganizations.* The Swedish business group register provides information on both the plant and the firm-level. The two levels of observation can be linked and provide information about which plants belong to a firm. We adapt Karim's (2009) approach to define a measure of reorganizations by counting the number of changes in the set of plants,  $P$ , that occur from one year to the next. In our context, reorganizations are captured by tracking the addition or

closure of plants, which reflect significant decisions made by firms. Each time a plant is opened or closed, it is counted as one reorganization event. For example, if a firm closes one plant and opens another one within the same year, we count two reorganization events (one for the closure and one for the opening). If multiple plants are opened or closed, each change is treated as an individual reorganization event, ensuring that our measure accurately reflects the scope of restructuring within the firm. Focusing on reorganizations of the plant portfolio of firms has the advantage that plant closures or openings are costly and carefully considered. Any plant reorganization is therefore unlikely to be spurious. What is more, changes to a firm's plant portfolio can be consistently measured across firms and sectors. Mathematically, we compute the number of reorganizations as the number of unique plants in the union set (i.e. the number of plants that are either in  $P_{it-1}$  or  $P_{it}$  or in both), minus the number of plants in the intersection set (i.e. the number of plants that appear in both sets  $P_{it-1}$  and  $P_{it}$ ):

$$\# \text{reorganizations}_{it} = |P_{it-1} \cup P_{it}| - |P_{it-1} \cap P_{it}| \quad (1)$$

*Productivity growth.* We use productivity growth as our key performance measure calculated as the percentage change in labor productivity from one year to the next. Labor productivity is usually defined as the monetarized output relative to labor input. To measure monetarized output, we resort to value added which is calculated as the difference between a firm's turnover and its costs of inputs and production factors. We use the number of employees as our measure of labor input. Labor productivity measures of firm performance have the advantage that they are available for a representative number of firms including private ones. This makes it unlikely that selection biases occur based on a narrow focus on publicly traded firms with publication requirements. Besides, labor productivity measures of firm performance are unlikely to suffer from measurement biases originating from depreciation or accounting

regulations, which can favor certain firms or industries. Changes in labor productivity are therefore suitable performance measures for testing how effective firms deploy their resources (e.g., Distel et al., 2022). Based on this, we define productivity growth as follows:

$$Productivity\ growth_{it} = \log\left(\frac{Value\ added_{it}}{Employees_{it}} / \frac{Value\ added_{it-1}}{Employees_{it-1}}\right) \quad (2)$$

### **Independent Variables**

*Declining firm growth.* We define declining firm growth by a dummy indicating whether firm growth today was lower than two years ago. The two-year time span represents a meaningful duration during which firms can separate seasonal changes from more substantial growth deficits that require action. This variable is our key independent variable in explaining firm heterogeneity in the decision to hire former consultants as managers. It is kept as a control in all other regressions.

*Number of former Consultants hired as managers in t-1.* The central independent variable for testing the second ('Reorganization') and third step ('Performance') of our empirical strategy is the number of managers hired by a focal firm with work experience as consultants. We identify consultants as individuals who are employed by a business consultancy following SNI 2007 building on NACE rev. 2.1. Business consultancies are all firms belonging to the classification 70.2 and primarily provide support to management problems, in line with the definition of management consultancies (Fincham et al., 2013). Thus, a hired consultant is any employee, who has been working in a consultancy directly prior to recruitment. To allow for periods of job search, we consider prior consultancy experience as relevant only if it was accumulated not more than three years before the job switch. Longer gaps could make it difficult to attribute human capital to the distinct consulting experience. We consider different thresholds for the lengths of the consulting experience but conclude that a conservative approach is to

include all former consultants. By that standard we do not have to make strong assumptions at which point in a consultant career valuable human capital is created. By including also potentially short consultant career spells, we induce a downward bias in our findings because it lowers the odds of finding significant results.

Moreover, we restrict the group of hired consultants to those individuals who had an occupation as professional or manager in the consultancy and are recruited into a managerial occupation at the hiring firm. This ensures we exclude cases where firms hired individuals in supportive roles (e.g., interns) from consultancies into non-managerial positions. Using the industry classification also implies that we have a conservative definition of consulting experience since it excludes in-house consultants, which are likely to appear in the control group and induce a downward bias to our estimations. We use the total number of former consultants hired as managers in this step of the analysis instead of the share and include the number of non-consultants hired as managers as a control variable (details below). By doing so, we obtain coefficients for both types of newly hired managers which can be compared and interpreted.

### **Control Variables**

We also control for a variety of additional firm and industry factors likely to influence the hiring decisions and performance of firms. We operationalize our control variables following the study by Distel et al. (2022) but make adjustment when appropriate based on our different research question and empirical setting. We include the *Number of non-consultants hired as managers in t-1* as a control variable, since we want to distinguish the effect of hiring former consultants as managers from the general effect of hiring new managers. This variable is defined the same way as “Number of hired former consultants in t-1”, but instead counts the number of managers who were not hired directly from a consultancy.

Next, we control for several firm-level characteristics that are likely to influence hiring practices, reorganizations as well as firm performance. To account for firm size, we include the *Number of employees* and *Number of plants* of the firm. We control for the relative amount of existing employees with a managerial function by adding the *Share of existing managers*, as firms differ in organizational conditions affecting the hiring potentials for new managers. We determine managers based on the two-digit occupational codes of SSYK2012 in the International Classification of Occupations 2008 (ISCO-08). To account for the knowledge intensity of firms, we include the *Share of employees with tertiary education* as well as dummy variables for the *educational fields of employees*. The definitions of tertiary-level education and educational fields are based on the International Standard Classification of Education 97 (ISCED97). Furthermore, we control for a host of firm-level characteristics that are likely to affect firm performance. This includes the ratio of new hires to all employees of the firm (*Hiring ratio*) to capture overarching hiring trends, the ratio of the value of machinery and equipment per employee to capture the capital intensity of the firm (*Capital intensity*), and the ratio of investments to turnover (*Investment ratio*) to account for changes in firm investments.

In addition to firm-level controls, we include variables to capture heterogeneity at the level of competition and dynamics of the firms' industry. We insert the *Herfindahl-Hirschman index (HHI)* measuring the geographical concentration of the firms, as well as the *entry* and *exit rates* of plants in each industry. To measure the extent to which a firms' environment is unpredictable and volatile, we follow prior literature (Dess & Beard, 1984; Sutcliffe, 1994) and include a measure of *environmental dynamism*. We measure industry dynamism by regressing turnover for each industry on a time trend, dividing the standard errors of the regression by the mean level of the dependent variable. We control for the *munificence of the industry* by dividing the rate of

turnover growth (i.e., the regression coefficient of a time trend on the yearly turnover for each industry) by the mean value of industry turnover. Moreover, we insert dummy variables for the different *years* and SNI/NACE two-digit *industry sectors*. Finally, specific to the regressions relating to our first step ('Hiring'), we include the wage-variable *relative wage consultant managers* as a major influence factor of relative labor demand for consultants. Specifically, we calculate average wages of consultant managers relative to wages of non-consultant managers in the same SNI/NACE2-sector and year.

