Corporate Takeovers and Labor Restructuring[*]

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Abstract

I use a matched employer-employee dataset linked with hand-collected data on M&A activity in Brazil to examine how firms reorganize their labor force after takeovers. I show that M&As are associated with a significant decline in employment and total wages of target firms through increased layoffs, limited hiring and occupational consolidation. Low-skilled labor is particularly affected, while firms experience voluntary exit of high-skilled labor. Post-takeover average wages decline only for low-skilled workers. Employees that perform routine occupational tasks experience a higher likelihood of involuntary separation in transactions where the acquirer is a foreign firm. Finally, I provide evidence that occupational overlap is a key channel of increased layoffs: workers in occupations that overlap with occupations in the acquiring firm exhibit a higher likelihood of being fired. The relative increase in the demand for high-skilled and non-routine labor and the heterogeneous impact of M&As on wages leads to an increase in within-firm wage inequality. Overall, my results are consistent with a neoclassical efficiency-seeking view of M&As.

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1 Introduction

Corporate takeovers represent one of the most significant financial transactions among firms. In 2015 the total value of global M&A transactions amounted to $4.73T. In general, the rationale of corporate takeovers is to create value either by taking advantage of synergies or by generating efficiency gains through cost-reduction, consolidation and disinvestment. As a result, M&As affect the scope of the firms involved in the transaction and are followed by an extensive restructuring process (Maksimovic et al. (2011)). The readjustment of firm boundaries in the post-takeover period is a subject that economists have long been interested in. Indeed, examining the reorganization process of the acquired assets in the post-takeover period contributes to our understanding of value creation sources in takeovers and has broader product market implications. Human capital is an important production factor, a scarce resource and a source of competitive advantage for firms and thus, the restructuring process is bound to entail decisions related to the labor force of the target firm, or even motivate the takeover (e.g. Dessaint et al. (2017); Ouimet and Zarutskie (2016); Tate and Yang (2016)). In addition, the labor integration and reorganization process in corporate takeovers is anecdotally a complicated and controversial issue due to the perceived adverse effects on employment. Yet, the empirical literature has largely focused on the restructuring process of physical assets of target firms, while human capital and labor-related considerations that potentially affect the reorganization outcomes have been relatively unexplored.

In this paper I empirically explore the post-takeover restructuring process of the labor force in target firms by constructing and analyzing a longitudinal micro-level dataset that combines manually-collected information on the identify of firms involved in M&A activity in Brazil and a comprehensive administrative employer-employee linked dataset. The employer-employee linked dataset consists of the universe of formal employment in Brazil and provides detailed information on individual employee characteristics and terminations of labor contracts, that allows me to capture a thorough depiction of the evolution of the labor force of target firms and characterize the extent and direction of post-takeover outcomes related to the level and composition of the labor force. Therefore, I am able to mitigate limitations in previous studies by disentangling the sources of net employment flows and exploring employee-level heterogeneous effects to document change in the composition of labor. The primary challenge in identifying the impact of M&As is selection bias reflecting the non-random nature of the distribution of M&A activity across industries and firm characteristics. However, the comprehensive nature of my dataset allows me to rely on nonlinear and nonparametric methods with the use of matching estimators and a difference-in-differences specification to address the potential selection concern, closely following the methodological approach of Davis et al. (2014).

To empirically categorize firms into productivity types for the purposes of the matching estimator, I follow the methodology of Abowd et al. (1999) (henceforth AKM) and instrument for productivity by using the distribution of the firm-specific wage premium. The definition of potential high-productivity firms as high-wage firms is consistent with numerous recent models of frictional labor markets (e.g., Christensen et al. (2005)), in which higher-productivity firms pay higher wages for equivalent workers. In addition, to reinforce the M&A-related interpretation of the results, I augment the empirical analysis by documenting that there are no employment effects on withdrawn M&As for reasons unrelated to labor considerations.

I begin my firm-level analysis by examining the impact of takeovers on total employment and total wages in target firms using a two-year window around the timing of the M&A transaction. Previous literature has struggled to provide convincing evidence on the impact of M&As on employment for reasons ranging from the use of only sparse employment data to non-representative samples of corporate control changes and firms (e.g. McGuckin and Nguyen (2001); Conyon et al. (2002); Li (2013)). My dataset allows me to overcome this problem. I demonstrate that corporate takeovers in Brazil are associated with extensive labor restructuring at the target firm. Specifically, I find that target firms experience a large decline in employment and total wages relative to control firms in the two-year post-takeover period. The magnitude of my estimates indicate that target firms experienced on average a decline of 29% in terms of employment and 17% in terms of total wages with respect to comparable firms.

In a second step of the analysis, I transition my focus on employment flows to shed light into the sources of this adjustment. Previous literature has predominantly focused on changes in total employment. Although net employment results are informative of the direction of the post-takeover restructuring, a decline in net employment relative to the set of control firms is likely to reflect an increase in separations and/or a decline in hirings. Most importantly, an increase in separations is likely to reflect both voluntary and involuntary departures, leading to a different interpretation of the post-takeover labor-related outcomes depending on the type of separation. For example, in case M&As are motivated by cost reduction and consolidation considerations, layoffs are expected to materialize as a by-product of the restructuring process. On the other hand, M&As induce uncertainty for target employees and thus, an increase in voluntary exit of human capital is likely to lead to a decline in employment even if the motivation of the takeover is unrelated to the pursuit of efficiency gains. An important advantage of my administrative dataset is that it contains unique information on the terminations of labor contracts which allows me to disentangle involuntary from voluntary separations and, thus, document the precise manner that employment adjustment takes place. Specifically, I present evidence that acquiring firms predominantly reorganize the labor force in the target firm by significantly

increasing layoffs and limiting hirings, consistent with the notion that M&As engage in efficiency-seeking consolidation. In addition, the employment decline reflects a significant increase in the rate of voluntary exit, reflecting the fact that M&As represent turbulent times for the employees of target firms. Finally, I supplement my analysis by documenting that reorganization involves occupational consolidation, as the number of occupations declines in the post-takeover period. This implies that acquiring firms not only decrease the number of workers within a specific occupation, but also that there are occupations where layoffs are accompanied by non-replacement of redundant workers, consistent with firms consolidating or limiting unrelated occupational tasks.

Having established firm-level patterns in the employment flows of target firms, I turn to an employee-level analysis to examine post-takeover changes in the demand for human capital. To the extent that acquiring firms actively reorganize human capital in the process of resetting their boundaries in the post-takeover period, I should expect M&As to be followed by heterogeneous effects on different groups of employees leading to changes in the composition of labor. For this purpose, I exploit cross-sectional variation in worker characteristics and characterize the post-takeover change in the likelihood of exit and entry for different groups of employees. To separate demand and supply side factors that affect the decision to exit the firm, I use the information on the reason for the termination of employment contracts and disentangle involuntary from voluntary exit. This cross-sectional analysis extends our understanding of the post-takeover readjustment process by providing evidence on within-firm across-employees changes in the demand for human capital.

The selection of the employee-level variation that I explore is motivated by theoretical predictions about the effects of M&As on firms. Specifically, I focus on the following human capital dimensions that are relevant to the reorganization decision of the acquiring firm: level of skill defining as high-skilled the employees that have completed at least undergraduate education, employees in managerial positions, occupational routine task intensity, and level of human capital overlap. The neoclassical merger theory is based on the view that M&As are an efficient response to regime shifts (e.g. due to technological shocks) by value-maximizing managers (e.g. Gort (1969); Mitchell and Mulherin (1996); Jovanovic et al. (2001)). Therefore, takeovers potentially lead to technological change and adoption of automation, and to the extent that capital and high-skilled labor are complements, these theories would predict that M&As should generate an increase in the demand for high-skilled and non-routine labor. In addition, synergy gains have long been considered as an important driver of M&As (e.g. Andrade et al. (2001); Devos et al. (2008)). An important channel though which synergies materialize is the existence of asset complementarities between the target and the acquiring firm (e.g. Rhodes-Kropf and Robinson (2008)). Therefore, these theories would predict an increase in the likelihood

of involuntary separation for workers in occupations that overlap between the acquiring and the target firm.

Given the importance of high-skilled employees for firm productivity and value creation (Abowd et al. (2005)), I document that acquiring firms attempt to retain the target's high-skilled employees, as there is no change in the post-takeover likelihood of involuntary separation. However, given the highly liquid market for high-skilled employees and the job uncertainty associated with M&As, high-skilled employees exhibit a 15% increase in the likelihood of voluntary exit in the post-takeover period. On the contrary, given the abundance of low-skilled labor in Brazil, I find that low-skilled workers are particularly affected in the post-merger reorganization by experiencing a 35% increase in the likelihood of involuntary separation. Moreover, there is a significant decline of 18% in the likelihood of hiring low-skilled employees, while there is no impact on the likelihood of hiring high-skilled employees. These results imply that the firm-level post-merger increase in layoffs and decrease in the hiring rate, documented previously, hit low-skilled workers disproportionally, while the increase in the rate of voluntary exit corresponds to high-skilled human capital. Next, I examine the reorganization decisions of acquiring firms regarding employees in managerial positions. I find that, unlike the rest of the high-skilled employees, managers experience an increase in the post-takeover likelihood of involuntary separation, while there is no change in the likelihood of voluntary exit. This finding is in line with the Jensen and Ruback (1983) view that takeovers induce competition for the right to manage resources and achieve efficiency by replacing managers in target firms.

M&As are likely to reduce frictions associated with technology adoption and increase automation for reasons ranging from inducing a more efficient use of capital (Jovanovic et al. (2001)) to alleviating financial constraints (e.g. Erel et al. (2015)). Consistent with technological change and capital upgrade, I have shown that there is an increase in the relative demand for high-skilled human capital. To further test this hypothesis, I focus on cross-border M&As. Over 90% of cross-border M&A activity in Brazil comes from developed countries, which implies that there is an increased potential for skill and technology upgrade as a response to increased exposure to trade (Verhoogen (2008); Bustos (2011)) and adoption of modern management practices (Bloom et al. (2013)). Indeed, the results indicate that post-takeover restructuring in cross-border M&As is indicative of routine-biased change with employees that perform routine tasks experiencing a 25% increase in the likelihood of involuntary separation. On the contrary, in domestic M&As there is a similar increase in the likelihood of involuntary separation for both routine and non-routine employees, implying that automation is not a driver of the post-merger reorganization process.

Finally, I exploit information on the occupational profiles of acquiring and target firms

to construct a binary variable that takes the value of 1 for occupations that are present in both firms involved and 0 otherwise. I document that the likelihood of involuntary separation increases by 1.8% in the post-takeover period for employees in occupations that overlap between the acquirer and the target. Thus, the labor reorganization process is motivated by an attempt to eliminate employees in overlapping occupations consistent with consolidation and cost-reduction being one of the primary drivers of takeovers.

The employee-level results indicate that takeovers lead to an increase in the relative demand for high-skilled and non-routine labor in the post-takeover period. Turning to firm-level analysis, I examine whether these post-takeover changes in the demand for different groups of employees reflect firm-level compositional changes. I find that this is indeed the case; target firms exhibit a 7% increase in the share of high-skilled labor and a 7.6% decline in the share of routine labor. To provide additional evidence of technological change, I document that target firms increase the share of employees in occupations related to R&D by 1.2%. These compositional changes are suggestive of skill-biased and routine-biased change and thus, are expected to differentially affect the average wages of high-skilled and low-skilled employees and contribute to an increase in within-firm wage inequality. Indeed, I find that corporate takeovers are associated with a 14.6% decline in the average wage for low-skilled workers and a 4.9% increase in the average wage for high-skilled workers. Moreover, I document an increase in within-firm wage dispersion by 6.8% and the widening of the 90-10 wage gap by 13.3% in the post-takeover period, reflecting an increase in within-firm wage inequality. Finally, I demonstrate that M&As with a higher potential for labor restructuring lead to larger employment adjustments.

My paper contributes to the M&As literature that examines the post-takeover restructuring process. Focusing on physical assets, Maksimovic et al. (2011) examine the magnitude and direction of restructuring in the 3-year post-merger period in manufacturing sectors using data from the Census LRD, and document that the restructuring process involves 46% of target plants with 26% of the plants sold and 19% closed supporting the notion that reorganization occurs in a manner that reinforces resource complementarity and exploits the comparative advantages of the acquiring firm. Kaplan and Weisbach (1992) examine long-term divestitures to document that 44% of their sample of mergers that take place between 1971 and 1982 had been wholly divested by 1989. Unlike the previous studies that focus on physical assets, my paper explores the post-takeover restructuring process of human capital.

My paper contributes to the existing finance literature that links finance with labor market (e.g. Agrawal and Matsa (2013), Simintzi et al. (2014), Tate and Yang (2015), Graham et al. (2016), Baghai et al. (2016)) and specifically, the set of papers that examine the role of human capital and labor in corporate takeovers. Dessaint et al. (2017) and John et al. (2015) exploit variation induced by changes in labor regulations to provide evidence

consistent with labor restructuring being a significant driver of M&As and synergy gains. Ouimet and Zarutskie (2016) demonstrate that the acquisition of valuable human capital is a significant motivation for corporate takeovers. Tate and Yang (2016) provide evidence that inter-industry mobility explains diversifying acquisitions, while Lee et al. (2017) show that human capital complementarity is an important determinant of M&As. Li (2013) adds to the literature by demonstrating that capital expenditures, wages per employee, and employment in public target firms experience a decline in the 3-year period following the acquisition without a decline in the output. Ma et al. (2017) document the role of M&A activity as a catalyst for shifts in the occupational composition of industries and increase in wage inequality. In the private equity literature, Davis et al. (2014) document increased productivity and modest employment losses following a private equity buyout, while Olsson and Tåg (2017) focus on leveraged buyouts in Sweden to provide evidence of job polarization. Agrawal and Tambe (2016) document that private equity-induced investment in IT is beneficial for the career paths of employees of firms targeted by private equity.

