Post-merger Restructuring of the Labor Force*

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Abstract

We study the restructuring of the labor force after M&As. Restructuring is large. Net employment of targets declines by half within two years after acquisitions relative to matching firms. Employee turnover increases, particularly for managers, and jobs migrate to acquirers. Acquirers have a better-educated, better-paid, and more qualified workforce than targets. Acquirers hire new employees who are younger and less expensive than those who leave. Some mergers create internal labor markets, especially for highly-paid employees, but most hiring is external. Our results are consistent with a framework in which acquirers seek business opportunities from targets and provide the organizational and managerial capacity to produce more efficiently.

Keywords: M&A, Restructuring, Employment, Internal Labor Markets

JEL Classifications: G30, G34, J24, J31, M51.

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1 Introduction

How do firms restructure their operations after mergers? A large literature analyzes the sources of synergies in mergers, usually by associating the pre-acquisition characteristics of the merging firms with their short-run and long-run stock returns.[1] Little is known about how firms restructure their operations to realize synergies after mergers.[2] Yet, much can be learned from analyzing how acquirers integrate the target by changing the composition and size of the workforce of the combined firm, reassigning employees to new jobs, and moving them to different plants. This perspective from the human side complements research on the asset side of restructuring, and extant research on the impact of mergers and acquisitions on employees, which has mostly looked at changes in net employment and aggregate wage bills.[3]

Hence, we take a detailed look at the post-merger reallocation of labor. We ask how many and which employees are hired externally after acquisitions? How many and which employees leave the firm, or are transferred between acquirers and targets in the post-acquisition period? Specifically, we are interested in how employee flows affect the composition of the workforce, how firms build managerial capacities, and how managerial capacities and the organizational structure of the acquirer influence labor flows. As such, ours is one of the very few papers that analyze the human-capital consequences of mergers by taking a comprehensive view at the combined firm, and focus not only on targets (see Section 2 for details). Finally, we analyze the activities of internal labor markets, and how important they are relative to the external labor market.

We analyze 1,043 acquisitions in Germany between 1997 and 2014 and investigate an employer-employee linked data set with over 500,000 employees. Germany is ideally suited to study these issues, because the strictness of its employment protection legislation puts it at

[1]The literature on M&As and the sources of synergies discussed in this literature is far too large to survey here. See Eckbo (2014) and Mulherin, Netter, and Poulsen (2017) for recent surveys.

[2]On the asset side of restructuring, see Maksimovic, Phillips, and Prabhala (2011) on plant closures, Kaplan and Weisbach (1992) on divestitures, and Bena and Li (2014) on patents.

[3]We provide a comprehensive discussion of the literature of the labor consequences of M&As in Section 2.

the median of the OECD, and we have detailed data on the compensation, education, occupations, and skill levels of the German labor force.[4] We perform matched-sample difference-in-difference analyses and match each target firm and each acquirer firm to a control firm. We conduct analyses at the establishment level and track the flows between establishments, in particular, internal flows between acquirer establishments and target establishments, and external flows to and from the outside labor market. We track these flows from the beginning of the year of the acquisition to the end of the second year after the acquisition. We find that restructuring involves a large loss of theworkforce of the target, that turnover is large, and that restructuring is mostly through external labor markets.

Overall restructuring activity is very large. On average, targets lose 55.4% of their workforce by the end of the second calendar year after the acquisition, and the combined workforce of the merged firm declines by 7.2%. This employment decline is concentrated in those targets that are closed completely, which account for one-third of the sample: their plants have no employees two years after the acquisition; employment in surviving targets is stagnant. More than 40% of the employees who leave the merged firm lose some of their human capital by becoming either unemployed, or by accepting lower-paid jobs.

There is a significant increase in employee turnover, so that net employment changes alone do not reveal the full extent of restructuring. Two years after the acquisition, merged firms have lost 13.4% more employees than comparable control pairs of acquirer and target, about half of whom are replaced by new hires. Turnover shifts jobs from the target to the acquirer, since increased hiring occurs at acquirers, whereas job losses are concentrated at the target.[5]

Mergers create internal labor markets. Flows between establishments of the merged firm

[4] There is no prior study on post-merger employment restructuring in Germany among the more than 30 studies we survey in Section 2. None of the studies on other countries addresses the questions we focus on in this paper. See Section 2 for a discussion of the literature and OECD (2020) for country-level scores on employment protection legislation. See also Kim, Maug, and Schneider (2018) for further detail on labor market regulation in Germany compared to other countries.

[5] In this paper, we define turnover as the minimum of inflows and outflows to emphasize the aspect of replacing workers, and to separate this aspect from net employment growth. See Section (4.1) for details.

increase by 3.5% of the merged firm's total employment. These are mostly flows from the target to the acquirer, with a much smaller flow in the opposite direction. Interestingly, there are also abnormal flows of about 1% of the merged firm's employment within acquirers or within targets. These within-firm transfers would have been feasible before the acquisition and indicate that mergers set in motion a chain of new job assignments within the merged firm. However, while activity in the newly created internal labor market of the merged firm is significant, it accounts for only about one-quarter of abnormal employee flows. The other three quarters of the restructuring after acquisitions occur through external hiring and releases of employees to the external labor market, either to other firms or to unemployment.

We find several of the salient observations on the post-merger restructuring of the labor force striking. Given that replacing employees is costly, as both hiring and layoffs are associated with significant costs, it is surprising to see such large turnover of the labor force. For the same reason, we would have expected merging firms to rely more strongly on internal labor markets, yet about three-quarters of the acquisitions in our sample see no internal transfers of employees at all.

To investigate these puzzles, we build on the paradigm of Levine (2017), who argues that firms with lower production costs and limited growth opportunities become acquirers of target firms, who tend to have the opposite features. We argue that acquirers' strategy to achieve their goals is reflected in their post-merger restructuring of the labor force. Specifically, drawing on several, non-mutually exclusive theoretical paradigms, we hypothesize that acquiring firms seek a competitive advantage through (1) leveraging the quality of their existing labor force, and improving and adapting the quality of their labor force further; (2) leveraging the quality of their managerial practices, and strengthening their organizational structure and their management.[6] Hence, in the second part of the paper we further characterize the drivers of employee flows, turnover, and internal labor markets by focusing on the

[6]See Bloom and Van Reenen (2007) and Atalay, Hortacsu, and Syverson (2014), among others, for discussions of how organizational designs and management practices can become the sources of competitive advantage that cannot be easily reproduced.

composition of the labor force, management, and organizational structure.

A comparison of the skills and compensation of target and acquirer employees confirms that acquirers start out with a significantly better-educated, more highly-qualified, better-paid, and slightly younger workforce than targets. The main drivers of employee turnover are the pre-acquisition growth of the acquirer, and (to a lesser extent) of the target, and the similarity of acquirers' and targets' workforce, which we measure through an index of human-capital relatedness (following Lee, Mauer, and Xu, 2018). The last observation is surprising, as firms replace employees if target employees are more similar to those of the acquirer; we would have expected more relatedness of human capital to result in more duplicate jobs, redundancies and separations, but not more transfers. Further analyses show that merged firms hire new employees with similar qualifications and a slightly better education compared to departing employees, but new hires are on average much younger (about four years or 10% of the average pre-acquisition age of the work force) and less expensive than the departing employees (about 11% reduction in daily compensation). Hence, firms save costs when they replace workers by hiring less-experienced workers, who may also be more adaptable to the processes of the acquirer, but not by hiring workers with lower education or qualification. Post-merger restructuring strengthens these differences relative to control firms: merging firms see a stronger increase in qualification, education, and compensation of their workforce compared to a matched sample of non-merging control firms, and their workforce ages slightly slower. Overall, we find support for the first channel noted above: Merging firms leverage the quality of their existing workforce, and improve and adapt their workforce further in post-merger restructuring.

Finally, we investigate the second channel above and analyze the flows of employees with managerial functions, mostly middle management. For managers, we observe a smaller and insignificant decline in net employment, which indicates that firms build managerial capacities. Moreover, we observe about twice as much turnover for managers as for the general workforce. The main driver of reliance on the internal labor market is the degree of hierarchization of the acquirer. Moreover, the employees transferred in the internal labor market are more qualified, better educated, and more highly paid than either the existing workforce or the employees transferred in external labor markets: The compensation of an internally-hired employee is 47% higher compared to an externally-hired employee. We conclude that the hierarchical structure of the acquirer measures its managerial capacities, and that operating an internal labor market mainly involves transferring managerial skills and building managerial capacities.

Overall, we show that mergers and acquisitions allow firms to economize on the costs of the labor force in three ways: First, by reducing the size of the labor force to streamline production. Second, by adapting the labor force towards better-educated, but younger and less expensive employees. Third, by building and transferring managerial capacities.

2 Contribution to the literature

This paper contributes to three broad strands of the literature: On the impact of M&As on labor market outcomes, on the impact of labor market institutions on M&As, and on internal labor markets. In this section, we provide a brief survey of each of these strands of the literature by introducing the key topics and findings, but note that the size of the literature may warrant a more detailed survey or meta-study, which is beyond the scope of this paper. We refrain from discussing the much broader literature on M&As, for which multiple excellent surveys exist.[7] We also do not discuss the human-capital consequences of other forms of restructuring, e.g., through private-equity buyouts or bankruptcy, in which the synergies we are focusing on do not play a role.[8]

[7]See, for example, Betton, Eckbo, and Thorburn (2008), Renneboog and Vansteenkiste (2019), Mulherin, Netter, and Poulsen (2017), and Tarba, Brock, and Calipha (2010) and the literature mentioned in footnote 21 below.

[8]Private equity: Davis et al. (2014), Olsson and Tåg (2017), Antoni, Maug, and Obernberger (2019); bankruptcy: Brown and Matsa (2016), Baghai et al. (2020), Graham et al. (2021).

The influence of M&As on labor market outcomes. In Table A1 in Appendix A.5, we survey a total of 39 studies that analyze labor market outcomes as consequences of mergers and acquisitions, two of which analyze cross-country data sets. The 37 single-country studies cover predominately the US, the UK, and other countries with lenient employment protection regulation.[9] There is no prior study on Germany, which is close to the median of the OECD in terms of the strictness of employment protection regulation. Overall, 13 studies discuss employment as well as wage outcomes, 14 only employment and ten only wages; two studies focus on other labor market outcomes.[10] The table provides information on whether the effects of M&As on labor market outcomes are positive (P), negative (N), insignificant (I), or ambiguous (A, i.e., they depend on moderating factors). While the majority of papers documents negative effects of M&As on employment (17 studies, compared to 4 studies with positive effects), the literature is about evenly divided on the direction of wage effects (23 studies: 6 negative, 7 positive, 10 insignificant or ambiguous). Note, however, that several studies explicitly attribute employment losses to the decisions of employees to leave their jobs (e.g., Kim, 2018; Ranft and Lord, 2000). Our study contributes to this literature by studying the economic mechanisms that drive the net effect on employment. In particular, we show how the aggregate employment effect is associated with large employee turnover, especially additional hiring at the acquirer, and correspondingly larger job losses at the target; how it is related to job rotations within the merged firm; its association with changes in the composition of the workforce; and how it is related to changes in the organizational structure of the firm.

[9]This statement is based on the 2019 OECD scores for the strictness of employment protection legislation (EPL), which are 1.3 for the US (22 studies), 1.6 for Canada (one study), 1.7 for the UK (4 studies), and 1.8 for Denmark (2 studies). The score for Germany is 2.2. The other six single-country studies with OECD EPL scores are from countries with stricter EPL regulation compared to Germany. See OECD (2020), Table 3.3.

[10]Tate and Yang (2016) analyze the cross-industry migration of employees and Li and Wang (2020) the post-merger collaboration of inventors.

Post-merger restructuring. Only few papers discuss post-merger restructuring of the labor force beyond effects on aggregate employment and wages. Our study is most closely related to Lagaras (2020a), who analyzes the employment dynamics after M&As for a Brazilian sample. However, Lagaras (2020a) focuses on the labor force of targets, whereas we analyze the labor force of the target and the acquirer, which allows us to explicitly analyze target employees who are transferred to the acquirer, especially after target closures, the knowledge transfer of the acquirer to (surviving) targets, and the post-merger changes in the organization of the acquirer. Ma, Ouimet, and Simintzi (2021) analyze a US sample and study post-merger changes in the occupational composition of the labor force. They also focus on targets and find that post-merger restructuring displaces workers in routine-based jobs and that wage inequality increases, in line with their hypothesis that mergers implement technological change. Their focus on technology is complementary to our focus on organizational structure. Smeets, Ierulli, and Gibbs (2016) study a sample of Danish M&As in the 1980s and 1990s and focuses on the mixing of target and acquirer employees. They also document that internal transfers between acquirer and target plants are low, and that employee turnover increases after mergers. However, they do not associate these changes with explanatory variables or changes in managerial structures. As such, their inference that post-merger integration may be possible by "reconciling policies and coordinating across groups [of employees] without much need to disturb day-to-day operations" (p. 464) is different from ours.

The influence of labor markets on M&As. The second strand of the literature identifies three broad categories of factors about how labor markets influence M&As. The first hypothesis is that unions and employment protection laws create frictions in the restructuring process, and thereby reduce the profitability and the incidence of M&As. Three cross-country studies (Ahmad and Lambert, 2019; Dessaint, Golubov, and Volpin, 2017; Levine, Lin, and Shen, 2015) and one study that compares states within the United States (John, Knyazeva, and Knyazeva, 2015) all find that labor regulations that provide employees with stronger employment protection have the predicted effect . Surprisingly, the effect of unionization on M&As is ambiguous. Whereas Tian and Wang (2020) find the predicted deterring effect of unions on takeovers, in line with the theory of Pagano and Volpin (2005), Ahmad and Lambert (2019) find that stronger unions facilitate takeovers. The literature on non-compete agreements is complementary to these studies on labor-market regulations that protect employees. Non-compete agreements protect acquirers, because they prevent key employees from leaving the target after the acquisition. Younge, Tong, and Fleming (2015) and Chen, Gao, and Ma (2020) both find that such regulations, which increase employee retention after acquisitions, increase the likelihood of acquisitions. Since our study is on a single country, a comparative analysis of labor market institutions, such as unions, employment protection regulation, and non-compete agreements, is outside the scope of our analysis.

Finally, a third group of studies hypothesizes that the benefits from mergers depend on the overlap between the acquirer's and the target's labor force, which may be related to the potential to consolidate the workforce, but also provide a measure for how closely the operations of the merging partners are related. Neffke and Henning (2013), Tate and Yang (2016), and Lee, Mauer, and Xu (2018) all develop measures of human-capital relatedness and find that they positively predict the likelihood of mergers. We contribute to this literature by using the measure of Lee, Mauer, and Xu, 2018 of human-capital relatedness to show that it positively affects the turnover of employees, especially managers, and the activity of internal labor markets.

Internal labor markets. The literature on internal labor markets (ILMs) goes back at least to Doeringer and Piore (1966) and Doeringer and Piore (1970). The earlier literature focuses on how ILMs shield themselves from the outside labor market by limiting the ports of entry into the firm, and how they structure employees' promotions along career ladders.[11]

[11]See Baker, Gibbs, and Holmstrom (1994a), Baker, Gibbs, and Holmstrom (1994b), and Baker and Holmstrom (1995) for foundational empirical work on these questions, Napari and Kauhanen (2015) for more

By contrast, the literature on internal capital markets builds on earlier work on the boundaries of the firm and compares the efficiency of resource allocation in internal and external markets.[12] The literature on internal labor markets started to address these questions on efficiency and the boundaries of the firm only recently, initially by emphasizing the (partial) complementarity of labor and capital in internal markets (Giroud and Mueller, 2015; Belenzon and Tsolmon, 2016). Tate and Yang (2015) may be the first to analyze the potential of internal labor markets to add value by facilitating transfers of employees from shrinking to expanding industries after adverse shocks.

Theories of internal labor markets argue that conglomerates or business groups create value by providing firms with internal, and therefore less expensive, access to skilled labor; by allowing firms to better match tasks and employees; by creating employment insurance and avoiding costly layoffs after negative shocks; by creating incentives for employees to invest in firm-specific human capital; and by allowing firms to transfer management practices across units of the same firm.[13] However, ILMs may also be costly if they lead to wage convergence as workers from low-paid industries demand higher wages in a conglomerate that is active in high-wage industries (Silva, 2017).

Our study contributes to the analysis of ILMs by showing how M&As create ILMs, by studying the change in employee flows before and after mergers, and by comparing post-acquisition internal employee flows in ILMs to those in external labor markets. While M&As create significant internal labor flows in merged firms, post-merger restructuring is dominated by hiring from and releases of employees to the external labor market. We do not attempt to separate the overlapping arguments for how ILMs create value, but some of the theories are

recent results, and Groshen and Levine (1998) for a longitudinal study of ILMs.

[12]We do not survey the literature on internal capital markets here. See Stein (2003), Maksimovic and Phillips (2007), and Maksimovic and Phillips (2013) for comprehensive surveys.

[13]Access to skilled labor: Giroud and Mueller (2015); better matching of capital and tasks to employees: Berk, van Binsbergen, and Liu (2017), Luo, Manconi, and Schumacher (2018); avoid costly layoffs: Belenzon and Tsolmon (2016); provide employment insurance: Sraer and Thesmar (2007), Cestone et al. (2017), Ellul, Pagano, and Schivardi (2017), Kim, Maug, and Schneider (2018), Faccio and O'Brien (2020); investments in firm-specific human capital: Tate and Yang (2015); transfers of management practices: Atalay, Hortacsu, and Syverson (2014), Huneeus et al. (2018).

better supported by our analysis than others. Specifically, the notions that ILMs improve the assignment of employees to jobs, and that they permit the transfer of management practices, are integral to our framework. By contrast, we do not see that the creation of ILMs after M&As are critical to providing additional insurance opportunities, as far more employees find new jobs outside the merging firms. Similarly, we are skeptical about the skill-shortage argument, which holds that acquirers purchase targets whose employees have scarce skills, which are sought by the acquirer. This argument has been successful in explaining some patterns of employee flows and wage changes in some specific situations, notably high-tech industries.[14] However, we find that ILMs play a relatively larger role for the general workforce than they do for highly-qualified employees or managers, and we would assume skill shortages to be concentrated in these segments of the workforce.

3 Data and methodology

3.1 Sample construction

We start with the universe of all mergers and acquisitions in the Bureau van Dijk (BvD) Zephyr database for which the target and the acquirer are headquartered in Germany. After applying the standard filters, we arrive at 3,602 transactions for the period 1997 to 2014 (see Table OA1). In the next step, we link our list of transactions to the Orbis-ADIAB data set provided by the Research Data Center of the Institute of Employment Research (IAB) using the BvD identifier. Details on the record-linkage between BvD and IAB data are described in Antoni et al. (2018).The Orbis-ADIAB data set contains the standard IAB establishment identifier, which we use to match our data to the Establishment History Panel (BHP, see Schmucker et al. 2016). The BHP contains aggregated information on employees and establishment characteristics. After identifying all establishments involved in an acquisition,

[14] See Ranft and Lord (2000); Chen, Gao, and Ma (2020); Ouimet and Zarutskie (2020); Qiu and Wang (2017); Beaumont, Hebert, and Lyonnet (2018) for different versions of this argument.

we aggregate these establishments to the firm (target or acquirer) level. About one-third of the firms covered by our M&A sample can be linked to the establishment data. For each acquisition, we require that both, the target and the corresponding acquirer be successfully linked, otherwise we remove them from the sample. We obtain 1,147 transactions with aggregate employment data for both firms involved in the deal. After matching target firms and acquirer firms to control firms, we are left with 1,043 transactions for our analysis (details on matching below). For the matched transactions, we select all employees, who work for either the treated or the control firms during the period from one year prior to two years after the transaction. Our individual employee-level data come from the Integrated Employment Biographies (IEB) at the IAB.[15] These steps leave us with 1,043 transactions and 2,086 acquirer and target firms. Table OA1 provides an overview of all steps of the data set construction.

3.2 Constructing a matched firm sample

We follow earlier contributions in the literature (e.g., Davis et al., 2014; Antoni, Maug, and Obernberger, 2019) and apply nearest-neighbor matching. The objective of this approach is to make treatment random conditional on the matching variables. Hence, for each target firm and acquirer firm, we identify one control firm using the firm-level aggregated BHP data and the following criteria.[16] First, we remove all target firms from the list of potential controls that have been involved in an acquisition themselves at any time during the sample period. Acquiring firms are not part of the list of potential controls from one year before to one year after the transaction. Second, we build matching cells based on two-digit industry affiliation (88 categories), calendar year, region, and number of establishments. We pick the nearest neighbor in terms of the Euclidean distance based on our numerical matching

[15] For an overview and definitions of all variables see Table 1. Summary statistics for the treated and control firms as well as employees are in Table 2. The IEB contain detailed longitudinal data on almost the entire German workforce.

[16] As a basis for the aggregation, we use the record-linkage from the IAB, which links 1,365,323 establishments to 955,784 German firms. The firm-level categorical variables are based on the firms' largest establishment, i.e., a firm's region is determined by the location of its largest establishment.

variables: the firm-level averages of *Wage* and *Age*, the number of employees, and the shares of, respectively, high-qualified, medium-qualified, and female employees. In the last step, we identify one control firm from the set of nearest neighbors for each target and for each acquirer firm. We match with replacement, i.e., a control firm may be matched to more than one target or acquirer. Of the 1,147 target and acquirer companies, we can match 1,136 (1,069) targets (acquirers). For a deal to be considered in the analysis, we require data on both target and acquirer simultaneously which leaves us with 1,043 jointly matched firm-pairs.

Table OA2 shows the matching results. For all numerical variables, the relative differences between the target group and the control group are below 5%. We further use the normalized differences proposed by Imbens and Wooldridge (2009) and used by Imbens and Rubin (2015) to examine significant differences between two groups of observations. Imbens and Wooldridge (2009) recommend that normalized differences be below 0.25 in absolute value. For all matching variables, the test statistic is never higher than 0.04, and we conclude that our control groups match target and acquirer firms very closely on all relevant criteria. Unmatched target and acquirer firms differ substantially in the matching variables from the matched sample averages. In particular, very large acquirers cannot be matched satisfactorily to a non-acquirer control firm. Since it is impossible to find a sufficiently close counterfactual firm, we prefer to eliminate these deals from the sample.