### Estimation Approach

The regressions relating to the hiring decision reflect standard relative labor demand equations, which include besides relative wages and additional controls also the variable indicating declining growth:

$$\log(\text{Relative consultant hiring}_{it}) = \zeta_1 \text{declining firm growth}_{it} + \lambda_1 \text{relative wage consultant managers}_{it} + x_{it}\beta_1 + c_{1i} + \varepsilon_{1it} \quad (3)$$

where  $x_{it}$  is a set of control variables  $\varepsilon_{1it}$  is an idiosyncratic purely random error terms and  $c_{1i}$  is firm-specific effect.

As for the second and third stage of our empirical strategy, we want to disentangle two interconnected outcomes, i.e., the scope of reorganizations and their performance effects. Hence, we estimate a triangular two-equation model, in which the first equation predicts the number of reorganizations, which is explained by the number of hired consultants as managers. In the second equation, we use productivity growth as a measure of firm performance, which is explained by both the number of hired consultants as managers and the number of reorganizations. The basic model structure for our estimation model looks as follows:

$$\#reorganizations_{it} = \delta_1 \#hired\ consultants_{it-1} + x_{it}\beta_2 + c_{2it} + \varepsilon_{2it}$$

$$Productivity\ growth_{it} = \delta_2 \#hired\ consultants_{it-1} + \delta_3 \#reorganizations_{it} + x_{it}\beta_3 + c_{3it} + \varepsilon_{3it} \quad (4a, b)$$

where  $x_{it}$  is a set of control variables common among both regressions.  $\varepsilon_{2it}$  and  $\varepsilon_{3it}$  are idiosyncratic purely random error terms and  $c_{2it}$  and  $c_{3it}$  are firm-specific effects, which we allow to be correlated with the other explaining variables and may or may not vary over time. Allowing the firm-specific effects to vary over time (unlike the assumption in Eq. (3)) results from concerns about the simultaneity and the selection into hiring, potentially dependent on reorganizations and productivity. Moreover,  $\delta_1$ ,  $\delta_2$ ,  $\delta_3$ ,  $\beta_1$ , and  $\beta_2$  represent model coefficients, which are estimated from the data. The main interest lies in the coefficients  $\delta_1$  (step ‘Reorganization’) and the interaction  $\delta_3$  (the effect of number of changes in the plants on productivity growth). It is crucial to note that  $\delta_3$  does not fully reflect the third step of our analysis (‘Performance’), which additionally requires that the number of reorganizations is attributable to having hired consultants. An appropriate statistic for this can be found by exploiting the triangular structure of the Eqs. (4a, b). In specific, the compound effect  $\delta_1 \cdot \delta_3$  and can be interpreted as that part of the effect of the number of reorganizations that is due to having hired consultants (Castellani, Montresor, Schubert, & Vezzani, 2017, Schubert & Tavassoli, 2020).

Apart from identifying the causal parameters, the triangular structure of Eqs. (4a, b) allows for a differentiation into direct and indirect effects via reorganizations, where the total marginal effect of hiring consultant managers is the sum of the direct and the indirect effect. The direct effects of hiring former consultants as managers are in each regression represented by the coefficient estimates of that variable. More specifically, the direct effect of hiring former consultants as managers on productivity growth is  $\delta_2$ , while the direct effect on the number of

reorganizations is  $\delta_1$ . Using this definition, it becomes obvious that the test statistic  $\delta_1 \cdot \delta_3$  for reorganizations is in fact the only indirect effect defined by the model.

### **Data Analysis Process and Descriptives on Consultants**

We explore the phenomenon of hiring former consultants as managers by going through a three-stage process. Our first stage is the pinpoint of the empirical phenomenon. For this purpose, we move from the illustrating examples in the introduction to a systematic approach of identifying management consultants in the data. For this purpose, we combine fine grained industry and occupational data to identify consultants. An important part of this step is to separate temporary consultant experiences, for example, as interns, from those who had managerial responsibilities.

In the second stage of the data process, we identify the career choices of consultants with a primary focus on isolating instances in which they are being hired by other firms, i.e., the defining unit of analysis of our study. Doing so, allows us to make descriptive comparisons and employ t-test statistics to assess the significance of differences between consultants making the career move to become managers elsewhere ("leavers") and the ones who remain in consultancies ("stayers").<sup>5</sup> Among other observations, our analysis reveals that leavers are more often in advanced stages of their consulting careers, as indicated by their relative higher proportions in functional manager (68%) and top manager positions (2%), while stayers are more likely to hold professional roles (78%, likely representing more junior consultants). Social sciences including economics and law is the most common educational background among all consultants, with a higher proportion among leavers (50%) compared to stayers (46%). This suggests that leavers may seek new leadership opportunities outside consulting, where they can leverage both their senior consulting experience and educational background. In terms of salary

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<sup>5</sup> The full table with detailed descriptive statistics on general demographics, occupational positions, and educational experiences, along with t-test results comparing stayers and leavers, is available from the authors upon request.

changes, 66% of leavers see an increase when transitioning from consultancy to a hiring firm, while 44% experience a salary decrease. Moreover, leavers tend to be more frequently married and have more children than stayers, suggesting they may prioritize greater stability outside the consultancy environment, with some accepting a pay cut in exchange for that stability. Overall, these descriptives suggest that not all consultants are homogenous in terms of their profiles.

Subsequently, we focus on the hiring firms and compare their decisions, especially with regards to reorganizations after consultants have been hired as managers. This made it necessary to explore suitable instances that link with prior research on reorganizations and can be reliably tracked in the data. Again, we explore descriptively whether these changes exist compared with firms making alternative hiring decisions.

In the third stage of the process, we determine empirical models that allow us to rule out alternative explanations and isolate the effect of the specific hiring decisions. For this purpose, we explore the prior literature for useful control variables as well as opportunities for identification. The latter is important for the estimation strategy which is outlined in detail in Appendix A. In general terms, we account for non-constant heterogeneity by explicitly modeling the recruitment event. We opt for a Heckman-type approach for addressing the issue by controlling for selection bias through the Inverse Mills Ratio which allows for the fact that the groups of recruiting and non-recruiting firms could be quite different. The probit model to compute the Inverse-Mill-Ratio includes all control variables and an exclusion restriction. For the latter, we calculate the share of consultants that switches jobs between consultancies in the focal firm's region. This variable is particularly suitable as an exclusion restriction since it is likely to affect the availability of consultants in the local labor market based on their willingness

to leave their current employer but unlikely to affect firm-level outcomes (reorganization or performance) of firms in other sectors since consultants move to other consultancies.

Additionally, we resort to covariance restrictions implied by dynamic panel data estimators (e.g., Arellano & Bond, 1991; Arellano & Bover, 1995). Specifically, we implement an Arellano-Bover-type of dynamic panel data model which utilizes orthogonality-conditions resulting from testable restrictions on the covariance structure. Moreover, we follow the recommendation of Roodman (2009) and collapse the number of instruments to guarantee a sufficiently high power of the overidentification tests.