My paper complements this literature on three distinct dimensions. First, I offer the first micro-level longitudinal analysis on the post-takeover labor restructuring process, an issue that has long concerned economists. Notice that I abstain from arguing that takeovers are exclusively motivated by labor restructuring purposes. Rather, I characterize the extent and direction of post-takeover labor-related outcomes of the average firm targeted at a takeover and highlight the role of M&As on exploiting labor-related inefficiencies. Pinning down the sources of changes in net employment has been challenging due to either the use of sparse data or the lack of detailed information on labor flows. My employer-employee dataset mitigates data limitations by tracking individuals over time and including information on the labor contracts terminations and the employment decisions of firms. Second, the disaggregate view of the labor force at the employee level allows me to document changes in the composition of labor and test predictions of merger theories. Thus, I am able to identify potential mechanisms that drive the post-takeover labor restructuring process. Third, consistent with evidence on the relationship between within-firm wage inequality and firm size (e.g. Mueller et al. (2017)) and in line with evidence on wage polarization (e.g. Autor and Dorn (2013)), I document within-firm evidence of increase in wage inequality after takeovers.

The closest paper is the paper by Ma et al. (2017) that uses establishment-level data from the Occupational Employment Survey (OES) in U.S. to explore the impact of horizontal M&As on occupational employment and wages and subsequently, link the findings with within-industry occupational shifts that reflect skill- and routine-biased change. My paper complements and adds to these findings by exploiting the disaggregate view of my dataset at the firm and employee level which allows me to examine employment flows (entry and

exit of the labor force) and directly document changes in the labor demand in the post-takeover period. Additionally, in my setting, I am able to track firms and employees over time at an annual basis which allows me to capture and analyze the dynamics of compositional changes in the labor force around the M&A event. Finally, I am able to precisely measure wage effects by exploiting individual-level information on wage changes and pin down the underlying channels by examining the entry and exit of employees.

2 Institutional Setting

2.1 M&A Market in Brazil

Brazil is currently the 9th largest economy in the world and is expected to experience significant growth with a forecast to be the 5th largest economy in 2050. In the early 2000s - following the successful implementation of the "Plano Real" in the mid 1990s along with privatizations of state-owned monopolies and amidst a surge in commodity prices - Brazil transitioned into a stable platform for economic growth by implementing sound fiscal policies that effected a downward trend in inflation, an accumulation of foreign reserves, a reduction in public debt, and a modernization of the credit and capital markets. As a result, Brazil was part of the high-growth BRIC countries in 2002, that, at the time, were collectively accounting for about 16% of the world's GDP growth. Since then, BRIC economies' contribution to global growth has increased to 45%. In 2006 Brazil's GDP outpaced inflation for the first time in 50 years and in 2008 Brazil became a net external creditor. In 2010 the nation was rated investment grade, for the first time, by all three main rating agencies. Thus, as a result of the fiscal, capital and credit structural reforms, Brazil has been the subject of intense M&A activity since the early 2000s.

Figure 1 reports the number of announced and completed M&A transactions that involve a Brazilian firm as a target, demonstrating the significant growth in the M&A market in the period from 2002 to 2014.

[Insert Figure 1 Here]

Except for certain regulated sectors (including telecommunications, aviation and energy) that prior authorization by the sector-specific regulatory body is required, there is no need for regulatory approvals to carry out an acquisition, unless the transaction triggers legal thresholds, and in which case the M&A transactions is generally subject to approval by the Antitrust Authority (CADE). According to Brazil's Constitution, sectors that foreign capital is either prohibited or permitted with certain restrictions are the following:

i **Health Services:** Brazil's Constitution prohibits the direct or indirect participation of foreign companies or foreign capital in healthcare, except in cases provided for by

law (Federal Constitution, Article 199, Paragraph 3). However, Federal Law 13,097, of January 19 2015, has allowed participation, directly or indirectly, of foreign capital in certain fields of healthcare.

ii **Media:** Foreign ownership of open-broadcast (non-cable) media and print media outlets is limited to 30% (Federal Constitution, Article 222, First Paragraph), and 49% in cable companies with the additional restriction that the foreign owner have had a presence in Brazil for the previous ten years and the headquarters are located in Brazil.

iii **Aviation:** At least 80% of the voting capital of airlines with concessions for domestic flight routes must be held by Brazilian residents, with foreign investment therefore limited to a maximum of 20% of said voting capital (Law 7,565 of November 19, 1986, Article 181, item II).

The predominant process for a foreign investor to expand activities in Brazil is the direct acquisition of an existing Brazilian entity, commonly using a preexisting Brazilian holding company as the acquisition vehicle, which receives direct investment from the foreign entity and is used as the vehicle for acquisition, and if necessary, for arranging funding. Upon acquisition, the acquirer is exposed to labor succession, as - according to the doctrine of the Brazilian Labor Code (CLT) and the practice of labor courts - the successor company is liable for the existing labor contracts.

2.2 Labor Regulation in Brazil

Brazil is considered to be one of the countries with the tightest labor regulations and highest employment protection worldwide (Botero et al. (2004)). Nevertheless, firing costs are not high in practice and there are no restrictions in labor contract terminations without just cause. These are important in my paper, implying that M&As are associated with relatively low labor adjustment costs in an attempt to reorganize the human capital resources of the target firm.

The majority of the employee rights in formal employment relationships is compiled in what is known as the Brazilian Labor Code, or the CLT ("Consolidação das Leis do Trabalho"), which provides a minimum standard for employment conditions. The CLT establishes the regulations that provide for the primary labor rights granted to employees in Brazil, including legal limits of regular working hours, minimum wages, benefits, and workplace safety standards. The overwhelming majority of the labor contracts in the private sector are open-ended contracts under CLT, requiring compliance with legal termination procedures and severance compensation for employees dismissed without just cause. In addition, under CLT, employers are subject to contributions to the Social Se-

curity System (INSS), to an amount ranging from 20% to 31.8% of the payroll, and the Unemployment Savings Fund (FGTS), to an amount equivalent to 8.0% of the employee's monthly earnings deposited in a blocked account at the Federal Savings Bank ("Caixa Econômica Federal"). The employee is entitled to withdraw deposits from the FGTS account in any case of contract termination.

Generally there are no restrictions in labor contract terminations without just cause; however there is a legal process that has to be followed. Specifically, the employer has to provide a notification 30 days prior to the dismissal ("Aviso Prévio"). Nevertheless, the norm adopted in the labor market is a practice called "Aviso Indenizado", meaning that the employer is willing to pay the employee an extra 30 days of work without the employee working or being present on the premises so as to prevent problems from arising in the company by the employee being aware of his/her dismissal. Furthermore, the employer is subject to a fine of 50% of the total amount deposited into the employee's FGTS account during the period of employment. Of the 50% penalty, 40% goes to the employee and 10% to the government.

Therefore, for the median target firm in my sample that engages in 30 firings in the post-takeover period and with the median fired worker having a tenure of 11 months and an average monthly salary of R$967, the total costs of terminations without just cause in the two-year period following the M&A are equal to about R$14,500, thus reinforcing the notion of low effective firing costs observed in practice.

3   Data

This paper uses multiple data sources to create my sample. First, I use Thomson's SDC as the primary source of information on M&As. Second, I use matched employer-employee records that consist of nearly the universe of formal employment in Brazil from the Relação Anual de Informações Sociais (RAIS). Third, I utilize data on routine intensity of occupational categories from Autor and Dorn (2013).

3.1   M&A Data

Information on M&A transactions that occurred in the period from 2004 to 2012 and involve a Brazilian firm as target is obtained from Thomson's SDC. SDC includes information on both the announcement and the effective date of the transaction. I focus on both private and public targets, and consider only the transactions that were completed and involved the acquisition of a majority stake. Firms in Brazil are identified by a Tax Identifier and thus, I use the names of the acquiring and target firms to manually extract

the Tax Identifier attached to the firm. The matching process involved manually scrutinizing information on the M&A transactions either provided by firms associated with the deal in the form of public announcements, or published in local government newspapers. For M&As where the approval of the Antitrust Authority (CADE) was necessary, the CADE reports were used to identify the firms associated with the transaction. I exclude M&As where the target appears to have zero employment at the time of the transaction. My sample includes 2,058 M&A transactions involving 2,264 target firms.

Figure 2 provides information on the number of M&As per year, demonstrating that there is a decline in M&A activity during the financial crisis.

[Insert Figure 2 Here]

3.2 RAIS Data

Information on linked employer-employee relationships is obtained from RAIS that is collected by the Brazilian Ministry of Labor (Ministério de Trabalho e Emprego - MTE) since 1976. RAIS is a longitudinal comprehensive administrative dataset that is compiled at an annual basis from information collected directly by formally-registered, public or private firms, and includes labor contracts that were active for at least part of the previous calendar year. The aim of the RAIS dataset is to administer and monitor access to unemployment insurance and payment of benefits to eligible employees, and, therefore, firms have strong incentives to provide comprehensive and accurate information in MTE. In addition, control mechanisms are in place to ensure mandatory compliance to the requirements of RAIS. Based on estimates of the Ministry of Labor, RAIS includes over 95% percent of formally-employed individuals in Brazil.

The unit of observation in RAIS is a job entry that is identified by an employee-level identifier (PIS) and a plant-level identifier (CNPJ) that enable me to track individuals over time and across firms. The firm-level identifier is extracted in a systematic manner by the plant-level identifier and is used to merge RAIS with the information collected from Thomson's SDC on the targets' and acquirers' firm identifiers. In addition, RAIS includes information regarding start and ending dates of employment, occupation type, wage level, and demographic characteristics. The ending date is available in a given year if the employee was separated from the job in the specific year. The occupation type is coded according to the Classificação Brasileira de Ocupaçõoes (CBO). RAIS contains a CBO code based on the 1994 classification and one based on the 2002 classification. Following the approach developed by Muendler et al. (2004), the 1994 CBO codes are mapped to the International Standard Classification of Occupations (ISCO).

At the plant-level, RAIS contains information on the geographical location of the plant,

and the sector that the specific plant operates. At the individual-level, available demographic characteristics include gender, age, and education level. Although the data are collected on an annual basis, the structure allows me to retrospectively analyze at a monthly frequency utilizing the information on starting and ending month of the employer-employee relationship. I restrict my sample to the years from 2002 to 2014 so that employee-level information of at least 2 years before and after the M&A transaction is included.

The cases that an individual is reported multiple times in a specific year and the action that I have followed are presented below:

i The individual is concurrently employed at multiple firms. Following Muendler and Rauch (2011), the job entry with the earliest hiring date and the highest wage is selected.

ii The employment contract of an individual with a firm is terminated in a given year and the individual is later hired by a firm. The job entry that responds to employment at the month of interest is used for the specific year.

iii The individual is transferred in a different plant of the firm. As my analysis is at the firm-level and to preserve the succession nature of internal transfers, the latest job entry of the specific year is used.

iv The individual performs multiple occupation types in a specific firm throughout the year. Following Muendler and Rauch (2011), the job entry with the earliest hiring date and the highest wage is selected.

I restrict my sample to workers with an age ranging from 16 to 55 so as to mitigate concerns regarding any potential impact of early retirement on entry and exit of workers in the data.[1]

3.3   Routine Task Intensity Data

Information on the level of routine intensity of a specific occupational category is provided by Autor and Dorn (2013). Autor and Dorn (2013) create an index that measures the occupational routine task intensity (RTI) based on the types of tasks (abstract, manual, routine) performed in a given occupational category. I take advantage of the crosswalk path provided by Autor and Dorn (2013) that assigns RTI scores to Census Occupational Codes (OCC1990DD), to perform a mapping of the CBO codes found in RAIS with RTI scores.

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[1] I use the same age restriction as Bustos et al. (2016).

I consider an individual to perform a routine occupation if the RTI score is positive and a non-routine occupation if the RTI score is negative. Alternatively, an occupation is defined to be routine-task intensive if the occupation is in the top employment-weighted third of routine-task intensity in a given year. The results are unchanged regardless of the definition of routine workers (the correlation of the routine variables is 0.89).

3.4 Final Sample

My sample represents the intersection between Thomson's SDC and RAIS including in total 2,058 M&A transactions involving 2,264 target firms. Figure 3 compares the share of target firms by size category at the time of the transaction with the correspondent share of the population of firms present in my data and not involved in M&A activity (around 5 million). I use the categorization used by the Brazilian National Statistical Institute (IBGE), which is based on number of employees to sort firms in four size categories. The IBGE defines as *Micro* firms that have between 1 and 9 employees, *Small* that have between 10 and 49 employees *Medium* that have between 50 and 99 employees, and *Large* firms with 100 or more employees. As shown, target firms are on average larger. In particular, around 95% of target firms have at least 10 employees compared to only 16.5% in the population. Furthermore, Panel A of Table 1 demonstrates that target firms are not representative of the population of firms in terms of employment-related characteristics.

[Insert Figure 3 Here]

[Insert Table 1 Here]

In Panel B of Table 1 I provide information on firm-level employment-related variables for target and acquiring firms at the time of the transaction. Relative to target firms, acquiring firms are on average three times larger in terms of total employment and have a higher share of high-skilled and non-routine human capital at the time of the M&A transaction.

Panel C of Table 1 provides information on the deal characteristics. Notice that only 4% of the firms targeted at an M&A transaction in Brazil are publicly listed, while 40% of the M&A activity is cross-border demonstrating the increased interest in the Brazilian economy from foreign investors.

In terms of the sector targeted at M&A activity, Table 2 provides information on the sectors affected by the merger activity in Brazil. I base my sector information on the 2-digit CNAE classification found in RAIS. M&A activity in Brazil has been largely driven by the commodity boom and followed domestic consumption patterns being concentrated on activities related to Business Services, IT and the Food and Beverage Manufacturing.