3.3 Variable construction

Employee flows. We define *Net employment growth* from time t to time $t+k$ as $g_{j,t,t+k} = \frac{E_{j,t+k}-E_{jt}}{0.5\left(E_{j,t+k}+E_{jt}\right)}$, where E_{jt} denotes the level of employment in firm j at time t.[17] We follow Antoni, Maug, and Obernberger (2019) and decompose firm-level employment growth into

[17] Davis et al. (2014) point out that this growth rate measure has become standard in analyses of establishment and firm dynamics. See Davis, Haltiwanger, and Schuh (1996) and Tornqvist, Vartia, and Vartia (1985) for detailed discussions. This definition of growth rates is less skewed and can take values between -200% and +200%. Further properties are discussed in Appendix A.1.

inflows and outflows. We define the normalized inflow of newly-hired employees (*Inflow*) from time t to time $t+k$ as $h_{j,t,t+k} = \frac{\sum_{\tau=0}^{\tau=k} H_{j,t+\tau}}{0.5(E_{jt}+E_{j,t-1})}$, where H_{jt} is the number of employees who enter firm j in period t ("hiring"). Analogously, we define *Outflow*, $s_{j,t,t+k}$, where S_{jt} is the number of employees who leave firm j in period t ("separations"). It follows that $g_{j,t,t+k} = h_{j,t,t+k} - s_{j,t,t+k}$. (See Appendix A.1 for further details.) We further decompose employee flows into flows within the same company (*Internal inflow/outflow within*), flows between the corresponding target/acquirer firm (*Internal inflow/outflow between*), and external flows (*External inflow/outflow*), which includes all other flows, in particular those to and from other companies, unemployment, training and education, or foreign establishments. For some analyses, we need to break down employee flows into subgroups of employees, e.g., by education or qualification. We explain these additional breakdowns when we discuss the respective results.

Turnover. We are interested in employee turnover, i.e., the degree to which employees are replaced. We conceive of replacements of employees as equal numbers of hirings and separations. Accordingly, we define turnover as

$$TO_{j,t,t+k} = Min\left(h_{j,t,t+k}, s_{j,t,t+k}\right). \tag{1}$$

Other contributions in the literature define turnover alternatively as $\frac{s+h}{2}$ (e.g., Davis and Haltiwanger, 1999; Cahuc, Carcillo, and Zylberberg, 2014). In Appendix A.1, we show that $\frac{s+h}{2} = TO + \frac{|g|}{2}$, i.e., this alternative measure of turnover also captures the absolute value of net employment growth, which renders it less useful for our purpose, since we want to capture new employment growth separately.[18]

[18] To illustrate the point, consider a firm that has 20 separations and 3 new hires. Hence, our measure of turnover is 3 and captures the low number of replacements. By contrast, the alternative definition would be 11.5 and reflect half of the new employment decline of 17.

Hierarchical structure. We construct layers of managers following Caliendo, Monte, and Rossi-Hansberg (2015) and Gumpert, Steimer, and Antoni (2019). The layers are inferred from occupational codes, with the lowest layer being layer 1 (production workers) and the highest potential layer being layer 4 (CEOs and managing directors). Layers 2 and 3 include different ranks of middle managers. See Appendix A.2 for further details.

3.4 Descriptive statistics

Table 2 presents descriptive statistics of the numerical variables for the treated and the control firms. Our final firm-level data set covers a cross-section of 1,043 acquirer-target pairs. On average, the merged firm employs 565 domestic employees (*Size*) in the year prior to the announcement, 102 at the target and 463 at the acquirer. Pre-acquisition employment growth (*Growth*) is very similar for targets and acquirers. We observe each target (acquirer) firm from two years before the acquisition to two years after the acquisition. Acquirer employees and target employees are of similar age, but earn on average 17% more than target employees (average daily wage of €104.45 compared to €89.33).

Table 3 provides descriptive information on the number of layers, employment, and wages in each firm, separately for targets and acquirers (in the pre-acquisition year) and for the merged firms. Only two-thirds of the acquirers (704 firms) and two-fifths of the targets (452 firms) have four layers. Note that some firms with fewer than four layers have structures with non-consecutive layers. For example, a firm may have employees in layers 1, 2, and 4, but none in layer 3. Table 3 reports such a firm as a 3-layer firm. There is a clear correlation between the number of layers and the number of employees, and larger firms with more layers of management almost always pay higher wages. (The exception are single-layer acquiring firms, which seem to consist of a single layer of highly-paid professionals.)

4 Post-merger restructuring and labor flows: Stylized facts

In this section, we provide an extensive analysis of labor flows after acquisitions, which provides the stylized facts on how post-merger restructuring affects the labor force and lays the ground for subsequent tests of our hypotheses. Section 4.1 introduces our regression design and Section 4.2 presents the results.

4.1 Methodology: Regression design

To provide a generic representation of employee flows, let $f_{j,t-1,t+2}$ be a labor flow relating to firm j from $t-1$ to $t+2$, where f can be an inflow ($f=h$), an outflow ($f=s$), a net employment change ($f=g$), or turnover ($f=TO$). We adapt the approach of Davis et al. (2014) and regress three-year flows on a target (acquirer)-firm indicator, control variables, and a set of fixed effects:

$$f_{j,t-1,t+2} = \alpha_t + \theta \times Treated_j + \lambda g_{j,t-3,t-1} + \beta X_{j,t-1} + \sum_c D_{cj}\delta_c + \varepsilon_j, \tag{2}$$

where $Treated_j$ is a dummy variable equal to one for target and acquirer firms in all sample years. We control for past employment growth using $g_{j,t-3,t-1}$, the two-year pre-acquisition growth rate. In the baseline regression, the only control variable included in the vector $X_{j,t-1}$ is the driving distance between the headquarter of the target and the acquirer. Like Davis et al. (2014) and Antoni, Maug, and Obernberger (2019), we use non-parametric controls by including a set of dummy variables D_{cj}, which equal one for cell c for firm j, and cells are defined by the full cross product of acquisition year, industry, establishment size category, and geographic region.[19] The coefficients of interest are the difference-in-differences estimates of

[19] We group firms into five size brackets according to their number of establishments. These brackets are: 1, 2, 3-5, 6-10, and larger than 10.

θ, which denotes the differences in flows (net growth, inflow, outflow) between sample firms and matching firms. Throughout the paper, we report t-statistics and significance levels based on standard errors clustered at the firm level. Precise definitions of all variables can be found in Table 1.

4.2 Restructuring after mergers

We begin the discussion of employee flows by analyzing the flows of employees between targets and acquirers. Table 4 presents our results for all employees of the merged firms (column 1), targets (columns 2 and 3) and acquirers (columns 4 and 5). For targets and acquirers, we report the results with flows scaled by the employment of the respective firm (columns 2, 4) and with flows scaled by the employment of the merged firm (columns 3, 5), to provide comparability with column 1. Column 6 reports turnover as defined in equation (1). The tables report only the coefficient estimates of θ as denoted in Equation (2), which measure the treatment effects after controlling for distance and pre-acquisition growth; we refer to these as abnormal flows, but will often omit the labeling as "abnormal." Indented flows are breakdowns of other flows.

Loss of employment is large. The first salient observation is that post-merger restructuring involves a large reduction of employment at the establishments of the target firm, which declines by 55.4% from the beginning of the year of the acquisition until the end of the second calendar year after the acquisition. By contrast, acquirers grow (*Net employment growth*: +14.5%), whereas the overall employment of the merged firm declines by 7.2%. Hence, our overall result is in line with the majority of the previous literature surveyed in Section 2, which finds declines in employment. In the context of our theoretical discussion, this means that the efficiency effect of restructuring dominates the growth effect.

A significant proportion of the employees who leave incur losses to their human capital. The *External outflow* of the merged firm amounts to 13.4% of the merged firm's labor force.

Of these, 3.86 percentage points (pp) experience a wage decline, and a further 1.73 pp become unemployed, hence, 42% (=(3.86+1.73)/13.4) of those who leave the merged firm incur losses to their human capital. Most of these are target employees who take lower-paid jobs (3.03%), whereas most of those who become unemployed are acquirer employees (1.08%). The remaining employees experience wage increases, and we expect that many of them will have left the firm voluntarily. Some studies (Kim, 2018; Chen, Gao, and Ma, 2020) discuss the difficulties of acquirers to retain the key employees of the target. Indeed, we find that 20.8% of target employees leave for other firms at a higher wage. However, the proportion of employees who leave the firm and experience a wage increase as fraction of all employees who leave for other firms is almost identical for targets (0.68=20.8/30.68; see column 2) and acquirers (0.69=4.31/6.23; see column 4). Hence, we conjecture that the restructuring of the organization and the labor force blocks some employees' career paths in both merging firms, and these employees then leave voluntarily.

Many targets lose all employees. Figure 2A shows that about 30% of all targets have zero employees at the end of year two after the acquisition, which corresponds broadly to the finding of Maksimovic, Phillips, and Prabhala (2011), who find that acquirers close 46% of acquired plants within three years of the acquisition. The change in employment and labor flows differ depending on whether targets are closed or not. To see this, we define an indicator variable *Target closure*, which is one if the target has zero employees in the second calendar year following the acquisition. Note that targets may close some but not all establishments, in which case *Target closure* equals zero. In Table 6, we report the employee flows separately for surviving and for closing targets. The overall employment of merged firms that close their targets declines by 27.6%, compared to a small and marginally significant increase of 3.8% for firms with surviving targets. The growth of firms with surviving targets happens entirely at the acquirer plants (12.3% of the acquirer's labor force, see column 4 of Table 6A), whereas target growth is statistically and economically small. External outflows are insignificant for surviving targets, but large and significant for closing targets, including outflows to unemployment or to other firms with wage declines. Hence, a significant portion of restructuring and human capital losses is associated with target closures.

Turnover is high and shifts jobs from targets to acquirers. Net employment changes do not reveal the overall extent of restructuring activity. From Table 4, the merged firm has abnormal outflows of 16.9%, matched by abnormal inflows of 9.7% over the same period. *Turnover*, defined in equation (1), increases by 7.8% after acquisitions relative to control firms (Table 4, column 6). However, turnover at the level of the merged firm does not take the form of separations and new hirings in the same establishment. Rather, additional hiring is only at acquirer establishments (*Inflow* is up by 12.5% for acquirers and down by 2.9% for targets; see columns 3 and 5 of Table 4), and most of the separations occur at target establishments (*Outflow* up by 11.1% for targets, compared to 5.6% for acquirers). Hence, M&As involve large abnormal employee turnover, such that most of the jobs lost are at the target and new jobs are created at the acquirer. *Turnover* is more than twice as high with closing targets (12.3%) compared to surviving targets (5.2%), although the last number is still economically and statistically significant (see Table 6). Note that acquirer outflows are also significantly larger when targets close (12.8%; Panel B, column 5) than when they survive (insignificant 1.4%; Panel A, column 5). Hence, target closures are associated with more restructuring in both firms.

Internal labor markets become more active. There is a significant increase in the activity of internal labor markets after acquisitions, with an increase of 3.5% of the flows between establishments of the merged firm (by construction, *Internal inflow* = *Internal outflow*). There is a substantial flow from targets to acquirers: The target's *Outflow between* of 2.2% (Table 4, column 3; scaled by the employment of the merged firm) corresponds to 18.1% of the target's employment (column 2); the matching inflow to the acquirer corresponds to

4.5% the acquirer's employment. (Acquirers are on average about four times larger than targets, see Table 2.) These findings are consistent with the results of Cestone et al. (2017) and Huneeus et al. (2018), who find significant increases in internal labor market activities after exogenous shocks in business groups.

The flows in the opposite direction from acquirers to targets are much smaller. The target's *Inflow between* is 0.27% (1.29%) as a percentage of the employment of the merged firm (target), but statistically still highly significant. Interestingly, there are also higher transfers within the acquirer and within the target compared to the control group: the abnormal *Inflow within* of the merged firm is 1.0%, driven mostly by flows within the acquirer. While smaller than other abnormal flows, these increases are still noteworthy, since they could have taken place even without an acquisition. We interpret them as the outcome of an overall reconfiguration of jobs and tasks. Hence, acquisitions set in motion a chain of internal job changes and transfers, which give rise to a substantial overall increase in the activity level of internal labor markets.

External flows dominate internal flows. However, while the increase in internal labor market activity is large and significant, it still contributes only about one-quarter of overall employee flows at the acquirer and the target. The transfers from the target to the acquirer account for less than one-fifth of the acquirers' *Total inflow* (2.20/12.52=0.18) and about one-quarter of the merged firm's *Total inflow* (2.47/9.72=0.25). Hence acquirers grow mostly through external recruiting and not through transferring employees from the target.

Similarly, only one-fifth of the total outflow of target employees moves to the acquirer (2.19/11.11=0.20), whereas half of the leaving target employees move to other firms at a higher wage (5.26/11.11=0.47), and a further quarter moves to other firms at a lower wage (3.30/11.11=0.27). Hence, internal labor markets have a much smaller role than external labor markets in providing target employees with new employment opportunities.[20]

[20]See Ellul, Pagano, and Schivardi (2017), Kim, Maug, and Schneider (2018), and Cestone et al. (2017)

The relative importance of internal labor flows is much lower when targets survive after acquisitions. The *Internal inflow* of 3.5% mentioned above is higher when targets are closed (+7.2%) than when they survive (+1.5%). Hence, most of the increased activity in internal labor markets documented in Table 4 is associated with transfers of target employees to acquirer plants when targets close. For surviving targets, moves to the acquirer account only for 3.7% (closures: 44.2%) of the target's labor force, or 0.4% (closures: 5.4%) of the labor force of the merged firm.

5 What happens in post-merger restructuring

For the reasons explained in the Introduction, we find find some of the salient observations documented in the previous section surprising, in particular, the extend of employee turnover and the comparatively small size of managerial labor markets. In this section, we shed more light on these observations. Section 5.1 analyzes how firms build and transfer managerial capacities. Section 5.2 shows more results on the composition of employee flows and Section 5.3 identifies the drivers of employee flows. Section 5.4 draws some conclusions for performance.

5.1 Restructuring and management

In this section we hypothesize that restructuring management has a critical role for post-merger restructuring and needs to be analyzed separately. A literature in organizational economics argues that the quality of management and managerial practices have a similar role in creating productivity improvements as changes in technology (e.g., Bloom and Van Reenen

for recent work on insurance provision within firms. Our argument is not inconsistent with the findings of Cestone et al. (2017), who show that internal hiring becomes relatively more important to external hiring after adverse industry shocks. They compare how the relative importance of internal flows compared to total (external plus internal) flows in business groups *changes* after industry shocks. By contrast, the analysis above compares the size of internal relative to external flows and not its change. Similarly, Huneeus et al. (2018) compare flows between pairs of business group affiliated firms to flows between pairs of non-affiliated firms and find that the former are four to five times larger than the latter. We would expect similar findings within merged firms, since the external transfers spread across a far larger set of firms than the internal transfers.

(2007); Bloom et al. (2012); Atalay, Hortacsu, and Syverson (2014)). However, managerial practices can often not be transferred like technological blueprints and are embedded in the managers who are familiar with these practices, which differentiates internal transfers of managers from those of rank-and-file employees. A related literature argues that firms gain competitive advantage by building "knowledge-based hierarchies," which make optimal use of knowledge and skills in production by creating layered structures of (middle) management. These hierarchies optimally trade off the benefits of more hierarchically-layered structures, which relieve employees in the middle layers from needing to over-specialize, against the costs of such structures from additional compensation for expensive top managers and costs for communicating across layers. Hence, we propose that firms create synergies from building and leveraging managerial capacities.[21]

Table 5 shows the flows for managers in the same format as Table 4 does for the general workforce. The term "managers" refers to middle management and is defined from the occupational codes using the Blossfeld (1987) classification.[22]

Net employment. The net employment decline for managers is small (*Net employment* growth = -3.9%), about half the point estimate for the general workforce and statistically insignificant. In addition to inflows and outflows from other establishments, we also have to consider promotions of employees of the same plant to managerial positions, which decline by 1.7%, and demotions of employees from managerial positions, which account for 1.4%, which are both statistically insignificant. The proportion of leaving managers who incur human capital losses is slightly lower (35%=(2.17+3.45)/16.14 of *External outflow*) than for

[21] An incomplete list of theories of how M&As create synergies, with selected references includes: Creation of monopoly power: Eckbo (1983); Cai, Song, and Walkling (2011); creation of monopsony power in labor markets: Fulghieri and Sevilir (2011); overcoming contracting inefficiencies along the supply chain: Kedia, Ravid, and Pons (2011); product differentiation: Hoberg and Phillips (2010), Sheen (2014); recombining assets: Maksimovic, Phillips, and Prabhala (2011); efficiency gains: Erel (2011); relaxing financial constraints: Erel, Jang, and Weisbach (2015), Almeida, Kim, and Kim (2015).

[22] Table OA3 in the Online Appendix repeats the analysis for highly-qualified employees. Highly-qualified employees are also defined from the occupational codes using the Blossfeld (1987) classification and include managers.

the general workforce, and a larger proportion of those who leave for better-paid jobs are from the acquirer (42%=4.53/10.59, see columns 1 and 5) compared to the corresponding proportions for the general workforce, which suggests that more acquirer managers perceive mergers as negative shocks to their career prospects and leave voluntarily. Moreover, human capital losses are only significant for target managers.

Turnover. The turnover of management is a little more than twice as high (16.2%) as that of the general workforce. Similar to the general workforce, job creation happens exclusively at the acquirer, but a much larger proportion of these outflows, almost one-half (9.24/20.36=45%; columns 4 and 5), are also at the acquirer. Together with the earlier findings on departures associated with wage increases, this observation suggests that post-acquisition restructuring involves a significant reconfiguration of management at the acquirer.

Internal labor markets. The internal flows of managers are much larger than those for other employees. We observe an *Internal inflow between* to the target of 4.21% of the target's workforce, compared to 1.29% for the general workforce (see column 2 of, respectively, Table 5 and Table 4). By contrast, the flows of managers from the target to the acquirer are almost exactly identical for managers and the general workforce (4.38% and 4.50%; see column 4 in the same tables). Hence, consistent with the argument that managerial capabilities are embedded in the acquirer's management, we observe a higher number of internal transfers from acquirers to targets compared to other employees.

Moreover, Table 6 shows that, for the general workforce, there are significant transfers from the acquirer to the target only for surviving targets (compare *Internal outflow* of the acquirer and *Internal inflow* of the target in columns 3 and 5 of both panels). Hence, either targets are closed and many target employees move to the acquirer, or targets survive and acquirer employees move to the target. These patterns are consistent with our theoretical arguments (Hypothesis 1(ii)), since efficiency increases require the application of improved managerial practices, either by moving acquirer employees to the establishments of the target, or by integrating target employees into the establishments of the acquirer.

External labor markets and turnover. Flows to and from the external labor market are much larger for managers: external turnover is higher by 11.9%, compared to 4.33% for the general workforce. This fact arises mainly because for managers, firms rely much more on external recruiting (*External inflow* = 15.3%) compared to the general workforce (6.2%; see column 1 of Tables 4 and 5). Moreover, the *Internal inflow* of managers to the acquirer is higher than that for the general workforce only because there are more internal transfers of managers from other establishments of the acquirer (*Internal inflow within* = 1.50%; column 5 of Table 5) compared to the general workforce (0.93%; column 5 of Table 4), not because there are more transfers from the target to the acquirer. Hence, the changes in skill requirements for managers require more external hiring and less internal retraining or job reassignments compared to other employees.[23]

5.2 The composition of employee flows

When merging firms turn over their workforce, they are likely to also change the composition of the workforce as they adapt to a new economic and organizational environment. Hence, we are interested in how the inflows and outflows to and from the merging firms differ. Table 7 provides descriptive evidence on the qualification and education of employees of acquirers and targets in the year before the merger. Acquirers employ a much higher proportion of employees in management (7.1% vs. only 4.4% for targets), have more technicians and engineers (14.7% vs. 11.6% for targets) and fewer employees in simple commercial and administrative occupations (7.6% vs. 12.7% for targets). Acquirer employees are also better educated, with

[23]Table OA3 in the Online Appendix provides results for highly-qualified employees, a broader group of employees, which includes managers. The results for this group for net employment, turnover, and the reliance on internal labor markets are about in the middle between those for managers and those for the general workforce and not discussed in detail here.

27.2% of them holding a university degree (17.5% for targets), whereas more target employees have only vocational training (60.5%, compared to 52.3% for acquirers). Hence, acquirers have more highly-qualified, better-educated and better-paid employees compared to targets (Table 2, Panel A reports a difference of €15.12 in daily wages). Recall from Section 4.2 that most hiring is at acquirers, whereas most job losses are at targets. If the null hypothesis is that firms scale up or down their workforce without changing its composition, we would expect that newly-hired employees are better educated, better-qualified, and earn more than those who leave. By contrast, the theory of knowledge-based hierarchies predicts that the employee flows after acquisitions lead to a reduction in the compensation of the workforce if superstar managers of the top of the hierarchy relieve the skill requirements on those in the middle of the skill distribution, who work in the "shadow of the superstars" (e.g., Garicano and Rossi-Hansberg (2015) and references therein).

We analyze the characteristics of inflows and outflows to merged firms in terms of wages, education, qualification, and age in Table 8. To analyze qualification and education, we define indices. *Qualification index* is constructed by mapping occupational codes into three categories (low, middle, high), and *Education index* is constructed based on educational attainments grouped into five categories (see Appendix A.2 for details). Table 8 reports the results for the averages of these indicators before and after the merger for the flows to and from the external labor market for the merged firm and the synthetic controls of the merged firms (Panel A), and for the internal flows of the merged firm (Panel B). Note that the number of observations differs across panels because the averages only include firms for which the respective flows are positive. In line with our expectations, Panel A shows that inflows and outflows to merged firms differ regarding all four characteristics. Newly-hired employees are, on average, slightly more qualified and better educated than those who leave the firm. However, these effects are economically small and amount to 3.2% (Education) and 0.7% (Qualification) of the pre-merger level, and amount to less than one-tenth of the standard deviations of these variables. Newly-hired employees are 3.97 years younger than leaving employees, which is 10.0% of the pre-merger age, and receive €11.02 or 11.2% less of *Daily wage.* These effects are economically large and statistically highly significant. Interestingly, the average *Age* of outflows is about the same as the pre-merger age, whereas *Daily wage* is lower for inflows and outflows compared to the average *Daily wage* of pre-merger employees. Hence, external inflows and outflows affect predominantly lower-paid employees.