## RESULTS

Table 1 presents basic descriptive statistics for the variables used throughout this study. The average productivity growth in the sample is 4 percentage points. On average, the firms in the sample have 0.07 reorganizations. The number of hired consultants as managers is low but has a maximum of 13, implying that few firms hire consultants but some hire many at the same time. Then again, 2,910 firms hire a former consultant as a manager over our studied period which makes it a salient hiring pool for many firms. As a point of comparison, the average firm hires 0.14 non-consultant managers per year. We inspect the data for indications whether firms hire consultants repeatedly for benefitting from an “academy” type pipeline effect (Brymer, Paraskevas, Josefy, & Ellram, 2024). The population data for Sweden does not provide indications for such effects. 95% of all hiring firms hire a manager with consultancy experience only once during the observation period.

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Insert Table 1 about here  
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Table 2 presents the correlation matrix. The correlations are typically significant but low between most variables. This holds except for size-dependent variables such as number of

employees and number of plants. In addition, the number of plants and the number of reorganizations is more strongly correlated. We keep the number of plants in the model, since it is an important control variable but conduct consistency checks with alternative model specifications and find no confounding effects. Besides, the correlations between the number of reorganizations and the number of hired consultants as well as the number of hired non-consultants in management are relatively large and positive. This provides a first indication for the relationships but also implies that more sophisticated estimation approaches are required for eliminating potential biases. Before going through the three steps of the analysis, we derive the Inverse-Mills-Ratio from the probit model to address a possible selection bias. The results of this model are reported in Appendix B (see Table B1) and show that the exclusion restriction is valid.

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Insert Table 2 about here  
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### **Firm Growth and the Hiring of Managers with Consultant Experience**

Table 3 shows the results for the first empirical step explaining the hiring of consultants as managers. In column 1, we find that firms experiencing declining growth substantially increase their relative demand for managers with consulting experience ( $b = 0.014$ ,  $p < 0.001$ ). Because the dependent relative demand variable is expressed in logs, this can be interpreted as an elasticity, where the fact of experiencing a decline in growth leads to a 1.4% increase in the ratio of hired consultants to non-consultants. The effects remain very robust when we include the first lag ( $t-1$ ) of the declining growth variable in the second column instead or when we include both the non-lagged and lagged variables in the third column. It is also interesting to note that the relative demand equation has the expected negative sign for the relative wage variable.

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Insert Table 3 about here  
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Although the declining growth dummy demonstrates high statistical significance, with t-statistics exceeding 20 in columns 1 and 3 of Table 3, the relatively low R-squared statistics indicate that the model's overall predictive power is limited. This limitation arises primarily from the fact that former consultant recruitment is a relatively rare event. The majority of firms never recruit former consultants, and even among those that do, 95% hire former consultants only once. This finding warrants some caution in interpretation. While the results provide strong evidence that declining growth is an important driver of hiring former consultants as managers, the actual occurrence of such hiring in any specific firm may depend on additional factors that we cannot observe, such as idiosyncratic and coincidental circumstances.

In an additional test, we further examine the effects of declining growth and create a dummy variable indicating whether growth is below the average of the respective SNI/NACE2 industry sector. This variable specification takes into account that firms might consider industry trends when assessing firm-specific growth rates. The estimation results are very similar, indicating a highly significant positive effect on the relative demand for consultants (tables are available from the authors upon request).

Overall, we see the empirical findings of this step of the analysis most immediately reflected in the Penrosean view which links firm growth to the availability of particular types of managers (Foss, Klein, Kor, & Mahoney, 2008). The Penrose effect or Penrose theorem (Kor, Mahoney, Siemsen, & Tan, 2016) implies that previously growing firms enter longer periods of low or no growth when firms reach the limits of their managerial capacity to envision new growth opportunities for the firm's resources (Tan & Mahoney, 2005). Hence, the demand for managers with such abilities becomes salient during low growth periods. In line with Penrose's (1959) view, managers create growth opportunities for their firms when they have (a) tacit knowledge of

the firm's resources and (b) skills to envision and implement productive changes to its resource base (Kor, Mahoney, & Michael, 2007; Tan, Su, Mahoney, & Kor, 2020; Foss et al., 2008). To broaden and effectively exploit this opportunity set, managerial skills such as creativity to imagine alternative resource configurations and uses as well as the ingenuity to mobilize the necessary funds to implement them are needed (Tan et al., 2020; Foss et al., 2008; Penrose, 1959). Firms can reach the limits of promising resource configurations that the existing managers can imagine (Chen, Kang, & Butler, 2018) and the constraint on the capacity of managers with firm-specific knowledge of resources limits firms' capacities for continuous growth (Kor et al., 2016). Thus, to stimulate further growth, a firm would need to recruit new managers who, in Penrose's view, however, cannot immediately increase this management capacity, since they would first need to develop firm-specific knowledge and skills to recognize new productive opportunities for the firm (Tan & Mahoney, 2005; Kor & Mahoney, 2000).

Our results indicate that during such low growth periods, the human capital of consultants might become especially attractive to firms. They may not possess firm-specific knowledge about the firm's resources yet, but the analytical skills acquired as consultants while dealing with multiple clients makes it more likely that they will learn and understand the hiring firm's resources quickly. Further, their exposure to various client firms increases the odds that they possess knowledge about resource reconfigurations that are likely to result in new growth opportunities. Hiring firms can treat these attributes of consultancies as reliable labor market signals for individuals who are comparatively more likely to turn into managers with Penrose-type qualities quickly (Kor et al., 2007; Foss et al., 2008; Penrose, 1959). In sum, the hiring of consultants as managers can allow firms to overcome the Penrose effect, i.e., low growth rates as a result of the limitations of existing managers.

## Reorganizations and their Performance Effects

In the subsequent steps of our empirical strategy, we relate the number of newly hired managers with experience as consultants to the number of reorganizations in the hiring firm and their performance effect. Table 4 gives the results for the baseline regressions. Table 5 presents the results for direct and indirect effects of hiring managers with and without consulting experience in percentage points. All regressions are dynamic panel Arellano-Bover regressions, in which the first and third columns exclude the Inverse-Mills-Ratio while the second and fourth columns include it. The regression results for the number of reorganizations can be found in columns 1 and 2, the productivity growth regressions are shown in columns 3 and 4. Overall, we see that the results do not depend on the inclusion of the Inverse-Mills-Ratio and the coefficients of the rich set of control variables have the expected signs. Regarding the validity of the instruments used to correct for endogeneity, we derive our instruments based on covariance-restrictions. Since dynamic panel data models are usually overidentified (based on the non-sufficient rank condition), we can test the exogeneity of the instruments using regular overidentification tests. All regression tables report the Hansen-test, where the p-values show that exogeneity cannot be rejected at conventional levels.

Focusing on the effect on reorganizations, the coefficient of the number of consultants hired as managers is positive and significant ( $p < 0.001$ ) for the number of reorganizations in column 2. The results in Table 4 show that hiring one additional manager with consultancy experience increases the number of changes in plants by 0.59. This effect is very large compared to the average number of reorganizations (0.07). The size is largely attributable to the fact that most firms rarely hire a former consultant and rarely reorganize their plant portfolio. When we compare the effects of hired former consultants with the effects of other newly hired managers without previous work experience as consultants (non-consultants hired as managers), we find

that, contrary to the hiring of former consultants, the number of newly hired managers without this particular work experience has a significantly negative effect on the number of reorganizations ( $b = -0.07, p < 0.001$ ), providing further support for the distinct effect of consultancy experience.