[Insert Table 2 Here]

4   Empirical Methodology

For the purposes of my empirical analysis, I follow previous studies in the M&A literature that have used micro data at the plant level (e.g. Maksimovic et al. (2011); Li (2013); Davis et al. (2014)) and hypothesize that M&As represent a shock to the target firm. Thus, I use the target firm as the unit of analysis. I employ a difference-in-differences approach around the timing of the M&A transaction to examine the impact of M&A activity on labor-related outcomes of target firms. I focus on a four-year window around the timing of the M&A transaction. In selecting the timing of the M&A, I use the effective date that the M&A transaction occurred provided by Thomson's SDC. However, the assignment of firms as targets of M&A activity is not random. Therefore, the primary econometric concern is selection bias reflecting the non-random nature of the distribution of M&A activity across industries and firm characteristics. Indeed, target firms in my sample are disproportionally larger than the average firm and are concentrated in specific industries. In order to address the potential selection issue, I allow for nonlinear and nonparametric methods with the use of matching estimators. The rationale of a matching estimator approach is to achieve optimal matching of treated firms with control firms based on multiple observable characteristics so as to restrict the set of counterfactuals to the matched controls, or in other words, identify a set of control firms that are expected to follow a similar path to the treatment group in the absence of treatment. A plausibly causal interpretation of the estimated treatment effect is based on the parallel trend assumption. The parallel trend assumption requires that the treated and control groups would have followed parallel trends in the absence of treatment. As the counterfactual outcomes are unobservable, I assess the plausibility of the assumption by comparing pre-trends of my variables. In my empirical analysis, I present results from a dynamic difference-in-differences specification that shows that treated and control firms follow parallel paths in the pre-takeover period. To reinforce the M&A-related interpretation of the results, I augment the empirical analysis by documenting that there are no employment effects on withdrawn M&As for reasons unrelated to labor considerations.

To construct the set of counterfactual firms, I closely follow Davis et al. (2014) and take advantage of the large number of firms in RAIS so as to control for a set of interactions among size, industry, business type, multi-establishment status, productivity and year of the transaction. Specifically, target firms are sorted into cells defined by the cross-product of the aforementioned characteristics at the time of the transaction and matched with a set of control firms that fall into the same cell and have never been involved in M&A activity either as a target or as an acquirer. In order to end up with a manageable sample

for my employee-level specifications, I restrict the number of control firms to be at most 20 firms by ranking the set of potential control firms based on the absolute difference of total employment between the control and the treated firm and selecting at most the first 20 firms. To empirically categorize firms into productivity types, I apply the methodology of Abowd et al. (1999) and instrument for productivity by using the distribution of the firm-specific wage premium. The definition of potential high-productivity firms as high-wage firms is consistent with numerous recent models of frictional labor markets (e.g., Christensen et al. (2005)), in which higher-productivity firms pay higher wages for equivalent workers.

My empirical work aims to characterize the extent and direction of post-takeover reorganization of human capital to document the decisions that acquiring firms make in readjusting the boundaries of the firm. I begin my empirical analysis by examining the impact of M&As on total employment and total wage bill of target firms to demonstrate the extent of post-takeover restructuring. I continue by exploring the sources of this adjustment in employment. To this end, I focus on the rates of firing, hiring, and voluntary separations, and the number of occupations. In a third step, I investigate how this adjustment affects different groups of workers using worker-level data. The outcomes of interest in the worker-level analysis involve binary variables that take the value of 1 in case there is a specific type of separation from the firm. I define a worker's separation as a quit (voluntary) or a layoff (involuntary) from the last formal employment in the calendar year. When I infer separations, I exclude transfers across plants within the same firm, as well as retirements and reported deaths on the job. The disaggregate nature of the separation variable is particularly useful as it allows me to disentangle involuntary from voluntary separations. Furthermore, in transactions where the information on the acquiring firm is available, I consider employees of the target firms that transfer to the acquirer as an internal transfer. Finally, I return to the firm-level analysis to examine whether changes in the demand for different employee groups induced by takeovers lead to firm-level changes in the composition of labor, average wages and measures capturing the level of within-firm wage inequality. In addition, I test whether different M&A types lead to a more rigorous labor restructuring process.

4.1   Estimation of the AKM Wage Model and Productivity Measure

Abowd et al. (1999) provide a methodology to quantify the relative importance of worker versus firm components in determining wages. Using longitudinal matched employer-employee datasets, AKM estimates a wage regression that decomposes log-wages in a person and a firm fixed effect. Formally, following Abowd et al. (1999), I specify a loglinear statistical model of wages as follows:

$$w_{iJ(i,t)} = \theta_i + X'_{it}\beta + \psi_{J(i,t)} + \mu_t + \varepsilon_{it}, \tag{1}$$

where J(i, t) is the firm for which person i works at time t. The person fixed effect, θ_i, captures the contribution of unobservable time-invariant individual characteristics on wages. $X'_{it}\beta$ captures the effect of person-specific time-varying factors. I include age, education and gender. The term $\psi_{J(i,t)}$ captures the effect of unobservable time-invariant firm characteristics on wages of all employees of firm j (all i with $J(i,t) = j$). Finally, ε_{it} is the error term. The AKM model assumes that the assignment of employees to firms is uncorrelated with the error term. To identify the person and firm fixed effects, the AKM specification requires the presence of employees that switch firms in matched employer-employee datasets. In the absence of movers, separating the effect of individual from firm effects would be improbable. Yet the presence of movers does not guarantee identification of all fixed effects. AKM provides an algorithm that exploits mobility to construct sets of firms and employees whose fixed effects are identifiable (the "connected set"). In typical matched employer-employee datasets, the largest group comprises consists of over 95% of the observations. Thus, restricting attention to the largest group of the sample is not a significant limitation.

I use the distribution of the firm-specific fixed effect extracted from the AKM methodology to instrument for productivity of firms. The definition of potential high-productivity firms as high-wage firms is consistent with numerous recent models of frictional labor markets (e.g., Christensen et al. (2005)), in which higher-productivity firms pay higher wages for equivalent workers, and has been extensively used in empirical studies (e.g. Serafinelli (2017)). Notice that the productivity measure that I use is time-invariant and thus, I cannot track changes in productivity in the post-takeover period.

I closely follow Lopes de Melo (2017) to apply the AKM methodology to RAIS data. Specifically, I restrict my focus to full-time employees within an age range from 16 to 55 that have at least completed basic education for the 12-year period from 2002 to 2014. To account for informality effects, I exclude individuals with available information for less than 5 of the 12 years, and who have been employed in more than three firms per year. The largest connected set includes 98.2% of the sample. Then, I categorize firms into three productivity types based on the distribution of the firm-specific fixed effect component.

4.2 Summary Statistics

Table 3 presents firm- and worker-level summary statistics for treated and control firms. Panel A reports firm-level employment-related characteristics for the pre-takeover period

and documents that control and treated firms are similar in terms of total employment, total wage bill and the human capital structure. Panel B and C of Table 3 present firm-level and worker-level descriptive statistics as observed at the time of the M&A transaction. In Panel B, I report firm-level summary statistics based on 2,204 unique treated firms and 20,257 control firms. As shown, treated firms and control firms are similar at the time of the M&A event. This is consistent with my matching procedure finding similar counterfactuals. In Panel C, I report summary statistics at worker-level, which are based on 2,281,039 unique workers of treated firms and 9,021,397 unique workers of control firms. As shown, workers display similar characteristics in terms of education, gender, age, tenure and average log wage.

[Insert Table 3 Here]

5 Empirical Analysis and Results

5.1 Firm-Level Analysis of Total Employment and Total Wages

The objective of this section is to document the main effects of being targeted at a takeover on employment-related outcomes. To this end, the firm is used as the unit of analysis and the following difference-in-differences empirical specification is employed:

$$Y_{itpm} = \alpha_i + \alpha_{mt} + \alpha_t + \gamma Post_p + \beta Post_p \times I_i^{treated} + \varepsilon_{itpm} \tag{2}$$

where i indexes firms, t indexes the calendar year, p indexes normalized time expressed in years around the M&A transaction ranging from -2 to +2 and m indexes municipalities. $Post_p$ is a dummy equal to 1 for the two-year period following the M&A transaction, and zero for the the two-year period prior to the M&A transaction. Finally, the variable $I_i^{treated}$ is an indicator function equal to 1 for firms that have been targeted in an M&A transaction at any point in time, and equal to 0 for control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. The coefficient of interest is β, which captures the average difference in the outcome variable between treated and control firms in the two-year period after the M&A transaction relative to the period before the transaction. I employ firm, municipality $\times$ year and year fixed effects. The standard errors are clustered at the transaction level so as to account for correlation between the different target firms that are involved in an M&A transaction.

I begin my analysis by examining the evolution of total employment in target firms following the M&A transaction. Specifically, I measure total firm-level employment as the logarithm of the number of employees in a firm. In case M&As are motivated by a

value-maximizing perspective in the pursuit of synergy gains through consolidation and cost-reduction, human capital restructuring is expected to be extensive involving a down-sizing in employment. The results of estimating equation (2) are reported in Column (1) of Table 4. As shown in Column (1), treated firms experience a statistically significant decline in the level of employment with respect to comparable firms never engaged in M&A activity in the period under study. The magnitude of my estimates indicate that target firms experience, on average, a decline of 29% in total employment. In particular, the employment level of the median target firm reduces from 139 employees at the time of the takeover to 96 in the post-merger period.

[Insert Table 4 Here]

I next explore the evolution of total wage bill in target firms after the M&A transaction. I expect the decline in employment in the post-takeover period for target firms to be followed by a decline in the wage bill. Indeed, Column (2) of Table 4 reports the results on total wages. The findings in Column (2) demonstrate that the decrease of total wages in target firms is 17% larger than in control firms.

Finally, I further complement the firm-level analysis by focusing on the direction of the post-merger level of wage per worker. The results are reported in Column (3) of Table 4. Interestingly, as shown in column (3), I find that wage per worker exhibits on average an increase of 14% for target firms in the post-merger period, implying the existence of changes in the composition of labor leading to an increase in the wage level of the remaining and/or incoming employees, or both.

In order to provide further insight into the evolution of employment and wage outcomes, I estimate firm-level dynamic effects of M&As by employing the following non-parametric event-study specification:

$$Y_{itpm} = \alpha_i + \alpha_{mt} + \alpha_t + \sum_{p=-2}^{p=+2} \gamma_p(T_p) + \sum_{p=-2}^{p=+2} \beta_p T_p \times (I_i^{treated}) + \varepsilon_{itpm} \qquad (3)$$

where i indexes firms, t indexes the calendar year, p indexes normalized time expressed in years around the M&A transaction ranging from -2 to +2 and m indexes municipalities. T_p is a dummy equal to 1 if $T_p = p$. Finally, the variable $I_i^{treated}$ is an indicator function equal to 1 for firms that have been targeted in an M&A transaction at any point in time, and equal to 0 for control firms that are never targets or acquirers during the period under study. The coefficient of interest is β_p, which captures the average difference in the outcome variable between treated and control firms when $T_p = p$. The specification includes firm, municipality × year and year fixed so as to absorb time-invariant differences across firms, municipalities and years. The standard errors are clustered at the transaction

level.

The results are presented in Figures 4 and 5. As illustrated, there are no differential pre-trends between treated and control firms in terms of total employment and total wage bill up to the time of the transaction. This is expected as the purpose of the matching process is to mitigate any pre-trend differences in the matching variables. However, there is a sharp decline in employment in the two-year post-takeover period.

[Insert Figure 4 Here]

[Insert Figure 5 Here]

5.2   Firm-Level Analysis of Employment Flows

The net employment results demonstrate that corporate takeovers in Brazil are associated with extensive human capital restructuring. Although net employment results are informative of the direction of the post-takeover restructuring, a decline in net employment relative to the set of control firms is likely to reflect an increase in separations and/or a decline in hirings. Most importantly, an increase in separations is likely to reflect both voluntary and involuntary departures, leading to a different interpretation of the post-takeover labor-related outcomes depending on the type of separation. For example, in case M&As are motivated by cost reduction and consolidation considerations, layoffs are expected to materialize as a by-product of the restructuring process. On the other hand, M&As represent turbulent times for the employees of the target firm and thus, an increase in voluntary exit of human capital is likely to lead to a decline in employment even if the motivation of the takeover is unrelated to the pursuit of efficiency gains. To shed light on the sources of the adjustment in net employment, I transition my focus on employment flows. An important advantage of my administrative dataset is that it contains unique information on the terminations of labor contracts which allows me to disentangle involuntary from voluntary separations and, thus, document the precise manner that employment adjustment takes place. Voluntary separation refers to employee-induced terminations (e.g. resignations), while involuntary separation refers to employer-induced terminations including both layoffs and fixed-contract terminations without a subsequent renewal. In inferring separations, I exclude within-firm transfers, as well as retirements and reported deaths. Furthermore, in transactions where the information on the acquiring firm is available, I consider any post-takeover employment flows that involve the acquiring and the target firm as an internal transfer. In addition, I exploit information on occupational codes to create a variable that captures the number of occupations at the firm level as an additional variable of interest. Specifically, examining changes in the number of occupations is informative of restructuring actions related to consolidation.

For the purposes of my analysis, I take advantage of the firm-level empirical specification of the previous section. The variables of interest that refer to employment-related flows are divided by total employment. The results are reported in Table 5.