It is instructive to compare the composition of flows to those of control firms (see second part of Panel A). For these, we observe almost identical relative changes for *Education* and *Qualification*, but not for *Age* and *Daily Wage.* Moreover, both inflows and outflows at control firms affect employees with much lower wages. In Panel B we provide the same analysis for internal inflows and internal outflows. (These flows are not defined for synthetic controls of merged firms, which do not have internal flows.) Most importantly, we now have only 266 observations, hence, internal flows do not exist for about three-quarters of our sample. This shows that internal labor markets are created only in a minority of mergers. In most mergers, there are no internal flows in either direction and we conclude that the creation of internal labor markets is not wide-spread. The most remarkable feature of the internal flows is that they involve more highly-paid employees: The average *Daily wage* is 44% higher for internal inflows relative to external inflows. Hence, merging firms appear to transfer mostly highly-paid employees. The compensation differences reflect higher levels of education and qualification for transfers in both directions: whereas external inflows and outflows involve employees with education and qualification that are about the same as that of the pre-merger workforce, internal flows involve significantly better-educated and better-qualified employees. These patterns may reflect that merging firms make stronger efforts to retain high-quality employees after mergers. They are also consistent with the notion that firms try to transfer managerial practices across the firm.

Figure 3 shows how the structure and compensation of the labor force changes around

M&As. The figure shows the developments for *Education*, *Qualification*, and *Age* (Panel A), and *Employment* and *Daily wage* (Panel B). All variables are indexed so that the variable equals 100 for control firms in t = -1. The numerical values for all variables are shown in Table OA4 in the Online Appendix. We see that the employees of merged firms are on average more educated, more qualified, and younger compared to those of control firms before the merger. Moreover, all these differences increase after the merger as the workforce of merged firms increases faster in terms of *Education* and *Qualification*, and ages more slowly compared to control firms. Employment declines at merged firms and control firms at about the same rate; *Daily wage* is already higher at merging firms before the merger, and then increases more strongly for these firms compared to control firms, which probably reflects the increase in education and qualification. Overall, we conclude that merging firms employ a higher-quality workforce before the merger, and they improve the quality of their workforce faster compared to control firms.

5.3 Determinants of employee flows

In this section we analyze the main determinants of employee flows. We extend our methodology (Section 5.3.1) and then ask what drives employment growth (Section 5.3.2), turnover (Section 5.3.3), and internal labor markets (5.3.4).

5.3.1 Methodology

Do do so, we expand Equation (2) by including additional variables that describe the labor force of the merging partners, their hierarchical structure, their size and pre-acquisition growth, as well as their relatedness. We measure all these variables in the pre-acquisition year $t-1$ and interact them with the *Treated* indicator. Hence, we run:

$$\begin{aligned} f_{j,t-1,t+2} =& \alpha_t + \theta \times Treated_j + \beta X_{j,t-1} + \gamma \times Treated_j \times X_{j,t-1} \\ &+ \lambda g_{j,t-3,t-1} + \sum_c D_{cj}\delta_c + \varepsilon_j. \end{aligned} \tag{3}$$

In the vector $X_{j,t-1}$ we include the following variables (precise definitions of all variables can be found in Table 1 and the Appendix):

Relatedness (3 variables). We use three variables that characterize key aspects of the relationship between acquirer and target:

- *HCR*, or human-capital relatedness, is a measure of the pairwise human-capital relatedness of acquirers and targets as defined in Lee, Mauer, and Xu (2018).[24]
- *Related* is an indicator variable that is equal to one if acquirer and target serve the same horizontal market, or if they are vertically related (see Appendix A.4 for details). Hence, *Related* equals zero only in diversifying acquisitions in which acquirer and target are unrelated. We often refer to *Related* as industrial or output-market relatedness, to distinguish it from human-capital relatedness.
- *Distance* is the driving distance between the headquarters of the acquirer and the headquarters of the target.

Hierarchy (2 variables). We use the employee-weighted average number of hierarchical layers in the firm (see Section 4.1) to characterize the degree of hierarchization of the acquirer and the target ($Hierarchy_A$, $Hierarchy_T$).

Growth and size (4 variables). We include the pre-acquisition growth of employment of the acquirer ($Growth_A$) and of the target ($Growth_T$) as in the baseline regressions based

[24]We also ran all key regressions using the measure of human capital transferability of Tate and Yang (2016) and obtain similar results.

on equation (2) discussed in the previous section. We also include the logarithm of total employment of acquirer and target as a proxy for size ($Size_A$, $Size_T$).

Characteristics of the labor force (8 variables). We use the average daily wage, the average employee age, and the percentages of employees with high education, respectively, high qualification. In each case, we include the value for the target and a second variable that measures the difference of this measure (age, wage, etc.) between the acquirer and the target. The coefficients for these variables are only reported in Table OA3 of the Online Appendix.

Hence, we have 17 explanatory variables and the treatment indicator *Treated.* To characterize flows for the entire workforce, we focus on four key dependent variables (*Growth*, *Inflow*, *Outflow*, *Turnover*) plus the breakdown of flows into inflows and outflows (another four variables). Since the number of variables and regressions is rather large, we only report estimates for the coefficients θ on $Treated_j$ and the coefficients γ on $Treated_j \times X_{j,t-1}$. Table 9 shows the results at the level of the merged firm (Panel A), at the level of the acquirer (Panel B), and at the level of the target (Panel C). The results for the labor force characteristics for the merged firm and for acquirers are relegated to Table OA5 in the Online Appendix, since these estimates are almost always insignificant and less relevant for our discussion. Table 10 shows the results for managers at the level of the merged firm.[25]

5.3.2 What drives growth and employment losses?

We first ask which variables drive the large net employment decline, particularly, the employment decline at the target. Note that the treatment indicator is never significant, even though it is significant in regressions without additional explanatory variables. Hence, the explanatory variables and their interactions with treatment added in equation (3) and Table 9 absorb the influence of treatment. Only two variables have significant explanatory power.

[25]For managers, the results for acquirers and targets are shown in Table OA6 of the Online Appendix. For highly-qualified employees, all results are shown in Table OA7 of the Online Appendix.

Related reduces growth of the merged firm (-8.3%; column 1 of Panel A) and of the target (-7.1%; column 1 of Panel B). Hence, industrial relatedness creates efficiency gains from consolidation.

Interestingly, acquirer size ($Size_A$) has a highly significant positive impact and target size ($Size_T$) has an equally significant negative impact. To evaluate economic significance, we multiply the coefficients from Table 9 by the standard deviations of the explanatory variables (see Table 2), which gives an impact of 12.2 pp for both variables (acquirer: +6.78x1.8; target: -8.71x1.4). The signs and size of these effects is surprising. First, we would have expected larger targets to carry more seeds, which permit the merged firm to growth faster, but this does not appear to be the case. Rather, it seems that larger targets have already matured and grown these seeds themselves, and require more adaptations to fit the purposes of the acquirer. Acquirers restructure these larger targets more radically, which is reflected in larger external outflows from the merged firm (Panel A, column 5). These fall in about equal amounts on the acquirer (+2.98% *External outflow,* Panel B, column 5) and the target (+3.85% *External outflow,* Panel C, column 5).

We would have expected larger acquirers to grow more slowly, simply because an acquisition of a given size has relatively less impact on a larger acquirer, and because larger firms generally grow more slowly (Sutton, 1997). We can offer two mutually non-exclusive explanations in the context of our framework. First, it is plausible that larger acquires are more "seed constrained," i.e., their growth is more constrained by the availability of business opportunities, whereas they have all other resources already in place, in particular management and management processes. Then an acquisition spurs faster post-acquisition growth, because it relaxes a more stringent constraint. Second, it could be that larger acquirers possess more capacities to integrate targets into their organization, either by absorbing target employees in the acquirer's firm or by managing the target as an independent entity. Absorbing the target into the acquirer's organization would suggest more internal labor flows from the target and to the acquirer, but we do not observe these: The coefficients of $Size_A$ on the acquirer's *Internal inflow* (-0.57; Panel B, column 4) and on the target's *Internal outflow* (-0.97; Panel C, column 7) are both negative.

By contrast, if acquirers manage the target as a separate entity we should observe lower (external) outflows from the target's plants. We analyze the potential causes of target closure in Table OA8 in the Online Appendix, where we run a regression of the indicator *Target closure* against the same explanatory variables as in Tables 9 and 10. We observe that, apart from the treatment indicator and the driving distance between acquirers' and targets' headquarters, the only other variables that reliably predict *Target closure* are the size of acquirer and target, which both have a highly significant negative impact. Hence, we find indeed that larger acquirers are less likely to close targets, consistent with the notion that larger acquirers have more managerial capacities to manage targets as independent units. In addition, we observe that the decision to close the target is largely unrelated to all other explanatory variables.

Table 10 shows the regression results from estimating equation (3) for managers. Many results for managers are similar to those for the general workforce, but some differences stand out. First, the treatment indicator is now significant and also large, showing that acquisitions are associated with a 151.1% increase in management that cannot be related to any of the other explanatory variables, and is not observed for the general workforce. This result is consistent with our earlier argument that managers play a key role in transforming and integrating the target by moving problem solving from the lower layers to the managerial layers of the organization. Second, acquirer size is not significant anymore. While we observe significantly lower (external) outflows for larger acquirers (see coefficients on $Size_A$ in columns 5 and 6 of Table 10), these are almost matched by equally lower (external) inflows (columns 2 and 3). This is unsurprising, because larger acquirers already have the managerial capacity in place. More hierarchical targets grow their management by 12.5% (=22.76%*0.55) less for a one standard-deviation increase in $Hierarchy_T$, whereas the hierarchical structure has no impact on the growth of the general workforce. Hence, more hierarchical targets seem to have already much of the managerial structure in place that acquirers need, so that the net growth in management is correspondingly lower.

5.3.3 What drives the increase in turnover?

Next, we discuss the increase in employee turnover. Employee turnover, defined in equation (1) and measured at the level of the merged firm, increases by 7.83% for the general workforce and by 16.18% for managers (see Tables 4 and 5 and Section 4.2). Three variables consistently explain the cross-sectional variation in turnover (see column 10 in Table 10): A one-standard deviation increase in HCR (0.50) increases turnover by 2.25 pp (=0.50x4.49); a one-standard deviation increase in acquirer growth (0.29) increases turnover by 2.77 pp (=0.29x9.40), and a one-standard deviation increase in target growth (0.23) increases turnover by 1.85 pp (=0.23x8.20).

Our interpretation is that growth is a process in which tasks and the labor force need to be continuously reconfigured; hence, growth drives turnover. Interestingly, the growth of the acquirer carries a quantitatively larger weight compared to the growth of the target. Hence, it is more the pre-acquisition growth of the acquirer that requires a more significant adaptation of the workforce than that of the target. These adaptations are more significant if the workforce of the acquirer and of the target are more similar, i.e., if HCR is higher, and this effect has economically about the same size as that of pre-acquisition growth. Note that, unlike industrial relatedness measured by *Related*, human-capital relatedness does not predict net employment growth (see column 1).[26] We hypothesize that a more similar target workforce has less complementarity with the skill set of the acquirer and induces more replacements, i.e., the acquirer hires lower-paid employees with similar qualifications compared

[26]This finding differs from that of Lee, Mauer, and Xu (2018) for M&As in the U.S., who find that HCR is related to net employment growth.

to those who leave. We will investigate this hypothesis in Section 5.2 below.

Next, we ask whether inflows and outflows are potentially associated with other variables than those that influence turnover, i.e., that jointly influence inflows as well as outflows. Table 9 shows that the only other variables that influence outflows in addition to those that influence turnover are *Related* and *Size*, both of which we discuss extensively above as determinants of net employment growth. By contrast, there are no variables associated with inflows other than those that influence turnover. Specifically, the variables that influence net employment growth influence almost only external outflows but not inflows. We conclude that the scope of restructuring is mainly related to the scope of outflows, and that inflows are driven mainly by the need to replace employees who leave. We explore this aspect further by regressing *External inflow* on outflows and report these results in Table 11. The analysis in column 1 shows that there is a consistent but surprisingly small response of inflows to outflows: On average, one acquirer (target) employee who leaves the merged firm is replaced by 0.20 (0.13) new employees. Importantly, the interactions with the treatment indicator are all insignificant. Hence, the relationship between inflows and outflows is the same for treated firms and for control firms, only that more employees leave from treated firms.

The variables that influence the turnover of managers are the same as those for the general workforce, but the effects are about twice as high as for the general workforce (compare Tables 10 and 5). For managers, we also need to consider promotions to and demotions from managerial roles, which we capture by running regression (3) with promotions (column 8) and demotions (column 9) as dependent variables. It is remarkable that most of the treatment effect on growth we noted above (151.1, column 1) can be accounted for by an increase in promotions (+43.4%, but statistically insignificant), and a reduction in demotions (-47.7%, significant at the 5%-level). Almost the entire reduction of employment growth we observe in related acquisitions can be attributed to a reduction in promotions. Hence, promotions and demotions account for much of the variation in the growth of employment in managerial positions, even though the averages of these flows are economically small and statistically insignificant (see Table 5). These findings suggest that the requirements for managers are to a significant degree satisfied through assigning jobs to existing employees, not through departures and hiring. They also show that post-acquisition restructuring is, to a significant degree, a restructuring of the managerial functions in the firm.

5.3.4 What drives the growth in the ILM?

Finally, we ask which factors affect whether firms increase the activity of their ILMs. The main factor that drives the activity level of the internal labor market is the degree of hierarchization of acquirers and targets. A one-standard deviation (0.53) increase in $Hierarchy_A$ increases the internal flows of the merged firm by 2.38 pp, which compares to an overall increase in ILM flows after acquisitions of 3.50% of the merged firm's labor force. The hierarchy index of the target is not relevant for the ILM of the merged firm, but it does affect the ILM flows of the target itself (coefficients of -1.35 on *Internal inflow* and -2.11 on *Internal outflow*). Note that hierarchy does not proxy for size here, which we control for and which has by itself a negative and less significant impact. We conclude that operating ILMs requires managerial capacities, so that higher degrees of acquirer hierarchization increase ILM activity. By contrast, more hierarchical targets appear to require less restructuring and new job assignments, so that the internal flows to and from the target are reduced in more hierarchical targets, showing again that managerial capacities are critical.

Other factors that affect the activity level of the ILM are the pre-acquisition growth of the acquirer (coefficient: +3.46) and HCR (coefficient: +1.88); a one-standard deviation increase in either of these variables increases ILM activity at the merged firm by one percentage point. Both variables are also associated with external inflows to the acquirer. Hence, it seems plausible that external inflows and internal inflows are complementary in serving the staffing requirements of the acquirer.

The results for the internal flows of managers are broadly similar to those of the general workforce, with the point estimates for acquirers' pre-acquisition growth and hierarchy being slightly larger. The most notable difference is that for managers, the industrial relatedness of the merging partners appears relevant, whereas human-capital relatedness does not, the opposite of what we see for the general workforce. This is plausible, because the transferability of managers' skills depends more likely on the similarity of the operations than on the similarity of the occupational characteristics of the workforce.

5.4 Performance

We are interested in whether M&As affect performance. In this regard, our analysis limited by availability of data, since our data provider does not have access to firm-level data and financial statements are often missing, in particular for non-listed firms. However, we can establish sales and sales growth for a larger number of firms, which allows for some inference. Accordingly, we calculate *Sales growth* from one period prior to two periods after the transaction, using the same definition of growth rates as for employment (see Section 3.3 and equation (4)) at the level of the merged firm. Similarly, we construct a variable *Labor productivity*, which is defined as the ratio of *Sales* and the number of employees, and calculate the growth in *Labor productivity* in the same way. We then perform regressions on the *Treatment* indicator with and without the cell fixed effects, with *Sales growth* and *Labor productivity* as the dependent variables. Table 12 reports the results for all 835 observations for which we can calculate *Sales growth* (columns (1), (2)), and for all observations for which we can calculate *Sales growth* for the treated as well as for the matching control observations (columns (3), (4)). The even-numbered columns include non-parametric cell indicators, whereas the odd-numbered columns do not. There is only limited evidence that *Sales growth* is higher for merged firms compared to matching control firms. However, there is consistent evidence that Labor productivity increases after mergers if we measure the change in Labor productivity in dollars (Panel B), and somewhat weaker evidence if we use the percentage growth in Labor productivity as the dependent variable (Panel C).

6 Conclusion

We study the restructuring of the labor force after acquisitions for a sample of M&As in Germany. We find that overall employment declines after mergers and is concentrated in about one-third of mergers that close all target establishments within two years of the acquisition. Either target employees move from closed target establishments to acquirer establishments, or some acquirer employees move to the surviving target establishments. Equally important, employee turnover increases, especially for middle managers and highly-qualified workers, for whom employment declines less. Finally, firms build managerial capacities through restructuring middle management and increasing the degree of hierarchical layering of the firm, especially for firms that grow faster and that increase the number of their product lines.

We interpret these findings in the context of a theoretical framework in which firms with business opportunities and superior abilities to generate revenues become targets, and those with superior managerial capacities to manage production efficiently become acquirers. The organization of acquirers delegates complex tasks to managers in the higher layers of the firm, and relieves the middle layers of the organization from these tasks, which can then be assigned to less expensive employees. As such, we put our discussion into a theoretical framework that emphasizes the internal organization of the firm, and the importance of human capital and intangible assets. Developing this framework more formally is left for future research.

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A Appendix

This appendix provides more detailed information about the computation of growth rates, hiring rates, and separation rates (Section A.1).

A.1 Growth rates, separation rates, and hiring rates

We use the following definitions:

Symbol	**Definition**
E_{jt}	Number of all employees employed in firm j at the end of year t.
H_{jt}	Number of employees who enter firm j in period t, i.e. between the end of year $t-1$ and the end of year t.
S_{jt}	Number of employees who are separated from firm j in period t, i.e. between the end of year $t-1$ and the end of year t.

We then define employment growth between period $t-1$ and period t as

$$g_{j,t-1,t} \equiv \frac{E_{jt} - E_{j,t-1}}{0.5\left(E_{jt} + E_{j,t-1}\right)} \tag{4}$$

and observe that

$$E_{jt} - E_{j,t-1} = H_{jt} - S_{jt}. \tag{5}$$

We define one-year hiring rates and separation rates as

$$h_{jt} = \frac{H_{jt}}{0.5\left(E_{jt} + E_{j,t-1}\right)}, \; s_{jt} = \frac{S_{jt}}{0.5\left(E_{jt} + E_{j,t-1}\right)}. \tag{6}$$

From (4), (5), and ((6)), we have

$$g_{j,t-1,t} = h_{jt} - s_{jt}. \tag{7}$$

We also compute multi-period employment flows as

$$E_{j,t+k} - E_{j,t-1} = \sum_{\tau=0}^{\tau=k} \left(E_{j,t+\tau} - E_{j,t+\tau-1}\right) = \sum_{\tau=0}^{\tau=k} \left(H_{j,t+\tau} - S_{j,t+\tau}\right) = H_{j,t-1,t+\tau} - S_{j,t-1,t+\tau}. \tag{8}$$

Multi-period rates. Multi-period growth rates between periods $t-1$ and $t+k$ are defined as

$$g_{j,t,t+k} \equiv \frac{E_{j,t+k} - E_{j,t-1}}{0.5\left(E_{j,t+k} + E_{j,t-1}\right)}. \tag{9}$$

Multi-period hiring rates and separation rates are defined analogously to (9). Note that, generally, $g_{j,t-1,t+k} \neq \sum_{\tau=0}^{\tau=k} g_{j,t+\tau-1,t+\tau}$ and analogously for separation and hiring rates.

Percentage growth rates. We use γ to refer to conventional one-year percentage growth rates, which can be defined as

$$\gamma_{j,t-1,t} \equiv \frac{E_{jt} - E_{j,t-1}}{E_{j,t-1}}. \tag{10}$$

It is easy to show that

$$g_{j,t-1,t} = \frac{2\gamma_{j,t-1,t}}{2 + \gamma_{j,t-1,t}} \Leftrightarrow \gamma_{j,t-1,t} = \frac{2g_{j,t-1,t}}{2 - g_{j,t-1,t}}$$

and that $g_{j,t-1,t}$ and $\gamma_{j,t-1,t}$ are monotonically increasing functions of each other. However, their ranges are different, $\gamma_{j,t-1,t} \in [-1, \infty)$ whereas $g_{j,t-1,t} \in [-2, 2]$.

Growth rates and employment fractions. For this discussion, suppress the firm index j and the time indices $t-1$ and t, and index employees in group h by the superscript h. Let $\phi_t^h \equiv \frac{E_t^h}{E_t}$ be the fraction of employees in group h, given by E_t^h, relative to the total number of employees $E_t \equiv \sum_h E_t^h$. Define the percentage growth rate of group h by $\gamma^h \equiv \frac{E_t^h - E_{t-1}^h}{E_{t-1}^h}$. The growth of the whole workforce, $\gamma \equiv E_t/E_{t-1} - 1$, is a weighted average of the percentage growth rates of the different groups, i.e.

$$\gamma = \frac{\sum_h E_{t-1}^h \left(1 + \gamma^h\right)}{E_{t-1}} - E_{t-1} = \sum_h f_{t-1}^h \gamma^h.$$

Note that the growth rates g defined in (4) and (9) do not have this property. Observe also that

$$\phi_t^h = \frac{E_{t-1}^h \left(1 + \gamma^h\right)}{E_{t-1}\left(1 + \gamma\right)} = \phi_{t-1}^h \frac{\gamma^h - \gamma}{1 + \gamma}.$$

Hence, $\phi_t^h > \phi_{t-1}^h \Longleftrightarrow \gamma^h > \gamma$. Since the previous observation implies that $\gamma^h > \gamma \Longleftrightarrow g^h > g$, we have that fractions ϕ^h increase exactly for those groups whose employment growth is higher than the overall growth rate, independently of whether the growth rate is defined as a percentage growth rate or as in (4) and (9).

