

Job Transitions and Employee Earnings After Acquisitions: Linking Corporate and Worker Outcomes*

David Arnold[†] Kevin Milligan[‡] Terry S. Moon[§] Amirhossein Tavakoli[¶]

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Abstract

This paper connects changes in employer characteristics through job transitions to employee earnings following mergers and acquisitions (M&As). Using firm balance sheet data linked to individual earnings data in Canada and a matched difference-in-differences design, we find that after M&As acquirers expand while targets shrink substantially relative to their matched control groups. Additionally, profit margins decrease for both acquirers and targets in the medium run. Furthermore, workers at target firms suffer losses in earnings, and this decline in earnings is entirely driven by workers who move to other firms after an M&A event. We find that workers leaving target firms after M&As move to larger firms with higher wage premiums, but with much worse match qualities on average. Taken together, it appears that job transitions to employers with poor match qualities primarily explain the post-M&A decline in worker earnings in our setting.

JEL Classification: E24, G34, J31, J42, L25

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[†]Department of Economics, University of California San Diego (email: daarnold@ucsd.edu)

[‡]Vancouver School of Economics, University of British Columbia (email: kevin.milligan@ubc.ca)

[§]Vancouver School of Economics, University of British Columbia (email: tsmoon@mail.ubc.ca)

[¶]Vancouver School of Economics, University of British Columbia (email: ah.tavakoli@ubc.ca)

1 Introduction

Mergers and acquisitions (M&As hereinafter) often result in important changes in corporate structure and worker composition for both targets and acquirers. While there exists a large literature on how M&As affect firm performance and market value, there is growing interest in understanding labor market impacts of M&As. In theory, M&As may have positive or negative impacts on worker earnings. If the M&A leads to efficiency gains for the involved parties, incumbent workers at acquiring firms or targets may experience a wage increase through rent sharing. By contrast, M&As may lead to layoffs through labor restructuring which can lower displaced workers' wages. Furthermore, M&As can result in increased labor-market or product-market power, again leading to lower wages. Since M&As may bring significant changes in both corporate and labor structure, a key challenge in answering this question is to link firm and worker outcomes following M&As to delve into potential mechanisms behind changes in worker earnings.

In this paper, we provide new empirical evidence on changes in workers' labor market outcomes following corporate M&As. While prior studies focus only on either firm-level outcomes or worker-level outcomes, in our work we are able to link detailed firm balance sheet data from corporate tax returns to worker-level earnings data from individual tax returns in Canada.¹ This allows us to connect and simultaneously evaluate both corporate and employee outcomes, and helps us pin down potential mechanisms behind our findings. Furthermore, the detailed joint information on firms and workers allows us to assess the connection between changes in employer characteristics via job transitions and employee earnings after M&As.

In the first part of the paper, we study the impact of M&As on firm-level outcomes. To do so, we implement a matched difference-in-differences design, where we match firms that go through M&A events to otherwise similar firms that never undergo M&As during our sample period. We find that acquirers expand, while targets shrink substantially after M&As. Acquirers' employment and revenue increase by 17.4 log points and 25.8 log points, respectively, on average relative to their matched control firms after M&As. By contrast, targets' employment, average payroll, and total revenue decrease by 8.4 log points, 2.8 log points, and 51.1 log points, respectively, on average. One important note is that around 80 percent of our M&A events are partial acquisitions, meaning the target and the acquirer continue to operate as separate entities following the M&A event.² At the aggregate (targets and acquirers combined) level, we find almost no changes in employment or average payroll, but significant declines in total revenue and profit margins.

¹While [Arnold \(2021\)](#) also uses employer-employee matched data in the U.S., the Longitudinal Employer-Household Dynamics (LEHD) data does not have detailed firm balance sheet information, such as profit margins, and therefore, cannot be used to simultaneously evaluate firm-level and worker-level outcomes.

²This allows us to identify the impact on both target and acquiring firms separately. As we discuss in detail later, our worker-level results depend substantially on the firm that the worker is originally employed at.

While efficiency gains through synergies are often argued as potential benefits of merger activities, we do not find any evidence of increased profitability for either acquiring or target firms after M&As. This has potentially important implications for pro-merger arguments that rely on predicted synergy gains. While this result might be surprising if M&A events are undertaken by profit-maximizing firms, this is consistent with a corporate finance literature that finds overall mixed results of M&A events on firm performance or market valuation. These results also have important implications for the impact on workers. If M&As did increase productivity, we might expect some workers to benefit through rent sharing. In this setting, however, the lack of productivity gains suggests that workers may not benefit from the M&A events if there are no increased rents to share.

To study this directly, the next part of our paper estimates the impact of M&As on workers. For workers at acquiring firms, we find relatively stable earnings after the M&A event. However, for target workers, we find their earnings decrease by 1.2 percent. This decline in worker earnings may stem from two channels. First, workers at target firms may face an increased risk of job displacement, implying the impacts on earnings are driven by job transitions. Second, workers at target firms may experience earnings losses due to changes in target firms' wage setting.

To test this, we first estimate the impact of M&A events on job transitions. For target workers, we find there is a large increase in the probability of job transitions in the year following an M&A event. Given that we observe the universe of workers in the formal labor market in Canada, we check that most of post-M&A job transitions are to different companies, rather than to self-employment or unemployment. By contrast, for workers at acquiring firms, we find no increase in the probability of job transitions.

For individuals that remain within target firms, earnings are relatively stable on average. However, individuals who move jobs after an M&A event suffer earnings losses immediately that continue to accumulate over time, resulting in earnings that are about 4 percent less on average after the M&A event. Given the relatively substantial loss for workers in this group, the next part of the paper decomposes the source of these earnings losses.

In particular, we follow a recent job displacement literature to decompose these losses in earnings into firm-specific components and match-specific components. To conceptualize our approach, we illustrate a model of firm-specific human capital following [Lazear \(2009\)](#). In this model, earnings are additively separable in worker effects, firm effects, and match effects. Firm effects arise due to differences in productivity across firms, while match effects arise due to a complementarity between the firm's production technology and the worker's skills. Given these components are additively separable, we can estimate them following [Card et al. \(2013\)](#), [Woodcock \(2015\)](#), and [Lachowska et al. \(2020\)](#).

We find that workers from target firms move to larger and more profitable firms with higher firm-specific wage premiums on average. Despite this, these workers still suffer earnings losses from moving to these firms. We find that while the firms target workers move to are larger on average, they are particularly poor matches for these workers. Our results are qualitatively similar to [Lachowska et al. \(2020\)](#) who find that match effects for displaced workers explain a large portion of the wage decline following a job loss, with firm effects playing a relatively minor role. One concern with the AKM and match effect estimation is that the effects are residuals which attempt to explain why a given firm pays more relative to other firms; in other words, there is potential for omitted variables driving the estimated match effects. The firm-level dataset allows us to confirm that these firms not only pay higher wages, but they are larger and more profitable, suggesting that the firm effect is capturing something real about firm quality.

To explore potential sources of lost match effects for job movers, we conduct heterogeneity analyses based on the type of job separations and worker characteristics. In particular, the model predicts that workers with high tenure at a firm continue to remain at the firm due to high match effects. Therefore, we should see relatively larger losses for these workers. We find that the declines are completely driven by workers with longer tenure. Individuals with less tenure are not impacted by the M&A-induced job transition. Furthermore, we find that the earnings losses are concentrated among workers who move to other firms involuntarily.³

While we interpret these results as the loss of match effects driven by worker-firm complementaries, an alternative interpretation is that the M&A event allows firms to displace overpaid workers. For example, [Lazear \(1979\)](#) illustrates a model in which workers are initially paid below their marginal product when they start at a firm, but paid above their marginal product after they have been employed by the same firm for a long duration. When a firm goes through an M&A event, this can then be used as an opportunity to fire workers whose wage is currently set above their marginal product. Similarly, [Shleifer and Summers \(1988\)](#) argue that takeovers allow firms to renege on implicit contracts. However, both of these channels would imply that the firms should see increases in profitability following the M&A event, contrary to our firm-level evidence.

This paper contributes to several distinct literatures. Most directly, we contribute to a literature on the impacts of M&As on the labor market ([Brown and Medoff, 1988](#); [Siegel and Simons, 2010](#)). Much of the recent work in this area has focused on particular mechanisms. For example, both [Prager and Schmitt \(2021\)](#) and [Arnold \(2021\)](#) study how M&A events that lead to large changes in labor market concentration affect worker earnings. In these papers, the goal of the analysis is to argue that other changes, such as shifts in productivity or product market power, are stable

³For a subset of our data, we observe whether an individual moves voluntarily or involuntarily following a job transition. For the non-missing observations, about 75 percent of job transitions after an M&A event are involuntary.

across M&A events that differentially impact labor market concentration. In this paper, we seek to directly estimate these impacts using the firm-level balance-sheet data. Additionally, the sample of M&A events in this paper is quite different. In both our analysis sample and the whole sample of M&A events, we find that shifts in labor market concentration are relatively rare mainly because most M&A events in our setting involve partial acquisitions that happen across different labor markets. However, we find these M&A events still have important impacts on job transitions that translate to changes in worker outcomes.

Relative to previous work documenting that M&A events create significant displacements of workers from target firms with higher wage premiums and reallocation to firms with lower wage premiums (He and le Maire 2022; Lagaras forthcoming), our work shows that many workers from target firms are displaced after an M&A event, and move to firms with higher wage premiums but with worse match qualities. While finding different mechanisms, our study complements Lagaras (forthcoming) by additionally using firm balance sheet data and showing that job movers do not move to less productive firms on average after M&As. This helps us rule out alternative mechanisms, such as other important differences between new firms and old firms, explaining the decline in worker earnings. Our analysis also complements the study by He and le Maire (2022), which focuses on the role of replacing managers in target firms. Theoretically, high-wage managers may be replaced after M&A events (Shleifer and Summers, 1988) leading to wage declines in target firms. While we cannot distinguish managers from other workers in our data, job displacements at targets may have been led by changes in management. Moreover, our work complements recent studies (Dessaint et al. 2017; Ouimet and Zarutskie 2020; Tate and Yang 2023) documenting human-capital considerations and labor restructuring as important drivers of M&As. While these studies show that acquirers engage in M&As to hire more (productive) workers, we find that most workers at targets move to non-acquiring firms after the event, implying that acquirers engage in M&As to purchase particular assets or intellectual properties of target firms, rather than to poach productive workers.

Second, there is a large literature in corporate finance and industrial organizations that studies how M&As affect firm performance, finding mixed empirical results. For example, Braguinsky et al. (2015) report positive impacts on productivity in the Japanese cotton spinning industry, while Blonigen and Pierce (2016) show negative impacts on productivity in a sample of U.S. manufacturing mergers. Furthermore, Hoberg and Phillips (2010) finds improved long-term profitability of merging parties when the target and the acquirer share asset complementarities, while Schoar (2002) shows that acquirers' productivity may decrease through a shift in focus of management towards new segments at the expense of existing ones. Additionally, while Boucly et al. (2011) find that leveraged buyouts in France allow target firms to grow and become more profitable by relaxing

financial constraints, Malmendier et al. (2018) show that acquirers that win bidding contests suffer long-run losses relative to firms that lose the bidding contests. Declines in stock performance of acquiring firms have been attributed to potentially misaligned incentives, such as empire-building motives (Jensen, 1986) or CEO overconfidence (Malmendier and Tate, 2005). Our paper contributes to this literature by estimating the impact of M&As on a variety of firm-level outcomes and by finding results consistent with the set of studies reporting negative impacts of M&As on firm performance. We then use these firm-level outcomes to rule out alternative mechanisms, such as changes in firms' market power, behind the decline in worker earnings.

Lastly, our paper relates to a literature on how job transitions impact wages. In particular, a large literature studies the role of firm-specific and match-specific components to explain changes in displaced workers' wages (Lachowska et al. 2020; Schmieder et al. forthcoming). Much of the recent work leverages mass layoffs to identify impacts of job transitions on workers earnings. In this paper, we find that M&A events can lead to significant job transitions for workers from target firms, and that workers moving to new employers with a worse match quality could play an important role explaining the decline in their earnings after an M&A event.

This paper is organized as follows. Section 2 provides institutional details on M&A regulations in Canada. Section 3 describes our data and Section 4 describes our research design. Section 5 shows our main results and Section 6 discusses potential mechanisms behind our findings. Section 7 concludes.

2 Institutional Background

This section describes relevant institutional details about competition policy and labor regulation. Competition policy in Canada is administered by the Competition Bureau, an independent law enforcement agency. In 2009, a major reform instituted a two-step process for merger reviews, similar to the American process with notification thresholds, a waiting period, and a supplementary information request. The thresholds for a pre-merger notification requirement are set by the Competition Act. The two most relevant thresholds are the size of parties and the size of transaction. Both of these must be met to trigger a pre-merger notification.⁴ In our analysis sample, most M&A deals and involved parties are not large enough to trigger any of these thresholds.

⁴The parties together must have aggregate assets in Canada, or aggregate annual gross revenue from sales in, from or into Canada, in excess of 400 million Canadian dollars. The aggregate value of the assets in Canada to be acquired, or the aggregate annual gross revenue from sales in or from Canada generated from those assets, must be greater than 93 million Canadian dollars. There is also a size of equity threshold that less frequently comes into play: the acquirer holds 20 percent of the shares of a public corporation, 35 percent of the share of a private corporation, or 35 percent of the profits or assets on dissolution of a non-corporate entity.