[Insert Table 5 Here]

In column (1), I focus on total separations disregarding information on whether the separation has been initiated by the employer or the employee, and document that there is a statistically significant positive relation between being targeted at an M&A transaction and the rate of separations. The magnitudes of my estimates indicate that target firms experience an increase of 38% in separation rates in the post-takeover period compared to firms never involved in M&A activity in the period under examination. Columns (2) and (3) delve deeper in the direction of separations, and document that corporate takeovers are primarily associated with an increase in the rate of involuntary separations. Indeed, there is a statistically significant increase in layoffs by 32.6%, while the change in the rate of voluntary separations significantly increases by 5.4%. Specifically, in absolute terms, the median target firm experiences a decline in the number of employees, 75% of which is due to layoffs and 25% is due to voluntary exit. In Column (4) I transition my focus on the post-takeover hiring rates to document that increased post-takeover layoffs are also accompanied by limited hiring activity. Indeed, target firms decrease hiring rates by 32% compared to control firms.

Therefore, acquiring firms predominantly reorganize the labor force in the target firm by increasing layoffs and limiting hirings, consistent with the notion that M&As engage in efficiency-seeking consolidation; however, at the same they experience an increased rate of voluntary exit of human capital. I further supplement my findings by exploring the impact of M&As on the number of occupations present in target firms. In particular, the observed increase in layoffs and the decline in hirings is likely to reflect occupational consolidation, implying that layoffs are accompanied by non-replacement of redundant workers, consistent with firms consolidating or limiting unrelated occupational tasks. Column (5) reports the results demonstrating that target firms are associated with a 11% decrease in the number of occupations in the post-takeover period.

5.3   Worker-Level Analysis on Labor Restructuring

Having established firm-level patterns in the labor flows of target firms, I turn to an employee-level analysis to examine post-takeover changes in the demand for human capital. To the extent that acquiring firms actively reorganize human capital in the process of resetting their boundaries in the post-takeover period, I should expect M&As to be followed by heterogeneous effects on different groups of employees leading to changes in the composition of labor. For this purpose, I exploit cross-sectional variation in worker

characteristics and characterize the post-takeover change in the likelihood of exit for different groups of employees. To separate demand and supply side factors that affect the decision to exit the firm, I use the information on the reason for the termination of employment contracts and disentangle involuntary from voluntary exit. This cross-sectional analysis extends our understanding of the post-takeover readjustment process by linking heterogeneous post-merger outcomes on different groups of employees with theoretical predictions emerging from theories that attempt to explain how M&As emerge and what are the effects on firms.

For the purposes of the worker-level analysis, the individual is used as the unit of analysis and the empirical specification has the following form:

$$Y_{ijptm} = \alpha_j + \alpha_m + \alpha_t + \gamma Post_p + \delta I_j^{treated} + \beta(I_j^{treated} \times Post_p) + X_j'\theta + \varepsilon_{ijptm} \qquad (4)$$

where i indexes firms, j indexes workers, p indexes normalized time expressed in years around the M&A transaction ranging from -2 to +2, t indexes the calendar year and m indexes municipalities. The variable $I_j^{treated}$ is an indicator function equal to 1 for individuals that have been employed in a firm i that was the target of an M&A transaction at any point in time, and equal to 0 for the individuals of control firms. Finally, $Post_p$ is a dummy equal to 1 for the two-year period following the M&A transaction, and zero for the the two-year period prior to the M&A transaction. The coefficient of interest is β, which captures the average difference in the outcome variable between treated and control firms in the two-year period after the M&A transaction relative to the period before the transaction. X_j' is a vector of individual controls that includes age, gender, education and tenure. The specification includes employ employee, municipality and year fixed effects. The standard errors are clustered at the transaction level. The dependent variable is a binary variable denoting the occurrence of specific type of separation from the firm. The type of separation includes voluntary departure from the firm and involuntary separation that includes dismissals or fixed contract terminations without renewal.

The selection of the employee-level variation that I explore is motivated by theoretical predictions about the effects of M&As on firms. Specifically, I focus on the following human capital dimensions that are relevant to the reorganization decision of the acquiring firm: level of skill, employees in managerial positions, occupational routine task intensity, and level of human capital overlap. The neoclassical merger theory is based on the view that M&As are an efficient response to regime shifts (e.g. due to technological shocks) by value-maximizing managers (e.g. Gort (1969); Mitchell and Mulherin (1996); Jovanovic et al. (2001)). Therefore, takeovers potentially lead to technological change and adoption of automation, and to the extent that capital and high-skilled labor are

complements, these theories would predict that M&As should generate an increase in the demand for high-skilled and non-routine labor. In addition, synergy gains have long been considered as an important driver of M&As (e.g. Andrade et al. (2001); Devos et al. (2008)). An important channel though which synergies materialize is the existence of asset complementarities between the target and the acquiring firm (e.g. Rhodes-Kropf and Robinson (2008)). Therefore, these theories would predict an increase in the likelihood of involuntary separation for workers in occupations that overlap between the acquiring and the target firm.

5.3.1 High-Skilled and Low-Skilled Labor

I begin my worker-level analysis by exploring the post-merger demand for high-skilled and low-skilled workers. High-skilled workers are considered to be a scarce and redeployable resource, instrumental for firm productivity and value creation (Abowd et al. (2005)). Thus, I expect acquiring firms to attempt to retain the target's high-skilled employees. On the other hand, in case M&As are motivated by cost reduction and consolidation considerations, layoffs of high-skilled workers are likely to materialize as a by-product of the consolidation process. In addition, M&As are a source of disruption for target firms associated with an increase in uncertainty related to employment prospects, and given the highly liquid market for high-skilled employees, I expect M&As to generate an increased likelihood in voluntary exit for high-skilled workers. On the contrary, given the abundance of low-skilled labor in Brazil and the lower labor adjustment costs, the role of low-skilled employees in the restructuring process is expected to be less pronounced - if any.

I proxy for skill by taking advantage of information on the educational level of employees. Specifically, I define as high-skilled any employee that has completed at least undergraduate education, while I define as low-skilled any employee having completed at most high-school education. I begin my analysis by examining involuntary separations. The dependent variable is a binary variable that takes the value of 1 for the year that an employee experiences employer-induced separation and 0 otherwise. The results are reported in Column (1) and (3) of Table 6. Column (1) focuses on the subsample of high-skilled labor, while column (3) examines the impact on low-skilled labor. As demonstrated, acquiring firms attempt to retain the target's high-skilled labor, as the likelihood of involuntary separation in the post-takeover period is not statistically significant. On the contrary, low-skilled labor is particularly affected by labor restructuring experiencing a higher likelihood of involuntary separation following an M&A transaction. The magnitudes of my estimates indicate that low-skilled labor is associated with an increase of 5.9% in the likelihood of involuntary separation. Relative to the average effect of 16.9%, the estimate implies that low-skilled employees are 35% more likely to be fired in the

post-merger period. This implies that the observed post-merger increase in layoffs hits low-skilled workers disproportionally.

[Insert Table 6 Here]

Given that M&As induce occupational uncertainty, the post-takeover period represents uncharted territory for the labor force of target firms, potentially leading to voluntary exit. Therefore, in Columns (2) and (4) of Table 6, I focus my attention to voluntary separations to explore the heterogeneous response of high- and low-skilled employees. High-skilled labor, faced with a better outside option, has the opportunity to exploit the highly liquid labor market and depart from the target firm after the takeover. On the contrary, low-skilled is less likely to exhibit any sensitivity to the merger shock. Indeed, Column (2) demonstrates that treated firms face a 1% increase in the likelihood of high-skilled employees exiting the target firm; however, as shown in column (4), there is no effect for low-skilled labor. In terms of magnitude, relative to the average likelihood of voluntary separation of 6.8%, high-skilled employees exhibit a 15% increase in the likelihood of voluntary exit in the post-takeover.

5.3.2 Employees in Managerial Positions

Next, I examine the reorganization decisions of acquiring firms regarding employees in managerial positions. Predicting the impact of M&As on managers is less straightforward. On the one hand, acquiring firms may have the incentive to replace managers so as to appoint their own in an effort to instill their management practices and corporate culture. In addition, managers may be deemed redundant as part of the consolidation process. On the other hand, retaining the managers of the target firms may be beneficial for the integration process due to deeper knowledge of the internal processes of the target firm. Therefore, it is unclear what is expected to be the direction of the reorganization process. I argue that cross-border M&As represent a subsample where the benefits of maintaining the managers of the target firm is beneficial. Specifically, expanding in a new geographical market is followed by increased uncertainty, and managerial knowledge on local business practices may be beneficial to alleviate such concerns.

I identify managerial positions by exploiting information on the occupational code of each employee. Following the approach developed by Muendler et al. (2004), I map CBO codes to International Standard Classification of Occupations (ISCO) codes, and I exploit the ISCO-88 codes of the employees to identify managers. The results are reported in 7. Columns (1) to (3) focus on the likelihood of involuntary separation. I find that, unlike the rest of the high-skilled employees, managers experience an increase in the post-takeover likelihood of involuntary separation in transactions that involve domestic firms. The point estimates indicate a 4% increase in the likelihood of involuntary separation for managers

in domestic M&As. This finding is in line with the Jensen and Ruback (1983) view that takeovers induce competition for the right to manage resources and achieve efficiency by replacing managers in target firms. On the contrary, cross-border acquirers appear to retain the managers of target firms consistent with the notion that cross-border acquirers benefit from managerial knowledge of both the local business environment and the internal processes of the target firm. Interestingly, I exploit information on the nationality of employees and I observe that in 26% of cross-border transactions, acquirers appoint a foreign manager potentially to supervise the process in an effort to instill the corporate culture and apply the management practices of the acquirer. In Columns (4) to (6) I explore changes in the likelihood of voluntary exit, and find that there is no change in the likelihood of voluntary exit after the takeover.

[Insert Table 7 Here]

5.3.3 Routine-Biased Change

The neoclassical theory on M&As emphasizes the role of M&As as an efficient response to regime shifts, generating technological change (e.g. Jovanovic et al. (2001), Jovanovic and Rousseau (2008)). In addition, Ma et al. (2017) link industry-level intensity in M&A activity with within-industry occupational shifts that reflect routine-biased change. Indeed, M&As are likely to reduce frictions associated with technology adoption and increase automation for reasons ranging from the pursuit of efficiency gains (Mitchell and Mulherin (1996)) to alleviating financial constraints (e.g. Erel et al. (2015)). To test this hypothesis, I focus on cross-border M&A transactions. Over 90% of cross-border M&A activity in Brazil involves acquiring firms from developed countries, implying that M&As are likely to constitute a vehicle of technological and organizational change. Indeed, the MNE literature has highlighted that MNEs consist of superior knowledge-based assets and possess competitive advantages transferable to the market of the host country (e.g. Hymer (1976)), while the trade literature has demonstrated the benefits of increased exposure to trade in terms of skill and technology upgrade (Verhoogen (2008); Bustos (2011)). Therefore, a Brazilian firm is likely to experience a decline in the frictions associated with technology adoption and increase in automation for various reasons including increased access to capital, transfer and upgrade of technology and greater adoption of modern management practices. In such cases, the target firm is bound to experience changes in labor demand induced by routine-biased technological change.

I exploit occupational information on routine intensity by Autor and Dorn (2013). An employee is considered to perform a routine occupation if the routine task intensity (RTI) score is positive and a non-routine occupation if the RTI score is negative. Alternatively, an occupation is defined to be routine-task intensive if the occupation is in the

top employment-weighted third of routine-task intensity in a given year. The results are unchanged regardless of the definition of routine workers (the correlation of the routine variables is 0.89).

The results are presented in Table 8. Columns (1) and (4) report the results for the full sample of M&As in Brazil and document that there is a post-takeover increase in the likelihood of involuntary separation for both routine and non-routine employees. Specifically, the magnitudes of my estimates indicate that workers performing non-routine tasks are associated with a 2.7% increase in the likelihood of involuntary separation, while routine workers experience a 6% increase.

[Insert Table 8 Here]

Nevertheless, in Columns (3) and (6), I repeat the analysis for the subsample of cross-border M&As, where I argue that automation and routine-biased change is more likely to occur. Indeed, the results indicate that post-takeover restructuring in cross-border M&As is indicative of routine-biased change with employees that perform routine tasks experiencing a 25% increase in the likelihood of involuntary separation. Non-routine employees exhibit no change in the post-takeover likelihood of involuntary separation. On the contrary, the likelihood of involuntary separation increases for both routine and non-routine employees, though at a higher rate for routine employees. Specifically, the likelihood of involuntary separation increases by 7.1% for routine employees and 3.7% for non-routine employees.

5.3.4   Hirings

Next, I turn to the analysis of the reorganization decisions of target firms in terms of hirings. M&As are associated with involuntary separations of low-skilled and routine employees at the target firms and experience voluntary exit of high-skilled employees. Examining their hiring decisions is important to shed light into the incentives of the firms involved in M&A activity in terms of the direction of the composition of human capital. To analyze the hiring decisions at target firms, I estimate specification (5) using as dependent variable an indicator that takes the value of 1 in the period an employee is hired by the firm and 0 otherwise.

The results are presented in Table 9. Columns (1) and (2) report the results for low-skilled and high-skilled human capital, while Columns (3) and (4) examine the hiring decisions regarding routine and non-routine employees. The results document that there is a post-takeover significant decline in the hiring likelihood only for low-skilled and routine employees. Specifically, the magnitudes of my estimates indicate that low-skilled workers are associated with a 5.5% decline in the likelihood of being hired, while workers

performing routine tasks experience a 4.4% decline. Combined with the previous findings that low-skilled and routine human capital is particularly affected in the post-takeover period through forced displacements, these results imply that acquiring firms actively aim at reducing the level of low-skilled employment and inducing automation at the target firms. On the contrary, there is no decline in the hiring rate of high-skilled and non-routine employees, suggesting that target firms actively decide to alter the composition of human capital and operate with a larger share of high-skilled and non-routine labor.