Turnover. To relate our definition of *Turnover* in equation (1) to other definitions in the literature, which regard turnover as an average of inflows and outflows (e.g., Davis and Haltiwanger, 1999; Cahuc, Carcillo, and Zylberberg, 2014), observe the following (suppress subscripts for time and firm for simplicity):

$$\begin{aligned} TO &= Min\,(s,h) \\ &= \frac{s+h}{2} + \frac{1}{2} Min\,(h-s, s-h) \\ &= \frac{s+h}{2} - \frac{1}{2} Max\,(h-s, s-h) \\ &= \frac{s+h}{2} - \frac{1}{2}\,|g|\,, \end{aligned} \tag{11}$$

where the last line uses ((7)). Hence, defining turnover as $\frac{s+h}{2}$ also captures the absolute value of net employment growth, $|g|$.

A.2 Variables derived from the Integrated Employment Biographies

Most variables in our analyses are derived from the Integrated Employment Biographies (IEB) database. The IEB contains every dependent employee in Germany, i.e. all regular employees since 1975 in West Germany and since 1992 in East Germany as well as all marginally employed workers since 1999.[27] The data are structured in terms of spells, i.e. employment relationships, and the data source reports starting and ending dates of these spells on a daily basis. If employment relationships continue into the following calendar year, a notification is given by the employer at the end of each year. The continued employment relationship is represented by a new spell in the following calendar year. For categorical variables such as education, qualification, and establishment affiliation, we use the information from the latest spell in a calendar year. An employee's daily wage is based on the individual's earnings in the firm over the calendar year divided by the number of days in employment. The employee's earnings are top-coded, because earnings above a threshold ranging from 51,000 in 1998 to 70,000 in 2013 Euros are exempt from certain social-security contributions. *Age* is determined on the last day of the calendar year.

A.2.1 Occupation-related variables based on Blossfeld (1987): ***Qualification*** and ***Manager***

All qualification-related variables and *Manager* are derived from Blossfeld (1987), who classifies jobs into 12 distinct major occupations based on the German Classification of Occupa-

[27] The IEB does not cover civil servants and the self-employed. These groups are irrelevant for the companies in our sample. For more details on the sources and structure of IAB's administrative data, see Antoni, Ganzer, and Vom Berge (2016).

tions 1988 (KldB 1988). Table 1 on page 99 in Blossfeld (1987) provides a detailed overview on those 12 occupations and related ISCO codes. We sort the occupational groups presented in Blossfeld (1987) into three groups according to the level of their qualification. Low qualification: Simple manual occupations, simple services, simple commercial and administrative occupations. Medium qualification: Skilled manual occupations, qualified services, semi-professions, qualified commercial and administrative occupations. High qualification: technicians, engineers, professions, managers. The *Qualification index* reports the average employee qualification level of an entity at the end of the calendar year. We assign a value of one for each low qualification, two for each medium qualification, and three for each high qualification employee.

A.2.2 Layers

We construct a four layer management hierarchy following Caliendo, Monte, and Rossi-Hansberg (2015). Based on five-digit occupational codes from the German (IAB) data we assign each employee (at the end of the calendar year) to one layer, the lowest layer being layer 1 (production workers) and the highest potential layer being layer 4 (CEOs and managing directors). Layers 2 and 3 include different ranks of middle managers. We use the exact same layer assignment from occupational codes as Gumpert, Steimer, and Antoni (2019), who adapt the layer definitions Caliendo, Monte, and Rossi-Hansberg use for France to German (IAB) data. See Gumpert, Steimer, and Antoni (2019), especially their Appendix A.3 ("Assignment of occupations to layers") for further details.

A.2.3 Education index

Education index is based on a categorical variable in the IEB database, which records the following education milestones: no school leaving certificate or intermediate school leaving certificate (ISLC), ISLC with vocational training, upper secondary school leaving certificate (USSLC) with or without vocational training, college, university degree. The *Education index* reports the average employee education level of an entity at the end of the calendar year. We assign a value of one for each employee with only ISLC, two for each employee with ISLC and vocational training, three for each employee with USSLC with or without vocational training, four for each employee with college degree, and five for each employee with university degree at the end of the calendar year.

A.3 Human capital relatedness (*HCR*): Lee, Mauer, and Xu, 2018

Lee, Mauer, and Xu, 2018 propose HCR as a measure of the relatedness between the workforce of two companies. Their original measure is based on 4-digit NAICS Occupation profiles from Occupational Employment Statistics (OES) and 3-digit SIC codes from the Compustat Industry Segment Database (CIS). The measure therefore does not compute the human capital relatedness of two firms, but of the two industries in which these firms operate. We deviate from this approach because our data allows us to compute the human capital relatedness of two firms. We start by computing firm-specific occupation shares based on a three-digit job classifier (142 values, according to the German Classification of Occupations 2010, KldB 2010). For each firm we compute the share of each occupation of those 142 occupations and compute HCR as $HCR = (H_A H_T') \,/\, \left(\sqrt{(H_A H_A')}\sqrt{(H_T H_T')}\right)$. H_A and H_T denote the human capital profile of the acquirer and the target firm (vector of occupations shares). HCR is thus a normalized measure between zero and one.

A.4 Industry relatedness (*Related*)

Related indicates whether the acquirer and the target operate in related industries. *Related* is equal to 1 if both target and acquirer operate in the same industry according to the 2-digit NACE-code or if target and acquirer operate in vertically integrated industries. To determine vertical integration, we use industry-level data on the input and output of goods provided by the OECD for Germany (in 2010). We expand the 36 industries in the OECD data to the 88 2-digit NACE industries in our sample and compute the relatedness of output and input between two industries. We define two industries to be vertically integrated, if the input-output relatedness is above the median input-output relatedness of all industries in our sample. We use the 2018 edition of the OECD input-output tables, which can be found here: `https://stats.oecd.org/Index.aspx?DataSetCode=IOTSI4_2018`.

A.5 Overview of the literature on M&As and labor

Table A1: Literature overview. This table provides a condensed overview of the Labor and M&A literature. The columns provide the following information. *Country*: ISO code of the country for domestic studies and INT for international (cross-country) samples. *Period*: Sample period. *#Obs*: Number of transactions investigated in the study. *Transaction*: Type of corporate control transaction investigated in the study. *Empl.*: Reports how employment is affected by corporate control transactions. *Wages*: Reports how employee wages are affected by corporate control transactions. Codes: A - ambiguous, P - significantly positive, N significantly negative, I - insignificant. *Topic*: Reports the direction of causality investigated in the study: M&A => Labor - the effect of M&As on labor outcome variables, Labor => M&A - the effect of labor variables on M&As.

Paper	Sample			Transaction	Labor outcome		Topic
	Country	Period	# Obs		Empl.	Wages	
Agrawal and Tambe (2019)	USA	n.a.	29,648	M&As			M&A => Labor
Ahmad and Lambert (2019)	INT	1992-2010	32,912	M&As			Labor => M&A
Almeida (2007)	PRT	1991-1998	1,381	M&As	I	I	M&A => Labor, Labor => M&A
Amess, Girma, and Wright (2014)	GBR	1996-2006	527	Takeovers, LBOs	N	I	M&A => Labor
Arnold (2019)	USA	1999-2009	7,100	M&As, OC of plants		A	M&A => Labor
Bandick and Görg (2010)	SWE	1993-2002	207	M&As	P		M&A => Labor
Bhagat, Shleifer, and Vishny (1990)	USA	1984-1986	62	Hostile takeovers	N		M&A => Labor
Brown and Medoff (1988)	USA	1978-1984	6,884	M&As	A	A	M&A => Labor
Carriquiry (2018)	DNK	2001-2010	3,489	M&As	N		M&A => Labor
Chen, Gao, and Ma (2020)	USA	1980-2013	10,911	M&As			Labor => M&A
Conyon et al. (2001)	GBR	1983-1996	240	Takeovers	N		M&A => Labor
Conyon et al. (2002)	GBR	1967-1996	442	M&As	N		M&A => Labor
Dessaint, Golubov, and Volpin (2017)	INT	1985-2007	45,696	M&As			Labor => M&A
Furlan (2015)	INT	2003-2010	ca. 1200	M&As	P		M&A => Labor
Geurts and Van Biesebroeck (2019)	BEL	2005-2012	2,601	M&As, Takeovers	N		M&A => Labor
Girma and Görg (2017)	GBR	1981-1994	303		A	A	M&A => Labor
Gokhale, Groshen, and Neumark (1995)	USA	1980-1991	133	Takeovers		P	M&A => Labor
Gugler and Yurtoglu (2004)	INT	1981-1998	646	M&As	A		M&A => Labor
He and le Maire (2020)	DNK	1995-2011	ca. 3700	M&As		N	M&A => Labor
Huttunen (2007)	FIN	1988-2001	284	Foreign M&As	N	P	M&A => Labor

Table A1: Literature overview (continued).

Paper	Sample			Transaction	Labor outcome		Topic
	Country	Period	# Obs		Empl.	Wages	
Kim (2018)	USA	1990-2011	3,700	M&As of startups	N		M&A => Labor
Krishnan, Hitt, and Park (2007)	USA	1992-1998	174	M&As	N		M&A => Labor
Lagaras (2020a)	BRA	2004-2012	2,096	M&As	N	P	M&A => Labor
Lagaras (2020b)	BRA	2004-2012	2,096	M&As		N	M&A => Labor
Lee, Mauer, and Xu (2018)	USA	1997-2012	1,322		N		M&A => Labor, Labor => M&A
Lehto and Böckerman (2008)	FIN	1989-2003	7,923	M&As	N		M&A => Labor
Levine, Lin, and Shen (2015)	INT	1991-2012	11,485	M&As			Labor => M&A
Li and Wang (2020)	USA	1981-2012	942	M&As			M&A => Labor
Li (2013)	USA	1981-2002	1,430	M&As	N	N	M&A => Labor
Lichtenberg and Siegel (1990)	USA	1972-1981	2,027	OC of plants	N	I	M&A => Labor
Lie and Que (2019)	USA	1987-2009	10,835	Asset sales, takeovers		I	M&A => Labor
Ma, Ouimet, and Simintzi (2021)	USA	1980-2010	396	M&As		P	M&A => Labor
McGuckin and Nguyen (1995)	USA	1977-1987	4,495	M&As	A	A	M&A => Labor
McGuckin and Nguyen (2001)	USA	1977-1987	20,383	OC of plants	P	P	M&A => Labor
McGuckin, Nguyen, and Reznek (1998)	USA	1977-1987	2,111	OC of plants	P	P	M&A => Labor
Neffke and Henning (2013)	SWE	2004-2007	17,504	Organic growth			Labor => M&A
Oldford and Otchere (2016)	CAN	1980-2008	804	M&As	N	N	M&A => Labor
Ouimet and Zarutskie (2020)	USA	1995-2005	1,800	M&As		P	M&A => Labor
Prager and Schmitt (2021)	USA	2000-2010	85	M&As		A	M&A => Labor
Ranft and Lord (2000)	USA	1994-1995	89	M&As	N		M&A => Labor
Rosett (1990)	USA	1976-1987	258	Takeovers		I	M&A => Labor
Shleifer and Summers (1988)	USA	1970-1985	4	Takeovers	N	N	M&A => Labor
Siegel and Simons (2010)	SWE	1985-1998	ca. 11000	M&As		N	M&A => Labor
Tate and Yang (2016)	USA	1995-2007	3,900	M&As			M&A => Labor, Labor => M&A
Tian and Wang (2020)	USA	1978-2008	1,814	Union elections			Labor => M&A
Younge, Tong, and Fleming (2015)	USA	1979-1998	ca. 500	M&As			Labor => M&A

B Figures

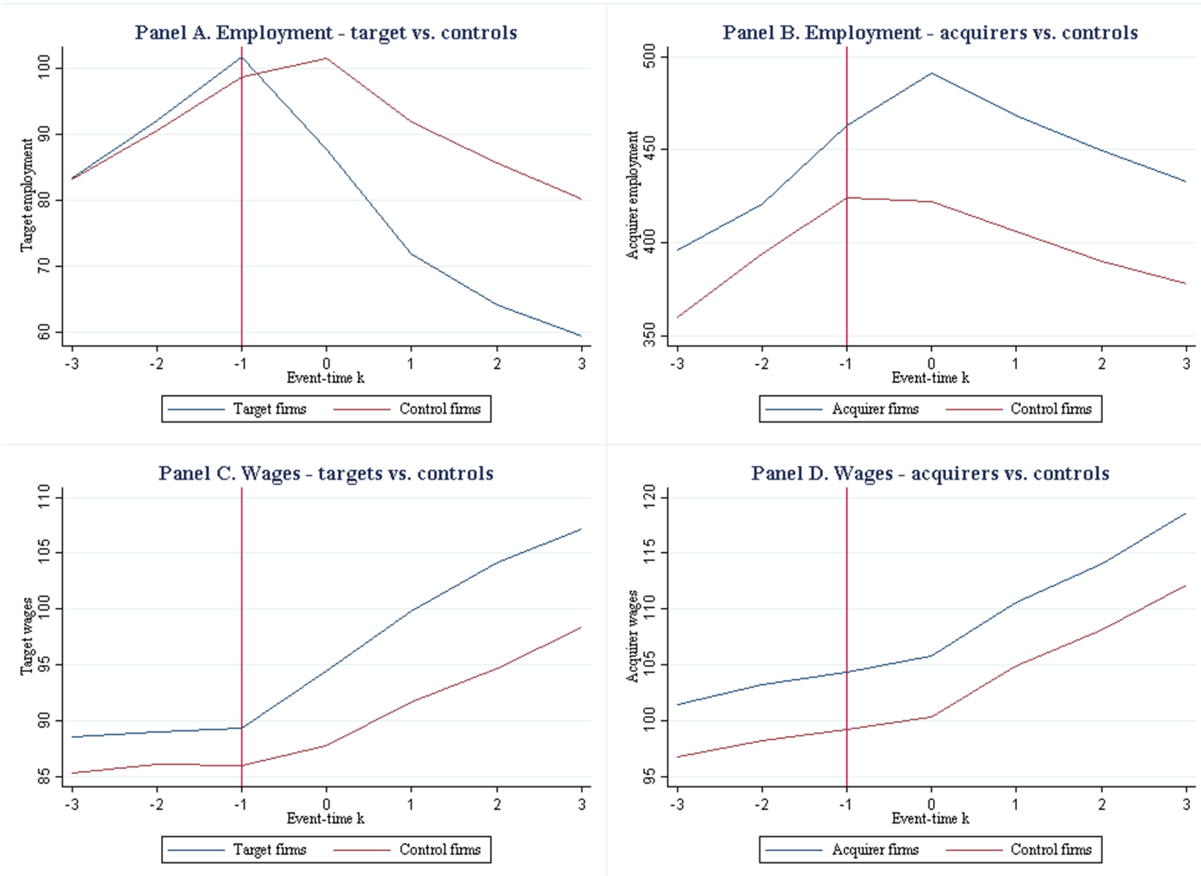

Figure 1: Firm-level employment and wages. Panel A (Panel B) shows the average total employment at the target (acquirer). Panel C (Panel D) shows the average *Wage* paid at the at the target (acquirer). *Wage* is defined in Table 1.

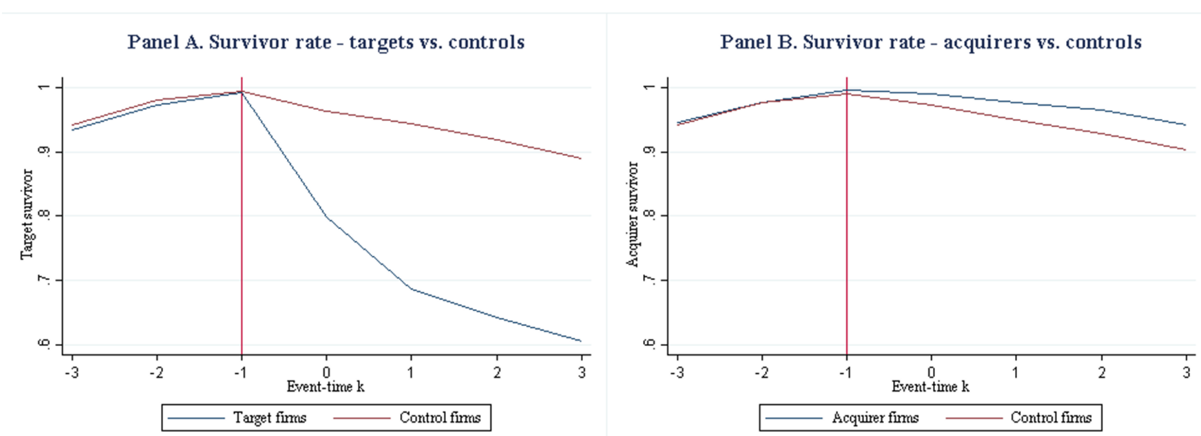

Figure 2: Firm-level development of labor force characteristics. Panel A (Panel B) plots the survival rate of target (acquirer) firms relative to control firms.

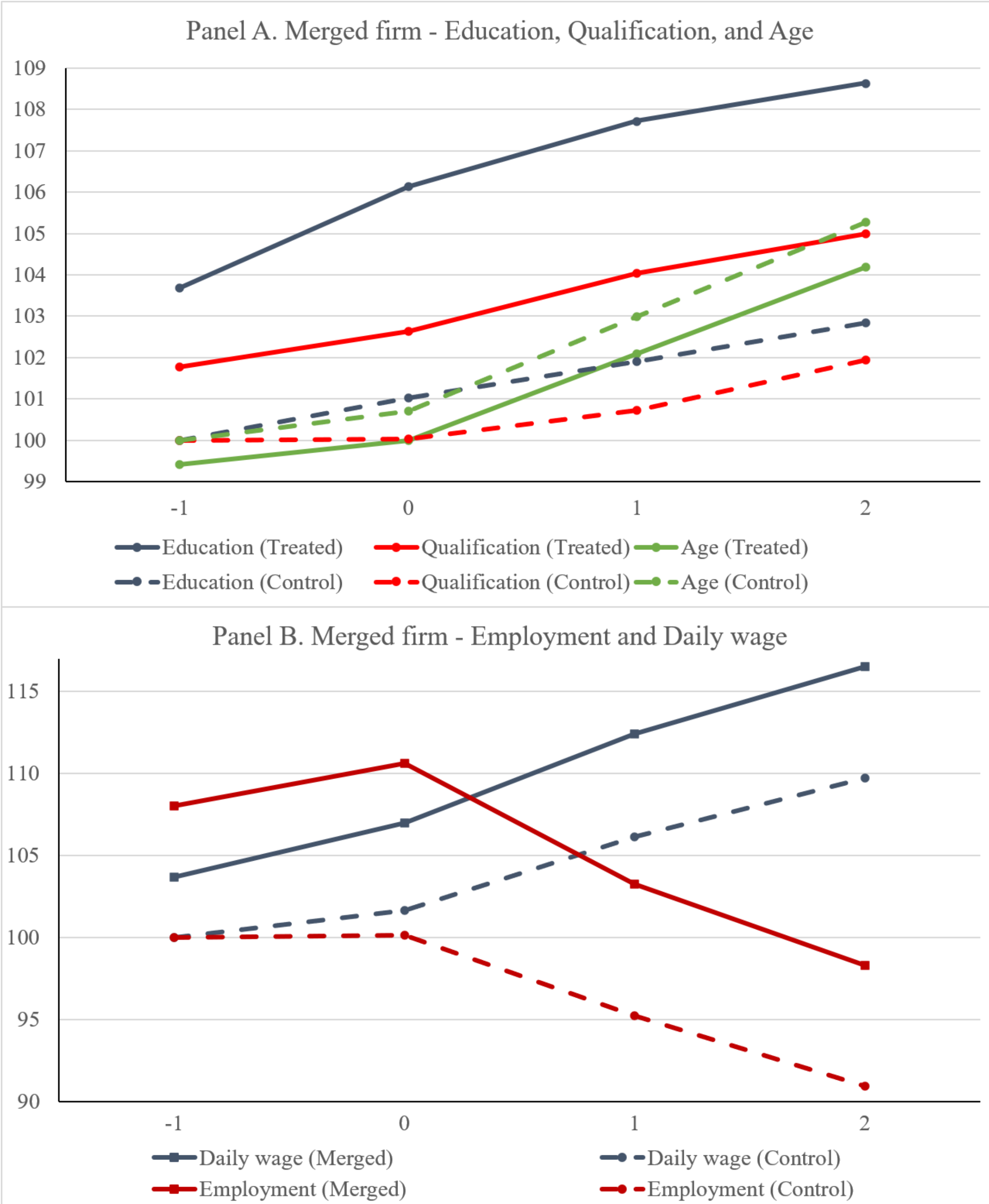

Figure 3: Changes in the composition of the labor force of the merged firm. Panel A (B) plots the averages of *Education*, *Qualification*, and *Age* (*Daily wage* and *Employment*) from one year before the event to two years after the event. All variables are normalized such that the mean for control firms in t=-1 equals 100. All variables are defined in Table 1.

C Tables

Table 1: Description of variables. The table defines the main numerical variables used in the paper. All other variables are defined in the respective captions of the tables using them.