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Insert Table 4 about here  
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Focusing on the performance effects, we see that the number of reorganizations is systematically positively related to productivity growth ( $p < 0.001$ ). Making a one-unit change to the plant reorganizations (for example by opening or closing a plant) increases productivity growth by 0.59 percentage points, which is substantial when compared to the average productivity growth of six percentage points. However, as described in the estimation strategy, this coefficient gives us only one piece of information necessary to assess the overall performance effect. The triangular model structure allows us to obtain estimates of the size of the indirect effect of hiring former consultants as managers for productivity growth, which can be calculated by multiplying the coefficient of the number of hired consultants in the first stage regression (predicting the number of reorganizations) with the coefficient of the latter variable in the productivity growth regression. As can be seen from Table 5, the indirect effect is 0.35 percentage points ( $= 0.59 * 0.59$ ) in the Arellano-Bover-model and statistically significant ( $p = 0.031$ ) when applying the Sobel test (Sobel, 1982), which is substantial as compared to an average productivity growth of six percentage points. Hence, the reorganizations that firms introduce after hiring managers with consulting experience result in higher productivity.

Additional tests confirm that these findings remain qualitatively consistent when we (a) replace productivity growth with value added growth as an alternative measure of performance, (b) include additional control variables used in prior research exploring the productivity effects

of hiring decisions with comparable data (Distel et al., 2022) – although these added controls increase multicollinearity in the estimation models substantially, and (c) split the sample into subsamples of low-performing (i.e., low-growth) and high-performing (i.e., high-growth) firms, based on their past performance, applying the same definition of low versus high growth as used in Table 3 (the ‘Hiring’ step). The results of these additional tests are available from the authors upon request.

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Insert Table 5 about here  
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Our empirical approach, utilizing a triangular model structure, allows us to isolate the indirect productivity growth effect of hiring former consultants as managers via the number of reorganizations from the direct effect of hiring former consultants on productivity growth, which is also positive. This finding is crucial for understanding the role former consultants play in the hiring firm and the value they create as managers. It implies that, besides having direct performance effects, former consultants bring not just mere changes in the hiring firm but also changes that are valuable in terms of improving performance. Hence, former consultants bring skills that enable them to reorganize firms in a value-creating way.

Moreover, more insights can be gained from Table 5 when comparing the effects of consultants hired as managers with the effects of non-consultants hired as managers. Compared to the positive indirect effect for hired former consultants, the indirect effect of hiring of managers without consulting experience via the number of reorganizations on productivity growth is negative ( $-0.02$  percentage points =  $-0.03 \times 0.59$ ) and significant in the Sobel test at the 10%-level ( $p = 0.051$ ). Additionally, the direct effect of hiring managers with consultant work experience on productivity growth ( $5.38$  percentage points) is substantially higher compared to newly hired managers without this work experience ( $0.72$  percentage points). This suggest that

former consultants create markedly more value than other newly hired managers, not only through reorganizations but also via other potential changes or improvements within the hiring firm. We revisit this point in the Supplementary Analyses below.

Despite common doubts about consultants' managerial abilities, such as concerns about the generality and limited transferability of their human capital and their potential to fuel fads and fashions, our results indicate that former consultants possess a unique capability for reorganizing firms in a way that ultimately enhances firm performance. When combined with the aforementioned individual-level descriptives, which highlight the heterogeneity between early-career consultants who tend to stay in consultancies and senior consultants who are more likely to leave to be hired as managers elsewhere, we can further substantiate our understanding of the distinct role former consultants play when joining the hiring firm. While both junior and senior consultants share foundational consulting skills, senior consultants are more likely to have worked on more on strategic, complex projects and advised clients on large-scale transformations, with greater exposure to high-stakes decision-making (Van den Bosch, Baaij, & Volberda, 2005). With their broader and deeper skill sets, senior consultants are better equipped to make a substantial impact on the hiring firm, particularly in developing and implementing effective changes.

We integrate these empirical findings into a larger stream of research that has examined the performance effects of different activities related to resource reconfiguration and reorganization (for an overview see Karim & Capron, 2016) and has found these activities to be important drivers for firm profitability, growth, and innovation (e.g., Brickley & Van Drunen, 1990; Vidal & Mitchell, 2015; Helfat & Eisenhardt, 2004; Karim & Kaul, 2015). However, the literature presents mixed results regarding the performance implications of resource reconfigurations, with

some studies indicating neutral or even (partially) detrimental performance effects (e.g., Barkema & Schijven, 2008; Danneels, 2011; Karim, 2009). The inconclusive findings of extant research regarding the performance implications of resource reconfigurations may lead us to believe that the mere act of reconfiguring resources does not automatically implicate superior outcomes, since not all changes to the resource base are necessarily valuable (Helfat & Martin, 2015). Rather, the potential of resource reconfiguration to create value depends on how well the underlying activities are planned and performed by the key decision-makers of the firm (Teece, 2012).

The emphasis on the importance of individual decision-makers for the value creation of reorganizations and resource reconfigurations aligns intriguingly with the ideas prominently featured in Penrose's (1959) theory of the growth of the firm and related work (e.g., Kor et al., 2016). Our findings support the notion that firms hiring managers with consulting experience are more likely to expand their capacity of managers with Penrose-type qualities faster than other firms to overcome the Penrose effect. This results in more reorganizations and, importantly, comparatively more valuable ones based on a broader knowledge pool that consultants acquire from working for various client firms and in multiple industry settings (March, 1991; Canato & Giangreco, 2011). This connection to Penrosean mechanisms suggests that firms benefit from managers with superior abilities to utilize diverse information sources and exercise their good judgment of emerging trends and risky market conditions (Foss et al., 2008; Tan et al., 2020). Further, former consultants are experienced in planning and deploying reorganizations including aligning them with the demands of the environment as well as in communicating the need for change effectively by incorporating stakeholder concerns and reducing resistance to change (Helfat & Peteraf, 2015).

## Supplementary Analyses

We conduct supplementary analyses to explore how the effects of hiring former consultants as managers evolve over time, whether the productivity growth effects of reorganizations differ depending on whether firms rely more on plant closures or openings, and whether the effects of hiring consultants extend beyond reorganizations.

*Long-term effects.* To examine whether consultants may act as change agents primarily in the short term and then become less inclined to initiate changes and seek new career opportunities as their tenure increases, we (a) assess the long-term impact of hiring former consultants at the firm level, using various time lags, to see if the positive effect on reorganizations diminishes over time, and (b) examine at the individual level whether consultants hired as managers tend to advance more quickly up the career ladder or leave the firm sooner than non-consultant hires.