[Insert Table 9 Here]

5.3.5 Occupational Overlap

In neoclassical M&A theories, asset and product-market complementarities motivate corporate takeovers (Rhodes-Kropf and Robinson (2008); Hoberg and Phillips (2010)) due to an increase in the potential for synergy gains. Lee et al. (2017) empirically extend these theories to human capital by constructing an industry-level measure of human capital relatedness to demonstrate that human capital complementarities also motivate M&As. This evidence suggests that human capital overlap is likely to partially explain the observed patterns of labor restructuring. To test this hypothesis, I focus on M&A transactions where the identities of both the target and the acquiring firm are available and exploit information on the occupational profiles of the acquiring and the target firm at the time of the takeover to construct a binary variable that takes the value of 1 for occupations that are present in both firms involved in the transaction at the time of the takeover.

To perform my empirical analysis, I restrict my sample to the employees of target and acquiring firms in the post-takeover period and employ the empirical specification presented below.

$$Y_{jptm} = \alpha_j + \alpha_m + \alpha_t + \beta I_j^{Overlap} + X_j'\theta + \varepsilon_{jptm} \tag{5}$$

where j indexes workers, p indexes normalized time expressed in years around the M&A transaction ranging from -2 to +2, t indexes the calendar year and m indexes municipalities. The variable $I_j^{overlap}$ is an indicator function equal to 1 for individuals that perform an occupation that exists in the occupational profile of the acquiring firm at the time of the M&A transaction. Finally, X_j' is a vector of individual controls that includes age, gender, wage and tenure. The specification includes employee, municipality and year fixed effects. The standard errors are clustered at the transaction level. The dependent variable is a binary variable that takes the value of 1 for the occurrence of a specific type of separation from the firm at a specific point in time. The type of separation includes

voluntary departure from the firm and involuntary separation either in the form of a contract termination without just cause or a fixed contract termination without renewal. Notice that the specification does not use a control group.

The results are reported in Table 10. Columns (1)-(3) report the results for the employees of the target firms in the post-takeover period, while Columns (4)-(6) report the results for the employees of the acquiring firms. In Columns (1) and (4) the dependent variable is a binary variable that captures voluntary separations, while in Columns (2), (3), (5) and (6) the dependent variable is a binary variable that takes the value of 1 in the case of an involuntary separation. The results demonstrate that the likelihood of involuntary separation increases for target employees with an overlapping occupation by 1.5% to 1.8% in the post-takeover period, while there is no effect for employees in acquiring firms. In addition, occupational overlap has no effect in the likelihood of voluntary separations. Columns (3) and (6) present the results of introducing a variable that takes the value of 1 low-skilled employees and the interaction with human capital overlap variable, demonstrating that low-skilled employees in target firms in overlapping occupations are disproportionally affected. This evidence suggests that occupational overlap is a key channel of increased layoffs in target firms in the post-takeover reorganization process, consistent with consolidation and cost-reduction being one of the primary drivers of takeovers.

[Insert Table 10 Here]

6 Firm-Level Compositional Changes in Human Capital

6.1 Technological Change and Automation

The employee-level results indicate that takeovers lead to an increase in the relative demand for high-skilled and non-routine labor in the post-takeover period. Therefore, I turn to firm-level analysis to further document whether these changes in the demand for different groups of employees lead to firm-level changes in the composition of labor. To perform the empirical analysis, I use the firm-level empirical specification (2) with the dependent variable being firm-level labor shares of different groups of employees. The employee groups that I consider are the share of high-skilled employees, the share of routine employees and the share of employees performing R&D-related tasks.

The results are reported in Table 11 and are suggestive of skill-biased and routine-biased compositional changes in line with the employee-level results in changes in the relative demand for different groups of employees. In Column (1) the dependent variable is the share of high-skilled labor at the firm level, while in Column (2) the dependent variable

is the firm-level share of routine labor. The results demonstrate an increase in the share of high-skilled labor of 7% and a decline in the share of routine labor by 7.6%.

[Insert Table 11 Here]

In order to provide additional evidence of technological change and investment in technology, I explore whether there is an increase in the share of employees that perform R&D-related tasks. To this end, I exploit the detailed nature of the occupational classification in my dataset and identify the employees that are occupied in positions with R&D being the primary task. Column (3) of Table 11 presents the results, showing that there is a statistically significant post-takeover increase by 1.2% in the firm-level share of employees in occupational tasks related to R&D.

6.2 Average Wages and Wage Inequality

My results demonstrate an increase in the relative demand for high-skilled and non-routine labor that are reflected to firm-level changes in the composition of labor after the takeover. These changes are likely to disproportionally affect the average wages of high-skilled and low-skilled employees. I find that this is indeed the case. In Column (1) and (2) of Table 12 I use the firm-level empirical specification (2) with firm-level average wages as the dependent variable, to document the impact of corporate takeovers on average wages. As reported in Column (2), M&As are associated with a decline in average wages for low-skilled workers; however, as shown in Column (1), high-skilled employees experience an increase in the average wage by 4.9% in the post-takeover period.

In addition, Autor and Dorn (2013) document that routine-intensive occupations are concentrated in the middle of the distribution of skill, implying that job polarization is accompanied by wage polarization. Therefore, I expect that job polarization and the relative increase in labor demand for skilled workers in the post-takeover period are expected to contribute to an increase in within-firm wage inequality in target firms.

To perform the analysis, I use the firm-level empirical specification (6) presented below.

$$\text{Inequality}_{itpm} = \alpha_i + \alpha_{mt} + \alpha_t + \gamma Post_p + \beta Post_p \times I_i^{treated} + \varepsilon_{itpm} \qquad (6)$$

The measures of wage inequality that I use as dependent variables are the standard deviation of (log) wages and the ratio of the 90th wage percentile to the 10th wage percentile. The results are reported in Table 13 and document a strong statistically significant positive relationship in the post-takeover period. Column (1) focuses on the the standard deviation of (log) wages as the inequality measure and demonstrates that

M&As are associated with an increase in wage dispersion of 6.8%, while Column (2) uses the 90-10 wage ratio and confirms that takeovers lead to an increase in within-firm wage inequality in the post-takeover period. The point estimates for the 90-10 wage ratio indicate that M&As increase the 90-10 wage inequality gap by 13.3%.

[Insert Table 12 Here]

[Insert Table 13 Here]

6.3   Combined Entity

Thus far, my results indicate that there is substantial post-takeover restructuring of the human capital at target firms that is indicative of skill-biased and routine-biased change. However, reorganization decisions in M&As are guided by labor considerations related to the human capital of the acquiring firms as well and, thus are expected to involve and affect the human capital of the combined entity. To this end, I next explore if the observed firm-level employment outcomes and changes in the composition of labor at target firms are reflected in the combined entity by analyzing changes in aggregate employment-related outcomes and the human capital profile of the combined entity. For this purpose, I repeat the firm-level analysis by considering the acquiring and the acquired firms involved in a M&A transaction as a single entity. The results are reported in Table 14 and, in total, demonstrate that M&As do lead to a decline in employment and labor expenses, an increase in wage inequality and do induce compositional changes in the human capital profile of the combined entity that reflect technological change and automation.

Specifically, I begin my analysis by examining the evolution of total employment and labor expenses in the combined entity following the M&A transaction. The results of estimating specification (2) for the combined entity are reported in Columns (1) and (2) of Table 14 and show that M&A firms experience a statistically significant decline in the level of employment and labor expenses with respect to comparable firms never engaged in M&A activity in the period under study. The magnitudes of my estimates indicate that the combined entity experiences, on average, a decline of 12.9% in total employment and 9.9% in total wages.

[Insert Table 14 Here]

In Columns (3) and (4) of Table 14 I focus on the share of high-skilled and routine human capital in the combined entity in the post-takeover period and demonstrate M&As are associated with technological change and automation. Specifically, the changes in the composition of human capital point to a 4.3% increase in the share of high-skilled labor and a 4.8% decline in the share of routine employment. As shown in Column (5),

these changes lead to a 9.6% post-takeover increase in within-firm wage inequality in the combined entity.

6.4   Takeover Types

In this section, I classify the post-takeover decisions on the reorganization of human capital by the type of the takeover. My empirical analysis is motivated by the fact that there are different predictions for the impact of M&As on the level of reorganization of assets depending on the type of the takeover. For example, focused takeovers are likely to be motivated by the potential of synergy gains through cost savings and consolidation, and therefore larger post-takeover employment losses and reductions in labor expenses are expected to materialize relative to combined pre-takeover levels compared to diversifying M&As. Therefore, I categorize M&As into focused and diversifying. For the takeovers that information on the acquiring firm is available, I follow Tate and Yang (2016) and identify a takeover as diversifying if there is no overlap in the establishment-level industries in which the acquiring and target firms operate at the time of the transaction. For the takeovers that there is no information on the acquiring firm, I use the three-digit SIC code, as reported in SDC, to classify M&As between firms in the same industry as focused. In my sample of M&As in Brazil, 83% are focused and 17% are diversifying.

For the empirical analysis, I estimate equation (2) separately for focused and diversifying takeovers, and examine the evolution of total employment and labor expenses in the combined entity following the M&A transaction. The results are reported in Table 15.

[Insert Table 15 Here]

In Columns (1) and (2) I examine the impact of the type of takeover on total employment, while in Columns (3) and (4) I focus on the impact on the total wage bill. The results demonstrate that only firms involved in focused M&As experience a statistically significant decline in the level of employment and labor expenses with respect to comparable firms never engaged in M&A activity in the period under study. The magnitudes of my estimates indicate that there is a significant decline of 15.3% in total employment and 11.7% in the total wage bill for firms that engage in focused takeover. On the contrary, firms involved in diversifying M&As demonstrate no employment and wage effects.

6.5   Human Capital Relatedness

Lee et al. (2017) empirically extend neoclassical M&A theories of asset complementarities to human capital by constructing an industry-level measure of human capital relatedness

to demonstrate that human capital complementarities also motivate M&As. This evidence suggests that the level of human capital relatedness is likely to affect the level of employment adjustment in the post-takeover. To test this hypothesis, I focus on M&A transactions where the identity of both the target and the acquirer is available and exploit information on the occupational profiles of the acquiring and the target firm at the time of the takeover to construct a variable of human capital relatedness. Specifically, I follow Lee et al. (2017) and construct a measure of human capital relatedness (HCR) between the acquiring firm i and the target firm j as the scalar product of the firms' occupational profile vectors divided by the product of their lengths:

$$HCR_{ij} = \frac{H_i H_j'}{\sqrt{H_i H_i' H_j H_j'}} \tag{7}$$

The HCR measure is bounded between 0 and 1. It is 1 for merging firms with identical occupational profiles, and 0 for firms with orthogonal human capital profiles. To perform my empirical analysis, I restrict my sample to the combined entity and employ the empirical specification (2). I classify takeovers into two categories based on the level of the human capital relatedness measure. The results are reported in Table 16.

[Insert Table 16 Here]

In Columns (1) and (2) I examine the impact of human capital relatedness on total employment, while in Columns (3) and (4) I focus on the impact on the total wage bill. The results demonstrate that merging firms with higher human capital relatedness experience a larger decline in the level of employment and labor expenses compared to merging firms with a lower level of human capital relatedness. The magnitudes of my estimates indicate that there is a significant decline of 19.3% in total employment and 16.4% in the total wage bill for M&As where the firms involved have a high human capital relatedness, while in M&As where the firms involved have a low human capital relatedness, the decline in employment is 9.5% and the decline in the total wage bill is 4.1%.

6.6   Withdrawn M&As

The empirical methodology relies on the use of matching estimators to alleviate concerns related to selection. The assumption is that the random assignment to treatment requirement is more likely to hold within the matching cells than across the population. In an attempt to mitigate the issue of common shocks affecting both the selection of takeover targets and labor restructuring outcomes and reinforce the M&A-driven interpretation of the results, I exploit information on withdrawn M&A deals. Specifically, I identify the deals from SDC that were announced and eventually withdrawn, excluding any deals

that include firms that were eventually acquired and deals that were withdrawn for labor-related reason. In particular, for each withdrawn deal, I use either news reports or the anti-trust authority report to identify the reason for the takeover withdrawal. The final sample includes 67 withdrawn M&As. I repeat the analysis for total employment and total wage bill by identifying a relevant set of control firms following the same methodological process that I used in the main empirical analysis.

Table 17 presents the results. I find that there is no statistically significant relationship between withdrawn M&As and total employment and total wage bill. These results provide additional evidence against concerns that the results are driven by selection into treatment.

[Insert Table 17 Here]

6.7 Investment in Capital and Stock Market Reaction

Post-takeover restructuring is followed by an increase in the relative demand for high-skilled and non-routine labor. Since capital and high-skilled labor are complements and routine-biased change is related to investment in automation, I expect firms to increase investment in capital in the post-takeover period. Indeed, although my dataset provides no information on the financial performance of firms, I have documented a post-takeover increase in the share of labor in occupational tasks related to R&D which is indicative of an increase in firm investment in technology. To further complement my analysis, I focus on public firms that financial information is reported in Compustat to provide suggestive evidence of an increase in investment in capital. The majority of target firms in Brazil are private; however there are 82 public firms that have been targeted at M&As from 2004 to 2012. For these firms, I identify public firms in the same two-digit SIC industry that have never been involved in M&A activity and compare changes in measures of investment before and after the takeover.

Panel A of Table 18 provides descriptive statistics of treated and control firms, demonstrating that there are no statistically significant differences between treated and control firms. Next I turn to a multivariate regression analysis to formally test post-takeover changes in investment in capital. For the empirical analysis, I use the firm-level empirical specification (8) presented below.

$$\text{Investment in Capital}_{itpm} = \alpha_i + \alpha_m + \alpha_t + \gamma Post_p + \beta Post_p \times I_i^{treated} + X_i'\theta + \varepsilon_{itpm} \quad (8)$$

The measures of investment in capital that are used as dependent variables are the ratio

of capital expenditure to beginning-of-year total assets, the growth in Property, Plant and Equipment (PPE) and the growth in intangible assets. The results are reported in Panel B of Table 18 and document a strong positive relationship in the post-takeover period. Column (1) focuses on the growth in intangible assets as the dependent variable and demonstrates that M&As are associated with an increase in the growth of intangible assets, Column (2) uses PPE growth and confirms that takeovers lead to an increase in investment in capital in the post-takeover period, while Column (3) focuses on the ratio of capital expenditure to beginning-of-year total assets as the dependent variable and demonstrates that M&As are associated with an increase in CapEx of 2.7%.