Variable name	Definition	Values
$\text{Age}_{\text{A-T}}$	Age_{A} - Age_{T}	[0:∞]
Age_{k}	Average age of all full-time employees in entity k	[0:∞]
Distance	Driving distance between target HQ and acquirer HQ in minutes	[0:∞]
$\text{Education}_{\text{A-T}}$	$\text{Education}_{\text{A}}$ - $\text{Education}_{\text{T}}$	[-100:100]
$\text{Education}_{\text{k}}$	Share of employees with college or university degree in entity k	[0:100]
External inflow_{k}	Inflow_{k} from the external labor market, i.e., inflow from an establishment which is not part of the merged firm	[0:∞]
External $\text{outflow}_{\text{k}}$	$\text{Outflow}_{\text{k}}$ into the external labor market, i.e., outflow to an establishment which is not part of the merged firm	[0:∞]
Growth_{k}	Employment growth rate g from t=-2 to t=-1 as defined in Section 3.3 and Appendix A.1	[-2:2]
HCR	Human capital relatedness index based on Lee et al. (2018), details see Appendix A.3	[0:100]
$\text{Hierarchy}_{\text{k}}$	Employee-weighted average of the number of hierarchical layers in entity k	[0:4]
Inflow_{k}	Employment inflow h into an establishment of entity k between event year t=-1 and t=2 as defined in Section 3.3 and Appendix A.1	[0:∞]
Internal inflow_{k}	Inflow_{k} from the internal labor market, i.e., inflow from another establishment of the merged firm	[0:∞]
Internal $\text{outflow}_{\text{k}}$	$\text{Outflow}_{\text{k}}$ into the internal labor market, i.e., outflow to another establishment of the merged firm	[0:∞]
Manager	One if occupation is equal to “Manager’, details see Appendix A.2	[0,1]
Net Emp. Growth_{k}	Employment growth rate g of entity k from event year t=-1 to t=2 as defined in Section 3.3 and Appendix A.1	[-2:2]
$\text{Outflow}_{\text{k}}$	Employment outflow s from an establishment of entity k between event year t=-1 and t=2 as defined in Section 3.3 and Appendix A.1	[0:∞]
$\text{Qualification}_{\text{A-T}}$	$\text{Qualification}_{\text{A}}$ - $\text{Qualification}_{\text{T}}$	[-100:100]
$\text{Qualification}_{\text{k}}$	Share of employees identified as Technicians, Engineers, Profession-Members, or Managers in entity k, details see Appendix A.2	[0:100]
Related	One if target and acquirer are in the same industry or display above median relatedness, details see Appendix A.4	[0,1]
Size_{k}	Number of employees employed in entity k	[0:∞]
Target closure	One if employment in target is zero at the end of t=2	[0,1]
$\text{Wage}_{\text{A-T}}$	Wage_{A} - Wage_{T}	[0:∞]
Wage_{k}	Average daily wage of all full-time employees in entity k	[0:∞]

Table 2: Summary statistics. This table provides descriptive statistics for all numerical variables. The firm level data set consists of 1,043 target, acquirer, and consequently merged firms. Each of these firm pairs has exactly one matched control firm pair. Panel A (Panel B) provides summary statistics for the treated (control) firms. All growth variables are measured from t=-1 to t=+2, all other variables are measured at t=-1. All variables are defined in Table 1.

Panel A: Treated firms

	N	Mean	SD	Min	P25	P50	P75	Max
$\text{Age}_{\text{A-T}}$	1,043	-0.16	6.38	-27.42	-3.71	-0.03	3.67	26.43
Age_{T}	1,043	40.02	5.98	20.00	36.19	40.27	43.56	66.50
Distance	1,043	173.23	150.17	0.00	37.97	140.15	284.77	642.68
$\text{Education}_{\text{A-T}}$	1,030	7.95	25.65	-82.22	-4.07	5.02	20.45	100.00
$\text{Education}_{\text{T}}$	1,035	23.75	23.95	0.00	4.88	15.38	34.38	100.00
Growth_{A} (%)	1,039	30.45	53.88	-200.00	5.50	16.29	37.50	200.00
Growth_{M} (%)	1,043	25.15	38.40	-171.23	7.16	15.95	32.80	200.00
Growth_{T} (%)	1,041	31.65	59.52	-200.00	5.50	18.04	41.86	200.00
HCR	1,027	49.49	32.11	0.00	18.97	49.24	80.34	99.99
$\text{Hierarchy}_{\text{A}}$	1,038	2.58	0.52	1.00	2.15	2.46	2.93	4.00
$\text{Hierarchy}_{\text{T}}$	1,035	2.50	0.54	1.00	2.08	2.33	2.83	4.00
Inflow_{A} (%)	1,043	64.95	140.47	0.00	24.82	41.44	70.82	2,880
Inflow_{M} (%)	1,043	47.89	41.23	0.00	23.71	37.93	57.01	531
Inflow_{T} (%)	1,037	37.51	60.87	0.00	0.00	22.50	47.06	1,000
Net emp. growth_{A} (%)	1,043	-10.21	61.98	-200.00	-19.83	-4.30	11.97	200.00
Net emp. growth_{M} (%)	1,043	-26.94	53.66	-200.00	-41.38	-13.00	2.02	152.54
Net emp. growth_{T} (%)	1,037	-84.57	95.37	-200.00	-200.00	-44.44	-7.23	200.00
$\text{Outflow}_{\text{A}}$ (%)	1,043	75.16	153.13	0.00	30.07	45.83	72.34	2,920
$\text{Outflow}_{\text{M}}$ (%)	1,043	74.83	61.45	10.38	36.89	54.97	90.59	665
$\text{Outflow}_{\text{T}}$ (%)	1,037	122.08	98.02	0.00	40.00	93.62	200.00	1,200
$\text{Qualification}_{\text{A-T}}$	1,030	2.05	26.20	-100.00	-8.33	1.82	13.17	100.00
$\text{Qualification}_{\text{T}}$	1,035	20.70	22.61	0.00	3.70	13.64	31.12	100.00
Related	1,043	0.72	0.45	0.00	0.00	1.00	1.00	1.00
Size_{A}	1,043	463.03	1,343.45	0.00	31.00	117.00	375.00	18,177
Size_{A} (ln)	1,043	4.66	1.80	0.00	3.47	4.77	5.93	9.81
Size_{M}	1,043	564.84	1,401.79	2.00	79.00	203.00	495.00	18,439
Size_{T}	1,043	101.81	273.33	0.00	14.00	40.00	103.00	6,242
Size_{T} (ln)	1,043	3.68	1.39	0.00	2.71	3.71	4.64	8.74
$\text{Wage}_{\text{A-T}}$	1,030	15.12	33.54	-143.29	-5.15	12.54	34.01	123.73
Wage_{T}	1,035	89.33	29.12	2.67	69.06	88.19	107.55	190.68

Table 2: Summary statistics (continued).

Panel B: Control firms	N	Mean	SD	Min	P25	P50	P75	Max
$\text{Age}_{\text{A-T}}$	1,043	0.02	6.25	-26.19	-3.40	0.04	3.72	31.86
Age_{T}	1,043	40.06	5.57	20.00	36.71	40.13	43.37	67.50
Distance	1,043	206.31	136.80	0.00	96.63	180.62	295.45	622.23
$\text{Education}_{\text{A-T}}$	1,024	6.23	26.80	-96.77	-5.89	3.42	18.44	100.00
$\text{Education}_{\text{T}}$	1,035	22.72	23.95	0.00	4.55	13.46	33.33	100.00
Growth_{A} (%)	1,039	27.58	56.59	-200.00	3.03	14.67	34.41	200.00
Growth_{M} (%)	1,043	22.93	35.71	-170.52	5.97	15.20	29.63	200.00
Growth_{T} (%)	1,041	30.01	54.55	-200.00	5.65	17.54	37.66	200.00
HCR	1,021	34.71	30.58	0.00	7.85	25.53	57.28	100.00
$\text{Hierarchy}_{\text{A}}$	1,032	2.52	0.54	1.00	2.11	2.37	2.88	4.00
$\text{Hierarchy}_{\text{T}}$	1,035	2.45	0.56	1.00	2.04	2.27	2.78	4.00
Inflow_{A} (%)	1,034	39.15	42.49	0.00	17.15	28.57	47.41	600
Inflow_{M} (%)	1,043	37.86	29.64	0.00	20.66	30.63	44.64	320
Inflow_{T} (%)	1,036	39.80	40.70	0.00	16.75	29.28	50.00	633
Net emp. growth_{A} (%)	1,034	-26.34	59.15	-200.00	-30.12	-10.81	0.00	200.00
Net emp. growth_{M} (%)	1,043	-20.59	41.02	-200.00	-27.34	-11.35	0.00	111.89
Net emp. growth_{T} (%)	1,036	-29.51	61.35	-200.00	-34.31	-12.58	0.00	200.00
$\text{Outflow}_{\text{A}}$ (%)	1,034	65.49	64.85	0.00	27.08	41.28	76.58	800
$\text{Outflow}_{\text{M}}$ (%)	1,043	58.45	45.50	9.09	30.10	43.19	68.42	400
$\text{Outflow}_{\text{T}}$ (%)	1,036	69.31	67.00	0.00	28.57	45.19	83.05	589
$\text{Qualification}_{\text{A-T}}$	1,024	2.11	28.45	-100.00	-10.36	1.11	13.37	100.00
$\text{Qualification}_{\text{T}}$	1,035	19.79	23.69	0.00	2.18	10.62	29.38	100.00
Related	1,043	0.72	0.45	0.00	0.00	1.00	1.00	1.00
Size_{A}	1,043	423.98	1,256.14	0.00	29.00	109.00	340.00	15,814
Size_{A} (ln)	1,043	4.56	1.81	0.00	3.40	4.70	5.83	9.67
Size_{M}	1,043	522.91	1,309.91	3.00	73.00	192.00	437.00	16,018
Size_{T}	1,043	98.93	262.52	0.00	14.00	39.00	100.00	5,266
Size_{T} (ln)	1,043	3.64	1.40	0.00	2.71	3.69	4.62	8.57
$\text{Wage}_{\text{A-T}}$	1,024	13.28	36.71	-124.56	-8.11	10.97	35.13	139.76
Wage_{T}	1,035	86.11	31.10	0.00	65.52	85.11	106.48	190.04

Table 3: Layer structure. This tables shows the hierarchical structure of our sample firms. Panel A reports the average number of employees as well as the mean and median daily wage for target, acquirer, and merged firm depending on the number of layers the respective firm has at t=-1. Panel B reports for treated and control firms summary statistics for the number of layers, the share of employees in each layer, the control span of each layer (defined as number of employees in l-1 divided by the number of employees in l), and the mean daily wage in each layer at t=-1.

Panel A

Number of layers (L)	N	Mean Size	Mean Wage	Median Wage
Target				
1	97	16.81	72.78	68.28
2	192	33.19	87.41	85.42
3	293	59.48	88.15	82.75
4	452	178.66	94.66	95.09
Acquirer				
1	53	18.57	103.49	102.20
2	91	40.82	97.21	92.61
3	189	171.25	99.99	96.30
4	704	633.34	106.60	106.02
Merged firm				
1	4	62.50	63.68	63.51
2	42	85.14	84.59	79.17
3	133	120.35	88.97	88.69
4	864	658.91	100.64	99.80

Table 3: Layer structure (continued).

Panel B

	Treated Firms				Control Firms			
	N	Mean	SD	P50	N	Mean	SD	P50
Target								
Number of layers (L)	1,034	3.06	1.00	3.00	1,035	2.94	1.03	3.00
Share in $l = 1$	1,035	0.58	0.31	0.63	1,035	0.60	0.32	0.67
Share in $l = 2$	1,035	0.20	0.21	0.13	1,035	0.21	0.23	0.13
Share in $l = 3$	1,035	0.14	0.22	0.04	1,035	0.12	0.21	0.03
Share in $l = 4$	1,035	0.05	0.11	0.01	1,035	0.04	0.09	0.01
Control span $l = 2$	837	7.49	13.08	2.85	822	8.24	14.07	3.16
Control span $l = 3$	706	4.63	7.11	2.00	660	5.10	7.43	2.55
Control span $l = 4$	619	5.34	9.88	2.00	547	4.37	6.98	2.00
Wage $l = 1$	989	74.35	26.67	72.92	984	72.34	27.79	71.11
Wage $l = 2$	842	104.99	33.85	106.92	831	105.52	36.05	106.74
Wage $l = 3$	713	119.13	36.35	121.80	671	117.31	39.23	122.00
Wage $l = 4$	624	147.88	33.21	155.59	556	146.63	35.82	154.13
Acquirer								
Number of layers (L)	1,037	3.49	0.86	4.00	1,030	3.38	0.94	4.00
Share in $l = 1$	1,038	0.55	0.29	0.57	1,032	0.57	0.31	0.62
Share in $l = 2$	1,038	0.19	0.19	0.14	1,032	0.21	0.22	0.15
Share in $l = 3$	1,038	0.16	0.21	0.07	1,032	0.14	0.22	0.04
Share in $l = 4$	1,038	0.07	0.14	0.02	1,032	0.05	0.12	0.02
Control span $l = 2$	902	8.41	15.46	3.00	886	9.11	18.37	3.00
Control span $l = 3$	872	4.19	7.30	1.95	806	5.20	8.16	2.73
Control span $l = 4$	809	6.79	14.57	2.18	762	7.08	15.07	2.00
Wage $l = 1$	1,005	87.91	28.13	86.49	993	83.22	29.42	80.98
Wage $l = 2$	913	117.37	31.34	119.67	902	116.48	33.98	119.46
Wage $l = 3$	882	132.02	31.36	136.71	814	129.96	32.99	134.50
Wage $l = 4$	818	156.90	27.37	166.18	768	153.55	30.60	163.36
Merged firm								
Number of layers (L)	1,043	3.78	0.52	4.00	1,043	3.74	0.59	4.00
Share in $l = 1$	1,043	0.57	0.27	0.62	1,043	0.60	0.27	0.64
Share in $l = 2$	1,043	0.20	0.17	0.16	1,043	0.21	0.18	0.16
Share in $l = 3$	1,043	0.15	0.20	0.07	1,043	0.13	0.19	0.05
Share in $l = 4$	1,043	0.05	0.07	0.03	1,043	0.04	0.06	0.02
Control span $l = 2$	993	8.26	14.60	3.14	992	9.32	17.06	3.45
Control span $l = 3$	951	4.22	6.51	2.25	943	5.12	7.01	3.00
Control span $l = 4$	922	6.68	13.22	2.29	896	6.40	13.09	2.14

Table 4: Firm-level aggregate employee flows for the general workforce. The table reports the estimated differences in growth rates from $t = -1$ to $t = +2$ between the treated firms (Merged, Target, Acquirer) and their control firms. Estimates are obtained as estimates of θ from equation (2) for the dependent variables presented in the first column. *Merged* refers to the combined flows of target and acquirer, respectively, their matched pairs. All rates are either scaled by the combined employment of target and acquirer (i.e., the merged firm denoted as *Merged*; columns 1, 3, 5) or the employment of the respective entity (columns 2 and 4). In column 6, the dependent variable is *Turnover* as defined in equation 1). In all our regressions, we control for driving distance, the pre-acquisition growth rate, and fixed effects for cells from the full product of the calendar year, region, and firm size category, where size categories are defined based on the number of firms' establishments: 1, 2, 3-5, 6-10, and more than 10. All variables are defined in Table 1 in the Online Appendix. Standard errors are clustered at the firm-level and t-statistics are presented in parentheses below the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 4: Firm-level aggregate employee flows for the general workforce (continued).

Entity	Merged	Target		Acquirer		Turnover
Scaled by	Merged (1)	Target (2)	Merged (3)	Acquirer (4)	Merged (5)	Merged (6)
Net employment growth	-7.22***	-55.36***	-14.01***	14.54***	6.97***	
	(-3.50)	(-15.75)	(-10.07)	(5.55)	(4.61)	
Inflow	9.72***	-2.22	-2.90***	23.78***	12.52***	7.83***
	(6.66)	(-0.95)	(-3.71)	(5.45)	(9.41)	(6.11)
External inflow	6.21***	-4.04*	-3.27***	18.19***	9.39***	4.33***
	(4.95)	(-1.79)	(-4.39)	(4.75)	(8.46)	(4.07)
Inflow other firms	5.81***	-0.81	-1.40**	14.45***	7.17***	4.13***
	(5.91)	(-0.56)	(-2.51)	(4.71)	(8.44)	(5.82)
with wage increase	5.09***	0.06	-0.85**	12.43***	5.90***	3.48***
	(6.97)	(0.06)	(-2.49)	(4.86)	(8.79)	(6.03)
with wage decrease	0.72	-0.87	-0.55*	2.03***	1.27***	0.70***
	(1.61)	(-1.30)	(-1.68)	(2.93)	(4.11)	(3.40)
Inflow new entrant	0.40	-3.26***	-1.86***	3.72***	2.20***	0.25
	(0.80)	(-2.67)	(-5.64)	(3.53)	(5.23)	(0.57)
Internal inflow	3.50***	1.83***	0.37**	5.59***	3.14***	3.50***
	(7.36)	(3.63)	(2.05)	(3.56)	(7.09)	(7.36)
Inflow within	1.04***	0.54	0.10	1.09**	0.93**	1.04***
	(2.58)	(1.22)	(0.59)	(2.58)	(2.57)	(2.58)
Inflow between	2.47***	1.29***	0.27***	4.50***	2.20***	2.47***
	(9.57)	(5.27)	(4.12)	(2.96)	(8.82)	(9.57)
Outflow	16.93***	53.14***	11.11***	9.24*	5.56***	
	(7.37)	(14.09)	(8.22)	(1.84)	(3.06)	
External outflow	13.43***	34.50***	8.82***	5.99	4.34***	
	(6.26)	(9.76)	(6.67)	(1.48)	(2.62)	
Outflow other firms	11.71***	30.68***	8.28***	6.23**	3.26**	
	(6.69)	(11.23)	(7.64)	(1.97)	(2.44)	
with wage increase	7.85***	20.80***	5.26***	4.31*	2.49**	
	(6.00)	(9.86)	(7.01)	(1.78)	(2.39)	
with wage decrease	3.86***	9.88***	3.03***	1.92*	0.77*	
	(5.94)	(8.46)	(5.95)	(1.79)	(1.92)	
Outflow unemployment	1.73**	3.81**	0.54	-0.24	1.08*	
	(2.30)	(2.24)	(1.21)	(-0.17)	(1.89)	
Internal outflow	3.50***	18.65***	2.29***	3.25*	1.21***	
	(7.36)	(12.39)	(7.66)	(1.82)	(3.28)	
Outflow within	1.04***	0.54	0.10	1.09**	0.93**	
	(2.58)	(1.22)	(0.59)	(2.58)	(2.57)	
Outflow between	2.47***	18.11***	2.19***	2.15	0.28***	
	(9.57)	(12.50)	(8.82)	(1.24)	(3.99)	
N	2,086	2,071	2,086	2,072	2,086	2,086

Table 5: Firm-level aggregate employee flows for managers. The table reports the estimated differences in growth rates for managers from $t = -1$ to $t = +2$ between the treated firms (Merged, Target, Acquirer) and their control firms. Estimates are obtained as estimates of θ from equation (2) for the dependent variables presented in the first column. *Merged* refers to the combined flows of target and acquirer, respectively, their matched pairs. All rates are either scaled by the combined employment of target and acquirer (i.e., the merged firm denoted as *Merged*; columns 1, 3, 5) or the employment of the respective entity (columns 2 and 4). In column 6, the dependent variable is *Turnover* as defined in equation 1). In all our regressions, we control for driving distance, the pre-acquisition growth rate, and fixed effects for cells from the full product of the calendar year, region, and firm size category, where size categories are defined based on the number of firms' establishments: 1, 2, 3-5, 6-10, and more than 10. All variables are defined in Table 1 in the Online Appendix. Standard errors are clustered at the firm-level and t-statistics are presented in parentheses below the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 5: Firm-level aggregate employee flows for managers (continued).

Entity	Merged	Target		Acquirer		Turnover
Scaled by	Merged (1)	Target (2)	Merged (3)	Acquirer (4)	Merged (5)	Merged (6)
Net employment growth	-3.92 (-1.04)	-48.93*** (-6.74)	-12.04*** (-5.24)	14.19*** (3.19)	8.06*** (2.69)	
Inflow	19.57*** (6.36)	9.70** (2.09)	0.89 (0.66)	25.00*** (6.79)	18.50*** (6.44)	16.18*** (6.33)
External inflow	15.32*** (5.14)	5.30 (1.18)	0.37 (0.28)	18.91*** (5.64)	14.76*** (5.32)	11.86*** (4.88)
Inflow other firms	11.38*** (5.06)	-1.06 (-0.32)	-1.12 (-1.16)	15.30*** (5.87)	12.42*** (6.00)	8.61*** (5.03)
with wage increase	8.59*** (4.55)	-1.54 (-0.52)	-1.23 (-1.43)	12.32*** (5.58)	9.76*** (5.74)	6.73*** (4.75)
with wage decrease	2.79*** (3.37)	0.48 (0.37)	0.11 (0.33)	2.98*** (3.15)	2.66*** (3.50)	1.61*** (3.07)
Inflow new entrant	3.98*** (2.93)	6.36** (2.33)	1.49* (1.82)	3.65** (2.55)	2.37** (2.02)	2.53** (2.55)
Internal inflow	4.25*** (6.54)	4.40*** (3.49)	0.52* (1.86)	6.09*** (5.14)	3.75*** (6.27)	3.41*** (5.94)
Inflow within	1.45*** (3.01)	0.19 (0.28)	-0.04 (-0.18)	1.71*** (3.15)	1.50*** (3.48)	1.29*** (2.80)
Inflow between	2.80*** (6.39)	4.21*** (3.96)	0.56*** (3.61)	4.38*** (4.15)	2.25*** (5.40)	2.11*** (6.06)
Outflow	20.36*** (5.13)	60.25*** (7.82)	10.94*** (5.05)	6.63 (1.55)	9.24*** (2.75)	
External outflow	16.14*** (4.15)	42.96*** (7.38)	8.74*** (4.17)	3.90 (0.93)	7.30** (2.22)	
Outflow other firms	12.76*** (4.28)	37.04*** (7.92)	7.41*** (4.63)	3.40 (1.04)	5.17** (2.13)	
with wage increase	10.59*** (4.25)	27.10*** (6.90)	5.93*** (4.38)	3.59 (1.33)	4.53** (2.23)	
with wage decrease	2.17* (1.75)	9.93*** (4.34)	1.48** (2.11)	-0.18 (-0.13)	0.64 (0.67)	
Outflow unemployment	3.45* (1.73)	5.93* (1.76)	1.33 (1.17)	0.50 (0.22)	2.13 (1.32)	
Internal outflow	4.14*** (6.97)	17.29*** (3.92)	2.20*** (5.42)	2.73*** (4.30)	1.94*** (4.34)	
Outflow within	1.38*** (2.91)	0.21 (0.34)	-0.09 (-0.41)	1.71*** (3.21)	1.47*** (3.50)	
Outflow between	2.77*** (7.57)	17.07*** (3.76)	2.29*** (-0.18)	1.02*** (2.90)	0.47*** (3.05)	
N	1,968	1,457	1,968	1,808	1,968	1,968

Table 6: Firm-level aggregate employee flows: target survival vs. target closure. The table reports the estimated differences in growth rates from $t = -1$ to $t = +2$ between the treated firms (Merged, Target, Acquirer) and their control firms for transactions where *Target closure* is equal to zero (Panel A) and transactions where *Target closure* is equal to one (Panel B). Estimates are obtained as estimates of θ from equation (2) for the dependent variables presented in the first column. *Merged* refers to the combined flows of target and acquirer, respectively, their matched pairs. All rates are either scaled by the combined employment of target and acquirer (i.e., the merged firm denoted as *Merged*; columns 1, 3, 5) or the employment of the respective entity (columns 2 and 4). In column 6, the dependent variable is *Turnover* as defined in equation 1). In all our regressions, we control for driving distance, the pre-acquisition growth rate, and fixed effects for cells from the full product of the calendar year, region, and firm size category, where size categories are defined based on the number of firms' establishments: 1, 2, 3-5, 6-10, and more than 10. All variables are defined in Table 1. Standard errors are clustered at the firm-level and t-statistics are presented in parentheses below the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 6: Firm-level aggregate employee flows: target survival vs. target closure (continued).