First, we expand our main regression analyses by incorporating the first three lags of the number of managers with consulting experience hired in years  $t-1$ ,  $t-2$ , and  $t-3$ . For consistency, we also include lagged control variables for newly hired managers without consulting experience. The results, reported in Appendix C (Table C1), indicate that the one-year lag effect on the number of reorganizations is the largest ( $b = 0.74$  for the model including the Inverse-Mills-Ratio) and the only significant effect at the 5% level. The two-year lag effect is smaller ( $b = 0.29$ ) and non-significant, while the three-year lag effect is the smallest ( $b = 0.27$ ) and only marginally significant. A similar pattern is observed for the direct effects on productivity growth, where the one-year lag effect ( $b = 0.07$ ) is the largest and the only one significant at the 5% level. These findings may be explained by the different organizational contexts that consultants transition into. Consultancies, with their project-based work environments and a focus on

advising varying clients on complex, evolving problems, stimulate the ability to enter new subjects on a constant level (Robertson et al., 2003). In contrast, established firms typically have more stable structures and processes, which favor comparatively more steady managerial thinking within well-defined areas. While former consultants may bring in a fresh perspective on the firm's resources when they first join, over time they may increasingly adapt to hiring firm's existing routines and may feel less pressure to prove themselves with new initiatives (Kor, 2006).

Second, we derive an individual-level subsample that includes only consultant and non-consultant outside hires who are initially hired into the lowest or second tier of management. This ensures that they still have the potential for promotion to the highest management level. We calculate the annual hazard rates for promotion to top-tier management positions and find that the promotion rates for hired consultants (1.3%) are nearly twice as high as those for non-consultant managers (0.7%). A t-test confirms this difference is significant at the 0.1% level, suggesting that consultants are more likely to rise to top management roles than other outside hires. Furthermore, we analyze the likelihood of consultants and non-consultants remaining with the firm after two years, irrespective of their entry level. While our measurement has limitations, as it may not only capture actual exits but also internal transfers within very large corporations or a change of the organizational identifier for the same corporation, the data suggests that consultants are slightly more likely to leave the hiring firm sooner than non-consultants.

***Separate effects of plant closures and openings.*** Our reorganization measure includes both plant closures and plant openings as instances of reorganization. To examine whether performance effects differ based on the reliance on closures versus openings, we separately include the net number of closures and openings as explanatory variables in the productivity

growth regression.<sup>6</sup> The results indicate that closures have a stronger and more immediate effect on productivity growth ( $b = 0.01, t = 3.20, p < 0.01$ ), while openings show a positive but statistically non-significant effect ( $b = 0.00, t = 1.18, p > 0.10$ ). One interpretation of this finding is that former consultants hired as managers may achieve immediate productivity gains primarily by identifying synergies, which are often realized through plant closures or consolidations.

Complementary correlation analyses, however, show that hired consultants are not disproportionately involved in closures compared to openings. While the hiring of former consultants as managers is significantly positively associated with both openings and closures, the correlation is slightly stronger for openings (0.07) than closures (0.04). These patterns suggest that future (qualitative) research could provide deeper insights into the motivations behind former consultants' recommendations for plant openings or closures, particularly during their initial tenure at the hiring firm.

*Alternative types of change.* We explore alternative routes by which former consultants might drive change in their hiring firms. Specifically, we consider other types of change that we can reliably observe with our data to address potential concerns that hiring of consultants has an isolated effect on reorganizations. The first additional phenomenon we examine is changes in the employment structure of the hiring firms, and the second phenomenon relates to changes in firm investments over time. The regression tables reporting the results of these analyses are available from the authors upon request.

Regarding employment structure, we test whether hiring consultants as managers affects the number of employees in the following year, as well as the difference in share of employees with

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<sup>6</sup> The closures variable captures the net number of plant closures when the number of plants decreases; otherwise, it is set to zero. Similarly, the openings variable captures the net number of plant openings when the number of plants increases; otherwise, it is set to zero. The full regression analysis is available from the authors upon request.

tertiary education. Hiring consultants has no significant effect on the total number of employees ( $b = -0.00, t = -0.25, p > 0.10$ ), but it has a significant positive effect on the difference in share of employees with tertiary education ( $b = 0.01, t = 2.08, p < 0.05$ ). This suggests that consultants do not primarily function as mere job cutters or creators but instead increase the firm's knowledge intensity, likely by replacing employees without tertiary education with those who have it.

For firm investments, we examine the impact of hiring consultants on the investment ratio. The results indicate no significant effect ( $b = -2.91, t = -0.10, p > 0.10$ ), suggesting that hiring former consultants does not, in itself, change the ratio of investments. However, in conjunction with the positive effects of hiring consultants as managers on reorganizations of the plant portfolio, it is possible that new investments (e.g., adding plants) were made, but the overall investment ratio remained stable due to either increased turnover or simultaneous divestments (e.g., selling or reducing plants) balancing out the changes.

These findings give us confidence that hiring consultants as managers not only leads to plant reorganizations but may also trigger other types of change. However, the lack of significant effects on the overall number of employees and investment ratio suggests that consultants do not drive every type of change that firms might seek to implement.

## **DISCUSSION AND CONCLUSION**

We conduct this study to understand the value of former consultants as managers for the firms hiring them. While anecdotal evidence indicates that many successful firms have managers who have worked for consultancies before, these firms have also many managers without consultant experience. Hence, it remains unclear whether hiring managers from consultancies is an underlying factor in creating value for companies. This research question is also of theoretical relevance because consultancies are a unique work environment for acquiring broad sets of knowledge and skills, but they may be consultancy-specific in nature so that it remains unclear

whether they can create value within a specific firm. We address this open question empirically by exploiting a unique data opportunity using the population of firms in Sweden, allowing us to track management experiences (including working for a consultancy), hiring decisions and performance outcomes for 99,927 firms during 2010-2015. We devise an empirical strategy that allows us to disentangle the effects that hiring managers from consultancies has on these firms. We find that firms with low growth rates are significantly more likely to hire from this pool. Subsequently, the firms which have hired former consultants are significantly more likely to reorganize the firm's plants which results in higher labor productivity. This is not the case when firms hire new managers from other firms outside of consulting. These findings have consequences for both theory and practice.

### **Implications for Theory**

Our empirical results suggest that managers have acquired distinct qualities while working for consultancies. This construct makes theory developed by Edith Penrose salient for understanding the underlying mechanisms. The Penrosean view and the related research stream on managerial underpinnings of resource reconfigurations and reorganizations is fundamental for understanding the growth strategies of firms (Tan et al., 2020; Kor 2003; Helfat & Martin, 2015; Huy & Zott, 2019). Within Penrose's logic, firms grow slower when they do not have enough managers who understand the resources of a firm thoroughly and can envision more productive uses for these resources, i.e. managers with Penrose-type qualities (Kor et al., 2007; Tan et al., 2020; Foss et al., 2008). Given that these managers would require highly firm-specific knowledge about a focal firm's resources, they could not be hired from external labor markets or remain ineffective until they had time to learn the specifics of their new employer's resources (Tan & Mahoney, 2005; Kor & Mahoney, 2000). If this assumption holds, firms are severely constrained in their abilities

to respond to declining growth rates because their supply of managers with Penrose-type qualities is highly inelastic.