The parties may close the deal when the statutory waiting period (30 days) has expired, been waived, or is terminated; unless extended by the Commissioner of Competition through a Supplementary Information Request similar to a second request in the United States under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 (the HSR Act). Furthermore, all mergers are subject to challenge from the Commissioner for up to one year after closing unless an Advance Ruling Certificate has been issued.⁵ Reviewing a merger, the Commissioner considers multiple factors, such as concentration and barriers to entry, and may challenge the proposed merger if it substantially lessens competition. In general, most transactions that underwent pre-merger reviews resulted in no enforcement action.

Section 96 of the Competition Act explicitly lays out an “efficiencies defence” of mergers, which allows anti-competitive mergers to proceed if potential cost savings outweigh the losses to consumers through higher prices. In the United States and many other jurisdictions, efficiency can also be considered as a factor in antitrust decisions for mergers but is given less weight.⁶ Legislation currently before the Canadian Parliament would remove the efficiencies defence from the Competition Act. Our work, assessing how acquirers’ and targets’ performance changes after M&As through a retrospective study, provides evidence that can inform policy discussions about how to weigh potential efficiency gains from M&A activities.

The Canadian and the U.S. labor markets share many similarities. Labor regulation is the jurisdiction of the provinces for most industries, but unemployment insurance is national through the Canada-wide Employment Insurance program. Measures of employment protection from the OECD show Canada close to the U.S. with much lower levels of protection from dismissals than European countries ([OECD, 2020](#)). Dismissing a worker requires several weeks of advance notice to the worker and mandatory severance depending on years of service. Non-compete clauses have recently been banned in certain provinces, but were generally unenforceable even before the explicit banning ([Hanson and Cohen, 2012](#)). Therefore, non-compete clauses are unlikely to be a substantial issue for worker transitions following M&As in our setting. One difference for labor markets in Canada is the degree of unionization. During our sample period, the overall coverage in the private sector by union contracts in Canada is about 18 percent on average, compared to 8 percent in the U.S.⁷ While the higher union coverage rates in Canada may render it more difficult to lay off workers in general, they may also present a source of inefficiency to be targeted by M&As.

⁵ An Advance Ruling Certificate notifies the parties that the Commissioner does not intend to make an application under section 92 of the Act which is akin to “early termination” in the U.S. under the HSR Act.

⁶ [Ware and Winter \(2016\)](#) assert (p. 366) for Canada that “...in no other jurisdiction in the world would a court accept evidence of substantial price effects from a merger and yet allow the merger.” A comparison of efficiency defences across many OECD countries is found in [OECD \(2013\)](#).

⁷ The source for the Canadian statistics is Statistics Canada, Table 14-10-0070-01, “Union Coverage by Industry.” The source of the U.S. statistics is Bureau of Labor Statistics, Series ID LUU0204906700, “Percent of Employed, Private Wage and Salary Workers Represented by Unions.”

3 Data

This section describes two datasets used for our analysis. First, we use the SDC Platinum database which contains information on M&A activities around the globe. Second, we use the Canadian Employer-Employee Dynamics Database, a matched employee-employer dataset that covers the universe of firms and workers in Canada from 2001 to 2017. To prevent disclosure of confidential information, Statistics Canada requires researchers to round estimates and observation counts.

3.1 SDC Platinum

The SDC Platinum database allows detailed search on M&A activities around the world, covering all corporate (public or private) transactions. This data set includes names of the parties, NAICS industry code, and other identifying information such as addresses and phone numbers. The dataset on M&A activities was merged with the firm-level data from the Canadian Employer-Employee Dynamics Database using all available identifying variables, such as firm names and addresses. The match rate is around 75 percent on average from 2001 to 2017.

3.2 Canadian Employer Employee Dynamics Database (CEEDD)

The Canadian Employer-Employee Dynamics Database draws information from both individual (T1) and corporate (T2) tax return records, merged with job-level information using T4 employee tax records (like a W-2 in the United States, with information on annual earnings) and Record of Employment (ROE) data (with information on work history), and with firm-level information from the National Accounts Longitudinal Micro-data File (NALMF). This database has rich information on the universe of firms and workers in Canada from 2001 to 2017.

The main firm-level outcome variables are employment, average payroll, total revenue, and profit margins. Employment is defined as the average number of employees reported on the NALMF. Average payroll is defined as the total wage bill divided by the number of employees. Profit margins are defined as total revenue minus total expenses, scaled by total revenue. Additionally, we look at realized capital gains and markups. We link ownership data with the firm-level data to compute realized capital gains by owners for a given firm in each year. The ownership data contains unique individual IDs of investors in private firms and their ownership rates. After merging individual tax returns data with the ownership data at the investor-level, we aggregate owners' realized capital gains of a particular firm in each year to compute total realized capital gains by these investors at the firm level. We define markup as the elasticity of output with respect to vari-

able costs as well as the variable costs share (De Loecker and Warzynski, 2012). For the elasticity of output with respect to variable costs, we use estimates from De Loecker et al. (2020) that allow for different elasticities across two-digit NAICS industry codes and years. Given the elasticity estimates, this allows us to estimate firm-level markups as the output elasticity multiplied by the inverse of the variable costs (total wage bills and material costs) share: $\hat{\theta}_{st} * \frac{Sales}{Costs\ of\ Goods}$.

At the worker level, the key outcome variable is annual earnings, aggregated across all employers for that worker in a given year. While we include earnings across all employers, we associate workers with the “dominant” employer (i.e., the employer from which the employee receives the highest pay in the year). We also use information on workers’ gender and age derived from the T1 income tax filing for creating a matched control group and for heterogeneity analyses.

4 Empirical Strategy

This section describes our empirical design and provides descriptive statistics on our matched sample. To estimate the effects of M&As on firm-level outcomes, we implement a matched difference-in-differences design by estimating a regression of the following form:

$$Y_{jt} = \sum_{k=-4}^5 \beta_k^{MA} \mathbb{1}(t_j = t^* + k) \times MA_j + \tau_t + \psi_j + u_{jt} \quad (1)$$

where Y_{jt} is an outcome variable for firm j at year t , MA_j is an indicator for an M&A firm, $\mathbb{1}(t_j = t^* + k)$ indicates an M&A event occurred k years in the past (or future) relative to the period of the M&A event t^* , τ_t are year fixed effects that vary by the year of the M&A event, ψ_j are firm fixed effects, and u_{jt} is an error term.⁸ To absorb any industry specific shock in a given year, we include 4-digit industry dummies interacted with year dummies as control variables. Furthermore, we include quartics in firm age to ensure that our results are not driven by differences in financial constraints of firms, although dropping these control variables does not qualitatively affect our results. The standard errors are clustered at the firm level.

To assess worker-level impacts, we estimate a similar matched difference-in-difference design of the following form:

⁸When workers must satisfy a tenure restriction to be included in the analysis sample, it is common to observe a hump-shaped pattern in earnings because workers with a stable job are likely on a positive earnings trajectory (Schmieder et al., forthcoming). Controlling for year fixed effects alone when pooling across multiple cohorts of treated and controls groups does not capture this hump-shaped pattern. Therefore, we include M&A event by year fixed effects in the estimation, which can control for this pattern of selection into the sample.

$$y_{it} = \sum_{k=-4}^5 \beta_k^{MA} \mathbb{1}(t_i = t^* + k) \times MA_i + \tau_t + \omega_i + \mu_{it} \quad (2)$$

where y_{it} is an outcome variable for incumbent worker i at year t , ω_i are worker fixed effects, and all other variables are defined as in Equation (1). The standard errors are two-way clustered at the worker-by-firm level.⁹

The key identifying assumption is that outcomes for M&A firms and workers and for control firms and workers would have trended similarly in the absence of the M&A event. This assumption may be strong since M&As are the result of firms' endogenous decisions. For example, acquiring firms may target firms that will be profitable in the future, whose earnings may grow even absent the merger. By contrast, acquirers may target mismanaged and underperforming businesses whose employment and earnings would fall regardless of a merger. One way to determine the direction of the potential bias is by comparing outcomes for M&A firms and workers to the control firms and workers in the years prior to the M&A event. Parallel pre-trends in firm-level and worker-level outcomes help alleviate the aforementioned concerns.

While verifying common pre-trends is reassuring for a causal interpretation, contemporaneous shocks that occur with M&A events could still bias our results. For example, there could be a negative demand shock that hits a particular market and causes both a decline in employment and an increase in merger activities as firms get purchased before they shut down. In this case, M&A activities are correlated with shocks that decrease labor demand. We can also have the opposite scenario; in fact, merger activities tend to be pro-cyclical in aggregate ([Rhodes-Kropf and Viswanathan, 2004](#)). We address this concern by also looking at M&As that are less likely to have been triggered by local economic conditions of the firm. Specifically, we consider the impact of national M&As that occur among domestic firms with multiple establishments across different commuting zones. The intuition is that these changes in ownership are less likely to be driven by local economic conditions faced by the firms or workers (see Appendix B).

4.1 Matched Samples

During our sample period, the total number of M&A events is 1,679 per year on average within our data (see Figure 1). Before performing a matching procedure between M&A firms and potential control firms, we make the following restrictions. First, we require a firm to have at least 10 workers one year prior to the event. This choice focuses our sample on economically active firms

⁹Our results are robust to two-way clustering standard errors at the worker and the market (4-digit industry by commuting zone) level – see Appendix A.

with enough pre-period observations, and drops most small businesses that are not comparable to either acquiring or target firms. We then match each firm in the year prior to an M&A event to a control firm in the same province and 2-digit NAICS industry. A firm is a potential control firm for firm j if: (1) the firm is never involved in an M&A event during our sample period, and (2) the firm is in the same decile bin of average payroll and is in the same 15-quantile bins in total revenue and firm age in the year prior to the M&A event of firm j .¹⁰ Of all the possible counterfactual firms for a given M&A firm, we choose the firm with the closest propensity score, which is estimated by predicting treatment using a linear probability model with quadratics in average payroll, total revenue, and firm age in year $[t-1]$. This matching strategy is similar to a number of recent papers implementing a dynamic difference-in-differences research design (Goldschmidt and Schmieder, 2017; Smith et al., 2019; Arnold, 2021). The matching strategy finds a counterfactual firm in about 35 percent of all cases.

Choosing one counterfactual control firm per M&A firm in a given year ensures that the treated and control groups are comparable on the matched variables. We construct an unbalanced panel of firms which extends 4 years prior to and 5 years after the M&A event. M&A firms in our analysis sample are larger than those that fail to find a control group on average mainly because we drop firms with fewer than 10 employees. Therefore, the M&A deals in our analysis sample are meaningful and larger than an average M&A deal in Canada during the sample period. Furthermore, there exists a handful of large M&A firms that are not matched to control firms due to their sizes. We provide descriptive statistics on the sample of unmatched M&A firms in Appendix A.

Matching on size, province, and sector finds treatment-control pairs that would plausibly exhibit common trends in the absence of an M&A activity. While we do not explicitly match firms based on a market (defined at the 4-digit NAICS by commuting zone level), it is possible that firms are matched within the same market. This is a potential concern if M&As have impacts on local labor markets through increased concentration. If M&As have negative effects on control firms in the same industry and commuting zone, then the impact of M&As on firms will be biased towards zero. However, these potential spillover effects are minimal in our setting given that the number of M&A deals within the same market is small and the number of competitors in a given market is so large that most M&A deals do not contribute to a meaningful increase in concentration (see Appendix B). Nevertheless, to minimize this concern, we do a robustness check by matching firms within the same province, but in different markets, and find similar results to our main results without this restriction (Appendix A).

To construct the worker-level sample, we extract all workers who were continuously employed

¹⁰While this specification yields the best parallel pre-trends on key outcomes, which are important for our identification strategy, our main results remain qualitatively similar when we use different bin sizes or other related firm characteristics for matching. Results based on other variation in matching can be provided upon request.

in the matched M&A firms during the pre-event period. This tenure restriction is chosen to obtain a sample of workers with attachment to the M&A firms and is similar to tenure restrictions used in the mass layoff literature (Jacobson et al., 1993; von Wachter et al., 2009; Lachowska et al., 2020). Additionally, we restrict workers to have at least 4,000 CAD in annual earnings to ensure that we study workers with stable income and attached to their firms (Card et al., 2013; Sorkin, 2018). Since we do not observe work hours in our data, we make these restrictions so that we mostly focus on full-time workers. For each worker in a treated firm, we choose a worker in any of the matched control firms in the same sector, province, worker age (five-year) bin and gender. If more than one match is found, we choose the worker with the closest propensity score to the treated worker, where the propensity score is estimated by predicting treatment using a linear probability model with a quadratic in worker age. In total, a counterfactual worker is found in 71 percent of the matched treated-control firm pairs, and 57 percent of workers at treated firms are matched to control workers in our sample. To compute earnings in the worker-level data, we aggregate annual earnings across all employers if a worker is employed at more than one firm in a given year.

Since we use a matched control group that is never treated, the specifications above do not suffer from the identification issues that arise in conventional event-study designs (Borusyak et al., 2021) or difference-in-differences designs with staggered timing (Goodman-Bacon, 2021). Identification here comes solely from differences in always-treated and never-treated units over time, not from units coming in and out of treatment.