Panel A - Target survival						
Entity	Merged	Target		Acquirer		Turnover
Scaled by	Merged (1)	Target (2)	Merged (3)	Acquirer (4)	Merged (5)	Merged (6)
Net employment growth	3.75*	2.89	-2.10*	12.31***	5.95***	
	(1.69)	(0.94)	(-1.76)	(3.91)	(3.24)	
Inflow	7.53***	3.05	0.23	17.99***	7.33***	5.17***
	(5.03)	(1.43)	(0.25)	(3.50)	(5.74)	4.42
External inflow	6.05***	0.49	-0.44	16.77***	6.51***	3.70***
	(4.35)	(0.24)	(-0.50)	(3.28)	(5.50)	3.44
Inflow other firms	5.79***	2.09	0.42	13.75***	5.46***	3.33***
	(5.49)	(1.53)	(0.68)	(3.35)	(5.98)	5.38
with wage increase	4.92***	2.29**	0.33	12.23***	4.64***	2.62***
	(6.41)	(2.24)	(0.72)	(3.61)	(6.99)	5.66
with wage decrease	0.87*	-0.20	0.09	1.51*	0.82**	0.67***
	(1.90)	(-0.31)	(0.42)	(1.71)	(2.01)	3.30
Inflow new entrant	0.26	-1.60	-0.85**	3.02**	1.05**	0.06
	(0.43)	(-1.24)	(-2.05)	(2.29)	(2.15)	0.11
Internal inflow	1.47***	2.56***	0.66***	1.22***	0.82**	1.47***
	(3.57)	(4.61)	(3.30)	(2.72)	(2.32)	3.57
Inflow within	0.63	0.60	0.25	0.51	0.40	0.63
	(1.61)	(1.40)	(1.40)	(1.18)	(1.17)	1.61
Inflow between	0.84***	1.96***	0.41***	0.71***	0.41***	0.25
	(6.23)	(5.57)	(4.35)	(5.77)	(6.27)	1.39
Outflow	3.78*	0.17	2.33**	5.68	1.38	
	(1.70)	(0.05)	(1.96)	(0.98)	(0.73)	
External outflow	2.31	-4.17	1.67	1.85	0.53	
	(1.07)	(-1.39)	(1.44)	(0.47)	(0.29)	
Outflow other firms	2.60	-2.01	1.34	4.19	1.24	
	(1.50)	(-0.88)	(1.49)	(1.39)	(0.85)	
with wage increase	1.93	-1.90	0.86	2.49	1.07	
	(1.48)	(-1.08)	(1.30)	(1.08)	(0.97)	
with wage decrease	0.67	-0.12	0.49	1.71	0.17	
	(1.15)	(-0.11)	(1.30)	(1.58)	(0.39)	
Outflow unemployment	-0.30	-2.16	0.32	-2.34	-0.71	
	(-0.34)	(-1.49)	(0.68)	(-1.56)	(-1.03)	
Internal outflow	1.47***	4.34***	0.66***	3.82	0.84**	
	(3.57)	(5.80)	(3.48)	(1.47)	(2.35)	
Outflow within	0.63	0.60	0.25	0.51	0.40	
	(1.61)	(1.40)	(1.40)	(1.18)	(1.17)	
Outflow between	0.84***	3.73***	0.41***	3.32	0.44***	
	(6.23)	(6.05)	(6.26)	(1.29)	(4.20)	
N	1,340	1,333	1,340	1,332	1,340	1,340

Table 6: Firm-level aggregate employee flows: target survival vs. target closure (continued).

Panel B - Target closure						
Entity	Merged	Target		Acquirer		Turnover
Scaled by	Merged (1)	Target (2)	Merged (3)	Acquirer (4)	Merged (5)	Merged (6)
Net employment growth	-27.56***	-163.2***	-36.73***	18.75***	9.20***	
	(-6.84)	(-44.92)	(-12.83)	(4.06)	(3.49)	
Inflow	13.23***	-14.13***	-8.85***	30.73***	22.02***	12.33***
	(4.87)	(-3.43)	(-7.00)	(5.11)	(8.70)	4.78
External inflow	6.07***	-14.47***	-8.69***	19.38***	14.68***	5.16**
	(2.72)	(-3.61)	(-7.17)	(4.47)	(7.37)	2.51
Inflow other firms	5.57***	-6.98**	-4.78***	14.89***	10.30***	5.43***
	(3.16)	(-2.43)	(-4.99)	(4.40)	(6.96)	3.78
with wage increase	5.15***	-4.52**	-3.15***	12.25***	8.22***	4.80***
	(3.92)	(-2.34)	(-7.29)	(4.24)	(6.61)	4.18
with wage decrease	0.42	-2.46*	-1.63**	2.64***	2.08***	0.83*
	(0.51)	(-1.92)	(-2.30)	(2.74)	(5.67)	1.89
Inflow new entrant	0.47	-7.57***	-3.91***	4.45***	4.35***	0.54
	(0.56)	(-4.43)	(-7.62)	(2.81)	(5.66)	0.70
Internal inflow	7.17***	0.34	-0.16	11.35***	7.34***	7.17***
	(6.88)	(0.34)	(-0.52)	(3.77)	(7.39)	6.88
Inflow within	1.79**	0.34	-0.16	2.27**	1.94**	1.79**
	(2.14)	(0.34)	(-0.52)	(2.58)	(2.52)	2.14
Inflow between	5.38***	0.00	0.00	9.08***	5.40***	-0.17
	(8.53)	(1.05)	(1.06)	(3.12)	(8.52)	-0.53
Outflow	40.80***	149.06***	27.88***	11.98	12.81***	
	(8.97)	(30.10)	(10.09)	(1.61)	(3.75)	
External outflow	33.63***	104.50***	22.66***	9.71	10.88***	
	(7.96)	(17.52)	(8.12)	(1.34)	(3.65)	
Outflow other firms	28.36***	91.30***	21.84***	6.38	6.51***	
	(8.27)	(18.55)	(9.53)	(1.15)	(2.69)	
with wage increase	18.54***	63.27***	13.79***	5.12	4.71**	
	(7.50)	(16.14)	(9.08)	(1.19)	(2.54)	
with wage decrease	9.82***	28.03***	8.05***	1.26	1.80**	
	(6.58)	(10.44)	(6.53)	(0.67)	(2.28)	
Outflow unemployment	5.27***	13.20***	0.83	3.33	4.37***	
	(3.70)	(3.71)	(0.86)	(1.31)	(4.54)	
Internal outflow	7.17***	44.56***	5.22***	2.27**	1.94**	
	(6.88)	(12.11)	(7.38)	(2.58)	(2.52)	
Outflow within	1.79**	0.34	-0.16	2.27**	1.94**	
	(2.14)	(0.34)	(-0.52)	(2.58)	(2.52)	
Outflow between	5.38***	44.22***	5.38***	0.00	0.00	
	(8.53)	(12.38)	(8.54)	(1.06)	(1.06)	
N	746	738	746	740	746	746

Table 7: Composition of acquirers' and targets' workforce. This table shows the occupational groups and education of acquirer and target employees. Occupational groups are based on the classification from Blossfeld (1987). All statistics are based on the year prior to the transaction.

	Target		Acquirer	
	N	%	N	%
Occupational group (degree of Qualification)				
Simple tasks (low)	21,829	23.3	87588	21.2
Skilled manual occupations (medium)	13,084	13.9	46,454	11.3
Technician/Engineers (high)	10,912	11.6	60,616	14.7
Qualified service (medium)	1,919	2.0	4,992	1.2
Semi-professions (medium)	4,961	5.3	11,596	2.8
Professions (high)	1,430	1.5	6,703	1.6
Simple commercial and admin. occupations (low)	11,915	12.7	31,543	7.6
Qualified commercial and admin. occupations (medium)	23,637	25.2	133,676	32.4
Managers (high)	4,143	4.4	29,460	7.1
Total	93,830	100.0	412,628	100.0
Education (level of Education)				
Intermediate school leaving certificate [ISLC] (low)	9,178	9.8	32,497	7.9
ISLC with vocational training (medium)	56,797	60.5	215,897	52.3
Upper secondary school leaving certificate [USSLC] (medium)	1,894	2.0	9,092	2.2
USSLC with vocational training (high)	9,513	10.1	42,815	10.4
College or university degree (high)	16,448	17.5	112,327	27.2
Total	93,830	100.0	412,628	100.0

Table 8: Characteristics of inflows and outflows. This table reports the mean and standard deviations of average employee education and qualification levels as well as average employee age and daily wage (at t=-1) for targets, acquirers, and merged firms. It also reports the average of these variables for the inflows (outflows) from (to) the external labor market (Panel A) and the internal labor market (Panel B) during the three year period from t=0 to t=+2 together with its difference (absolute and in %) and a paired t-test. *Education index* and *Qualification index* are defined in Appendix A.2, *Age* and *Wage* are defined in Table 1.

Panel A

		Education index (1)	Qualification index (2)	Age (3)	Wage (4)
Treated firms	Mean at t = -1	2.825	1.901	39.78	98.60
N = 1035	SD at t = -1	0.693	0.357	4.11	25.80
	External inflow	3.060	1.983	35.44	85.25
	External outflow	2.962	1.968	39.34	96.19
	Difference	0.091	0.013	-3.97	-11.02
	in % of t = -1	3.2	0.7	-10.0	-11.2
	t-stat	11.07	3.07	-33.36	-25.19
Control firms	Mean at t = -1	2.724	1.865	39.99	94.85
N = 1043	SD at t = -1	0.687	0.394	3.81	27.48
	External inflow	2.823	1.826	36.17	74.57
	External outflow	2.751	1.807	36.53	75.13
	Difference	0.072	0.019	-0.36	-0.57
	in % of t = -1	2.6	1.0	-0.9	-0.6
	t-stat	48.85	23.04	-18.24	-5.55

Panel B

		Education index (1)	Qualification index (2)	Age (3)	Wage (4)
Treated firms	Mean at t = -1	2.891	1.918	39.46	99.91
N = 266	SD at t = -1	0.699	0.344	4.02	26.48
	Internal inflow	3.523	2.164	39.18	122.82
	Internal outflow	3.444	2.157	38.41	114.99
	Difference	0.079	0.007	0.77	7.83
	in % of t = -1	2.7	0.4	2.0	7.8
	t-stat	2.79	0.27	3.81	6.90

Table 9: Flow regressions: all employees. The table reports the estimated differences in growth rates from *t=-1* to *t=2* between the treated firms (Panel A: Merged firm, Panel B: Target, Panel C: Acquirer) and their control firms. *Merged firm* refers to the combined employment (flows) of target and acquirer, respectively, their matched pairs. All rates are scaled by the combined employment of target and acquirer (i.e., the merged firm). The table reports estimates of θ (*Treatment*) and γ (*Treatment* $\times$ variable of interest) of equation (3) for the dependent variables *Net employment growth* (column 1), *Inflow* (column 2), *External inflow* (column 3), *Internal inflow* (column 4), *Outflow* (column 5), *External outflow* (column 6), *Internal outflow* (column 7), and *Tur*nover as defined in equation (1) (column 8). In all our regressions, we include additional control variables accounting for average employee age (*Age*), employee wage (*Wage*), employee qualification (*Qualification*), and employee education (*Education*) in the target, and the difference between the acquirer and the target. We report the estimates of γ for these variables in Table OA5. All variables are defined in Table 1. Standard errors are clustered at the firm-level and t-statistics are presented in parentheses below the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A - Merged firm

	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Turnover (8)
Treatment	2.12	-34.97	-31.56	-3.41	-37.09	-33.68	-3.41	-27.07
	(0.06)	(-1.07)	(-1.19)	(-0.34)	(-0.78)	(-0.78)	(-0.34)	(-0.88)
× Distance	5.37	-1.00	-1.74	0.74	-6.37	-7.11	0.74	-1.10
	(0.87)	(-0.24)	(-0.45)	(0.69)	(-1.02)	(-1.20)	(0.69)	(-0.34)
× Related	-8.29*	2.73	1.77	0.95	11.01**	10.06**	0.95	2.49
	(-1.73)	(0.89)	(0.65)	(0.97)	(2.36)	(2.24)	(0.97)	(0.99)
× HCR	3.13	5.98**	4.10	1.88*	2.85	0.97	1.88*	4.49*
	(0.73)	(2.07)	(1.59)	(1.95)	(0.64)	(0.23)	(1.95)	(1.85)
× $\text{Hierarchy}_\text{T}$	1.16	4.59	4.92	-0.33	3.43	3.76	-0.33	4.35
	(0.13)	(0.65)	(0.87)	(-0.15)	(0.31)	(0.37)	(-0.15)	(0.64)
× $\text{Hierarchy}_\text{A}$	-1.30	7.63	3.16	4.47**	8.93	4.46	4.47**	5.99
	(-0.14)	(1.22)	(0.61)	(2.13)	(0.87)	(0.47)	(2.13)	(1.02)
× Growth_T	0.15	9.76*	8.56*	1.20	9.61	8.41	1.20	8.20*
	(0.03)	(1.85)	(1.94)	(0.81)	(1.30)	(1.28)	(0.81)	(1.69)
× Growth_A	-2.15	12.63**	9.17**	3.46***	14.79**	11.32	3.46***	9.40**
	(-0.33)	(2.57)	(2.03)	(2.68)	(2.02)	(1.63)	(2.68)	(2.18)
× Size_T	-8.71***	-2.16*	-1.88*	-0.27	6.55***	6.83***	-0.27	-0.82
	(-5.25)	(-1.72)	(-1.71)	(-0.68)	(3.57)	(3.99)	(-0.68)	(-0.74)
× Size_A	6.78***	-1.12	-0.52	-0.60*	-7.90***	-7.30***	-0.60*	-0.97
	(4.48)	(-1.17)	(-0.63)	(-1.93)	(-4.99)	(-4.83)	(-1.93)	(-1.20)
N	2,036	2,036	2,036	2,036	2,036	2,036	2,036	2,036
adj. R^2	0.154	0.303	0.339	0.076	0.271	0.281	0.076	0.312

Table 9: Flow regressions: all employees (continued).

Panel B - Target

	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Turnover (8)
Treatment	-29.55	-11.72	-10.39	-1.34	17.82	1.98	15.85***	-8.70
	(-1.42)	(-1.00)	(-0.92)	(-0.56)	(0.96)	(0.11)	(3.04)	(-0.96)
× Distance	2.63	-0.65	-0.97	0.32	-3.27	-3.20	-0.08	-0.59
	(0.72)	(-0.25)	(-0.38)	(0.68)	(-0.99)	(-0.97)	(-0.10)	(-0.33)
× Related	-7.14**	0.26	0.18	0.08	7.40***	7.47***	-0.07	0.02
	(-2.25)	(0.14)	(0.10)	(0.19)	(2.58)	(2.61)	(-0.09)	(0.01)
× HCR	-0.92	-0.19	-0.16	-0.03	0.73	-1.22	1.94***	0.22
	(-0.37)	(-0.12)	(-0.11)	(-0.08)	(0.32)	(-0.54)	(3.13)	(0.19)
× $\text{Hierarchy}_{\text{T}}$	0.59	0.17	1.52	-1.35**	-0.42	1.69	-2.11*	0.02
	(0.12)	(0.07)	(0.64)	(-2.40)	(-0.08)	(0.33)	(-1.92)	(0.01)
× $\text{Hierarchy}_{\text{A}}$	-0.40	-4.20	-4.88*	0.67	-3.81	-4.28	0.47	-3.43
	(-0.07)	(-1.53)	(-1.87)	(1.23)	(-0.69)	(-0.78)	(0.42)	(-1.44)
× Growth_{T}	2.95	1.98	1.23	0.75*	-0.97	-0.75	-0.22	0.99
	(0.86)	(0.81)	(0.51)	(1.90)	(-0.32)	(-0.25)	(-0.33)	(0.58)
× Growth_{A}	-7.09	0.89	0.70	0.19	7.98*	5.27	2.71**	0.60
	(-1.47)	(0.37)	(0.30)	(0.42)	(1.75)	(1.18)	(2.54)	(0.31)
× Size_{T}	-5.50***	-1.81***	-1.85***	0.04	3.69***	3.85***	-0.16	-1.13**
	(-5.00)	(-2.77)	(-3.13)	(0.19)	(3.69)	(3.95)	(-0.61)	(-2.36)
× Size_{A}	7.18***	1.23**	1.26**	-0.03	-5.95***	-4.99***	-0.97***	0.94**
	(6.70)	(2.25)	(2.43)	(-0.21)	(-6.12)	(-5.22)	(-4.23)	(2.29)
N	2,036	2,036	2,036	2,036	2,036	2,036	2,036	2,036
adj. R^2	0.344	0.392	0.409	0.096	0.537	0.514	0.107	0.446

Panel C - Acquirer

	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Turnover (8)
Treatment	31.66	-23.25	-21.17	-2.08	-54.92	-35.65	-19.26**	-26.30
	(1.04)	(-0.74)	(-0.84)	(-0.21)	(-1.29)	(-0.95)	(-2.35)	(-0.90)
× Distance	2.74	-0.35	-0.77	0.42	-3.09	-3.91	0.82	-0.76
	(0.58)	(-0.10)	(-0.24)	(0.43)	(-0.63)	(-0.85)	(1.08)	(-0.29)
× Related	-1.14	2.47	1.60	0.87	3.61	2.59	1.02	2.31
	(-0.32)	(0.93)	(0.70)	(0.99)	(1.02)	(0.77)	(1.59)	(1.15)
× HCR	4.05	6.18**	4.26*	1.92**	2.12	2.18	-0.06	2.67
	(1.23)	(2.38)	(1.88)	(2.18)	(0.59)	(0.65)	(-0.08)	(1.25)
× $\text{Hierarchy}_{\text{T}}$	0.57	4.42	3.40	1.02	3.85	2.07	1.78	4.78
	(0.08)	(0.63)	(0.61)	(0.49)	(0.39)	(0.24)	(0.99)	(0.73)
× $\text{Hierarchy}_{\text{A}}$	-0.90	11.84*	8.04	3.80*	12.74	8.74	4.00**	10.02*
	(-0.13)	(1.93)	(1.62)	(1.85)	(1.48)	(1.14)	(2.27)	(1.81)
× Growth_{T}	-2.80	7.78	7.33*	0.46	10.58	9.16	1.42	7.76*
	(-0.62)	(1.60)	(1.88)	(0.32)	(1.62)	(1.61)	(1.10)	(1.70)
× Growth_{A}	4.94	11.74**	8.47**	3.27***	6.81	6.05	0.76	6.76*
	(1.10)	(2.47)	(1.98)	(2.71)	(1.31)	(1.20)	(1.16)	(1.73)
× Size_{T}	-3.21***	-0.35	-0.03	-0.32	2.87*	2.98**	-0.11	0.15
	(-2.61)	(-0.31)	(-0.03)	(-0.96)	(1.91)	(2.18)	(-0.37)	(0.16)
× Size_{A}	-0.40	-2.35***	-1.78**	-0.57**	-1.94*	-2.31**	0.37*	-1.03
	(-0.40)	(-2.72)	(-2.43)	(-2.03)	(-1.75)	(-2.19)	(1.76)	(-1.42)
N	2,036	2,036	2,036	2,036	2,036	2,036	2,036	2,036
adj. R^2	0.120	0.336	0.361	0.089	0.302	0.324	0.064	0.354

Table 10: Flow regressions: managers. The table reports the estimated differences in growth rates for managers from *t=-1* to *t=2* between the treated firms for the merged firm. *Merged firm* refers to the combined employment (flows) of target and acquirer, respectively, their matched pairs. All rates are scaled by the combined employment of target and acquirer (i.e., the merged firm). The table reports estimates of θ (*Treatment*) and γ (*Treatment* $\times$ variable of interest) of equation (3) for the dependent variables *Net employment growth* (column 1), *Inflow* (column 2), *External inflow* (column 3), *Internal inflow* (column 4), *Outflow* (column 5), *External outflow* (column 6), *Internal outflow* (column 7), and *Tur*nover as defined in equation (1) (column 8). In all our regressions, we include additional control variables accounting for average employee age (*Age*), employee wage (*Wage*), employee qualification (*Qualification*), and employee education (*Education*) in the target, and the difference between the acquirer and the target. All variables are defined in Table 1. Standard errors are clustered at the firm-level and t-statistics are presented in parentheses below the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 10: Flow regressions: managers. (continued)