Finally, focusing on the stock market reaction, the three-day abnormal return CAR(-1,1) is 6.37% significantly positive for the 78 publicly listed targets and 1.19% significantly positive for the 654 publicly listed acquirers, implying that the restructuring process in the post-takeover period leads to value creation.

7 Labor Restructuring and (Un)employment Outcomes

My results demonstrate that M&As are associated with a large adjustment in employment for target firms that disproportionally affect specific types of human capital. In this section, I transition my focus on the impact of M&As on the subsequent employment outcomes of displaced employees by analyzing labor mobility in the post-takeover period for low-skilled and high-skilled employees. The RAIS dataset allows me to follow firms and employees over time and track their employments decisions. Therefore, I measure employment-related outcomes for the human capital of target firms displaced after takeovers for the two-year post-separation period.

Specifically, I begin by documenting the impact of M&As on the incidence of unemployment. For the empirical analysis, I estimate specification (5) using as dependent variable an indicator variable that equals 1 for employees that have experienced displacement and unemployment in the two-year period after their displacement and 0 otherwise for treated and control firms. Columns (1) and (4) in Table 19 present the results on unemployment incidence for low-skilled and high-skilled employees, documenting that M&As lead to a statistically significant increase in the unemployment incidence only for low-skilled employees by 3.3%. Columns (2) and (5) focus on unemployment spells as the dependent variable. Unemployment spells are estimated as the number of months of unemployment a displaced employee experiences in the two-year period after their departure from a firm in my sample. Notice that any effect on the total unemployment months combines the effect on unemployment incidence and unemployment duration. The results demonstrate that only target firms' low-skilled employees experience a significant increase in unemployment spells in the post-takeover period. The magnitudes of my estimates indicate

that displaced target employees experience an increase of 25% in unemployment duration, relative to the average effect in my sample which is 2 months.

[Insert Table 19 Here]

Next, I turn to job turnover by estimating the number of jobs displaced employees have had in the two-year period after their displacement. Columns (3) and (7) in Table 19 present the results on job turnover for low-skilled and high-skilled employees, documenting that M&As lead to a statistically significant increase in job turnover only for low-skilled employees. Relative to the average effect, displaced target employees experience an increase of 15% in the number of job changes after takeovers.

Finally, I examine the impact of M&As on the average monthly wage during a year. Notice that any treatment effects documented incorporate wage changes due to unemployment, changes in employment between firms, and changes in earnings at the current job. Columns (4) and (8) in Table 19 indicate that only low-skilled employees experience a statistically significant wage decline relative to comparable employees in control firms. In total, the results in Table 19 confirm that low-skilled employees in target firms, on average, experience unfavorable labor outcomes in the post-takeover period.

8   Conclusions

I analyze the extent and direction of the labor reorganization process in firms targeted at takeovers in Brazil from 2004 to 2012. I demonstrate that corporate takeovers are associated with extensive labor restructuring at the target firm. Specifically, I find that target firms experience a large decline in total employment and total wage bill relative to control firms in the two-year post-takeover period. This adjustment in employment occurs by increasing layoffs and limiting hirings, consistent with the notion that M&As engage in efficiency-seeking consolidation. I further supplement my findings by documenting that reorganization involves occupational consolidation, as the number of occupations declines in the post-takeover period.

Having established firm-level patterns in the employment flows of target firms, I turn to an employee-level analysis to examine post-takeover changes in the demand for human capital. For this purpose, I exploit cross-sectional variation in worker characteristics and characterize the post-takeover change in the likelihood of exit for different groups of employees. To separate demand and supply side factors that affect the decision to exit the firm, I use the information on the reason for the termination of employment contracts and disentangle involuntary from voluntary exit. My findings show that the post-takeover restructuring process is indicative of skill-biased and routine-biased technological change, consistent with empirical findings that highlight the importance of high-skilled labor for

firm productivity and value creation, and theoretical predictions that link M&As with automation and technological change. In addition, I provide evidence that occupational overlap is a key channel of increased layoffs.

The employee-level results indicate that takeovers lead to an increase in the relative demand for high-skilled and non-routine labor in the post-takeover period. I show that these demand changes lead to changes in the firm-level composition of labor, as the share of high-skilled labor increases by 7%, while the share of routine labor decreases by 7.6%. In order to provide additional evidence of technological change, I show that there is a post-takeover increase in the firm-level share of labor in occupational tasks related to R&D.

Finally, I focus on wages and document that average wages decline only for low-skilled labor. This heterogeneous change in wages in the post-takeover period along with the relative increase in demand for skilled and non-routine workers contribute to an increase in within-firm wage inequality.

My findings have broader implications about how acquiring firms redraw their boundaries after takeovers. Given the extent of post-takeover labor restructuring, takeovers should be viewed as a vehicle of an extensive organizational change that resets the boundaries of the firms in a manner that is indicative of technological change and efficiency-seeking consolidation.

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Figures

Figure 1: Publicly Announced and Completed M&A Transactions in Brazil, Including Majority and Minority Stake Acquisition. Source: Thomson SDC
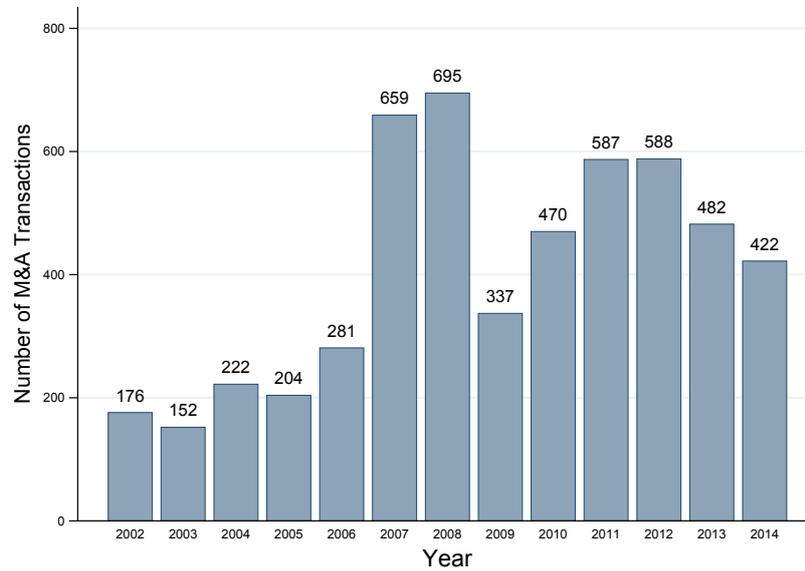
Figure 2: Matched Sample of Publicly Announced and Completed M&A Transactions in Brazil
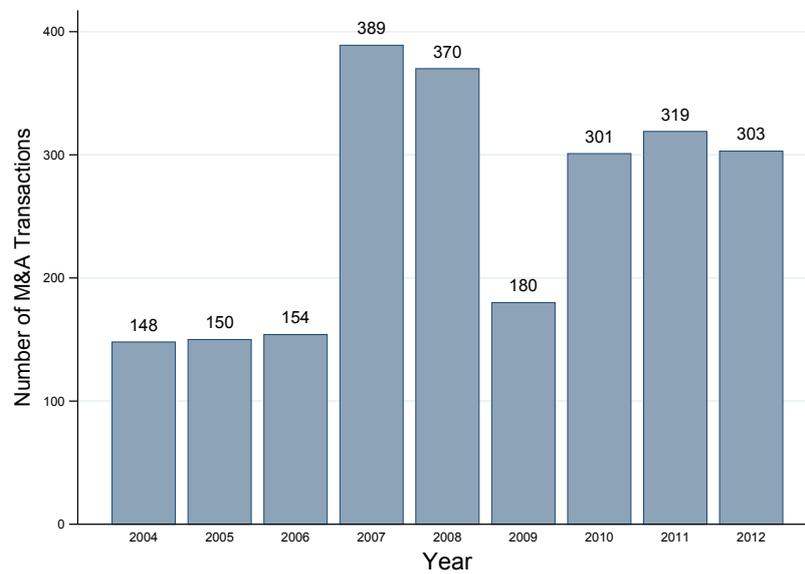
Figure 3: Size of Target Firms Vs. Population
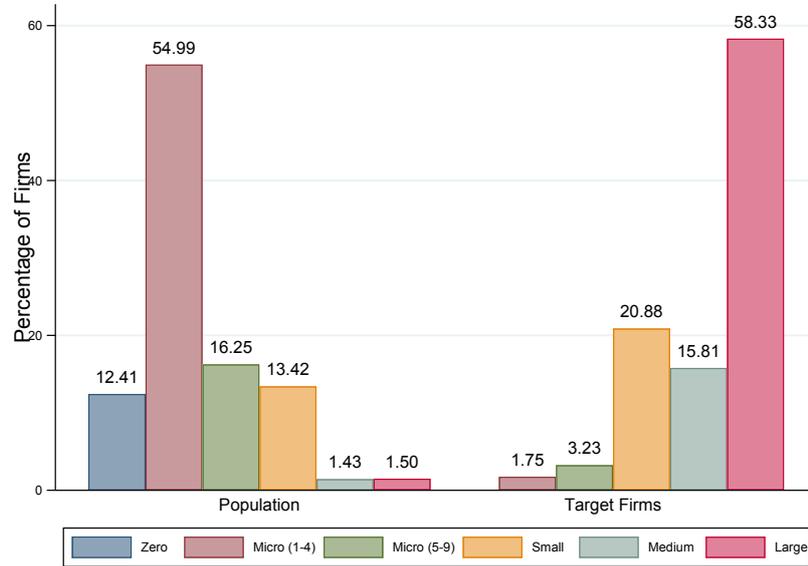
Figure 4: Dynamic Effects of M&A on Target's Employment Level
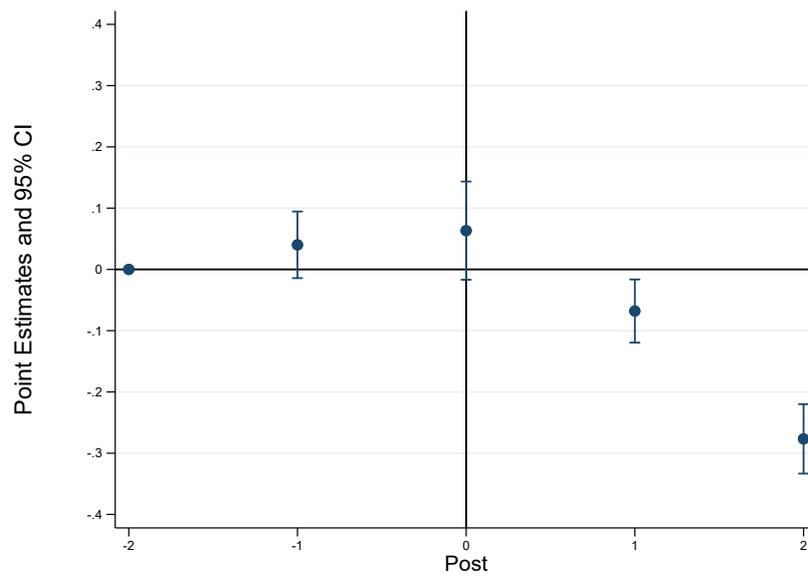
Figure 5: Dynamic Effects of M&A on Target's Total Wages
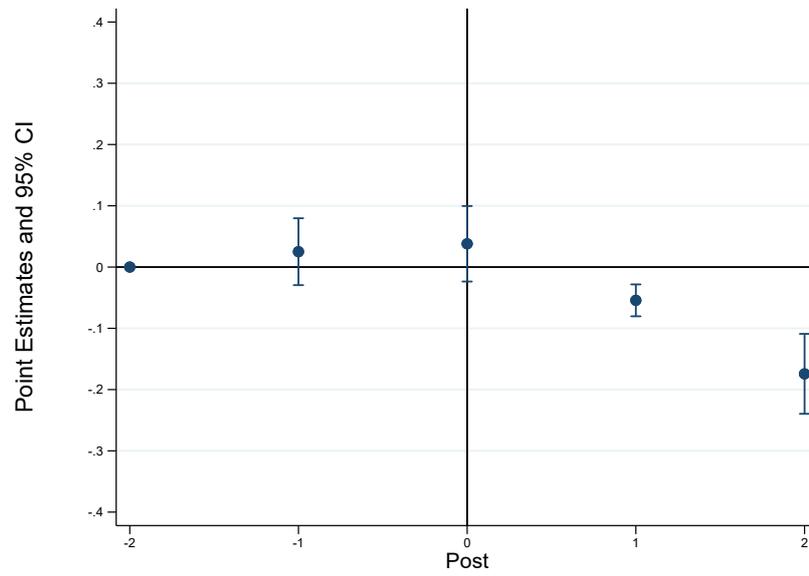
Tables