The shortage of managers with Penrose-type qualities is therefore a central constraint for growth within these theoretical models (Kor & Mahoney, 2000; Penrose, 1959) and makes it salient for theory and practice to understand the nature of this constraint as well as ways in which it can be alleviated. Our empirical findings suggest that firms can act on labor market signals and hire managers from consultancies because these individuals are likely to acquire the Penrose-type qualities within the hiring firm quickly. Further, we show that these signals are credible because former consultants demonstrate Penrose-type qualities as managers through more frequent and productive reorganizations.

A separate stream of research has challenged the assumption that external hiring has positive performance implications for firms (Keil, Lavie, & Pavićević, 2022; Schepker, Kim, Patel, Thatcher, & Campion, 2017). Raffiee and Byun (2020) refer to this phenomenon as the “portability paradox” because many externally hired employees do not advance performance after being hired (Bidwell, 2011; DeOrtentiis et al., 2018). This is largely due to the fact that external hires need time to adjust or create human and social capital in their new firm before they can have positive performance effects (Raffiee & Byun, 2020). Then again, most firms rely regularly on external hiring (Bidwell & Keller, 2014) and our study suggests that it is important to understand the heterogeneity among external hires. Within our logic, former consultants have learned to assess and adjust the organizational environment of their client firms frequently and have built social relationships repeatedly. These learning opportunities exist in very few other organization environments. Hence, it is likely that former consultants are comparatively more effective and efficient to adapt and acquire human as well as social capital when they are hired

by a firm than the average externally hired manager. Hence, our findings point towards a larger theoretical opportunity to disentangle the prior careers of externally hired managers and isolate the observable experiences that hiring firms can use to overcome the “portability paradox” when hiring externally.

### **Implications for Practice**

These academic implications have immediate relevance for strategy practice. We identify consultants as a promising target for recruiting efforts when firms want to respond to declining growth rates and reorganize. Our findings indicate that these new hires have distinct positive effects especially when compared with the average newly hired manager who has no significant effect on reorganization or even detrimental ones. Given these insights, cultivating a potential hiring pool of consultants becomes strategic and can benefit from actions such as participating in dedicated conferences or creating professional networks.

### **LIMITATIONS AND FUTURE RESEARCH**

We discover several promising routes for future research while conducting this project. First, we benefit from a large dataset with longitudinal coverage of many firms hiring former consultants. This allows us to combine selection and panel estimation approaches. Ideally, we would like to observe exogenous shocks for identifying mechanisms but these do not occur during our observation period. Dedicated studies may use research designs which can exploit such natural experiments and corroborate our empirical findings.

Second, we correlate the hiring of former consultants with reorganizations of hiring firms and their performance effects. Future studies may be able to unpack the particular abilities of former consultants for envisioning alternative resource configurations and implementing them successfully. Qualitative or experimental studies should be able to highlight types of knowledge and skills which are particularly salient for these purposes. These dedicated studies using smaller

samples might also be able to quantify whether former consultants are hired by firms that they have served earlier in their careers as clients of the consulting firms. This information is not available at the population level of our data.

Third, while our results demonstrate that hiring consultants as managers can drive change, as seen in the reorganizations of the plant portfolio and change to the employment structure, our data does not allow us to test for all potential types of changes or process improvements that such hiring might induce. Future research could explore other potential channels through which consultants bring change and value to the firms hiring them, such as better process management, strategy adjustments, alternative decision-making approaches, or improvements in routines. Qualitative studies could also provide deeper insights into the motivations of former consultants when recommending and implementing specific changes.

Fourth, we focus on the firm level and explore organizational changes. However, future research may focus on the individual level antecedents and consequences of former consultants joining other firms, such as career trajectories or salary outcomes. Similarly, consultancies are likely heterogeneous in the degree to which they facilitate the particular knowledge and skill development in their consultants. Future studies might explore such heterogeneity and identify training or client portfolio differences which provide the best learning opportunities for consultants.

Finally, our study exploits a unique empirical opportunity for studying work experience, hiring, reorganizations and firm performance in Sweden. Sweden is a high-tech economy with an advanced education system and well developed labor markets. We suspect that the advantages from hiring former consultants for resource reorganizations in firms are even bigger when skilled

employees are scarce or labor markets inefficient. Therefore, we encourage comparative studies for emerging economies.

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**TABLE 1**  
**Descriptive Statistics of Main Variables**

	Mean	SD	Min	Max
Productivity growth	0.04	0.50	-8.47	8.96
Relative consultant hiring	0.96	0.15	0.00	8.00
Consultants hired as managers	0.00	0.07	0.00	13.00
No. of reorganizations	0.07	0.98	0.00	228.00
Declining firm growth	0.45	0.50	0.00	1.00
Non-consultants hired as managers	0.14	1.12	0.00	105.00
No. of employees	24.67	183.45	1.00	21256.00
Hiring ratio	1.07	0.68	0.00	188.50
Capital intensity	178942.1	2121615	-2422975	643000000
Share of existing managers	0.15	0.22	0.00	1.00
Investment ratio	-12.68	7380.66	-4187188	1200955
No. of plants	1.39	4.81	1.00	439.00
Share of employees with tertiary education	0.23	0.27	0.00	1.00
Industry entry rate	0.13	0.04	0.03	0.28
Industry exit rate	0.10	0.03	0.01	0.22
Dynamism	12.50	6.73	2.01	87.39
Munificence	0.02	0.02	-0.24	0.14
HH-index	0.96	0.15	0.01	1.00

**TABLE 2**  
**Correlation Matrix of Main Variables**

<i>Variables</i>	1	2	3	4	5	6	7	8	9
1 Productivity growth	1.0000								
2 Relative consultant hiring	0.0328*	1.0000							
3 Consultants hired as managers	-0.0060*	0.0932*	1.0000						
4 No. of reorganizations	0.0014	-0.1808*	0.0891*	1.0000					
5 Declining firm growth	0.1914*	0.0194*	-0.0029	0.0076*	1.0000				
6 Non-consultants hired as managers	-0.0195*	-0.5305*	0.2370*	0.4207*	-0.0149*	1.0000			
7 No. of employees	-0.0047*	-0.2662*	0.2200*	0.3183*	0.0071*	0.6146*	1.0000		
8 Hiring ratio	-0.2958*	-0.0698*	0.0148*	0.0378*	-0.2473*	0.0832*	0.0046*	1.0000	
9 Capital intensity	0.0141*	-0.0262*	0.0106*	0.0087*	0.0035*	0.0200*	0.0102*	-0.0055*	1.0000
10 Share of existing managers	0.0234*	-0.1239*	0.0238*	0.0004	0.0196*	0.0512*	-0.0134*	-0.0484*	0.0140*
11 Investment ratio	0.0041*	-0.0052*	-0.0077*	0.0001	0.0010	0.0005	0.0002	0.0000	-0.0000
12 No. of plants	-0.0039*	-0.2440*	0.1021*	0.5585*	0.0082*	0.4669*	0.4983*	0.0029	0.0056*
13 Share employees with tertiary education	0.0035*	-0.1038*	0.0466*	0.0257*	0.0162*	0.0616*	0.0308*	0.0051*	0.0117*
14 Industry entry rate	0.0121*	-0.0010	0.0101*	0.0059*	-0.0077*	0.0002	-0.0225*	0.0357*	-0.0322*
15 Industry exit rate	0.0152*	0.0157*	0.0081*	0.0113*	0.0112*	-0.0073*	-0.0196*	0.0094*	-0.0202*
16 Dynamism	-0.0045*	0.0013	0.0064*	0.0041*	0.0089*	0.0023	-0.0088*	0.0021	-0.0393*
17 Munificence	0.0020	0.0195*	-0.0050*	-0.0066*	-0.0042*	-0.0139*	-0.0153*	0.0083*	-0.0433*
18 HH-index	0.0056*	0.3224*	-0.0958*	-0.3025*	-0.0250*	-0.3056*	-0.2999*	-0.0049*	-0.0147*