	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Promotion (8)	Demotion (9)	Turnover (10)
Treatment	151.10**	51.10	50.23	0.87	-8.92	-10.98	-1.27	43.40	-47.69**	43.32
	(2.03)	(0.80)	(0.80)	(0.08)	(-0.11)	(-0.14)	(-0.11)	(1.16)	(-1.97)	(0.75)
× Distance	12.67	-9.34	-8.98	-0.37	-14.00	-14.15	0.29	8.20	0.20	-9.51
	(1.17)	(-0.95)	(-0.93)	(-0.29)	(-1.33)	(-1.36)	(0.28)	(1.53)	(0.05)	(-1.23)
× Related	-15.03*	-2.24	-4.79	2.56*	-1.80	-4.91	2.62**	-13.07**	1.52	-3.05
	(-1.77)	(-0.28)	(-0.60)	(1.90)	(-0.18)	(-0.49)	(2.30)	(-2.10)	(0.52)	(-0.46)
× HCR	-1.05	15.17**	16.08**	-0.91	14.02*	14.36*	-0.40	-1.25	0.95	11.76**
	(-0.13)	(2.23)	(2.45)	(-0.60)	(1.65)	(1.75)	(-0.28)	(-0.25)	(0.34)	(2.03)
× $\text{Hierarchy}_{\text{T}}$	-26.76*	-3.19	-2.14	-1.04	9.34	8.65	2.27	-11.15	3.08	-3.32
	(-1.87)	(-0.25)	(-0.17)	(-0.39)	(0.57)	(0.53)	(1.05)	(-1.54)	(0.65)	(-0.28)
× $\text{Hierarchy}_{\text{A}}$	-3.88	4.61	-0.76	5.37*	12.63	8.43	4.14	6.75	2.61	10.12
	(-0.23)	(0.34)	(-0.06)	(1.80)	(0.75)	(0.51)	(1.52)	(0.82)	(0.49)	(0.85)
× Growth_{T}	-11.60	16.67	16.10	0.57	25.31**	24.65**	0.76	2.22	5.18	15.91*
	(-1.11)	(1.64)	(1.64)	(0.31)	(2.01)	(1.98)	(0.44)	(0.34)	(1.36)	(1.68)
× Growth_{A}	-8.77	17.83*	12.42	5.41**	22.97*	19.65	3.22**	4.90	8.53***	24.59**
	(-0.74)	(1.67)	(1.18)	(2.38)	(1.69)	(1.46)	(2.12)	(0.74)	(2.66)	(2.57)
× Size_{T}	-10.78***	-3.96	-3.42	-0.55	5.06*	5.75*	-0.77	-1.63	0.13	-1.83
	(-3.45)	(-1.56)	(-1.42)	(-1.01)	(1.67)	(1.95)	(-1.49)	(-1.09)	(0.12)	(-0.87)
× Size_{A}	0.23	-4.82**	-4.58**	-0.24	-6.42**	-6.06**	-0.33	0.38	1.75*	-2.61
	(0.08)	(-2.02)	(-1.99)	(-0.49)	(-2.08)	(-2.00)	(-0.78)	(0.26)	(1.93)	(-1.24)
N	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925
adj. R^2	0.098	0.094	0.076	0.197	0.143	0.142	0.129	0.331	0.307	0.080

Table 11: Inflows and outflows. The table reports the regression results of *External Inflow* on outflows from the target and acquirer for seven different groups indicated at the top of the table. All flows are scaled by the total employment of the merged firm. All variables are defined in Table 1. Standard errors are clustered at the firm-level and t-statistics are presented in parentheses below the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

	All (1)	Manager (2)	HQ (3)	Layer1 (4)	Layer2 (5)	Layer3 (6)	Layer4 (7)
Treatment	1.65	-1.94	-5.05	5.71	-2.32	7.60	-1.47
	(0.55)	(-0.41)	(-1.08)	(1.61)	(-0.71)	(1.43)	(-0.28)
Ext. outflow$_T$	0.13*	0.17**	0.19***	0.23***	0.24***	0.09	0.27***
	(1.88)	(2.19)	(2.68)	(3.22)	(3.42)	(1.19)	(3.33)
Ext. outflow$_A$	0.20***	0.31***	0.35***	0.29***	0.12**	0.17**	0.18**
	(3.20)	(3.83)	(3.92)	(5.02)	(1.97)	(2.43)	(2.41)
Internal outflow$_T$	0.27	-0.13	0.20	0.17	0.39**	0.80*	-0.48*
	(1.23)	(-0.30)	(0.73)	(0.86)	(2.17)	(1.83)	(-1.90)
Internal outflow$_A$	0.31	-0.19	-0.65*	0.12	-0.12	0.71*	-0.01
	(1.26)	(-0.70)	(-1.84)	(0.42)	(-0.55)	(1.81)	(-0.05)
$\times$ Ext. outflow$_T$	-0.08	-0.01	0.04	-0.14**	-0.09	-0.01	-0.04
	(-1.30)	(-0.10)	(0.48)	(-2.04)	(-1.25)	(-0.09)	(-0.48)
$\times$ Ext. outflow$_A$	0.10	0.29**	0.18	-0.01	0.18**	-0.02	0.35**
	(1.48)	(2.42)	(1.56)	(-0.16)	(2.05)	(-0.22)	(2.56)
$\times$ Int. outflow$_T$	-0.12	0.10	0.06	-0.18	-0.20	-0.92**	0.41
	(-0.49)	(0.22)	(0.18)	(-0.79)	(-0.92)	(-2.00)	(1.18)
$\times$ Int. outflow$_A$	0.17	0.18	0.98***	0.27	0.86***	-0.48	0.23
	(0.48)	(0.47)	(2.64)	(0.79)	(3.40)	(-0.75)	(0.71)
N	2,086	1,968	2,050	2,077	2,041	1,980	1,920
adj. R^2	0.386	0.322	0.430	0.437	0.382	0.178	0.321

Table 12: Sales growth and labor productivity. The table reports regression results with sales growth (Panel A), change in labor productivity (Panel B), and labor productivity growth (Panel C) from *t=-1* to *t=2* as the dependent variable. In columns 1 and 2 the sample includes all available observations and in columns 3 and 4 the sample includes only observations for which all dependent and independent variables are available for the merged and for the control firm. Sales is the sum of target and acquirer sales reported by BvD. Labor productivity is the ratio of sales to the total number of employees ($Size_M$). Change in labor productivity is the difference between labor productivity in *t=2* and *t=-1*. Sales growth and labor productivity growth are defined following the definition of growth rates described in Section 3.3 and equation (4) for employment growth. Fixed effects are the full product of calendar year, region, and firm size category, where size categories are defined based on the number of the firms' establishments: 1, 2, 3-5, 6-10, and more than 10. Standard errors are clustered at the firm-level and t-statistics are presented in parentheses below the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

	All Observations		Matched Observations	
	(1)	(2)	(3)	(4)
Panel A: Sales growth from t=-1 to t=+2				
Treatment	8.24**	5.14	5.84	5.84
	(2.45)	(0.89)	(1.20)	(1.21)
Fixed effects	No	Yes	No	Yes
Observations	835	835	352	352
adj. R^2	0.006	0.658	0.004	0.475
Panel B: Change in labor productivity from t=-1 to t=+2				
Treatment	489.64***	330.97***	332.27***	332.27***
	(6.75)	(2.69)	(3.03)	(3.18)
Fixed effects	No	Yes	No	Yes
Observations	835	835	352	352
adj. R^2	0.035	0.690	0.026	0.007
Panel C: Labor productivity growth from t=-1 to t=+2				
Treatment	13.27***	6.64	9.18*	9.18*
	(3.69)	(1.07)	(1.79)	(1.79)
Fixed effects	No	Yes	No	Yes
Observations	835	835	352	352
adj. R^2	0.013	0.666	0.009	0.470

D Online Appendix

Table OA1: Sample construction. This table presents an overview of the sample construction. For each step the number of remaining observations and the percentage of lost observations is reported.

Description	N	Type	Loss in %
(1) All M&A deals where the target is headquartered in Germany from 1996 until 2014	11,415	Transactions	
(2) Delete all non-majority acquisitions (ownership <50% before and >=75% after)	8,152	Transactions	28.6
(3) Delete all deals with multiple acquirers or targets	7,532	Transactions	5.4
(4) Delete all deals defined as asset sale, build up, exit, LBO, nationalisation, privatisiation, restructuring, secondary buy-out, sovereign wealth fund, unsuccessful public takeover or start up	6,852	Transactions	6.0
(5) Delete all target-year duplicates and deals where target equals acquirer (targets and acquirers obtained after step 5 are removed from the list of potential controls)	6,792	Transactions	0.5
(6) Delete deals if acquirer is not headquartered in Germany	3,602	Transactions	27.9
(7) Delete all deals where the record linkage did not work for either target or acquirer	1,147	Transactions	21.5
(8) Delete all deals where either the target or the acquirer has no adequate control firm	1,043	Transactions	0.9

Table OA2: Firm matching success. Panel A presents descriptive statistics on target firms and control firms. Panel B presents descriptive statistics on acquirer firms and control firms. All variables are measured in the year prior to the acquisition announcement (t=-1). The Imbens-Wooldridge statistic measures the normalized difference between two variables. The test divides the difference between two variables by the square root of the sum of their variances. As a rule of thumb, a test statistic exceeding 0.25 indicates that the analysis tends to be sensitive to the specification.

Panel A: Target firms

	Wage	Age	Size	Share MQ	Share HQ	Share female
Matched treated target firms ($N = 1,043$)						
Mean	89.33	40.02	101.81	0.63	0.24	0.36
Median	88.19	40.27	40.00	0.69	0.15	0.31
SD	29.12	5.98	273.33	0.24	0.24	0.24
Matched control target firms ($N = 1,043$)						
Mean	86.11	40.06	98.93	0.64	0.23	0.36
Median	85.11	40.13	39.00	0.70	0.14	0.30
SD	31.10	5.57	263.43	0.24	0.24	0.23
Relative difference of mean	0.0360	0.0056	0.0565	0.0280	0.0790	0.0049
Imbens-Wooldridge test	0.08	0.00	0.01	0.03	0.03	0.01

Panel B: Acquirer firms

	Wage	Age	Size	Share MQ	Share HQ	Share female
Matched treated acquirer firms ($N = 1,043$)						
Mean	104.45	39.86	463.03	0.58	0.31	0.38
Median	100.73	40.13	117.00	0.63	0.25	0.34
SD	33.54	4.86	1,343.45	0.23	0.25	0.21
Matched control acquirer firms ($N = 1,043$)						
Mean	99.39	40.08	423.98	0.60	0.29	0.38
Median	96.08	40.34	109.00	0.65	0.21	0.33
SD	36.71	4.58	1,256.14	0.23	0.25	0.22
Relative difference of mean	0.0484	0.0056	0.0565	0.0280	0.0790	0.0049
Imbens-Wooldridge test	0.10	0.03	0.02	0.05	0.07	0.01

Table OA3: Firm-level aggregate employee flows for highly-qualified employees.

Entity	Merged	Target		Acquirer		Turnover
Scaled by	Merged (1)	Target (2)	Merged (3)	Acquirer (4)	Merged (5)	Merged (6)
Net employment growth	-6.13**	-52.19***	-12.45***	14.34***	6.34***	
	(-2.05)	(-9.65)	(3.94)	(3.94)	(2.74)	
Inflow	14.77***	2.37	-0.58	22.03***	0.46	13.61***
	(5.47)	(0.71)	(-0.52)	(7.19)	(0.34)	(5.53)
External inflow	10.46***	-0.07	-1.26	16.98***	15.22***	9.24***
	(4.54)	(-0.02)	(-1.18)	(6.50)	(6.18)	(4.56)
Inflow other firms	7.99***	-2.11	-1.05	13.35***	11.57***	7.49***
	(4.61)	(-0.89)	(-1.21)	(6.22)	(5.68)	(5.34)
with wage increase	6.89***	-0.06	-0.58	11.53***	8.99***	6.14***
	(4.90)	(-0.03)	(-0.77)	(6.58)	(5.88)	(5.69)
with wage decrease	1.10	-2.05**	-0.47	1.81**	7.42***	1.15***
	(1.52)	(-2.01)	(-1.63)	(1.97)	(6.25)	(2.85)
Inflow new entrant	2.45**	2.04	-0.21	3.60***	1.57**	1.62**
	(2.46)	(1.04)	(-0.42)	(3.20)	(2.32)	(1.98)
Internal inflow	4.31***	2.44***	0.67***	5.06***	2.56***	3.92***
	(5.10)	(3.48)	(3.26)	(4.83)	(2.87)	(4.93)
Inflow within	1.77**	0.58	0.38*	1.69**	3.66***	1.96***
	(2.36)	(1.11)	(1.94)	(2.06)	(4.44)	(2.64)
Inflow between	2.54***	1.85***	0.30***	3.36***	2.26***	0.38*
	(6.57)	(3.95)	(4.25)	(5.25)	(5.85)	(1.96)
Outflow	20.04***	57.83***	11.06***	6.16	8.73***	
	(5.69)	(11.15)	(6.00)	(1.54)	(2.99)	
External outflow	15.73***	40.99***	8.74***	3.31	6.60***	
	(4.95)	(9.32)	(4.90)	(0.91)	(2.63)	
Outflow other firms	13.17***	36.48***	7.81***	4.78*	5.17***	
	(5.53)	(9.64)	(5.59)	(1.69)	(2.70)	
with wage increase	10.66***	26.34***	6.17***	2.91	4.33***	
	(5.32)	(8.01)	(5.23)	(1.28)	(2.73)	
with wage decrease	2.51***	10.15***	1.64***	1.87	0.84	
	(2.91)	(6.39)	(3.01)	(1.63)	(1.27)	
Outflow unemployment	2.40	4.51**	0.93	-1.47	1.43	
	(1.58)	(2.01)	(1.08)	(-0.83)	(1.28)	
Internal outflow	4.47***	16.84***	2.32***	2.85***	2.13***	
	(5.32)	(6.57)	(6.51)	(3.28)	(2.80)	
Outflow within	1.93**	0.55	0.34*	1.91**	1.60**	
	(2.57)	(1.06)	(1.66)	(2.33)	(2.21)	
Outflow between	2.53***	16.29***	1.98***	0.94***	0.53**	
	(6.61)	(6.20)	(1.94)	(3.21)	(2.25)	
N	2,050	1,752	2,050	1,932	2,050	1,968

Table OA4: Labor force changes. This table reports the annual sample means of average employee education and qualification levels, average employee age, average daily wage, and number of employees from t=-1 until t=+2 for merged treated firms (Panel A) and merged control firms (Panel B). *Education index* and *Qualification index* are defined in Appendix A.2, *Age*, *Wage* and *Size* are defined in Table 1.

Panel A: Treated firms

t	Education index (1)	Qualification index (2)	Age (3)	Wage (4)	Size (5)
-1	2.825	1.898	39.71	98.36	564.84
0	2.891	1.914	39.95	101.47	578.39
1	2.934	1.941	40.78	106.63	539.98
2	2.960	1.959	41.62	110.51	513.91

Panel B: Control firms

t	Education index (1)	Qualification index (2)	Age (3)	Wage (4)	Size (5)
-1	2.724	1.865	39.95	94.85	522.91
0	2.752	1.866	40.23	96.42	523.54
1	2.776	1.879	41.14	100.68	497.88
2	2.802	1.902	42.05	104.09	475.43

Table OA5: Flow regressions: all employees. The table reports the estimated differences in growth rates for managers from *t=-1* to *t=2* between the treated firms (Panel A: Merged firm, Panel B: Target, Panel C: Acquirer) and their control firms for all control variables not reported in Table 9. *Merged firm* refers to the combined employment (flows) of target and acquirer, respectively, their matched pairs. All rates are scaled by the combined employment of target and acquirer (i.e., the merged firm). The table reports estimates of θ (*Treatment*) and γ (*Treatment* $\times$ variable of interest) of equation (3) for the dependent variables *Net employment growth* (column 1), *Inflow* (column 2), *External inflow* (column 3), *Internal inflow* (column 4), *Outflow* (column 5), *External outflow* (column 6), *Internal outflow* (column 7), and *Tur*nover as defined in equation (1) (column 8). All variables are defined in Table 1. Standard errors are clustered at the firm-level and t-statistics are presented in parentheses below the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A - Merged firm

	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Turnover (8)
Treatment	2.12	-34.97	-31.56	-3.41	-37.09	-33.68	-3.41	-27.07
	(0.06)	(-1.07)	(-1.19)	(-0.34)	(-0.78)	(-0.78)	(-0.34)	(-0.88)
$\times$ Age$_{\mathrm{T}}$	0.01	0.53	0.47	0.06	0.52	0.46	0.06	0.39
	(0.02)	(1.24)	(1.22)	(0.43)	(0.79)	(0.73)	(0.43)	(1.04)
$\times$ Age$_{\mathrm{A-T}}$	0.64	0.74*	0.59*	0.14	0.09	-0.05	0.14	0.38
	(1.05)	(1.95)	(1.75)	(1.04)	(0.15)	(-0.09)	(1.04)	(1.20)
$\times$ Wage$_{\mathrm{T}}$	-0.05	0.01	0.02	-0.01	0.06	0.07	-0.01	-0.02
	(-0.39)	(0.10)	(0.30)	(-0.48)	(0.44)	(0.57)	(-0.48)	(-0.31)
$\times$ Wage$_{\mathrm{A-T}}$	-0.06	0.03	0.07	-0.03	0.10	0.13	-0.03	0.00
	(-0.51)	(0.40)	(0.95)	(-1.26)	(0.77)	(1.07)	(-1.26)	(0.02)
$\times$ Qualific.$_{\mathrm{T}}$	0.07	-0.03	0.01	-0.03	-0.09	-0.06	-0.03	-0.11
	(0.38)	(-0.23)	(0.05)	(-0.88)	(-0.45)	(-0.31)	(-0.88)	(-0.95)
$\times$ Qualific.$_{\mathrm{A-T}}$	0.08	-0.03	-0.01	-0.01	-0.10	-0.09	-0.01	-0.08
	(0.46)	(-0.29)	(-0.17)	(-0.40)	(-0.61)	(-0.57)	(-0.40)	(-0.94)
$\times$ Educ.$_{\mathrm{T}}$	0.03	-0.16	-0.10	-0.06	-0.18	-0.12	-0.06	-0.09
	(0.11)	(-0.75)	(-0.56)	(-1.03)	(-0.58)	(-0.43)	(-1.03)	(-0.43)
$\times$ Educ.$_{\mathrm{A-T}}$	0.14	-0.12	-0.07	-0.05	-0.26	-0.21	-0.05	-0.07
	(0.72)	(-1.10)	(-0.74)	(-1.39)	(-1.38)	(-1.17)	(-1.39)	(-0.70)
N	2,036	2,036	2,036	2,036	2,036	2,036	2,036	2,036
adj. R^2	0.154	0.303	0.339	0.076	0.271	0.281	0.076	0.312

Table OA5: Flow regressions: all employees. (continued)

Panel B - Target

	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Turnover (8)
Treatment	-29.55	-11.72	-10.39	-1.34	17.82	1.98	15.85***	-8.70
	(-1.42)	(-1.00)	(-0.92)	(-0.56)	(0.96)	(0.11)	(3.04)	(-0.96)
× Age_{T}	0.24	0.23	0.16	0.07	-0.01	0.10	-0.11	0.13
	(0.64)	(1.03)	(0.76)	(1.38)	(-0.03)	(0.29)	(-1.21)	(0.77)
× $\text{Age}_{\text{A-T}}$	0.59	0.35*	0.25	0.10*	-0.24	-0.18	-0.06	0.17
	(1.51)	(1.67)	(1.30)	(1.75)	(-0.66)	(-0.49)	(-0.67)	(1.07)
× Wage_{T}	-0.05	0.09*	0.08**	0.00	0.14*	0.14*	-0.00	0.07**
	(-0.62)	(1.89)	(1.99)	(0.10)	(1.77)	(1.85)	(-0.05)	(2.01)
× $\text{Wage}_{\text{A-T}}$	-0.04	0.12**	0.14***	-0.02	0.16*	0.16*	-0.01	0.09**
	(-0.42)	(2.28)	(2.79)	(-1.19)	(1.83)	(1.89)	(-0.25)	(2.24)
× $\text{Qualific.}_{\text{T}}$	0.05	0.08*	0.08*	0.01	0.03	0.05	-0.02	0.07*
	(0.52)	(1.73)	(1.65)	(0.83)	(0.37)	(0.61)	(-0.99)	(1.82)
× $\text{Qualific.}_{\text{A-T}}$	-0.09	-0.00	0.01	-0.02**	0.09	0.11	-0.02	0.00
	(-0.87)	(-0.07)	(0.28)	(-2.00)	(0.84)	(1.01)	(-1.03)	(0.01)
× Educ._{T}	0.05	-0.02	-0.03	0.01	-0.07	-0.10	0.03	-0.00
	(0.32)	(-0.34)	(-0.51)	(0.63)	(-0.54)	(-0.75)	(0.86)	(-0.05)
× $\text{Educ.}_{\text{A-T}}$	0.12	-0.02	-0.02	0.01	-0.14	-0.13	-0.00	-0.02
	(0.88)	(-0.26)	(-0.38)	(0.42)	(-1.13)	(-1.09)	(-0.19)	(-0.45)
N	2,036	2,036	2,036	2,036	2,036	2,036	2,036	2,036
adj. R^2	0.344	0.392	0.409	0.096	0.537	0.514	0.107	0.446

Panel C - Acquirer

	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Turnover (8)
Treatment	31.66	-23.25	-21.17	-2.08	-54.92	-35.65	-19.26**	-26.30
	(1.04)	(-0.74)	(-0.84)	(-0.21)	(-1.29)	(-0.95)	(-2.35)	(-0.90)
× Age_{T}	-0.22	0.31	0.31	-0.01	0.53	0.36	0.17*	0.29
	(-0.47)	(0.78)	(0.90)	(-0.06)	(1.04)	(0.74)	(1.83)	(0.90)
× $\text{Age}_{\text{A-T}}$	0.06	0.39	0.34	0.05	0.33	0.13	0.20**	0.26
	(0.13)	(1.11)	(1.10)	(0.36)	(0.81)	(0.33)	(2.14)	(0.99)
× Wage_{T}	-0.00	-0.08	-0.06	-0.02	-0.08	-0.06	-0.01	-0.11*
	(-0.01)	(-1.05)	(-0.95)	(-0.64)	(-0.76)	(-0.67)	(-0.69)	(-1.86)
× $\text{Wage}_{\text{A-T}}$	-0.03	-0.09	-0.07	-0.02	-0.06	-0.03	-0.03*	-0.12**
	(-0.33)	(-1.38)	(-1.29)	(-0.73)	(-0.77)	(-0.42)	(-1.76)	(-2.43)
× $\text{Qualific.}_{\text{T}}$	0.01	-0.11	-0.07	-0.04	-0.13	-0.11	-0.01	-0.17
	(0.11)	(-0.92)	(-0.71)	(-1.07)	(-0.71)	(-0.70)	(-0.43)	(-1.58)
× $\text{Qualific.}_{\text{A-T}}$	0.17	-0.02	-0.03	0.00	-0.19	-0.20	0.01	-0.07
	(1.43)	(-0.26)	(-0.35)	(0.12)	(-1.44)	(-1.63)	(0.22)	(-0.97)
× Educ._{T}	-0.02	-0.13	-0.06	-0.07	-0.11	-0.03	-0.09*	-0.11
	(-0.11)	(-0.64)	(-0.36)	(-1.25)	(-0.42)	(-0.11)	(-1.72)	(-0.57)
× $\text{Educ.}_{\text{A-T}}$	0.02	-0.10	-0.05	-0.05*	-0.12	-0.08	-0.04*	-0.07
	(0.13)	(-1.02)	(-0.56)	(-1.71)	(-0.91)	(-0.64)	(-1.73)	(-0.84)
N	2,036	2,036	2,036	2,036	2,036	2,036	2,036	2,036
adj. R^2	0.120	0.336	0.361	0.089	0.302	0.324	0.064	0.354