4.2 Descriptive Statistics

We close this section with descriptive statistics of our analysis sample. Panel A of Table 1 shows the averages for key variables across firms, comparing M&A firms to the set of matched control firms one year before the event. On average, M&A firms are a bit larger than their control firms, in terms of total revenue, expenses, and employment. However, for average payrolls, leverage ratio, and markup, M&A firms are comparable to their control firms, suggesting that firms that go through M&As and firms that never get involved in M&As are comparable with regards to their average employee compensation and financing structure prior to the event. Importantly, as we show in Section 5, M&A firms and their control firms share parallel pre-trends on these variables, implying that they exhibited similar patterns in terms of sales, profitability, employment, and average payrolls, prior to the M&A event. The dominant sectors are manufacturing, wholesale, and services; together these sectors make up almost 70 percent of our firm sample.

Panel C of Table 1 shows average worker characteristics in our analysis sample one year before the event. We distinguish between workers at acquiring firms and workers at target firms. Annual

earnings are 70,046 CAD and 70,625 CAD among workers at acquiring firms and target firms, respectively. Annual earnings for workers are roughly 71,000 CAD to 72,000 CAD among workers at control firms on average prior to the M&A event. Therefore, annual earnings of treated workers are comparable to those of control workers on average. The difference between average payrolls in Panel A and annual earnings in Panel C arises because not all workers from treated firms are matched to workers at control firms, as we impose restrictions on tenure, worker age, and gender for matching. Hence, the average payroll at a given firm may not equal the average annual earnings of workers at a given firm in our matched sample. The age and gender compositions are similar for workers at both acquiring and target firms, compared to their matched workers in control firms.

5 Results

This section reports the results from the estimation of the difference-in-differences model in Section 4, and presents additional tests supporting the interpretations of the results.

5.1 Post-M&A Firm Size and Performance

Figure 2 plots estimates of β_k^{MA} from equation (1) across the main firm-level outcomes using our matched sample. Panel (a) shows that acquiring firms' and target firms' employment followed a similar pattern as those of their matched control firms before the M&A event. This pre-event stability is important evidence in support of our empirical strategy. While acquirers' employment significantly increased after the event, targets' employment substantially decreased after the event, compared to those of matched control firms. For Panel (b), the pre-event trends for average payroll are also similar between M&A firms and their control firms. While acquirers' average payroll stayed flat after the M&A event on average, targets' average payroll significantly decreased after the event, compared to control firms' average payroll.

Sales and profitability results are shown in Panels (c) and (d), which exhibit parallel pre-trends between M&A firms and their control firms. While acquiring firms' total revenue increased, their profit margins decreased significantly after the M&A event on average, relative to their control group. For target firms, total revenue shrank drastically, and their profit margins decreased on average after the event, except for the initial spike in the first year. The initial increase in profit margins for targets is likely mechanical, due to a larger saving in fixed costs from downsizing relative to the initial fall in sales at the event year. Additionally, we use two alternative measures of firm performance (return on assets and EBITDA per worker) and find decreases in these other measures for both targets and acquirers after M&As (see Appendix A).

Panel (e) shows similar pre-trends in realized capital gains for acquiring firms and target firms, relative to their matched control firms. While owners' realized capital gains at acquiring firms slightly decreased after M&As, those at target firms spiked significantly on the first year, as they sold a part of their shares through M&A transactions. Finally, Panel (f) depicts parallel trends in markups between M&A firms and control firms prior to the event, and markups remain relatively flat after the event.

To interpret the magnitude of these results, Table 2 presents the difference-in-differences estimates on these outcomes, separately for acquirers and for targets. Column (1) shows that acquiring firms' employment increased by 17.4 log points on average, relative to control firms, whereas target firms' employment decreased by 8.4 log points after the event. Column (2) shows that acquiring firms' average payroll did not change much, relative to control firms, whereas target firms' average payroll decreased by 2.8 log points after the event. Column (3) shows that acquiring firms experienced a 25.8 log points increase in total revenue, while target firms experienced a decrease of 51.1 log points in total revenue. Column (4) shows that acquiring firms' and target firms' profit margins decreased by 2 percentage points and 1 percentage points, respectively, on average relative to control firms after the event. Column (5) reports that the change in realized capital gains of owners at acquiring firms decreased by 14,001 CAD, while those of owners at target firms increased by 32,140 CAD on average after the event. These results suggest that the owners at target firms are net sellers of their shares in their own companies, while the owners at the acquiring firms are net buyers after the M&A event. Finally, Column (6) presents estimates suggesting that markups stayed roughly similar for both acquirers and targets after M&As.

Overall, these firm-level results show that acquirers expanded significantly, but became less profitable after M&As. In contrast, target firms shrank substantially, became less profitable, and their initial investors cashed out by selling a part of their shares after M&As. Note that we find qualitatively similar results on key outcomes, such as employment, revenue, and average payrolls, in levels, where we replace missing observations (for a small share of firms and workers that exit the sample after M&As) with zeros (Appendix A).

Figure 3 shows estimates across the main firm-level outcomes, where we combine targets and acquirers and compare their outcomes with those of their control firms before and after the M&A event.¹¹ Across these outcomes, M&A firms were in a similar trend prior to the event compared to their control firms. After M&As, changes in aggregate employment and average payrolls are close to zero. By contrast, we observe significant declines in total revenue and profit margins, while realized capital gains spike on the first year, entirely driven by initial owners at target firms (as

¹¹We repeat the same analysis by adding previously missing firms in target-acquirer pairs (mostly acquirers that were not matched to control firms) to our main analysis sample for this aggregate analysis, so that we can comprehensively look at the overall impacts of M&As on both targets and acquires combined (see Appendix A).

shown in Panel (e) of Figure 2). Finally, we observe no change in markups after M&As.

Table 3 shows that employment and average payrolls do not change much for targets and acquirers combined. In contrast, revenue and profit margins decrease by 27.2 log points and 1 percentage points, respectively. Finally, realized capital gains increased by 24,156 CAD, without much effects on markups. Therefore, the main aggregate-level changes are declines in total revenue and profit margins, without much changes in employment or average payroll. We next turn to worker-level data to assess the impacts of M&As on worker earnings and job transitions.

5.2 Post-M&A Worker-level Earnings and Job Transitions

Given the considerable turnover at target firms going through M&As, changes in average payroll may reflect changes in worker composition. For example, the decrease in firm-level average wages can be driven by either laying off unproductive workers or directly cutting the wages of existing workers or both. Therefore, we next turn to the worker-level data that allows us to flexibly control for composition by tracking the same workers over time.

Panel (a) of Figure 4 shows that annual earnings for workers at target firms trend similarly to those of their matched control workers in the years prior to the event, but fall significantly afterwards. By contrast, annual earnings of workers at acquiring firms trend similarly to those of their matched control workers and stayed flat after the event. Column (1) of Table 4 shows that workers at target firms experience a decline of 1.2 log points in annual earnings after the M&A event on average. This decline could be due to M&A workers moving to lower-paying firms or M&A firms reducing earnings for their incumbent workers. Column (2) shows that the annual earnings of workers at acquiring firms did not change much on average.

The drop in employment at target firms, as shown in Table 2, suggests that job transitions could explain a part of the decline in worker-level earnings. The reduction in employment could come primarily through decreased hiring, implying incumbent workers may be relatively unaffected. We first consider the impact of M&As on the probability of worker transitions from a job. This transition could be to another firm or to non- or self-employment. In our data, most of the workers who leave their original employers do so involuntarily, but find a job afterwards.¹² Panel (b) of Figure 4 plots the estimates of equation (2) with an indicator for a job transition as the outcome. Column (2) of Table 4 reveals that one year after an M&A event, job transitions spike in target firms, with target workers 6.7 percentage points more likely to switch jobs relative to control

¹²Our data has an indicator for reasons for job separations, which can be broadly categorized into involuntary (i.e., shortage of work, takeovers, or retirement) or voluntary (i.e., personal or medical reasons). Roughly half of the observations in the relevant sample have these reasons as “unknown.” Among the other half, about three quarters of workers moving from target firms left involuntarily after the M&A event.

workers on average. Given this notable increase in job separations, part of the effects on earnings may be coming from departures from their employers rather than within-firm decreases in earnings. By contrast, we find that workers at acquiring firms do not experience any increased probability of a job transition relative to their control counterparts.

To study the impacts solely due to within-firm changes in compensation, Panel (c) of Figure 4 restricts the analysis to workers who stay in the same firm in the years following the event. We make this restriction for both M&A workers and control workers so that the treatment group does not mechanically contain workers who have more stable job histories. Column (3) of Table 4 shows that annual earnings for stayers in M&A firms do not change much at either target or acquiring firms on average in the years following the event. These results imply that the decline in earnings of workers at target firms is almost entirely driven by those who move to other firms after the M&A event. In the next section, we examine workers at target firms who move to other firms after the event, and explore potential mechanisms behind their earnings responses.

6 Potential Mechanisms and Economic Interpretations

In this section, we discuss and empirically test potential mechanisms behind the responses of worker-level earnings following M&As. In principle, both increased labor-market power and increased product-market power have the potential to impact worker earnings. For example, Prager and Schmitt (2021) and Arnold (2021) study how M&As that generate large shifts in concentration generate market-level declines in earnings. Similarly, in theory, shifts in product-market power could impact earnings through two channels. First, if product-market power increases, firms may cut quantity in order to increase price. A decrease in labor demand in an industry may therefore lower wages. However, in models of rent-sharing, increases in product-market power will increase wages for workers in merging firms.¹³

In our setting, we find limited evidence for these channels. In particular, it is important to note that most of the M&A events (roughly 80 percent) are partial acquisitions, implying the two firms do not completely consolidate after the event.¹⁴ Second, we find declines in profit margins for both target and acquiring firms. This decline in profitability is inconsistent with M&As increasing market power in either the labor market or product market on average. In Appendix B, we perform

¹³Kroft et al. (2020) study a setting in which both the labor market power and product market power exist to quantify markdowns of wages and markups of prices simultaneously.

¹⁴We find similar effects on target workers' earnings for both partial acquisitions and full mergers, suggesting a limited role for increased market power driving our findings (Appendix B). Moreover, given that a much larger share of M&A events involves partial acquisitions, there is a limited possibility of large increases in market power after the event.

a variety of heterogeneity analyses to further support this claim. For example, we do not find larger declines in target workers’ earnings when an M&A event happens within the same labor market or in the markets with a high initial level of concentration or in non-tradable sectors or in within-industry (horizontal) M&As. The overall takeaway from these results is that we find declines in worker earnings even in M&A events that are unlikely to have any impact on labor or product market power, such as partial acquisitions between firms in different locations or industries.

Given these results, we focus on workers whose earnings are directly impacted by M&As: job movers from target firms. We first discuss a model of job transitions that helps us decompose changes due to firm-specific and match-specific components. We find evidence consistent with a decline in match effects driving the post-M&A wage losses for workers in target firms.

6.1 Conceptual Framework: Impact of M&As on Job Transitions

As shown in Section 5, the decline in earnings of workers at target firms is almost entirely driven by those who move to other firms after the M&A event. Since three quarters of these workers leave their firms involuntarily, we follow the job displacement literature to decompose the decline in earnings of job movers into (1) firm-specific wage premiums (employer fixed effects) and (2) match-specific premiums (match effects) (Lachowska et al., 2020).

To set up this decomposition, we first plot the outcomes for job movers from target firms. These are the individuals for whom we find significant declines in earnings. Therefore, from now on, we will focus on job movers from target firms. Panel (a) of Figure 5 shows annual earnings of workers at target firms who move to other firms after the M&A event. Relative to their control workers (who may or may not move to other firms after the event), job movers from target firms show parallel trends in their earnings prior to the event, but show a significant drop one year after the M&A event. The drop in earnings in subsequent years comes both from workers who had already left target firms and from workers who leave two or more years after the event. Panel (b) shows that roughly a half of these workers move to other firms one year after the M&A event, with an elevated rate of job transitions in the following years. Panel (c) separates these movers into those who move to acquiring firms and to completely different firms, and show that while both types of workers experience a decline in earnings, workers who move to completely different firms experience a larger decrease in their earnings. Table 5 shows that workers who move from target firms experience 4.1 log points decrease in earnings on average relative to their control workers. Next, we decompose this decline in earnings of job movers into firm-specific and match-specific components. To do so, we first introduce a conceptual model through which we interpret our estimation strategy.

6.1.1 Model of Job Transitions

In this section we illustrate a model of firm-specific human capital following Lazear (2009) to understand the impact of M&As on workers. In the model, each individual has skills A and B and the total output of individual i with skills A_i and B_i at firm j is given by:

$$y_{ij} = \phi_j + \lambda_j \cdot A_i + (1 - \lambda_j) \cdot B_i \quad (3)$$

where $\lambda_j \in \{0, 1\}$. Allowing for two skills only is for notational convenience, but does not impact any conclusions in this section. Firms are differentiated by λ_j and ϕ_j in this model. Firms with high λ_j value the ability A_i more than the ability B_i . Therefore, individuals with high A_i would be well-matched with firms with high λ_j , and not as well matched to firms with low λ_j . Firms with high ϕ_j are generally more productive and therefore have higher outputs regardless of the type of the worker.