Table 1: Summary Statistics - M&As

	Panel A: Firm Characteristics					
	Treated Firms			Population		
Variables	**p50**	**Mean**	**Std Dev.**	**p50**	**Mean**	**Std Dev.**
Number of Employees	139	678	1,672	2	15	894
Total Wage Bill (R$)	231,753	1,301,086	4,135,980	1,568	19,759	1,184,941
Log Employment	4.9	4.9	1.7	1.1	1.4	1.1
Log Total Wage Bill	12	12	1.9	7.4	6.8	2.9
Number of Firms	2,204			5,056,407		
	Panel B: Target Vs. Acquirer Characteristics					
	Target Firms			Acquiring Firms		
Variables	**p50**	**Mean**	**Std Dev.**	**p50**	**Mean**	**Std Dev.**
Number of Employees	142	648	2,636	396	2,602	5,203
Total Wage Bill (R$)	268,153	1,265,115	5,264,600	904,683	6,352,138	26,095,079
Log Employment	5	5	1.7	6	5.8	2.3
Log Total Wage Bill	12	12	1.8	14	13	3.4
Routine Share	0.79	0.71	0.24	0.72	0.64	0.25
High-Skilled Share	0.16	0.27	0.26	0.26	0.35	0.29
Number of Firms	1,564			1,381		
	Panel C: Deal Characteristics					
Variables	**N**		**Mean**		**Std Dev.**	
Deal Value ($M)	812		229.23		709.01	
Cross-Border	2,058		0.40		0.49	
Public Acquirer	2,058		0.35		0.48	
Public Target	2,264		0.04		0.18	
Diversifying	2,058		0.17		0.38	
Friendly	2,058		0.98		0.15	

 Notes: The table reports firm-level descriptive statistics for treated firms and the population of firms. The data refer to the time of the M&A Transaction.
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 2: M&A Target Firms by Sector of Operation

	M&A Target Firms		
Sector	Domestic	Cross-Border	Total (%)
Agriculture	25	19	1.90%
Forestry	4	0	0.17%
Oil and Natural Gas Extraction	1	6	0.30%
Metallic Mineral Mining	7	6	0.56%
Non-Metallic Mineral Mining	5	2	0.30%
Food and Beverage Manufacturing	108	62	7.35%
Tobacco Products Manufacturing	1	1	0.09%
Textile Products Manufacturing	12	3	0.65%
Apparel Manufacturing	6	4	0.43%
Leather Processing, Luggage and Footwear Manufacturing	5	4	0.39%
Wood Products Manufacturing	2	2	0.17%
Pulp, Paper and Paper Products Manufacturing	22	20	1.82%
Publishing, Printing and Reproduction of Recordings	24	16	1.73%
Coal and Nuclear Products, Oil Refining and Alcohol Production	12	7	0.82%
Chemical Products Manufacturing	67	75	6.14%
Rubber and Plastics Product Manufacturing	15	30	1.94%
Nonmetallic Mineral Product Manufacturing	23	10	1.43%
Metals Production and Basic Processing	9	12	0.91%
Metal Product Manufacturing	10	28	1.64%
Machinery and Equipment Manufacturing	24	43	2.90%
Office and Data Processing Equipment Manufacturing	2	6	0.35%
Electrical Machinery and Equipment Manufacturing	6	18	1.04%
Electronic Components Manufacturing	7	10	0.73%
Medical Equipment, Optical and Precision Instruments	4	12	0.69%
Motor Vehicle Assembly and Manufacturing	7	13	0.86%
Other Transportation Equipment Manufacturing	3	6	0.39%
Furniture and Miscellaneome Manufacturing	4	2	0.26%
Recycling	1	1	0.09%
Production and Distribution of Energy	27	17	1.90%
Treatment and Distribution of Water	5	0	0.22%
Construction Services	27	18	1.94%
Automotives and Fuels Trade	14	9	0.99%
Wholesale Trade	74	87	6.96%
Retail Trade and Repairs	82	44	5.45%
Hospitality and Food	12	13	1.08%
Ground Transportation	26	6	1.38%
Maritime Transportation	1	2	0.13%
Aviation	9	5	0.61%
Auxiliary Transportation	70	18	3.80%
Telecommunications	34	10	1.90%
Financial Services	35	10	1.94%
Insurance	29	17	1.99%
Auxiliary Financial Services	19	20	1.69%
Real Estate Services	52	6	2.51%
Rentals	8	3	0.48%
IT and Software Related Activities	100	71	7.39%
R&D	2	2	0.17%
Advertising, Auditing, Consulting and Other Corporate Services	128	152	12.10%
Public Administration, Defense, and Social Security	2	1	0.13%
Education	90	11	4.36%
Health and Social Services	70	1	3.07%
Sewage and Cleaning Services	6	1	0.30%
Associative Activities	3	6	0.39%
Recreational, Cultural and Sports Activities	16	5	0.91%
Laundry, Dry Cleaning and Fitness Activities	2	2	0.17%

Notes: Sector of Operation (2-Digit CNAE) at the Time of the M&A Transaction.

Table 3: Summary Statistics - Treated Vs. Control Firms

	Panel A: Firm Characteristics - Pre-Period						
	Treated Firms			Control Firms			
Variables	p50	Mean	Std Dev.	p50	Mean	Std Dev.	Difference
Number of Employees	118	613	1,691	123	568	1,285	45
Total Wage Bill (R$)	224,070	1,216,405	4,570,886	187,602	1,156,268	3,907,803	36,468
Log Employment	4.8	4.8	1.8	4.9	4.8	1.7	0
Log Total Wage Bill	12	12	2	12	12	1.8	0
Routine Share	0.80	0.72	0.24	0.78	0.72	0.18	0
High-Skilled Share	0.16	0.26	0.26	0.14	0.23	0.21	0.03
Number of Firms	2,204			20,257			
	Panel B: Firm Characteristics (t = 0)						
	Treated Firms			Control Firms			
Variables	p50	Mean	Std Dev.	p50	Mean	Std Dev.	Difference
Number of Employees	139	678	1,672	132	581	1,305	97
Total Wage Bill (R$)	231,753	1,301,086	4,135,980	215,063	1,063,845	3,791,463	237,241
Log Employment	4.9	4.9	1.7	4.9	4.9	1.6	0
Log Total Wage Bill	12	12	1.8	12	12	1.8	0
Routine Share	0.79	0.72	0.24	0.80	0.74	0.18	-0.02
High-Skilled Share	0.16	0.27	0.26	0.14	0.24	0.22	0.03
Number of Firms	2,204			20,257			
	Panel C: Workers' Characteristics (t = 0)						
	Treated Employees			Control Employees			
Variables	p50	Mean	Std Dev.	p50	Mean	Std Dev.	Difference
Education	7	6.4	1.9	7	6.1	1.9	0.3
Male	1	0.65	0.52	1	0.63	0.48	0.2
Age	30	32	9.1	30	32	9.3	0
Tenure (in Months)	14	37	57	13	32	48	5
Log(Wage)	6.9	7	1.3	6.8	6.9	1.1	0.1
Number of Workers	2,281,039			9,021,397			

Notes: The table reports descriptive statistics: **(I)** at the firm-level for the pre-takeover period (Panel A), **(II)** at the firm-level at the time of the M&A transaction (Panel B) and, **(III)** at the worker-level at the time of the M&A transaction (Panel C). Education takes values from 1 to 11 ranging from Illiteracy to Doctoral Degree. An education level of 7 reflects completion of high school education.
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Total Employment and Wages

Variables	(1) Log(L)	(2) Log(Wages)	(3) Log(Wages/L)
Post	-0.036***	-0.105***	-0.030***
	(0.006)	(0.009)	(0.003)
Post $\times I_i^{Treated}$	-0.288***	-0.174***	0.143***
	(0.019)	(0.031)	(0.008)
Firm Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Municipality x Year Fixed Effects	Yes	Yes	Yes
Observations	148,060	148,060	148,060
Adjusted R^2	0.89	0.81	0.66

Notes: In Column (1) the dependent variable is firm-level employment. In Column (2) the dependent variable is firm-level log wages. In Column (3) the dependent variable is the firm-level log wage per employee. Employment is measured as the log number of employees in the firm. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_i^{Treated}$ is an indicator function equal to 1 for firms that have been targeted at an M&A transaction at any point in time, and equal to 0 for control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Labor Restructuring and Labor Flows

Variables	(1) Separation Rate	(2) Firing Rate	(3) Voluntary Rate	(4) Hiring Rate	(5) Log(Occupations)
Post	-0.039***	-0.030***	-0.009	-0.062***	-0.035***
	(0.003)	(0.002)	(0.007)	(0.007)	(0.003)
Post $\times I_i^{Treated}$	0.379***	0.326***	0.054***	-0.318**	-0.108***
	(0.038)	(0.034)	(0.008)	(0.156)	(0.011)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Municipality x Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	146,874	146,874	146,874	146,874	148,060
Adjusted R^2	0.27	0.30	0.21	0.18	0.89

 Notes: In Column (1) the dependent variable is the firm-level ratio of the number of separations at a specific year over employment in the previous year. In Column (2) the dependent variable is the firm-level ratio of the number of involuntary separations at a specific year over employment in the previous year. In Column (3) the dependent variable is the firm-level ratio of the number of voluntary separations at a specific year over employment in the previous year. In Column (4) the dependent variable is the firm-level ratio of the number of hirings at a specific year over employment in the previous year. In Column (5) the dependent variable is the log number of distinct occupational codes at a specific year. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_i^{Treated}$ is an indicator function equal to 1 for firms that have been targeted at an M&A transaction at any point in time, and equal to 0 for control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.

Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Labor Restructuring and Level of Skill

Variables	High-Skilled Labor		Low-Skilled Labor	
	(1)	(2)	(3)	(4)
	Involuntary	Voluntary	Involuntary	Voluntary
Post	0.050***	0.023***	0.020***	0.007***
	(0.003)	(0.002)	(0.005)	(0.001)
Post $\times I_j^{Treated}$	0.012	0.010***	0.059***	0.002
	(0.012)	(0.003)	(0.008)	(0.004)
Employee Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Employee Fixed Effects	Yes	Yes	Yes	Yes
Municipality Fixed Effects	Yes	Yes	Yes	Yes
Observations	5,209,866	5,209,866	28,896,450	28,896,450
Adjusted R^2	0.32	0.30	0.35	0.39

Notes: In Columns (1) and (3) the dependent variable is an employee-level binary variable that equals 1 for involuntary separation at a specific year and 0 otherwise. In Columns (2) and (4) the dependent variable is an employee-level binary variable that equals 1 for voluntary separation at a specific year and 0 otherwise Columns (1) and (2) refer to the sample that includes only high-skilled labor, while Columns (3) and (4) refer to the sample that includes only low-skilled employees. High-skilled labor includes employees that have at least completed an undergraduate degree. Low-skilled labor includes employees that have at most received high-school education. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_j^{Treated}$ is an indicator function equal to 1 for individuals that have been employed in a firm that was the target of an M&A transaction at any point in time, and equal to 0 for the individuals of control firms. Employee controls include age, gender, tenure and education. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: Labor Restructuring and Managers

	Involuntary			Voluntary		
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Full Sample	Domestic	Cross-Border	Full Sample	Domestic	Cross-Border
Post	0.042***	0.039***	0.048***	0.011***	0.011***	0.012***
	(0.004)	(0.006)	(0.007)	(0.001)	(0.002)	(0.002)
Post $\times I_j^{Treated}$	0.032***	0.040***	0.018	0.005	0.004	0.006
	(0.008)	(0.010)	(0.019)	(0.006)	(0.005)	(0.006)
Employee Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Employee Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,685,446	882,692	802,663	1,685,446	882,692	802,663
Adjusted R^2	0.32	0.26	0.32	0.30	0.25	0.32

Notes: The sample includes employees in managerial positions. Managerial positions are occupations with a two-digit ISCO code equal to 12. In Columns (1)-(3) the dependent variable is an employee-level binary variable that equals 1 for involuntary separation at a specific year and 0 otherwise. In Columns (4)-(6) the dependent variable is an employee-level binary variable that equals 1 for voluntary separation at a specific year and 0 otherwise. Columns (1) and (4) examine the full sample of M&As. Columns (2) and (5) examine the sample of Domestic M&As, while Column (3) and (6) examine the sample of Cross-Border M&As. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_j^{Treated}$ is an indicator function equal to 1 for individuals that have been employed in a firm that was the target of an M&A transaction at any point in time, and equal to 0 for the individuals of control firms. Employee controls include age, gender, tenure and education. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8: Labor Restructuring and Routine-Biased Change

Variables	Involuntary Separation					
	Non-Routine			Routine		
	(1)	(2)	(3)	(4)	(5)	(6)
	Full Sample	Domestic	Cross-Border	Full Sample	Domestic	Cross-Border
Post	0.053***	0.042***	0.038***	0.014***	0.004	0.019**
	(0.006)	(0.008)	(0.009)	(0.011)	(0.007)	(0.008)
Post $\times I_j^{Treated}$	0.027**	0.037**	0.018	0.060***	0.071***	0.049***
	(0.012)	(0.017)	(0.021)	(0.007)	(0.010)	(0.008)
Employee Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Employee Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Municipality Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,009,071	4,360,902	3,422,026	25,691,547	12,848,318	12,102,520
Adjusted R^2	0.38	0.34	0.38	0.34	0.27	0.36

Notes: The dependent variable is an employee-level binary variable that equals 1 for involuntary separation at a specific year and 0 otherwise. Columns (1)-(3) refer to the sample that includes only routine employees, while Columns (4)-(6) refer to the sample that includes only non-routine employees. Employees are categorized as Routine or Non-Routine based on their occupational Routine Task Intensity (RTI) Score. Routine employees have a positive RTI, while non-routine employees have a negative RTI. Columns (1) and (4) examine the full sample of M&As. Columns (2) and (5) examine the sample of Domestic M&As, while Column (3) and (6) examine the sample of Cross-Border M&As. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_j^{Treated}$ is an indicator function equal to 1 for individuals that have been employed in a firm that was the target of an M&A transaction at any point in time, and equal to 0 for the individuals of control firms. Employee controls include age, gender, tenure and education. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 9: Labor Restructuring - Hirings

	Skill Level		Routine Intensity	
	(1)	**(2)**	**(3)**	**(4)**
Variables	**Low-Skilled**	**High-Skilled**	**Routine**	**Non-Routine**
Post	-0.017***	0.009	-0.011*	0.001
	(0.006)	(0.010)	(0.006)	(0.011)
Post $\times I_j^{Treated}$	-0.055***	-0.009	-0.044***	-0.011
	(0.009)	(0.018)	(0.010)	(0.024)
Employee Controls	Yes	Yes	Yes	Yes
Employee Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Municipality Fixed Effects	Yes	Yes	Yes	Yes
Observations	28,896,486	5,209,967	25,691,547	8,009,071
Adjusted R^2	0.33	0.31	0.34	0.35

Notes: The table reports the effect of M&A on hirings. Columns (1) and (2) focus on high-skilled versus low-skilled employees, while Columns (3) and (4) focus on routine versus non-routine employees. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_j^{Treated}$ is an indicator function equal to 1 for employees that have been employed at a firm targeted at an M&A transaction at any point in time, and equal to 0 for employees of control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.

Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 10: Human Capital Overlap

Variables	Target Employees			Acquirer Employees		
	(1)	(2)	(3)	(4)	(5)	(6)
	Voluntary	Involuntary	Involuntary	Voluntary	Involuntary	Involuntary
Overlap	0.001	0.015***	0.018**	0.001	-0.001	-0.003
	(0.002)	(0.002)	(0.008)	(0.001)	(0.002)	(0.004)
Low-Skilled			0.080***			0.042***
			(0.020)			(0.006)
Low-Skilled $\times$ Overlap			0.010**			0.005
			(0.005)			(0.004)
Employee Controls	Yes	Yes	Yes	Yes	Yes	Yes
Employee Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Municipality Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,394,702	3,394,702	3,394,702	29,050,925	29,050,925	29,050,925
Adjusted R^2	0.45	0.42	0.44	0.48	0.41	0.42

 Notes: The table reports the impact of human capital overlap on the likelihood of voluntary and involuntary separation in the post-takeover period. Columns (1)-(3) use the subsample of target employees in the post-takeover period, while (4)-(6) use the subsample of acquirer employees in the post-takeover period. In Columns (1) and (4) the dependent variable is an employee-level binary variable that equals 1 for voluntary separation at a specific year and 0 otherwise. In Columns (2), (3), (5) and (6) the dependent variable is an employee-level binary variable that equals 1 for involuntary separation at a specific year and 0 otherwise. Low-skilled labor includes employees that have at most received high-school education.

Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 11: Skill-Biased and Routine-Biased Change

	(1)	(2)	(3)
Variables	**High-Skilled Share**	**Routine Share**	**R&D Share**
Post	-0.002	0.003	0.001
	(0.002)	(0.002)	(0.001)
Post $\times I_i^{Treated}$	0.070***	-0.076***	0.012***
	(0.003)	(0.004)	(0.002)
Firm Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Municipality x Year Fixed Effects	Yes	Yes	Yes
Observations	148,060	148,060	148,060
Adjusted R^2	0.91	0.88	0.62

Notes: In Column (1) the dependent variable is the share of high-skilled labor at the firm level. In Column (2) the dependent variable is the firm-level share of routine labor. In Column (3) the dependent variable is the firm-level share of labor in occupational tasks related to R&D. High-skilled labor includes employees that have at least completed an undergraduate degree. Routine labor includes employees that the Routine Task Intensity (RTI) Score is positive. The categorization in R&D occupations is based on the occupational code reported in RAIS. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_i^{Treated}$ is an indicator function equal to 1 for firms that have been targeted at an M&A transaction at any point in time, and equal to 0 for control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 12: Labor Restructuring and Average Wages

	Average Wage	
	(1)	**(2)**
Variables	**High-Skilled Labor**	**Low-Skilled Labor**
Post	-0.007***	-0.034***
	(0.003)	(0.003)
Post $\times I_i^{Treated}$	0.049***	-0.146***
	(0.008)	(0.028)
Firm Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Municipality x Year Fixed Effects	Yes	Yes
Observations	148,060	148,060
Adjusted R^2	0.88	0.62

Notes: The dependent variable is average log wage at the firm-level. In Column (1) the dependent variable is measured including only the high-skilled labor of the firm. In Column (2) the dependent variable is measured including only the low-skilled labor of the firm. High-skilled labor includes employees that have at least completed an undergraduate degree. Low-skilled labor includes employees that have at most received high-school education. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_i^{Treated}$ is an indicator function equal to 1 for firms that have been targeted at an M&A transaction at any point in time, and equal to 0 for control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 13: Labor Restructuring and Wage Inequality

Variables	(1) Standard Deviation of Log Wages	(2) 90-10 Wage Ratio
Post	-0.009	0.008
	(0.008)	(0.014)
Post $\times I_i^{Treated}$	0.068***	0.133***
	(0.012)	(0.026)
Firm Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Municipality x Year Fixed Effects	Yes	Yes
Observations	148,060	148,060
Adjusted R^2	0.60	0.68

Notes: The dependent variable is a measure of wage inequality. In Column (1) the relevant measure is the standard deviation of log wages at the firm level, while in Column (2) the firm-level ratio of the 90th wage percentile to the 10th wage percentile (Column (2)). *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_i^{Treated}$ is an indicator function equal to 1 for firms that have been targeted at an M&A transaction at any point in time, and equal to 0 for control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 14: Combined Entity

Variables	(1) Log(L)	(2) Log(Wages)	(3) High-Skilled Share	(4) Routine Share	(5) 90-10 Wage Ratio
Post	-0.080***	-0.113***	-0.002	0.003	0.004
	(0.012)	(0.014)	(0.002)	(0.002)	(0.012)
Post $\times I_i^{Treated}$	-0.129***	-0.099***	0.043***	-0.048***	0.096***
	(0.025)	(0.029)	(0.002)	(0.002)	(0.023)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Municipality x Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	219,469	219,469	219,469	219,469	219,469
Adjusted R^2	0.88	0.80	0.90	0.85	0.71

Notes: The dependent variable is one of the following: log employment (Column (1)), log wages (Column (2)), share of high-skilled employees (Column (3)), share of routine employees (Column (4)), and wage inequality (Column (5)). *Post* is a dummy that equals 1 for the two-year period after the M&A transaction was withdrawn, and 0 for the the two-year period prior to the withdrawal of the M&A transaction. $I_i^{Treated}$ is an indicator function equal to 1 for firms that have been targeted at an M&A transaction at any point in time that has been subsequently withdrawn, and equal to 0 for control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 15: Labor Restructuring - Takeover Types

Variables	Combined Entity			
	Log(L)		Log(Wages)	
	(1)	(2)	(3)	(4)
	Focused M&As	Diversifying M&As	Focused M&As	Diversifying M&As
Post	-0.087***	-0.051***	-0.116***	-0.092***
	(0.014)	(0.011)	(0.015)	(0.016)
Post $\times I_i^{Treated}$	-0.153***	0.025	-0.117***	0.039
	(0.028)	(0.048)	(0.038)	(0.041)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Municipality x Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	179,908	39,517	179,908	39,517
Adjusted R^2	0.88	0.91	0.80	0.84

Notes: The table reports the effect of different types of M&As on total employment and total wage bill of the combined entity. In Columns (1) and (2) the dependent variable is the log number of employees, while in Columns (3) and (4) the dependent variable is the log total wage bill. Columns (1) and (3) present results for focused M&As and Columns (2) and (4) present results for diversifying M&As. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_i^{Treated}$ is an indicator function equal to 1 for firms that have been targeted at an M&A transaction at any point in time, and equal to 0 for control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 16: Labor Restructuring - Human Capital Relatedness

Variables	Combined Entity			
	Log(L)		Log(Wages)	
	(1)	(2)	(3)	(4)
	High HCR M&As	Low HCR M&As	High HCR M&As	Low HCR M&As
Post	-0.024**	-0.081***	-0.107***	-0.090***
	(0.012)	(0.017)	(0.024)	(0.016)
Post $\times I_i^{Treated}$	-0.193***	-0.095**	-0.164***	-0.041***
	(0.036)	(0.046)	(0.048)	(0.006)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Municipality x Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	92,247	83,513	92,247	83,513
Adjusted R^2	0.89	0.89	0.81	0.81

Notes: The table reports the effect of M&As with different level of Human Capital Relatedness on total employment and total wage bill of the combined entity. In Columns (1) and (2) the dependent variable is the log number of employees, while in Columns (3) and (4) the dependent variable is the log total wage bill. Columns (1) and (3) present results for M&As with a high level of human capital relatedness and Columns (2) and (4) present results for M&As with a low level of human capital relatedness. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_i^{Treated}$ is an indicator function equal to 1 for firms that have been targeted at an M&A transaction at any point in time, and equal to 0 for control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014.

Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 17: Withdrawn M&As

Variables	(1) Log(Employment)	(2) Log(Wages)
Post	-0.018	-0.076
	(0.029)	(0.040)
Post $\times I_i^{Treated}$	-0.007	0.063
	(0.020)	(0.107)
Firm Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Municipality x Year Fixed Effects	Yes	Yes
Observations	51,519	51,519
Adjusted R^2	0.93	0.86

Notes: The dependent variable is either log employment or log wages. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction was withdrawn, and 0 for the the two-year period prior to the withdrawal of the M&A transaction. $I_i^{Treated}$ is an indicator function equal to 1 for firms that have been targeted at an M&A transaction at any point in time that has been subsequently withdrawn, and equal to 0 for control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014. Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 18: Investment in Capital

| | Panel A: Summary Statistics at t = 0 | | | | | | |
| | Treated Firms | | | Control Firms | | | |
Variables	Mean	p50	Std Dev.	Mean	p50	Std Dev.	Difference
Log(Assets)	7.46	7.74 7.46	1.66	7.36	7.72	1.85	0.10
Leverage	0.33	0.29	0.42	0.32	0.28	0.50	0.01
Cash	0.12	0.10	0.11	0.11	0.09	0.12	0.01
CapEx	0.08	0.06	0.09	0.08	0.05	0.11	0
PPE Growth	0.05	-0.02	0.16	0.06	-0.01	0.24	-0.01
Intangible Assets Growth	0.06	3.	0.16	0.04	-0.01	42.56	0.02
Number of Firms	82			421			

| | Panel B: Regression Analysis | | |
| | (1) | (2) | (3) |
Variables	Intangible Assets Growth	PPE Growth	CapEx
Post	-5.15	-4.40	-0.01
	(10.09)	(3.39)	(0.01)
Post $\times I_i^{Treated}$	55.02**	3.46**	0.027**
	(26.73)	(1.74)	(0.13)
Firm Controls	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Municipality Fixed Effects	Yes	Yes	Yes
Observations	2,151	3,156	2,111
Adjusted R^2	0.34	0.43	0.34

Notes: Panel A reports descriptive statistics of firm-level financial variables for public firms included in Compustat. The variables included are the natural logarithm of total assets (Compustat Item AT), leverage ((Compustat Item DLC + Compustat Item DLTT)/Compustat Item AT), cash (Compustat Item CHE)/Compustat Item AT), CapEx (Compustat Item CAPX)/Compustat Item AT(t-1)) and PPE growth (Compustat Item PPENT/Compustat Item PPENT(t-1) -1). Panel B reports the results of a univariate analysis that compares the change in capital expenditures between treated and control firms in the period before and after the takeover. Panel C report firm-level regression results for the sample of public firms. In Column (1) the dependent variable is Intangible Assets Growth, in Column (2) the dependent variable is PPE growth, while in Column (3) the dependent variable is CapEx. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_i^{Treated}$ is an indicator function equal to 1 for firms that have been targeted at an M&A transaction at any point in time, and equal to 0 for control firms that have never been involved in a M&A transaction either as targets or acquirers during the period under study. Firms controls include leverage, cash and sales growth (Compustat Item SALE).
Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 19: Labor Restructuring and Unemployment

	Labor Outcomes							
	Low-Skilled				High-Skilled			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Unemployed	Spell	Turnover	Log(Wage)	Unemployed	Spell	Turnover	Log(Wage)
Post	0.041***	0.441***	0.079***	-0.059***	0.036***	0.366***	0.095***	-0.110***
	(0.004)	(0.041)	(0.008)	(0.009)	(0.003)	(0.029)	(0.007)	(0.007)
Post $\times I_j^{Treated}$	0.033***	0.430***	0.053***	-0.056**	0.009	0.110	0.018	-0.021
	(0.007)	(0.078)	(0.016)	(0.024)	(0.008)	(0.056)	(0.013)	(0.019)
Employee Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employee Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	28,896,486	28,896,486	28,896,486	28,896,486	5,209,967	5,209,967	5,209,967	5,209,967
Adjusted R^2	0.37	0.42	0.47	0.50	0.35	0.37	0.37	0.48

Notes: The table reports results on employment outcomes of target employees in the post-takeover period. Columns (1)-(4) focus on low-skilled employees, while Columns (5)-(8) focus on high-skilled employees. The dependent variable is: **(I)** in Columns (1) and (5) an indicator variable that equals 1 for employees that have experienced displacement and unemployment in the 2-year period after their displacement and 0 otherwise, **(II)** in Columns (2) and (6) the sum of unemployment spells in months for employees that have experienced displacement and unemployment in the 2-year period after their displacement and 0 otherwise, **(III)** in Columns (3) and (7) the number of jobs for employees that have experienced displacement in the 2-year period after their displacement and 0 otherwise, and **(IV)** in Columns (4) and (8) the average monthly log wage during the year. High-skilled labor includes employees that have at least completed an undergraduate degree. Low-skilled labor includes employees that have at most received high-school education. *Post* is a dummy that equals 1 for the two-year period after the M&A transaction, and 0 for the the two-year period prior to the M&A transaction. $I_j^{Treated}$ is an indicator function equal to 1 for individuals that have been employed in a firm that was the target of an M&A transaction at any point in time, and equal to 0 for the individuals of control firms. Employee controls include age, gender, tenure and education. Standard errors are clustered at the transaction level. The sample period is from 2002 to 2014. Significance Levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.