Table OA6: Flow regressions: managers, acquirer and target level. The table reports the estimated differences in growth rates for managers from *t=-1* to *t=2* between the treated firms for the target (Panel A) and the acquirer (Panel B). All rates are scaled by the combined employment of target and acquirer (i.e., the merged firm). The table reports estimates of θ (*Treatment*) and γ (*Treatment* $\times$ variable of interest) of equation (3) for the dependent variables *Net employment growth* (column 1), *Inflow* (column 2), *External inflow* (column 3), *Internal inflow* (column 4), *Outflow* (column 5), *External outflow* (column 6), *Internal outflow* (column 7), and *Tur*nover as defined in equation (1) (column 8). In all our regressions, we include additional control variables accounting for average employee age (*Age*), employee wage (*Wage*), employee qualification (*Qualification*), and employee education (*Education*) in the target, and the difference between the acquirer and the target. All variables are defined in Table 1. Standard errors are clustered at the firm-level and t-statistics are presented in parentheses below the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A - Target

	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Promotion (8)	Demotion (9)	Turnover (10)
Treatment	42.07	7.80	6.82	0.98	-14.67	-21.16	6.49	-8.45	-28.05	3.22
	(0.98)	(0.32)	(0.28)	(0.23)	(-0.43)	(-0.63)	(0.70)	(-0.48)	(-1.53)	(0.20)
$\times$ Distance	6.77	-0.74	-0.93	0.19	-3.91	-4.31	0.40	5.28*	1.68	-0.98
	(1.00)	(-0.21)	(-0.27)	(0.32)	(-0.72)	(-0.80)	(0.60)	(1.92)	(0.63)	(-0.43)
$\times$ Related	-7.75	2.81	2.11	0.70	4.05	3.37	0.68	-5.76***	0.74	0.68
	(-1.49)	(0.88)	(0.68)	(1.04)	(0.84)	(0.72)	(0.81)	(-2.75)	(0.39)	(0.28)
$\times$ HCR	-3.21	-1.01	-0.66	-0.36	3.95	3.58	0.37	0.53	-1.23	1.11
	(-0.69)	(-0.41)	(-0.28)	(-0.55)	(0.96)	(0.92)	(0.40)	(0.25)	(-0.67)	(0.58)
$\times$ $\text{Hierarchy}_{\text{T}}$	-4.16	0.06	0.69	-0.63	-0.71	-0.19	-0.53	-2.54	2.39	-1.25
	(-0.47)	(0.01)	(0.15)	(-0.70)	(-0.08)	(-0.02)	(-0.38)	(-0.67)	(0.85)	(-0.31)
$\times$ $\text{Hierarchy}_{\text{A}}$	-11.48	-10.61*	-10.21*	-0.40	1.01	-1.84	2.85	3.52	3.38	-5.45
	(-1.05)	(-1.93)	(-1.93)	(-0.36)	(0.11)	(-0.21)	(1.27)	(0.60)	(0.77)	(-1.29)
$\times$ Growth_{T}	-2.92	-1.80	-3.29	1.49*	-4.72	-4.72	-0.00	-1.34	4.50*	-1.50
	(-0.51)	(-0.62)	(-1.22)	(1.84)	(-1.05)	(-1.07)	(-0.00)	(-0.67)	(1.92)	(-0.73)
$\times$ Growth_{A}	-9.71	-3.51	-3.37	-0.14	3.95	1.90	2.05*	0.67	2.92	0.23
	(-1.16)	(-0.72)	(-0.69)	(-0.26)	(0.55)	(0.27)	(1.72)	(0.20)	(1.20)	(0.07)
$\times$ Size_{T}	-7.06***	-1.99**	-2.12**	0.13	3.41**	3.52***	-0.11	-1.71**	-0.05	-0.56
	(-3.81)	(-2.00)	(-2.34)	(0.40)	(2.36)	(2.58)	(-0.34)	(-1.97)	(-0.08)	(-0.86)
$\times$ Size_{A}	2.87	-1.35	-1.14	-0.21	-3.87**	-3.40**	-0.47	1.16	0.80	-0.77
	(1.39)	(-1.22)	(-1.08)	(-0.69)	(-2.20)	(-1.98)	(-1.60)	(1.27)	(1.09)	(-0.92)
N	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925
adj. R^2	0.140	0.197	0.195	0.096	0.251	0.250	0.070	0.199	0.017	0.214

Table OA6: Flow regressions: managers, acquirer and target level (continued).

Panel B - Acquirer

	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Promotion (8)	Demotion (9)	Turnover (10)
Treatment	109.03*	43.30	43.40	-0.11	5.75	13.51	-7.76	51.85	-19.63	30.97
	(1.82)	(0.71)	(0.72)	(-0.01)	(0.08)	(0.18)	(-1.09)	(1.58)	(-1.07)	(0.56)
× Distance	5.90	-8.61	-8.04	-0.56	-10.09	-9.98	-0.11	2.92	-1.49	-9.45
	(0.70)	(-0.95)	(-0.90)	(-0.50)	(-1.09)	(-1.09)	(-0.13)	(0.61)	(-0.44)	(-1.27)
× Related	-7.28	-5.04	-6.90	1.86	-5.85	-7.79	1.94**	-7.31	0.77	-2.78
	(-1.05)	(-0.67)	(-0.93)	(1.58)	(-0.67)	(-0.90)	(2.46)	(-1.26)	(0.32)	(-0.45)
× HCR	2.16	16.19**	16.74***	-0.55	10.07	10.84	-0.77	-1.78	2.18	9.09*
	(0.33)	(2.48)	(2.66)	(-0.41)	(1.37)	(1.53)	(-0.71)	(-0.39)	(0.90)	(1.66)
× $\text{Hierarchy}_{\text{T}}$	-22.61**	-3.25	-2.84	-0.41	10.06	7.26	2.80	-8.61	0.69	-1.54
	(-2.02)	(-0.26)	(-0.23)	(-0.16)	(0.68)	(0.49)	(1.64)	(-1.41)	(0.17)	(-0.14)
× $\text{Hierarchy}_{\text{A}}$	7.60	15.22	9.45	5.77**	11.62	10.33	1.29	3.23	-0.77	14.28
	(0.62)	(1.18)	(0.75)	(2.07)	(0.79)	(0.71)	(0.77)	(0.57)	(-0.20)	(1.28)
× Growth_{T}	-8.68	18.47*	19.39**	-0.92	30.03***	29.27**	0.76	3.55	0.68	19.09**
	(-1.00)	(1.85)	(2.00)	(-0.54)	(2.59)	(2.56)	(0.54)	(0.58)	(0.20)	(2.07)
× Growth_{A}	0.94	21.34**	15.78	5.56**	19.02*	17.85*	1.17	4.23	5.62**	22.74**
	(0.12)	(2.16)	(1.63)	(2.50)	(1.79)	(1.70)	(1.27)	(0.73)	(2.23)	(2.50)
× Size_{T}	-3.72	-1.97	-1.30	-0.67	1.65	2.31	-0.66	0.08	0.18	-1.01
	(-1.51)	(-0.85)	(-0.58)	(-1.53)	(0.62)	(0.89)	(-1.61)	(0.06)	(0.19)	(-0.50)
× Size_{A}	-2.64	-3.47	-3.44	-0.02	-2.55	-2.69	0.14	-0.77	0.95	-1.24
	(-1.30)	(-1.62)	(-1.63)	(-0.06)	(-1.08)	(-1.17)	(0.42)	(-0.68)	(1.44)	(-0.64)
N	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925
adj. R^2	0.060	0.092	0.061	0.223	0.127	0.114	0.150	0.312	0.268	0.056

Table OA7: Flow regressions: highly-qualified employees. The table reports the estimated differences in growth rates for highly qualified employees from *t=-1* to *t=2* between the treated firms for the merged firm (Panel A), the target (Panel B), and the acquirer (Panel C). High qualification is defined in Appendix A.2. All rates are scaled by the combined employment of target and acquirer (i.e., the merged firm). The table reports estimates of θ (*Treatment*) and γ (*Treatment* $\times$ variable of interest) of equation (3) for the dependent variables *Net employment growth* (column 1), *Inflow* (column 2), *External inflow* (column 3), *Internal inflow* (column 4), *Outflow* (column 5), *External outflow* (column 6), *Internal outflow* (column 7), and *Tur*nover as defined in equation (1) (column 8). In all our regressions, we include additional control variables accounting for average employee age (*Age*), employee wage (*Wage*), employee qualification (*Qualification*), and employee education (*Education*) in the target, and the difference between the acquirer and the target. All variables are defined in Table 1. Standard errors are clustered at the firm-level and t-statistics are presented in parentheses below the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A - Merged firm	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Promotion (8)	Demotion (9)	Turnover (10)
Treatment	63.59	39.70	48.35	-8.65	-8.27	8.78	-11.78	-15.28	-30.90	38.93
	(1.02)	(0.80)	(1.11)	(-0.56)	(-0.13)	(0.15)	(-0.79)	(-0.48)	(-1.52)	(0.88)
× Distance	0.10	-4.92	-4.19	-0.73	-3.46	-2.31	-1.24	0.89	-0.67	-6.16
	(0.01)	(-0.81)	(-0.78)	(-0.45)	(-0.42)	(-0.30)	(-0.79)	(0.25)	(-0.24)	(-1.21)
× Related	-7.95	2.87	1.13	1.74	3.67	0.76	2.90**	-5.96*	1.19	2.46
	(-1.22)	(0.56)	(0.25)	(1.18)	(0.53)	(0.12)	(2.11)	(-1.74)	(0.58)	(0.54)
× HCR	2.08	11.21**	10.07**	1.13	14.17*	12.55*	1.89	0.91	-4.13*	11.43**
	(0.33)	(1.98)	(2.04)	(0.66)	(1.91)	(1.86)	(1.09)	(0.28)	(-1.90)	(2.20)
× $\text{Hierarchy}_\text{T}$	-17.15	-16.22	-15.73*	-0.49	-7.25	-8.37	1.40	-1.94	6.25	-14.68
	(-1.37)	(-1.62)	(-1.71)	(-0.20)	(-0.51)	(-0.61)	(0.74)	(-0.32)	(1.49)	(-1.61)
× $\text{Hierarchy}_\text{A}$	3.60	4.85	2.15	2.70	3.47	2.11	0.93	2.35	0.13	3.61
	(0.27)	(0.49)	(0.24)	(0.97)	(0.25)	(0.16)	(0.36)	(0.46)	(0.03)	(0.39)
× Growth_T	-4.46	22.61**	20.22**	2.39	22.92*	19.68*	3.74	2.54	6.70**	19.73*
	(-0.54)	(2.11)	(2.36)	(0.67)	(1.74)	(1.77)	(1.00)	(0.45)	(2.35)	(1.89)
× Growth_A	-10.14	18.07*	11.69	6.38**	27.57**	22.07*	5.17**	4.27	4.91*	19.88**
	(-1.15)	(1.68)	(1.16)	(2.48)	(2.03)	(1.68)	(2.37)	(0.89)	(1.95)	(1.98)
× Size_T	-7.58***	-1.28	-1.12	-0.16	6.25**	6.28***	-0.26	0.82	0.86	-0.41
	(-3.16)	(-0.69)	(-0.67)	(-0.33)	(2.51)	(2.69)	(-0.53)	(0.77)	(1.23)	(-0.25)
× Size_A	3.13	-2.77	-2.74	-0.03	-6.35**	-6.29**	-0.15	0.86	1.31*	-1.83
	(1.42)	(-1.24)	(-1.30)	(-0.07)	(-2.23)	(-2.29)	(-0.29)	(1.01)	(1.88)	(-0.87)
N	2,003	2,003	2,003	2,003	2,003	2,003	2,003	2,003	2,003	2,003
adj. R^2	0.124	0.183	0.183	0.133	0.176	0.178	0.144	0.372	0.426	0.194

Table OA7: **Flow regressions: highly-qualified employees (continued).**

Panel B - Target										
	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Promotion (8)	Demotion (9)	Turnover (10)
Treatment	-23.85	17.06	16.51	0.55	45.93	34.05	11.88	-10.81	-15.83	12.01
	(-0.71)	(0.97)	(0.97)	(0.22)	(1.65)	(1.23)	(1.48)	(-0.90)	(-0.98)	(0.96)
× Distance	1.09	-1.59	-1.62	0.03	-0.04	0.13	-0.17	3.30*	0.66	-2.27
	(0.21)	(-0.63)	(-0.66)	(0.07)	(-0.01)	(0.03)	(-0.23)	(1.95)	(0.34)	(-1.26)
× Related	-7.20*	2.83	2.47	0.37	7.22*	6.88*	0.34	-1.74	1.08	2.99*
	(-1.72)	(1.18)	(1.07)	(0.79)	(1.87)	(1.82)	(0.45)	(-1.36)	(0.75)	(1.67)
× HCR	0.01	-0.53	-0.44	-0.10	3.07	2.66	0.41	1.09	-2.53	0.68
	(0.00)	(-0.27)	(-0.23)	(-0.23)	(0.91)	(0.81)	(0.58)	(0.91)	(-1.60)	(0.45)
× $\text{Hierarchy}_{\text{T}}$	-3.18	-4.30	-2.98	-1.32**	-4.21	-2.98	-1.23	-0.04	3.06	-3.98
	(-0.43)	(-1.08)	(-0.81)	(-1.98)	(-0.61)	(-0.44)	(-1.08)	(-0.02)	(1.20)	(-1.28)
× $\text{Hierarchy}_{\text{A}}$	-0.80	-5.36	-5.23	-0.13	-4.56	-5.46	0.90	1.30	1.30	-2.77
	(-0.09)	(-1.40)	(-1.38)	(-0.28)	(-0.54)	(-0.66)	(0.61)	(0.35)	(0.33)	(-0.90)
× Growth_{T}	1.04	0.71	-0.18	0.89*	-4.63	-4.04	-0.60	0.16	4.47**	-0.17
	(0.22)	(0.27)	(-0.07)	(1.66)	(-1.19)	(-1.05)	(-0.71)	(0.12)	(2.38)	(-0.09)
× Growth_{A}	-8.05	-1.47	-1.55	0.09	5.84	3.43	2.41**	1.41	2.15	-0.23
	(-1.22)	(-0.49)	(-0.52)	(0.21)	(0.91)	(0.54)	(2.10)	(0.60)	(0.92)	(-0.09)
× Size_{T}	-4.48***	-0.12	-0.28	0.16	4.28***	4.05***	0.23	0.19	0.26	0.44
	(-2.99)	(-0.16)	(-0.40)	(0.78)	(3.43)	(3.35)	(0.85)	(0.39)	(0.53)	(0.78)
× Size_{A}	5.58***	-0.37	-0.19	-0.18	-5.92***	-5.17***	-0.74***	0.63	0.60	-0.39
	(3.58)	(-0.51)	(-0.27)	(-1.36)	(-4.31)	(-3.82)	(-2.93)	(1.29)	(1.03)	(-0.67)
N	2,003	2,003	2,003	2,003	2,003	2,003	2,003	2,003	2,003	2,003
adj. R^2	0.201	0.283	0.283	0.094	0.343	0.326	0.125	0.212	0.141	0.321

Table OA7: Flow regressions: highly-qualified employees (continued).

Panel C - Acquirer

	Net emp. growth (1)	Inflow (2)	External inflow (3)	Internal inflow (4)	Outflow (5)	External outflow (6)	Internal outflow (7)	Promotion (8)	Demotion (9)	Turnover (10)
Treatment	87.44*	22.64	31.84	-9.20	-54.20	-30.54	-23.66*	-4.47	-15.07	19.30
	(1.70)	(0.48)	(0.78)	(-0.60)	(-0.94)	(-0.59)	(-1.89)	(-0.14)	(-0.95)	(0.45)
× Distance	-1.00	-3.33	-2.57	-0.76	-3.42	-2.35	-1.07	-2.42	-1.33	-3.71
	(-0.15)	(-0.59)	(-0.52)	(-0.49)	(-0.50)	(-0.37)	(-0.77)	(-0.73)	(-0.60)	(-0.81)
× Related	-0.75	0.03	-1.34	1.37	-3.55	-6.10	2.55**	-4.22	0.11	-0.13
	(-0.15)	(0.01)	(-0.34)	(0.98)	(-0.63)	(-1.18)	(2.21)	(-1.29)	(0.07)	(-0.03)
× HCR	2.07	11.74**	10.51**	1.23	11.10*	9.62*	1.48	-0.18	-1.61	9.53*
	(0.43)	(2.17)	(2.25)	(0.73)	(1.75)	(1.73)	(0.93)	(-0.06)	(-0.95)	(1.92)
× $\text{Hierarchy}_{\text{T}}$	-13.97	-11.92	-12.75	0.83	-3.03	-5.66	2.63*	-1.90	3.19	-11.71
	(-1.39)	(-1.23)	(-1.43)	(0.36)	(-0.26)	(-0.50)	(1.74)	(-0.33)	(0.88)	(-1.33)
× $\text{Hierarchy}_{\text{A}}$	4.41	10.22	7.39	2.83	8.03	8.00	0.03	1.05	-1.17	6.75
	(0.48)	(1.10)	(0.90)	(1.03)	(0.72)	(0.78)	(0.02)	(0.25)	(-0.39)	(0.79)
× Growth_{T}	-5.50	21.90**	20.40**	1.50	27.55**	23.22**	4.33	2.38	2.24	20.82**
	(-0.82)	(2.10)	(2.48)	(0.42)	(2.23)	(2.31)	(1.19)	(0.43)	(0.88)	(2.03)
× Growth_{A}	-2.10	19.54*	13.25	6.29**	21.74**	18.98*	2.76	2.86	2.76	16.68*
	(-0.34)	(1.89)	(1.38)	(2.48)	(2.03)	(1.87)	(1.51)	(0.64)	(1.51)	(1.72)
× Size_{T}	-3.10*	-1.16	-0.84	-0.32	1.97	2.46	-0.49	0.63	0.60	-0.98
	(-1.67)	(-0.67)	(-0.53)	(-0.70)	(0.93)	(1.26)	(-1.18)	(0.64)	(0.99)	(-0.62)
× Size_{A}	-2.45	-2.40	-2.55	0.15	-0.43	-1.03	0.60	0.23	0.71	-0.37
	(-1.59)	(-1.16)	(-1.31)	(0.28)	(-0.19)	(-0.49)	(1.34)	(0.28)	(1.43)	(-0.19)
N	2,003	2,003	2,003	2,003	2,003	2,003	2,003	2,003	2,003	2,003
adj. R^2	0.073	0.205	0.199	0.140	0.199	0.204	0.152	0.304	0.408	0.208

Table OA8: Explaining target closure. The table reports the results for a linear probability model of *Target closure*. All variables are defined in Table 1. Standard errors are clustered at the firm-level and t-statistics are presented in parentheses below the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Target closure		
	(1)	(2)	(3)
Treatment	0.7857***	0.7534***	1.1235***
	(3.02)	(2.63)	(3.79)
$\times$ Age_{T}	-0.0052	-0.0049	-0.0068
	(-1.04)	(-0.95)	(-1.32)
$\times$ $\text{Age}_{\text{A-T}}$	-0.0096**	-0.0099**	-0.0108***
	(-2.32)	(-2.37)	(-2.59)
$\times$ Wage_{T}	-0.0016	-0.0019*	-0.0011
	(-1.53)	(-1.73)	(-0.98)
$\times$ $\text{Wage}_{\text{A-T}}$	-0.0008	-0.0010	-0.0005
	(-0.95)	(-0.96)	(-0.52)
$\times$ $\text{Qualification}_{\text{T}}$	0.0003	-0.0002	-0.0002
	(0.23)	(-0.11)	(-0.16)
$\times$ $\text{Qualification}_{\text{A-T}}$	0.0007	0.0005	0.0006
	(0.68)	(0.45)	(0.53)
$\times$ $\text{Education}_{\text{T}}$	0.0012	0.0015	0.0006
	(0.72)	(0.85)	(0.39)
$\times$ $\text{Education}_{\text{A-T}}$	0.0004	0.0005	-0.0003
	(0.28)	(0.38)	(-0.21)
$\times$ Distance	-0.0004***	-0.0003**	-0.0004***
	(-3.00)	(-2.45)	(-3.10)
$\times$ Related	-0.0465	-0.0435	-0.0466
	(-1.18)	(-1.11)	(-1.20)
$\times$ HCR	0.0303	0.0281	0.0488
	(0.85)	(0.79)	(1.39)
$\times$ $\text{Hierarchy}_{\text{T}}$	-0.0445	-0.0283	-0.0501
	(-0.62)	(-0.35)	(-0.64)
$\times$ $\text{Hierarchy}_{\text{A}}$	0.0286	0.0182	0.0146
	(0.53)	(0.28)	(0.23)
$\times$ Growth_{T}	-0.0824**	-0.0772	-0.0892*
	(-2.04)	(-1.56)	(-1.83)
$\times$ Growth_{A}	0.0495	0.0535	0.0208
	(1.38)	(1.28)	(0.48)
$\times$ Size_{T}			-0.0399***
			(-2.85)
$\times$ Size_{A}			-0.0275***
			(-2.60)
N	2,036	2,036	2,036
adj. R^2	0.138	0.166	0.199