In the first period, we assume each worker is matched to a firm. In this case, we will say u is the value of the outside option. Following Lazear (2009), we assume that the wage offered in period 1 (the initial match) is given by:

$$w_{ij}^1 = \gamma \cdot y_{ij} + (1 - \gamma) \cdot u \quad (4)$$

where γ denotes a bargaining parameter (assumed to be homogenous across firms). We assume this is the wage paid to new entrants that come from unemployment. Each period at the firm, the worker may match with new firms. For example, if the worker matches to firm k , then the worker's output at firm k in period 2 is given by:

$$y_{ik} = \phi_k + \lambda_k \cdot A_i + (1 - \lambda_k) \cdot B_i \quad (5)$$

Now, instead of u being the fallback option of the worker, the fallback option will be the maximum wage that can be paid at the other firm. For illustrative purposes, imagine $y_{ij} > y_{ik}$ implying the worker is more productive at firm j . In the model, Nash bargaining implies that any voluntary separation will be efficient. Therefore, in this case, the worker will remain at firm j and the wage will be equal to:

$$w_{ij}^2 = \gamma \cdot y_{ij} + (1 - \gamma) \cdot y_{ik} \quad (6)$$

We assume that wages in following periods will remain the same, unless the worker is matched

to a firm l such that $y_{il} > y_{ij}$. In this case, the worker has found a better outside option than previously, and will use this to bargain for a higher wage.

In this model, an individual worker's output can be decomposed into a firm component, a worker component, and a match effect. Let $\bar{\lambda}$ be the average value of λ across all firms. Output for worker i at firm j at time t can be written as:

$$y_{ijt} = \underbrace{\phi_{j(t)}}_{\text{Firm Effect}} + \underbrace{\bar{\lambda} \cdot A_i + (1 - \bar{\lambda}) \cdot B_i}_{\text{Worker Effect}} + \underbrace{((\lambda_{j(t)} - \bar{\lambda})A_i + (\bar{\lambda} - \lambda_{j(t)}) \cdot B_i)}_{\text{Match Effect}}$$

The wage of the worker at time t is given by:

$$w_{ijt} = \gamma \cdot y_{ijt} + (1 - \gamma) \cdot v_{i(j,t)} \quad (7)$$

where the outside option $v_{i(j,t)}$ is specific to worker i and depends on how much time worker i has been employed at firm j . To simplify, we assume that this tenure effect is homogenous across workers and depends on how long the individual has been employed at the firm: $v_{i(j,t)} = \xi \cdot \tau_{ijt}$, where τ_{ijt} is the tenure of the worker at the firm and ξ is a constant. This implies that tenure effects are not person-firm specific, which would empirically make it possible to distinguish match effects from tenure effects using the approach developed in [Woodcock \(2015\)](#). Later, we discuss potential alternative interpretations of the results if we allow this assumption to be violated. With this assumption, however, we can write the wage of individual i in firm j at time t as:

$$w_{ijt} = \alpha_i + \psi_{j(t)} + m_{i,j(t)} + \beta X_{ijt} \quad (8)$$

where $\alpha_i = \gamma(\bar{\lambda} \cdot A_i + (1 - \bar{\lambda}) \cdot B_i)$ captures the worker effects, $\psi_{j(t)} = \gamma \cdot \phi_{j(t)}$ captures the firm effects, $m_{i,j(t)} = ((\lambda_{j(t)} - \bar{\lambda})A_i + (\bar{\lambda} - \lambda_{j(t)}) \cdot B_i)$ captures the match effects, and $\beta X_{ijt} = (1 - \gamma) \cdot \xi \cdot \tau_{ijt}$. In other words, the wage is a linear combination of individual effects, firm effects, and match effects.

6.1.2 Comparative Statics following M&As

Next, we consider how M&A events may impact wages in this model. To do so, we first note that wage changes for a worker between two periods is given by:

$$\Delta w_{ijt} = \Delta \alpha_i + \Delta \psi_{j(t)} + \Delta m_{i,j(t)} \quad (9)$$

Changes in $\psi_{j(t)}$: The parameter $\psi_{j(t)}$ captures firm-specific productivity that increases output of

all workers at the firm. A common justification for mergers or acquisitions is the possibility of increased profitability through synergies. For example, Braguinsky et al. (2015) finds evidence of increased productivity in the Japanese cotton spinning industry after acquisitions, while Blonigen and Pierce (2016) finds little evidence of increased productivity in manufacturing acquisitions in the United States. In this model, changes to technology can impact two parameters. First, an increase in overall productivity increases ϕ_j which would increase the wage of all workers within a firm. However, as discussed previously, it is also possible that M&A events lower profitability, which would imply a decrease in wages for all workers.

Second, we find that a large fraction of workers move to other firms after an M&A event. Again, the impact on worker productivity and wages would depend on whether they move to a higher ψ_j firm or low ψ_j firm, all else equal. Overall, changes in ψ_j impact all workers equally, which would be a key difference when turning to match effects.

Changes in $m_{i,j(t)}$: In this model, technology can be shifted through firm-specific productivity, ψ_j , or through the weights firms place on different skills, λ_j . Changes in λ_j have the potential to explain both firm separations and wage changes following an M&A event. In this model, workers move when they receive a better outside option. Therefore, individuals with long tenure would be particularly well matched to their firm, as they have not found an outside option of sufficient value to move. This implies that individuals with long tenure would be (1) more likely to be impacted negatively by changes in λ_j and (2) suffer larger productivity losses due to changes in λ_j . Therefore, a key distinction when turning to empirics is understanding how changes in wages are correlated with various aspects of an individual, such as her within-firm job tenure.¹⁵

To illustrate concretely how an acquisition could impact the match quality, we use an example of Toyota purchasing the self-driving unit of Lyft. After the acquisition, Lyft no longer has a team focused on the self-driving technology. Therefore, this acquisition could potentially be a shift in what type of skills are demanded for these types of workers. Lyft no longer requires workers whose skills are used for developing new self-driving technologies, but rather utilizing existing technologies to either improve or develop new services. Therefore, workers particularly interested in self-driving technology development may no longer be as well matched to Lyft after the acquisition event.

Model Summary: To summarize, we use a simple model of firm-specific human capital through which to interpret M&A events. Changes in technology can impact (1) firm productivity as well

¹⁵In this model, the individual person effect is due to the skills that an individual has, which are portable across employers. It is unclear why an M&A event would cause the level of these skills to change. Layoffs generated by M&As could lead to skill depreciation during periods of unemployment, as documented in Dinerstein et al. (2022). While this certainly could play a role for certain workers, we find impacts on workers who immediately transition to new jobs. Therefore, we find a limited role for skill depreciation in explaining the bulk of the findings.

as (2) firm-worker match quality. The key distinction in separating these two channels is through worker heterogeneity. Workers with longer tenure, and therefore with a higher match quality at a firm, would be more impacted due to changes in within-firm technology, as well as more negatively impacted by M&A-induced transitions across firms.

6.2 Firm Fixed Effects

First, we estimate an employer fixed effect for each firm. We then characterize a firm-specific wage premium of the old employer and of the new employer for each worker who undergoes a separation following an M&A event to understand the decline in earnings. Our implementation of the AKM model regresses log earnings observed for individual i working at firm j in year t (y_{ijt}) on employer-specific fixed effects which reflect firm characteristics that result in above- or below-average earnings for all workers at firm j ($\phi_{j(i,t)}$), individual fixed effects (ω_i), and year effects (τ_t):

$$y_{ijt} = \phi_{j(i,t)} + \omega_i + \tau_t + u_{ijt} \quad (10)$$

We can then assess the role played by employer fixed effects by estimating an analogue to equation (2), substituting in as the outcome variable the estimated firm fixed effects $\hat{\phi}_j$. The goal is to estimate the share of earnings losses following job transitions that can be attributed to a mover's reemployment by an employer with a different $\hat{\phi}_j$ than the employer from which the mover left. To validate the AKM estimation in our setting, we describe the results from testing the AKM assumptions in Appendix A.

Panel (d) of Figure 5 shows firm-specific wage premiums of workers at target firms who move to other firms after the M&A event. Relative to their control workers, movers from target firms show a significant increase in their firm fixed effects after the event, implying that on average, they move to employers with higher wage premiums. The increase in employer fixed effects in each post-M&A year comes both from workers who had already left target firms and from workers who leave in each subsequent year. Column (5) of Table 5 shows that workers who move from target firms experience 2.4 log points increase in firm-specific wage premiums after the event.

This suggests that workers are actually moving to firms with higher wage premiums after M&As. In practice, many factors may contribute to a firm having a higher wage premium. Therefore, to get into the black box of the AKM effects, we next take advantage of our firm balance sheet data to characterize the types of firms that target workers transition to after M&As.

Figure 6 shows average firm characteristics of target workers who move to other firms after the M&A event. Because of the tenure restriction, any change in pre-event firm characteristics is

driven by yearly changes in target firms' characteristics (i.e., changes in firm size). The change in firm characteristics in event year ($t = 0$) still reflects the change in target firms' characteristics, given that the first job transition happens one year after the event. Starting from one year after the event ($t = 1$), changes in firm characteristics reflect both changes in new employers where target workers moved, and changes in target firms of workers who had not left yet. Figure 6 shows that workers transition to firms with more employees, more sales, and higher profit margins. Table 6 presents the difference-in-differences results summarizing these impacts, finding workers from target firms move to firms with higher employment (32.6 log points), higher revenue (25.9 log points) and higher profit margins (1.2 percentage points).

To summarize, we find that workers who transition jobs after M&A events move to better firms along a number of dimensions. Despite this, their actual earnings are 4.1 log points lower on average. In the next section we directly estimate match effects to explore this channel further.

6.3 Match Effects

We estimate match effects following Lachowska et al. (2020) which implements a strategy based on Woodcock (2015). For each employee-employer spell, we first calculate the average of residualized log earnings (\bar{y}_{ij}) by removing calendar-year effects and regressing this adjusted log earnings on years of job tenure and worker-employer match indicators. We then compute within-match averages of the outcome after subtracting the contribution of job tenure. Then we estimate a model similar to the AKM model in equation (10), but using within-match averages as the dependent variable:

$$\bar{y}_{ij} = \alpha_i + \pi_{j(i,t)} + e_{ij} \quad (11)$$

where α_i , $\pi_{j(i,t)}$, and e_{ij} denote the worker fixed effects, employer fixed effects, and an error term independent of individual and firm fixed effects, respectively.

We then calculate the residuals from equation (11) and interpret them as worker-employer match effects averaged over the years we observe a given worker-employee match:

$$\hat{e}_{ij} = \bar{y}_{ij} - \hat{\alpha}_i - \hat{\pi}_{j(i,t)} \quad (12)$$

We proceed to take the estimated \hat{e}_{ij} terms relevant for the employee in each time period and use them as the dependent variable in equation (2) to see the contribution of match effects in explaining the earnings loss of target workers who move to other firms after the event.

Panel (e) of Figure 5 shows match effects of workers at target firms who move to other firms after the M&A event. Relative to their control workers, movers from target firms show a significant and large decrease in their match effects after the event, implying that on average, they move to employers with a lower match quality. The decrease in match effects in each post-M&A year comes both from workers who had already left target firms and from workers who leave in each subsequent year. Column (6) of Table 5 shows that workers who move from target firms experience 5.6 log points decrease in match effects after the event.

The decline in match effects may imply that these workers lose the benefit of a specific employee skill set that fits better with the previous employer. A possible explanation for worse match effects is that a significant share of workers moving from target firms switch their industries. Column (7) of Table 5 shows that the probability of switching industries for job movers increases by 5.7 percentage points on average after the M&A event. While the match effect is firm specific (rather than industry specific), the chance of having a worse match with the new employer increases when the employee moves to a completely different industry (possibly indicating a switch in occupation). Furthermore, the decrease in match effects could simply indicate that these workers lose an employer-specific contract that yields a better work environment or amenity.

Note that the decline in match effects is larger than the decline in actual earnings on average; however, the combined employer fixed effects and match effects is 3.2 log points, similar to the average decline of 4.1 log points in earnings of workers who leave target firms after the event.¹⁶ Therefore, we conclude that the decrease in match effects is the primary factor explaining the earnings losses for workers who leave target firms after the M&A event. Taken together, it appears that after target firms shrink through an M&A event, workers move to larger firms with higher wage premiums and take a modest wage cut in the medium run due to worse matches with new employers. Relative to previous work ([Lagaras forthcoming](#); [He and le Maire 2022](#)) documenting that M&A events create significant displacements of workers from target firms with higher wage premiums and reallocation to firms with lower wage premiums, we find that a significant share of workers' earnings losses after M&As stems primarily from a decline in match quality.

¹⁶The third potential factor is the direct effect of a job loss, which is the residual after accounting for time-invariant employer fixed effects and match effects. Direct effects encompass time-varying factors emanating from the worker, such as scarring driven by asymmetric information. Direct effects also include time-varying aspects within a specific employee-employer match, such as career progression through a firm's salary scale for a particular kind of worker. Estimates of the contribution of direct effects to wage losses in [Lachowska et al. \(2020\)](#) suggest that for the first couple of years after a separation, direct effects explain the majority of wage losses, but this effect shrinks by more than half over the span of five years after a separation.