  

<i>Variables (continued)</i>	10	11	12	13	14	15	16	17	18
10 Employee share professionals or managers	1.0000								
11 Investment ratio	-0.0012	1.0000							
12 No. of plants	0.0004	0.0001	1.0000						
13 Share employees with tertiary education	0.1028*	-0.0031*	0.0227*	1.0000					
14 Industry entry rate	0.0114*	-0.0013	-0.0037*	0.2629*	1.0000				
15 Industry exit rate	-0.0249*	0.0003	0.0068*	0.2959*	0.5905*	1.0000			
16 Dynamism	0.0249*	0.0007	0.0099*	0.2385*	0.2966*	0.1527*	1.0000		
17 Munificence	-0.0015	0.0016	-0.0019	-0.0495*	0.0611*	0.0941*	0.0761*	1.0000	
18 HH-index	-0.0039*	-0.0004	-0.4133*	-0.0965*	0.0040*	-0.0039*	-0.0232*	0.0107*	1.0000

\*  $p < 0.05$

**TABLE 3**  
**Relative Consultant Hiring as Dependent Variable (fixed effects models)**

	(1)	(2)	(3)
	Relative consultant hiring (log)	Relative consultant hiring (log)	Relative consultant hiring (log)
Declining firm growth	0.0140*** (21.00)		0.0145*** (21.55)
Declining firm growth in t-1		0.0016* (2.29)	0.0039*** (5.32)
Relative wage consultant managers	-0.0028*** (-5.26)	-0.0029*** (-5.29)	-0.0028*** (-5.26)
No. of employees (log)	-0.0289*** (-27.17)	-0.0308*** (-28.93)	-0.0284*** (-26.51)
Hiring ratio	-0.0234*** (-42.51)	-0.0262*** (-48.71)	-0.0235*** (-42.67)
Capital intensity	0.0000 (0.59)	0.0000 (0.60)	0.0000 (0.59)
Share of existing managers	-0.2990*** (-82.16)	-0.2978*** (-81.78)	-0.2995*** (-82.27)
Investment ratio	-0.0000 (-1.61)	-0.0000 (-1.58)	-0.0000 (-1.62)
No. of plants	-0.0036*** (-7.80)	-0.0035*** (-7.64)	-0.0036*** (-7.83)
Share of employees with tertiary education	-0.0076* (-2.08)	-0.0080* (-2.21)	-0.0075* (-2.07)
Industry entry rate	0.0140 (0.36)	0.0160 (0.41)	0.0142 (0.36)
Industry exit rate	-0.0378 (-0.90)	-0.0432 (-1.02)	-0.0370 (-0.88)
Dynamism	-0.0002 (-1.44)	-0.0002 (-1.42)	-0.0002 (-1.43)
Munificence	-0.0760 (-1.26)	-0.0712 (-1.18)	-0.0757 (-1.25)
HH-index	0.1234*** (15.64)	0.1208*** (15.30)	0.1238*** (15.69)
Constant	-0.0518** (-2.84)	-0.0363* (-1.99)	-0.0555** (-3.04)
Year dummies	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes
Education field dummies	Yes	Yes	Yes
Observations	440223	440223	440223
Number of firms	99927.0000	99927.0000	99927.0000
R-squared	0.0428	0.0415	0.0428

*t* statistics in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**TABLE 4**  
**Number of Reorganizations and Productivity Growth as Dependent Variables (dynamic GMM models)**

	(1)	(2)	(3)	(4)
	No. of reorganizations	No. of reorganizations	Productivity growth	Productivity growth
Consultants hired as managers in t-1	0.6015** (2.70)	0.5991** (2.69)	0.0562** (2.62)	0.0538* (2.51)
No. of reorganizations			0.0059*** (3.52)	0.0059*** (3.56)
Non-consultants hired as managers in t-1	-0.0366** (-2.81)	-0.0365** (-2.80)	0.0067** (2.63)	0.0069** (2.66)
No. of employees (log)	-0.0495** (-2.61)	-0.0716*** (-4.11)	-0.6066*** (-23.37)	-0.6127*** (-26.56)
Hiring ratio	0.0359*** (3.97)	0.0352*** (3.85)	-0.1091*** (-4.72)	-0.1108*** (-4.81)
Capital intensity	0.0000 (1.16)	0.0000 (1.20)	0.0000 (1.55)	0.0000 (1.54)
Share of existing managers	-0.0057 (-0.50)	-0.1782 (-1.57)	0.0469* (2.56)	-0.0118 (-0.26)
Investment ratio	0.0000 (0.98)	0.0000 (1.67)	0.0000 (1.38)	0.0000 (1.46)
No. of plants	0.4144*** (3.30)	0.4056** (3.22)	-0.0016 (-0.60)	-0.0015 (-0.60)
Share employees with tertiary education	-0.0116 (-0.51)	-0.0609 (-1.50)	-0.0127 (-0.71)	-0.0294 (-1.37)
Industry entry rate	0.2940 (0.98)	0.4153 (1.32)	-0.1386 (-0.94)	-0.0978 (-0.65)
Industry exit rate	0.6840* (2.21)	0.5004 (1.49)	-0.3830* (-2.47)	-0.4427** (-2.82)
Dynamism	-0.0000 (-0.08)	0.0001 (0.26)	-0.0011* (-1.96)	-0.0010 (-1.83)
Munificence	-0.0293 (-0.08)	-0.1377 (-0.38)	0.4461 (1.77)	0.4080 (1.61)
HH-index	0.2131 (0.45)	0.1870 (0.40)	-0.1902*** (-4.24)	-0.1891*** (-4.27)
Declining firm growth	-0.0067** (-2.64)	0.0027 (0.36)	0.0575*** (17.85)	0.0605*** (19.19)
Inverse Mills ratio		0.7126 (1.42)		0.2412 (1.43)
Year dummies	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes
Education field dummies	Yes	Yes	Yes	Yes
Observations	440223	440223	440223	440223
Number of firms	99927	99927	99927	99927
Number of instruments	45	46	45	46
Hansen J statistic	7.8755	7.6324	7.2337	6.8393
p value of Hansen statistic	0.1632	0.1777	0.1240	0.1446

*t* statistics in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**TABLE 5**  
**Direct and Indirect Effects in Percentage Points**

	Consultants hired as managers	Non-consultant hired as managers
Direct effect	5.38 (p> z =0.012)	0.72 (p> z =0.007)
Indirect effect	0.35 (p> z =0.031)	-0.02 (p> z =0.051)