6.4 Potential Drivers of Lost Match Effects

One limitation of the match effect estimation is that the match effect is a residual that attempts to explain why a given worker receives more or less pay at a given firm. Understanding what exactly drives match effects, however, can be opaque. Therefore, in this section we explore additional heterogeneity to consider settings in which the match effects may be more or less important. This allows us to provide additional evidence for the match effects channel, as well as to understand some of the potential drivers behind the decreased match effects.

Type of Transition: In the conceptual model, individuals voluntarily move when they receive a better outside offer. When they are involuntarily displaced, they suffer large losses due to the deterioration in their bargaining position. Therefore, we first explore heterogeneity by the type of transition. In our sample, roughly three quarters of these workers leave target firms involuntarily after the M&A event.¹⁷ If the match effect drives our results, we would expect the displaced workers to experience larger declines in earnings, and experience larger declines in match effects, relative to workers that voluntarily left their firm. Panel (a) of Figure 7 shows earnings of workers at target firms who move to other firms, separately for those who move voluntarily and for those who move involuntarily. Relative to their control workers, those who move involuntarily show a larger decline in earnings compared to those who move voluntarily after the event. Panel (c) shows that these workers move to firms with higher wage premiums on average. However, Panel (d) shows that those who move involuntarily experience a much larger decline in match effects, implying that those who got displaced are more likely to meet new employers with much worse match qualities.

Type of Worker: Next, we consider heterogeneity by the type of worker. In the conceptual model, individuals that remain at a firm for a long duration are well matched to that firm. Therefore, we would expect high tenure workers to be especially impacted by the displacement.¹⁸

Next, we study variation by worker tenure. To do so, we divided workers into two groups: those with 4 years of tenure (shorter tenure), and those with 7 or more years of tenure (longer tenure). In Figure 8, we find no impact on workers with 4 years of tenure. Individuals with 7 or more years of tenure see a large decline in their earnings after M&As. Turning to Panel (b), we find that individuals with long tenure also face elevated risks of job transitions relative to shorter-tenure workers. Everyone in both groups transition at some point in the post period, so the different levels indicate that the long-tenure workers are moving multiple times after the M&A events.

¹⁷The reason for separations is missing for about a half of the observations in our matched sample. We omit these individuals from this calculation, although the effects on earnings for these individuals are close to zero.

¹⁸Note that the estimation procedure takes into account a return-to-tenure that is common to all workers. Therefore, changes in match effects between low-tenure and high-tenure will not reflect a common return to tenure profile.

Decomposing the impacts into firm and match effects, there are two opposing forces for shorter-tenure workers. Shorter-tenure workers are moving to firms that pay higher wage premiums (about 5 log points on average). The fact that on the net these workers see no earnings gains can then be rationalized by a decrease in the match effects. While individuals with longer tenure are also moving to better firms in terms of AKM premiums (about 2 log points), the decline in match effects is substantial. This evidence is consistent with the conceptual model. Individuals with longer tenure would tend to have better match effects at existing firms. For this group we find substantial effects. For shorter-tenure workers, we find small negative, but statistically insignificant effects.¹⁹

An alternative way to measure quality is studying heterogeneity by within-firm earnings quintiles. This also incorporates differences in the type of jobs that individuals are performing. Intuitively, workers at the upper end of the earnings distribution may have skills that are more specific to the job. In hospital mergers, [Prager and Schmitt \(2021\)](#) finds impacts for nurses, but no impacts on unskilled workers such as cafeteria workers, whose skills were not tied to the hospital industry. Individuals higher in the wage distribution within the firm are likely to be higher skilled, and have potentially spent more time at the firm – both factors may increase the importance of match effects.

In Figure 9 we plot the impacts of M&As for individuals in the bottom quintile of the earnings distribution versus individuals in the top quintile of the earnings distribution.²⁰ For individuals in the top quintile, we see a much larger decline in earnings for job movers relative to job movers in the bottom quintile of the earnings distribution. These differences are not due to differences in the probability of job transitions. Furthermore, the differences are not due to top quintile workers moving to worse-paying firms on average. As shown in Panel (c) of Figure 9, both bottom quintile and top quintile workers are moving to firms with higher levels of firm fixed effects, and of similar magnitude. Therefore, what explains the difference is again the difference in match effects. Both experience a decline in match effects, but the decline is much larger for job movers who used to be top earners at target firms.

Alternative Interpretations: We have interpreted the match effect deriving from complementarities between worker skills and firm technology. However, there are alternative channels through which workers may be paid higher than expected at a given firm. For example, ? illustrates a model in which workers are initially paid below their marginal product when they start at a firm, but paid above their marginal product after they have been employed by the same firm for a long duration. This design of the contract solves a principal-agent problem in the employment relationship. When a firm goes through an M&A event, this can then be used as an opportunity to lay off workers

¹⁹In Appendix B we also present results based on other worker characteristics such as age. We conceptualize these alternative factors as other characteristics for which match quality may be more or less important.

²⁰For this analysis, we implement the matching strategy again to ensure control workers are in the same quintile of the earnings distribution within their firm as the target workers.

whose wage is currently set above their marginal product. Similarly, Shleifer and Summers (1988) argue that takeovers allow firms to renege on implicit contracts. If a worker is able to bargain for particularly good contracts within a firm, then this would be captured as a match effect in our estimation strategy.

These alternative channels are consistent with much of the worker-level results. The firm-level results, however, cannot be rationalized through this channel. If workers who are paid above their marginal product are laid off, then this suggests firm profits should rise after an M&A event. However, as discussed in Section 5, we find no evidence of increased profits. For both acquiring and target firms, we find declining profit margins following the M&A event. Therefore, alternative channels that rely on the separation of overpaid workers have a difficult time rationalizing the firm-level results.

Summary: To summarize, we find that the decrease in earnings in our setting is primarily driven by workers who transition jobs after an M&A event and move to different firms. While some M&A events may increase labor market or product market power, we find the number of such events is limited in our setting. Interestingly, workers who transition to new firms after M&A events move to firms that have better observable characteristics along a number of dimensions. These firms pay higher wage premiums and have higher revenue and profit margins. Despite this, workers who transition to these firms still experience decreases in earnings overall. We find this can be explained by a decrease in match effects for these workers. Our worker heterogeneity results are consistent with this story, finding that longer-tenure workers or those at the top of the within-firm earnings distribution suffer the largest earnings losses after an M&A event.

7 Conclusion

In this paper, we use linked employer-employee data to connect the impact of M&A events on firms to the impact on their employees. Previous research has looked at the financial impact on firms and the impact on workers' outcomes separately, but our paper is the first to link these impacts directly using our administrative data from tax records on both firms and workers. This allows us to look deeper into firm-based mechanisms than has been possible in previous research.

Using a matched difference-in-differences design, we compare firms that went through an M&A to matched control firms of the same size bins, province, and sector. Our results show that acquiring firms expand, but target firms shrink significantly. Furthermore, both targets and acquirers experience a significant decline in profit margins on average in the medium-run. This is consistent with parts of the literature that show negative impacts of M&A activities on firm perfor-

mance. For workers at target firms, we find that their earnings decline and job separations increase significantly after an M&A event.

Leveraging detailed firm balance sheet data, we investigate different potential mechanisms for the decline in workers' earnings at target firms. Since we see no meaningful change in labor market concentration after M&As, we conclude that a rise in market concentration is unlikely the key mechanism behind post-M&A wage declines. Furthermore, since profit margins decrease at both targets and acquirers, without any meaningful changes in markups, a rise in product market concentration ie unlikely to have driven the decline in worker earnings either. Instead, we find that the decrease in earnings of workers at targets is almost entirely driven by those who move to other firms after the M&A event. While these workers move to larger firms with higher wage premiums on average, their new employers turn out to be worse matches for these job movers, and they continue to experience lower earnings within five years after the M&A event.

Our findings provide important context for research investigating the labor market consequences of corporate M&As. Whichever mechanism is under investigation, care should be taken to account for how firm-level outcomes, especially their profitability and growth, as well as worker-level outcomes, may change after M&As. Our results also matter for public policy. In Canada, a review of the Competition Act targets both the impact of M&As on labor and how potential efficiency gains are weighed in merger decisions. Similar debates are happening in other countries, including the United States ([Naidu et al. 2018](#)). Our results provide new evidence of the negative impact of M&As on wages that add perspective to these policy debates, and our findings on post-M&A firm performance raise doubts about the efficiency arguments made in support of M&As.

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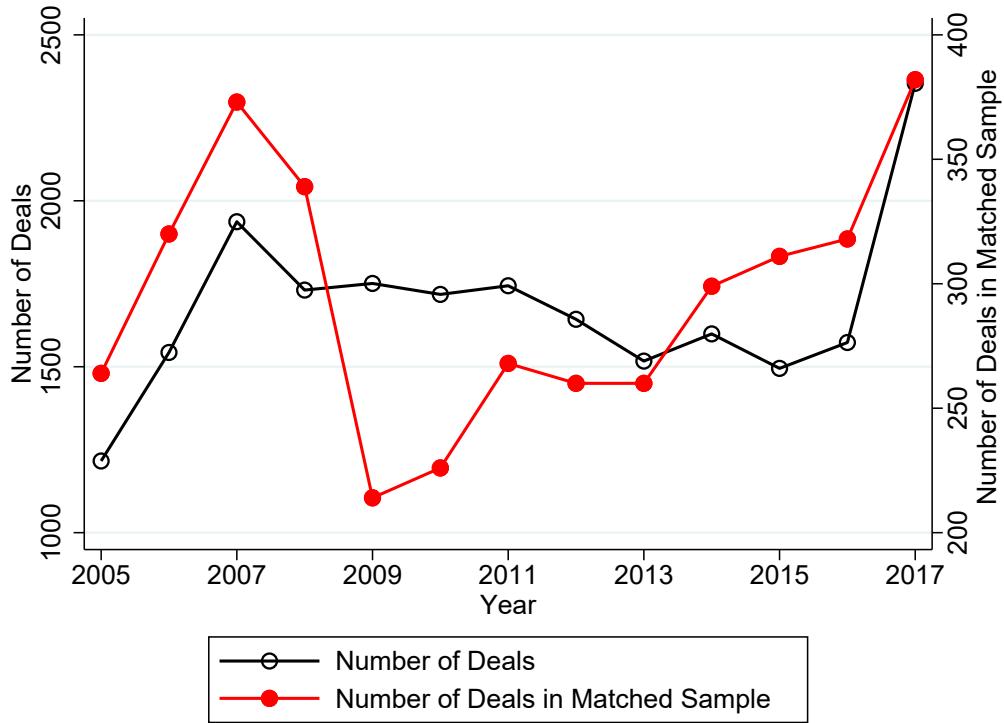
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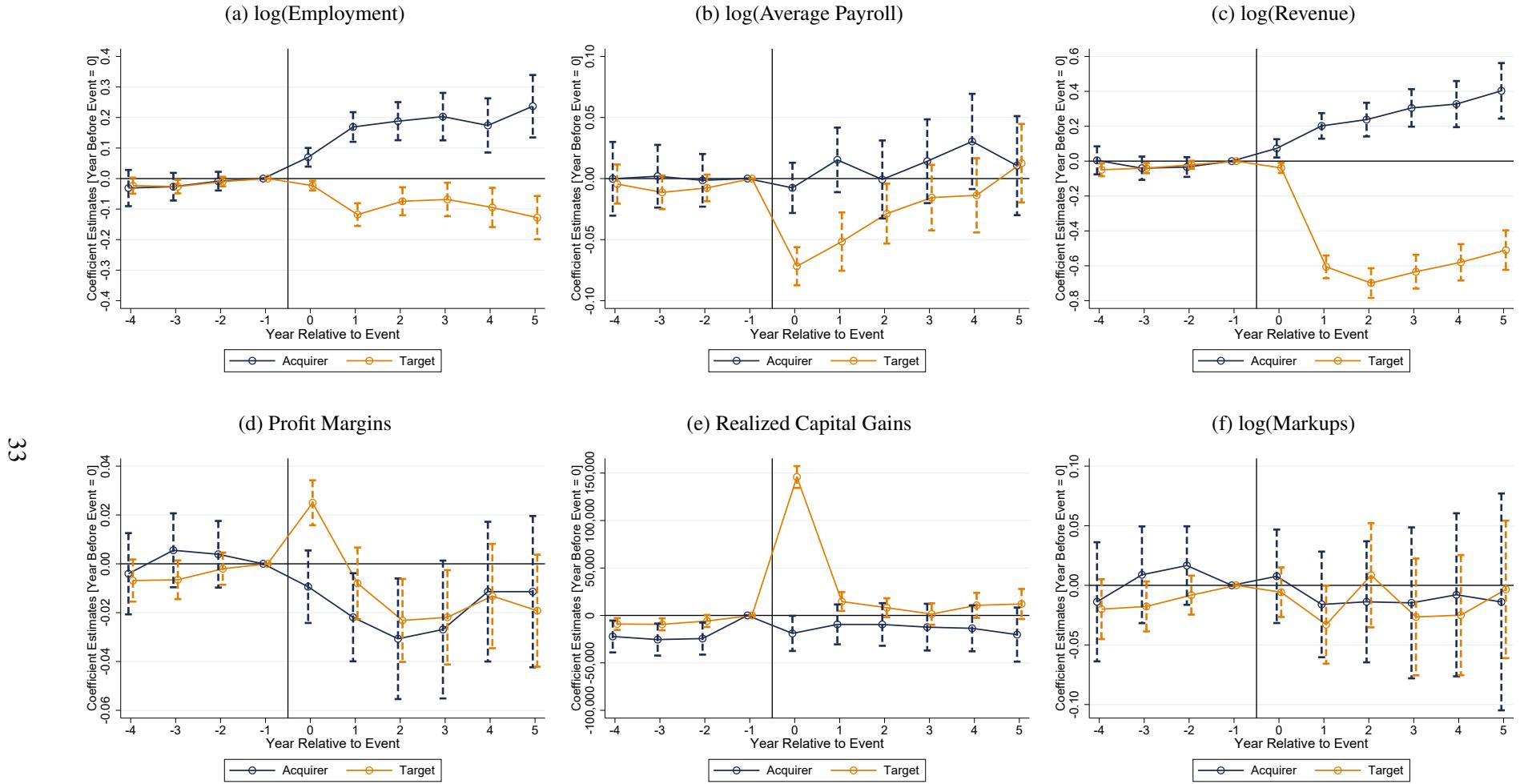
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Figure 1: Number of M&A Deals



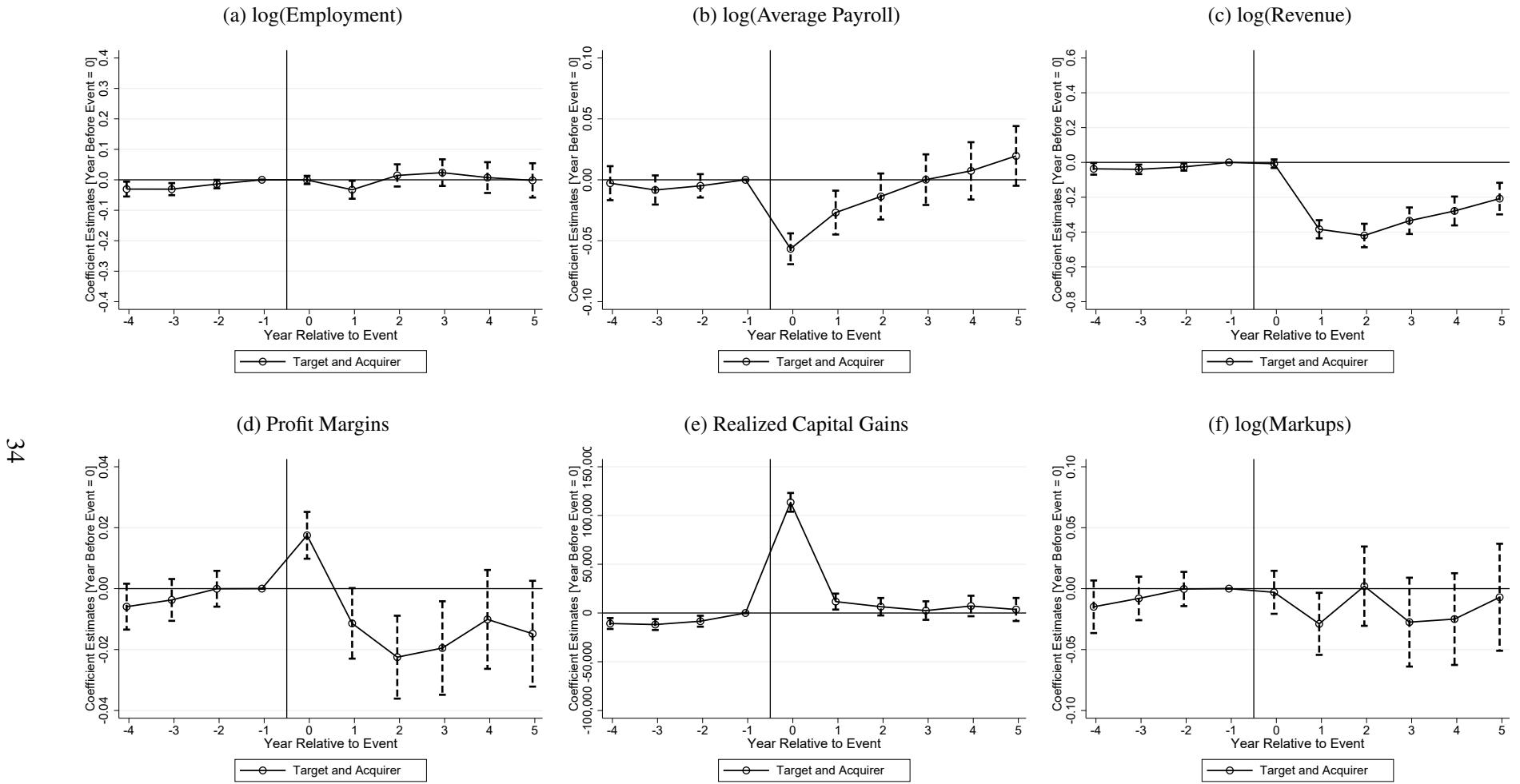
Notes: This figure plots the total number of completed M&A deals (black line) and the total number of completed M&A deals in the matched sample (red line) over time during our sample period. Section 3 describes how we construct our matched sample. Note that the total number of deals in the matched sample excludes multiple M&A deals for the same firm as we focus on the first M&A event for each firm during our sample period for the analysis.

Figure 2: Firm Size and Performance After M&As



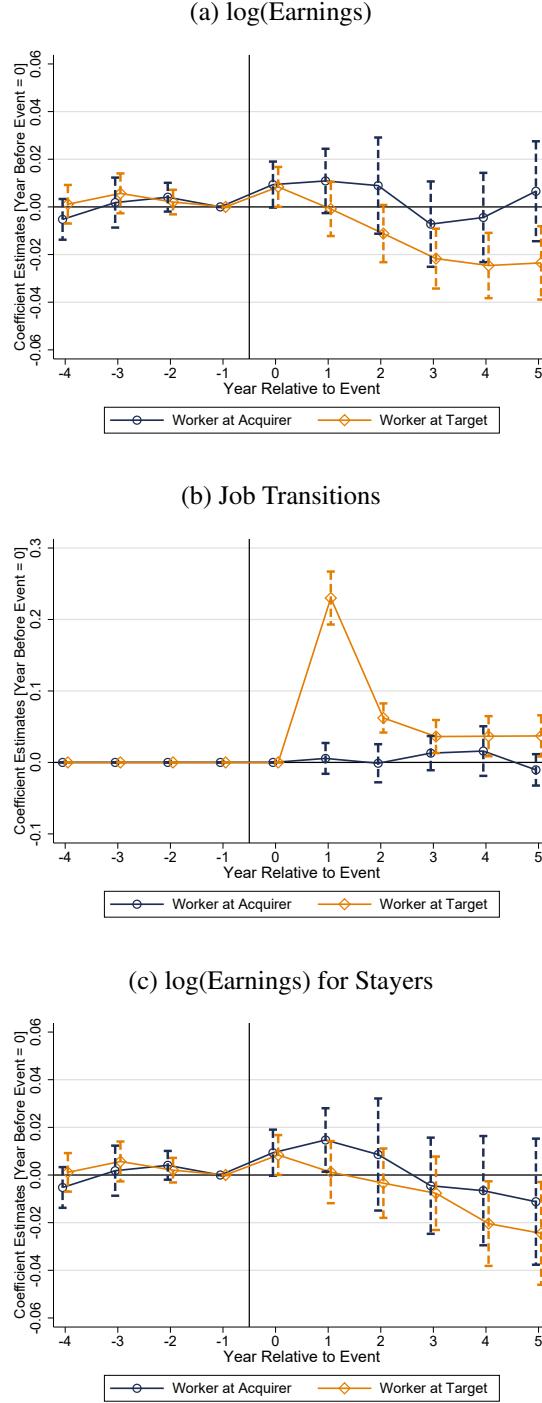
Notes: These figures display event-study estimates for the impact of M&As on firm-level outcomes, separately for acquiring firms (navy lines) and for target firms (orange lines). Panel (a) shows the estimates for log of employment. Panel (b) shows the estimates for log of average payroll. Panel (c) shows the estimates for log of total revenue. Panel (d) shows the estimates for profit margins. Panel (e) shows the estimates for owners' realized capital gains aggregated at the firm level. Panel (f) shows the estimates for log of markups. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure 3: Aggregate Firm Size and Performance After M&As



Notes: These figures display event-study estimates for the impact of M&As on aggregate firm-level (targets and acquirers combined) outcomes. Panel (a) shows the estimates for log of employment. Panel (b) shows the estimates for log of average payroll. Panel (c) shows the estimates for log of total revenue. Panel (d) shows the estimates for profit margins. Panel (e) shows the estimates for owners' realized capital gains aggregated at the firm level. Panel (f) shows the estimates for log of markups. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure 4: Worker Earnings and Job Transitions After M&As



Notes: These figures display event-study estimates for the impact of M&As on worker-level outcomes, separately for workers at acquiring firms (navy lines) and for workers at target firms (orange lines) in the matched sample. Panel (a) shows the estimates for log of total earnings for workers. Panel (b) shows the estimates for job transition probabilities. Panel (c) shows the estimates for log of total earnings for stayers. The dashed lines indicate 95 percent confidence intervals where the standard errors are two-way clustered at the worker and firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure 5: Workers Moving from Targets