## APPENDIX A

### DETAILED IDENTIFICATION STRATEGY

The empirical strategy for estimating Eq. (3) and Eqs. (4a, b) depends crucially on the assumptions that we impose on the error terms  $\varepsilon$  and  $c$ . In the simplest case, we could assume that the fixed effects are uncorrelated with the other explanatory variables and the error terms. Then we could estimate the Eqs. (3, 4a, b) with random effects regression to obtain consistent estimate. The zero correlation assumptions are however unreasonably restrictive. There is likely to remain unobserved heterogeneity between firms, which drives the very decision to recruit former consultants as managers. Unobserved characteristics, such as a firm's internal structure, strategy, culture, market position, or reputation, could influence both a firm's likelihood of hiring consultants and the consultants' willingness to join these firms. Thus, regarding Eq. (3), certain firms may be inherently more attractive on the labor market and may therefore find it easier to recruit managers to the firm. Such unobserved heterogeneity can drive complex types of selection problems, which could lead to endogeneity biases if not appropriately accounted for. We apply a relatively straightforward solution for time-constant unobserved heterogeneity and use fixed effects regression in this case. Fixed effects have the additional advantage to control at least partially for the likelihood that firms hire former consultants systematically who have previously been assigned to them as client firms of the consultancy. Consulting services are highly concentrated in certain industries in Sweden, especially wholesale/retail or IT services as evidenced by the official Input Output tables of Sweden, and very stable over time (the official statistics combine legal and consulting services). In other industries, the odds of consulting services are ex-ante low.

Regarding Eqs. (4a, b), however other types of selection and problems potentially causing endogeneity may become pertinent. First, the relevant firm-level heterogeneity may vary with

time because of random productivity shocks that change over time. It is therefore unlikely that fixed effects will completely control for selection that is ongoing. To account for this type of non-constant heterogeneity, we explicitly model the recruitment event. In specific, we opt for a Heckman-type approach for addressing the issue and estimate the propensity to hire consultants based on a preceding probit model. The probit model allows us to calculate an Inverse-Mills-Ratio, which we include as an additional control variable in Eqs. (4a, b). The probit model includes all control variables and an exclusion restriction. For the latter, we calculate the share of consultants that switches jobs between consultancies in the focal firm's region. This variable is particularly suitable as an exclusion restriction since it is likely to affect the availability of consultants in the local labor market based on their willingness to leave their current employer but unlikely to affect firm-level outcomes (reorganization or performance) of firms in other sectors since consultants move to other consultancies.

Second, while the fixed-effects model including the Inverse-Mill-Ratio is a reasonable control of the dynamics of recruitment process over time, it still requires that none of the explaining variables is endogenous because of other reasons (e.g., omitted variable bias or simultaneity). This assumption may not hold when, for example, the decision to reorganize the plant portfolio may have preceded the decision to hire a consultant as manager, potentially implying reverse causality. Moreover, poor past growth may induce the firm to hire a consultant as manager to raise the performance level. Given the potential endogeneity of the number of hired consultants as managers, we opt for an instrumentation approach accounting for reverse causality instead of applying fixed effects estimators with the Inverse-Mills-Ratio as a control.

For deriving system-GMM instruments, we resort to covariance restrictions implied by dynamic panel data estimators (e.g., Arellano & Bond, 1991; Arellano & Bover, 1995). While

these covariance restrictions are often deployed for the causal identification of effects based on lagged dependent variables, the same type of variance restrictions can effectively be used as a basis for generating instruments in case of simultaneity (Roodman, 2009), where the validity of the covariance restrictions can easily be tested using regular overidentification tests. Using exclusion restrictions typically performs poorly as an identification strategy because of higher order weak identification and multicollinearity. Moreover, the number of required instruments increases. Dynamic panel data models utilizing system-GMM instruments typically perform substantially better and are almost always overidentified even with higher numbers of endogenous variables. Specifically, we implement an Arellano-Bover-type of dynamic panel data model which utilizes orthogonality-conditions resulting from testable restrictions on the covariance structure. Moreover, we follow the recommendation of Roodman (2009) and collapse the number of instruments to guarantee a sufficiently high power of the overidentification tests. We also exclude the level equation, which, although increasing efficiency, requires additional untested and potentially failing assumptions on the covariance structure.

## APPENDIX B

### TABLE B1

#### Probit Model to Derive the Inverse-Mills-Ratio with Panel-robust Standard Errors

	Consultants hired as managers
Relative wage consultant managers	-0.0465** (-2.93)
No. of employees (log)	0.4267*** (41.23)
Hiring ratio	0.0086** (2.72)
Capital intensity	-0.0000 (-1.36)
Share of existing managers	1.9090*** (41.06)
Investment ratio	-0.0000 (-1.81)
Non-consultants hired as managers	0.0179*** (6.02)
Mobile consultants in region	0.0001*** (5.88)
No. of plants	-0.0030** (-2.82)
Share of employees with tertiary education	0.7104*** (16.40)
Industry entry rate	2.1543* (2.20)
Industry exit rate	-2.3853* (-2.22)
Industry growth rate	-3.4047*** (-3.62)
Dynamism	-0.0032 (-1.61)
Munificence	0.7687 (1.51)
HH-index	0.0602 (1.26)
Declining firm growth	-0.0944*** (-4.57)
Constant	-4.4986*** (-30.66)
Year dummies	Yes
Sector dummies	Yes
Education field dummies	Yes
Observations	493007
Number of firms	109325

The number of observations is larger than in the main regressions because of the inclusion of higher order lags in the dynamic GMM estimation.

*t* statistics in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

## APPENDIX C

**TABLE C1**  
**Main Models Augmented with Time Lags to Test Long-term Effects**

	(1)	(2)	(3)	(4)
	No. of reorganizations	No. of reorganizations	Productivity growth	Productivity growth
Consultants hired as managers in t-1	0.7429* (2.37)	0.7399* (2.37)	0.0840** (2.59)	0.0736* (2.18)
Consultants hired as managers in t-2	0.2919 (1.43)	0.2879 (1.43)	0.0477 (1.66)	0.0401 (1.36)
Consultants hired as managers in t-3	0.2728 (1.81)	0.2698 (1.79)	0.0464 (1.88)	0.0418 (1.67)
No. of reorganizations			0.0070* (2.30)	0.0070* (2.35)
Non-consultants hired as managers in t-1	-0.0882*** (-3.49)	-0.0881*** (-3.51)	-0.0053 (-1.16)	-0.0046 (-0.97)
Non-consultants hired as managers in t-2	-0.0485 (-1.69)	-0.0485 (-1.70)	-0.0084** (-2.74)	-0.0079* (-2.48)
Non-consultants hired as managers in t-3	-0.0480** (-2.59)	-0.0477* (-2.56)	-0.0039** (-2.71)	-0.0037* (-2.55)
Firm controls	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes
Education field dummies	Yes	Yes	Yes	Yes
Observations	323949	323949	323949	323949
Number of firms	84433	84433	84433	84433
Number of instruments	45	46	46	47
Hansen J statistic	2.6378	2.6261	5.3913	5.0415
p value of Hansen statistic	0.2674	0.2690	0.0675	0.0804

*t* statistics in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

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