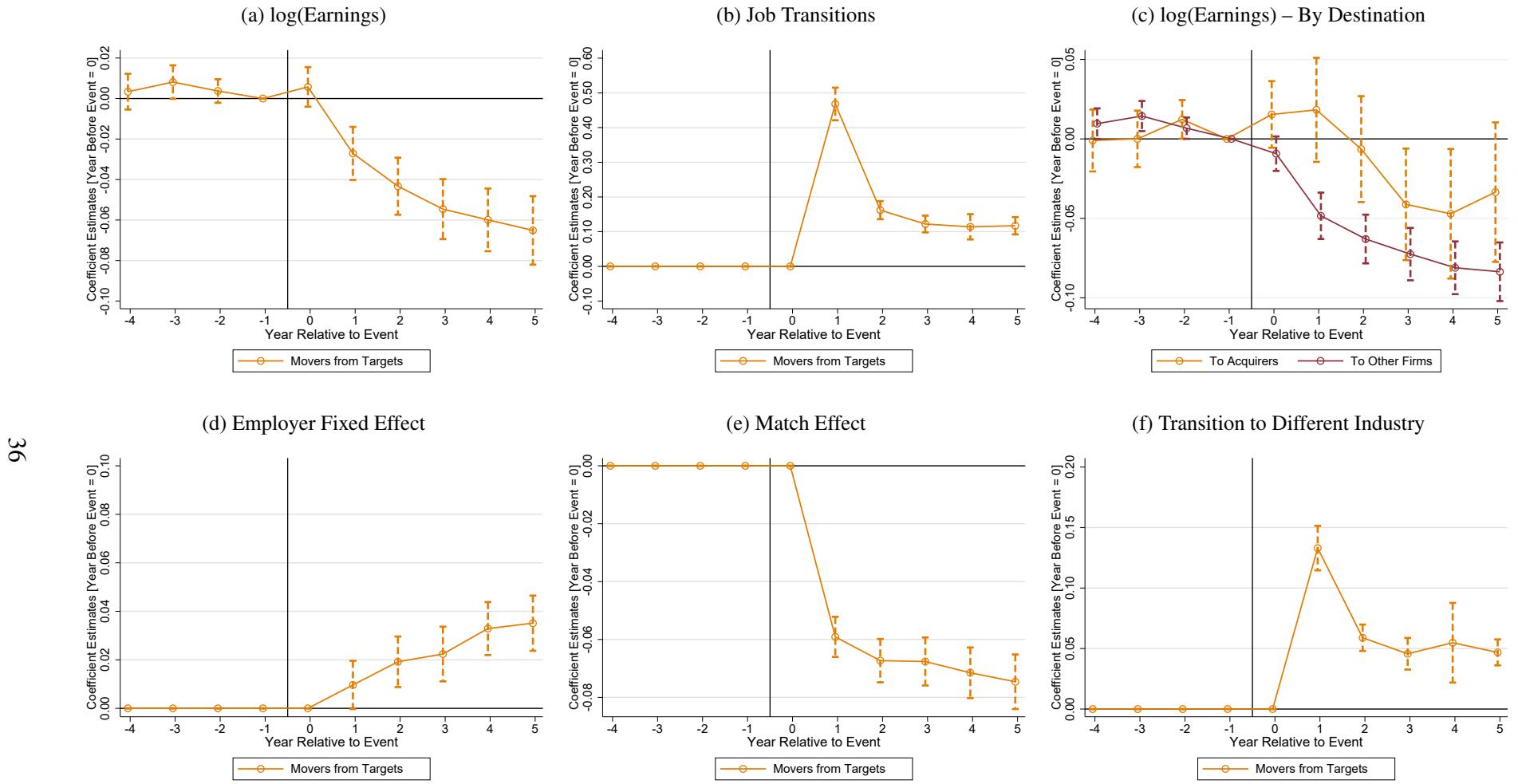
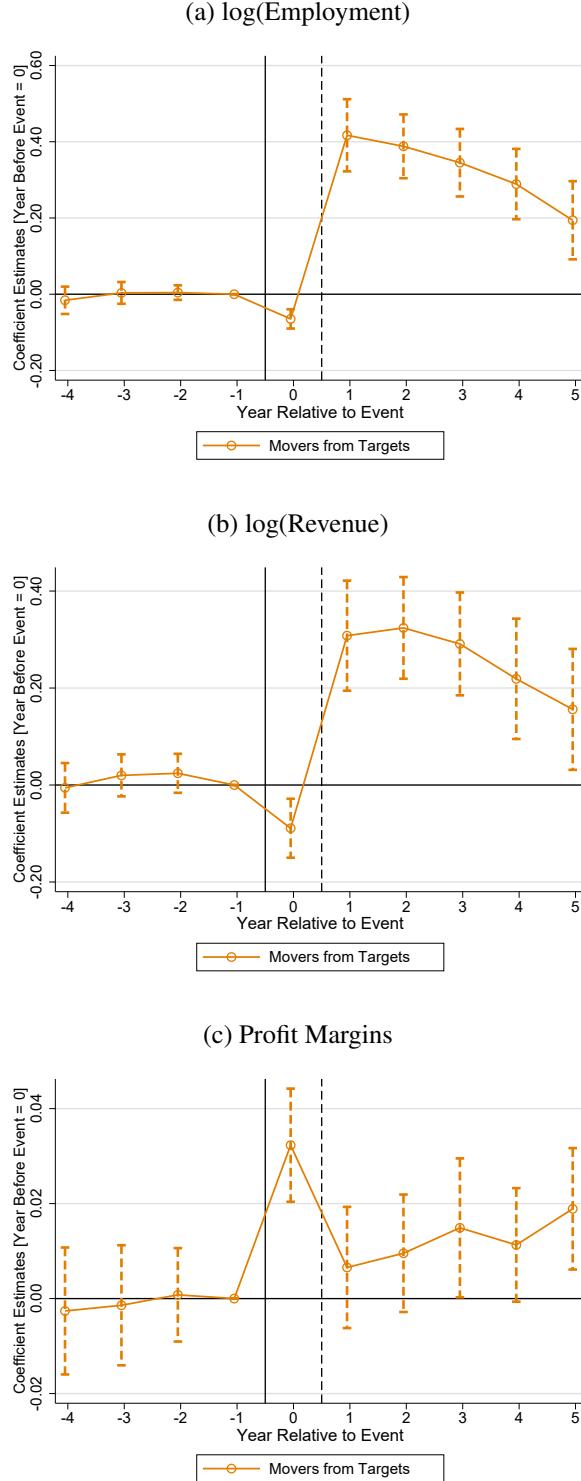
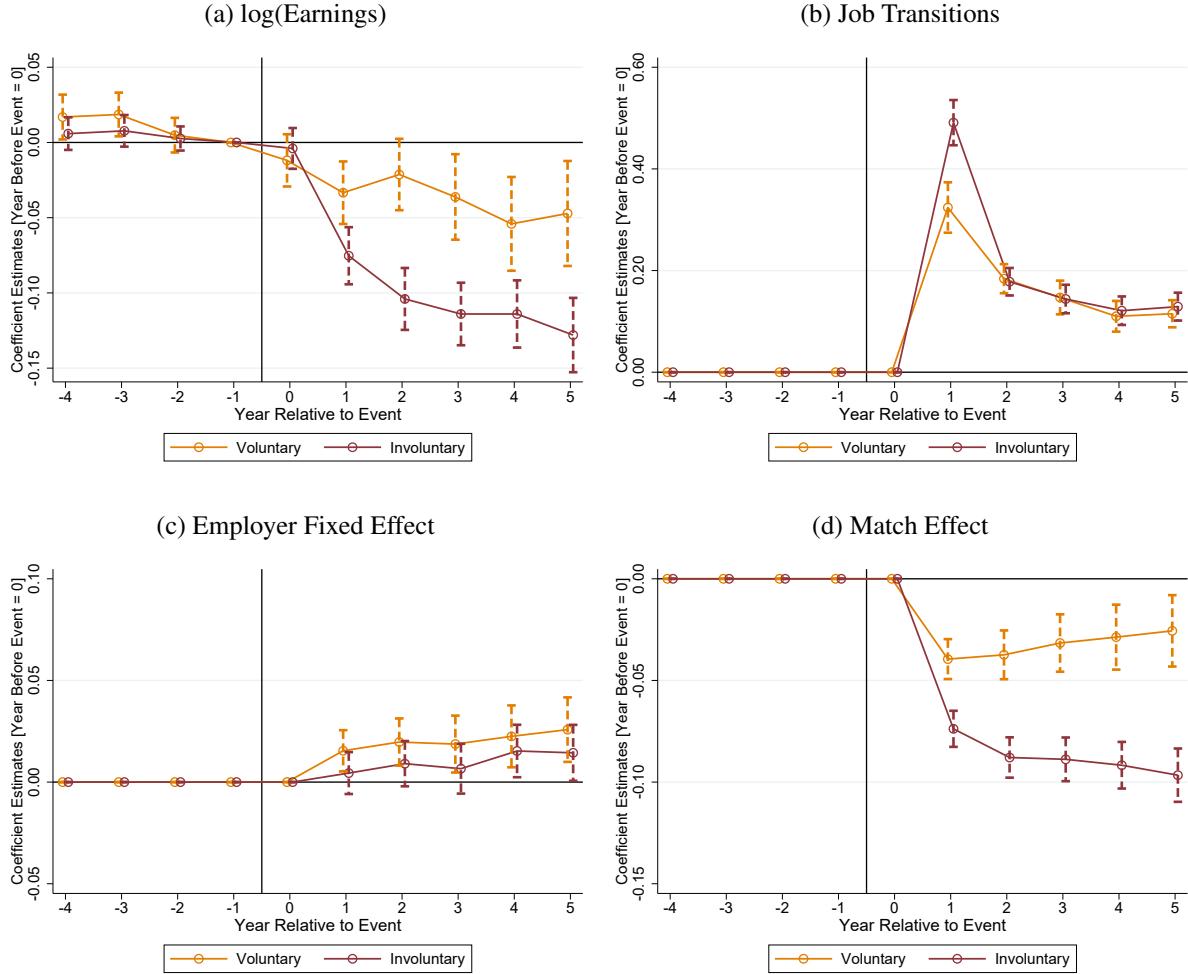


Figure 6: Firm Characteristics of Workers Moving from Targets



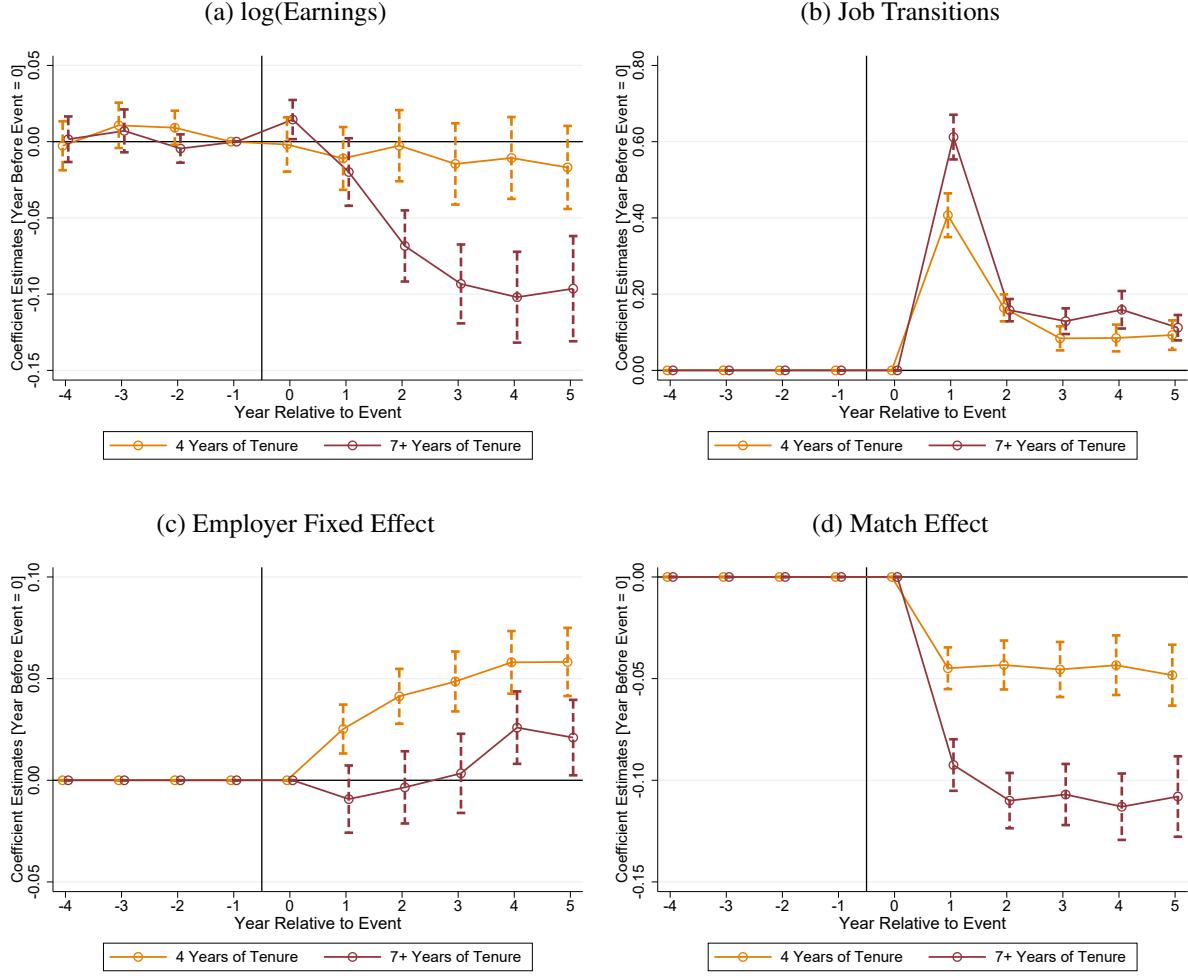
Notes: These figures display event-study estimates for average firm characteristics of workers moving from target firms, as described in Section 6. Panel (a) shows the estimates for $\log(\text{Employment})$. Panel (b) shows the estimates for $\log(\text{Revenue})$. Panel (c) shows the estimates for profit margins. The dashed lines indicate 95 percent confidence intervals where the standard errors are two-way clustered at the worker and firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure 7: Workers Moving From Targets – By Type of Job Separation



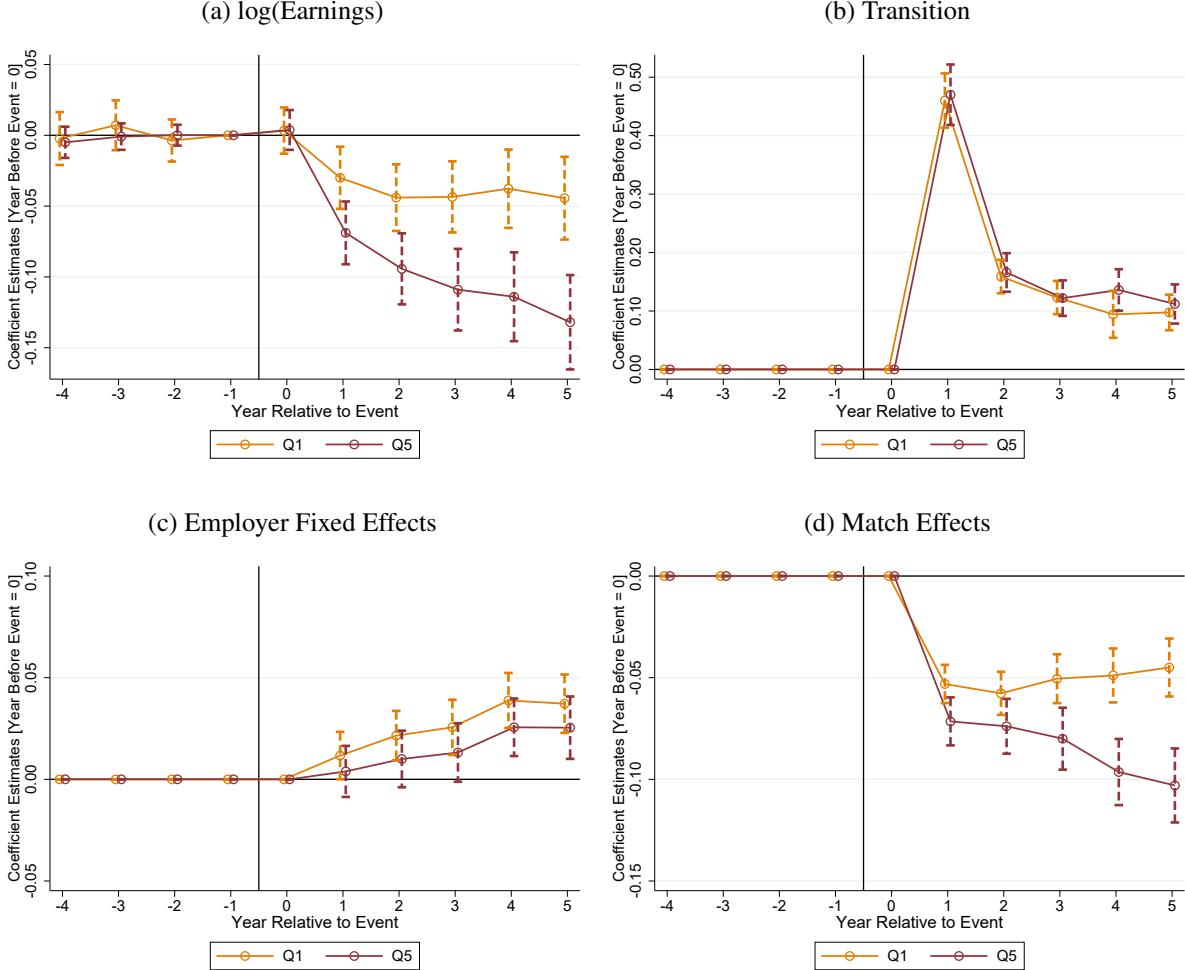
Notes: These figures display event-study estimates for the impact of M&As for workers moving from target firms, separately for voluntary separations and for involuntary separations. Panel (a) shows the estimates for log of total earnings. Panel (b) shows the estimates for job transition probabilities. Panel (c) shows the estimates for employer fixed effects. Panel (d) shows the estimates for worker-employer match effects. The dashed lines indicate 95 percent confidence intervals where the standard errors are two-way clustered at the worker and firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure 8: Workers Moving From Targets – By Worker Tenure



Notes: These figures display event-study estimates for the impact of M&As for workers moving from target firms, separately for workers with 4 years of tenure and for workers with 7 or more years of tenure by the event year. For this analysis, we implement the worker-level matching (described in Section 4) including workers' tenure one year prior to the event as an additional matching criteria so that treated workers and control workers have similar tenure prior to the event. Panel (a) shows the estimates for log of total earnings. Panel (b) shows the estimates for job transition probabilities. Panel (c) shows the estimates for employer fixed effects. Panel (d) shows the estimates for worker-employer match effects. The dashed lines indicate 95 percent confidence intervals where the standard errors are two-way clustered at the worker and firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure 9: Workers Moving From Targets – By Within-Firm Earnings Distribution



Notes: These figures display event-study estimates for the impact of M&As for workers moving from target firms, separately workers at the bottom quintile (Q1) of the within-firm earnings distribution and for workers at the top quintile (Q5) of the within-firm earnings distribution. For this analysis, we implement the worker-level matching (described in Section 4) including workers' quintile in the within-firm earnings distribution one year prior to the event as an additional matching criteria so that treated workers and control workers are in the same within-firm earnings quintile prior to the event. Panel (a) shows the estimates for log of total earnings. Panel (b) shows the estimates for job transition probabilities. Panel (c) shows the estimates for employer fixed effects. Panel (d) shows the estimates for worker-employer match effects. The dashed lines indicate 95 percent confidence intervals where the standard errors are two-way clustered at the worker and firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Table 1: Descriptive Statistics on Matched Sample of Firms and Workers

	(1) Acquirer	(2) Control	(3) Target	(4) Control
<i>Panel A: Firm Characteristics</i>				
Total Revenue (in millions)	62	47	34	29
Total Expenses (in millions)	58	44	32	28
Profit Margins	0.02	0.05	0.02	0.05
Number of Employees	187	125	106	87
Average Wage Bill	52,472	51,956	50,380	49,175
Leverage Ratio	0.65	0.67	0.7	0.65
Markups	1.88	1.68	1.88	1.68
Number of Firms	1,040	1,040	3,060	3,060
<i>Panel B: Sectors (Firms)</i>				
Construction	0.06	0.06	0.05	0.05
Manufacturing	0.23	0.23	0.26	0.26
Wholesale	0.15	0.15	0.14	0.14
Retail	0.03	0.03	0.05	0.05
Transportation	0.03	0.03	0.04	0.04
Information	0.04	0.04	0.04	0.04
Services	0.33	0.33	0.32	0.32
Other Sectors	0.13	0.13	0.11	0.11
<i>Panel C: Worker Characteristics</i>				
Total Earnings	70,046	71,386	70,625	72,317
Age	46.7	46.6	47.2	47.0
Female	0.33	0.33	0.31	0.31
Number of Workers	42,780	42,780	64,520	64,520
<i>Panel D: Sectors (Workers)</i>				
Construction	0.03	0.03	0.02	0.02
Manufacturing	0.49	0.49	0.5	0.5
Wholesale	0.16	0.16	0.1	0.1
Retail	0.01	0.01	0.03	0.03
Transportation	0.03	0.03	0.03	0.03
Information	0.02	0.02	0.02	0.02
Services	0.19	0.19	0.21	0.21
Other Sectors	0.05	0.05	0.08	0.08

Notes: This table reports descriptive statistics on the matched sample of firms and workers, measured in one year prior to the event. Panel A reports characteristics of firms such as total revenue, total expenses, profit margins, number of employees, average payroll, leverage ratio, and markups. Columns (1) and (3) report these statistics for acquiring firms and for target firms, respectively, and column (2) and (4) report these statistics for their respective matched control firms. Panel B reports the distribution of firms in the matched sample across 2-digit NAICS sectors. Panel C reports characteristics of workers such as total annual earnings, age, and gender. Column (1) and (3) report these statistics for workers at acquirers and for workers at targets, respectively, and column (2) and (4) report these statistics for their respective matched control workers. Panel D reports the distribution of workers in the matched sample across 2-digit NAICS sectors. Other sectors include (1) Agriculture, forestry, and fishing, (2) Mining, quarrying, and oil and gas extraction, (3) Utilities, (4) Real estate and rental and leasing, (5) Arts, entertainment and recreation, (6) Accommodation and food services, (7) Other services, and (8) Public administration.

Table 2: Difference-in-differences Estimates on Firm Outcomes

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Revenue)	(4) Profit Margins	(5) Realized Capital Gains	(6) log(Markups)
Target	-0.084*** (0.020)	-0.028*** (0.009)	-0.511*** (0.034)	-0.010* (0.006)	32,140*** (3,908)	-0.014 (0.017)
Mean at t = -1	3.97	10.69	16.35	0.01	36,236	0.42
Adj. R squared	0.872	0.796	0.819	0.357	0.281	0.755
Firm-Year Obs.	80,380	80,250	82,480	83,010	52,890	49,020
Acquirer	0.174*** (0.029)	0.010 (0.012)	0.258*** (0.041)	-0.019** (0.008)	-14,001* (8,213)	-0.010 (0.023)
Mean at t = -1	4.54	10.75	17.00	0.02	53,491	0.40
Adj. R squared	0.886	0.807	0.854	0.353	0.231	0.795
Firm-Year Obs.	27,990	27,920	28,100	28,290	14,270	16,300

Notes: This table reports the difference-in-differences estimates for the impacts of M&As on firm-level outcomes, separately for acquiring firms and for target firms in the matched sample. The dependent variables in column (1) to (6) are log of employment, log of average payrolls, log of total revenue, profit margins, owners' realized capital gains aggregated at the firm level, and log of markups. The standard errors are clustered at the firm level.

Table 3: Difference-in-differences Estimates on Aggregate Firm Outcomes

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Revenue)	(4) Profit Margins	(5) Realized Capital Gains	(6) log(Markups)
Target and Acquirer	0.002 (0.016)	-0.012 (0.007)	-0.272*** (0.027)	-0.010** (0.005)	24,156*** (3,258)	-0.015 (0.013)
Mean at t = -1	4.11	10.71	16.51	0.02	39,924	0.41
Adj. R squared	0.876	0.797	0.826	0.354	0.245	0.763
Firm-Year Obs.	108,990	108,770	111,210	111,920	75,180	65,930

Notes: This table reports the difference-in-differences estimates for the impacts of M&As on aggregate firm-level (targets and acquirers combined) outcomes in the matched sample. The dependent variables in column (1) to (6) are log of employment, log of average payrolls, log of total revenue, profit margins, owners' realized capital gains aggregated at the firm level, and log of markups. The standard errors are clustered at the firm level.

Table 4: Difference-in-differences Estimates on Worker Outcomes

	(1) log(Earnings)	(2) Transition	(3) log(Earnings) - Stayers
Workers at Target	-0.012** (0.005)	0.067*** (0.007)	-0.008 (0.006)
Mean at t = -1	11.01	0.00	11.01
Adj. R squared	0.739	0.187	0.797
Worker-Year Obs.	2,023,130	2,0264,40	1,581,880
Workers at Acquirer	0.004 (0.007)	0.004 (0.006)	0.002 (0.008)
Mean at t = -1	11.02	0.00	11.02
Adj. R squared	0.732	0.171	0.786
Worker-Year Obs.	1,343,370	1,345,330	1,084,030

Notes: This table reports the difference-in-differences estimates for the impacts of M&As on workers' outcomes, separately for those at acquiring firms and for those at target firms in the matched sample. The dependent variables in columns (1) and (2) are log of total earnings and the probability of job transitions. Column (3) reports the estimates on log of total earnings for firm stayers. The standard errors are two-way clustered at the worker and firm level.

Table 5: Workers Moving from Targets

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	log(Earnings) - By Destination				Changes in Firm Characteristics		
	log(Earnings)	Transition	To Acquirer	To Other Firms	Employer FE	Match Effect	To Diff Industry
Workers Moving from Targets	-0.041*** (0.005)	0.164*** (0.007)	-0.016 (0.013)	-0.060*** (0.006)	0.020*** (0.004)	-0.056*** (0.003)	0.057*** (0.004)
Mean at t = -1	10.99	0.00	10.96	10.95	0.23	0.05	0.00
Adj. R squared	0.733	0.252	0.765	0.731	0.891	0.201	0.154
Worker-Year Obs.	992,170	994,080	146,030	680,420	985,020	975,060	994,080

Notes: This table reports the difference-in-differences estimates for the impacts of M&As for workers moving from target firms. Columns (1) displays the estimates for log of total earnings. Column (2) displays the estimates for the job transition probabilities. Column (3) and Column (4) displays the estimates for log of total earnings based on workers' destination (to acquiring firms and to other firms respectively). A small share of workers also move within their original parent company; however, we do not observe any impact for these workers, so we do not report the estimates here. Column (5) displays the estimates for employer fixed effects. Column (6) displays the estimates for worker-employer match effects. Column (7) displays the estimates for the transition probability to a different industry. The standard errors are two-way clustered at the worker and firm level.

Table 6: Firm Characteristics of Workers Moving from Targets

	(1) log(Employment)	(2) log(Revenue)	(3) Profit Margins
Workers Moving From Targets	0.326*** (0.043)	0.259*** (0.052)	0.012*** (0.006)
Mean at t = -1	5.92	18.47	0.04
Adj. R squared	0.793	0.809	0.471
Worker-Year Obs.	989,100	927,310	929,380

Notes: This table reports the difference-in-differences estimates for changes in average firm characteristics of workers moving from target firms. Columns (1) displays the estimates for log of employment. Column (2) displays the estimates for log of average payrolls. Column (3) displays the estimates for log of revenue. The standard errors are two-way clustered at the worker and firm level.

Table 7: Workers Moving from Targets – By Type of Job Separation

	(1) log(Earnings)	(2) Transition	(3) Employer FE	(4) Match Effect
Post × Treated	-0.028*** (0.009)	0.147*** (0.008)	0.017*** (0.005)	-0.026*** (0.005)
Post × Treated × Involuntary	-0.061*** (0.010)	0.030*** (0.007)	-0.008* (0.005)	-0.048*** (0.005)
Mean at t = -1 (Involuntary = 0)	10.95	0.00	0.20	0.05
Mean at t = -1 (Involuntary = 1)	10.91	0.00	0.17	0.06
Adj. R squared	0.736	0.214	0.870	0.200
Worker-Year Obs. (Involuntary = 0)	130,390	130,550	128,750	127,000
Worker-Year Obs. (Involuntary = 1)	362,170	362,730	358,970	354,990

Notes: This table reports the difference-in-differences estimates for the impacts of M&As for workers moving voluntarily from target firms. The triple interaction term captures the triple-difference estimates for (displaced) workers moving involuntarily from target firms. Columns (1) displays the estimates for log of total earnings. Column (2) displays the estimates for the job transition probabilities. Column (3) displays the estimates for employer fixed effects. Column (4) displays the estimates for worker-employer match effects. The standard errors are two-way clustered at the worker and firm level.

Table 8: Workers Moving from Targets – By Worker Tenure

	(1) log(Earnings)	(2) Transition	(3) Employer FE	(4) Match Effect
Post × Treated	-0.003 (0.009)	0.144*** (0.010)	0.034*** (0.005)	-0.039*** (0.005)
Post × Treated × 7+ Years of Tenure	-0.057*** (0.013)	0.052*** (0.015)	-0.027*** (0.007)	-0.051*** (0.007)
Mean at t = -1 (4 Years of Tenure)	10.91	0.00	0.21	0.12
Mean at t = -1 (7+ Years of Tenure)	11.06	0.00	0.23	0.08
Adj. R squared	0.74	0.327	0.905	0.249
Worker-Year Obs. (4 Years of Tenure)	259,580	260,210	256,960	253,550
Worker-Year Obs. (7+ Years of Tenure)	328,430	328,910	327,150	325,080

Notes: This table reports the difference-in-differences estimates for the impacts of M&As for workers with 4 years of tenure by the event year and moving from target firms after the event. The triple interaction term captures the triple-difference estimates for workers with 7 or more years of tenure by the event year and moving from target firms after the event. Columns (1) displays the estimates for log of total earnings. Column (2) displays the estimates for the job transition probabilities. Column (3) displays the estimates for employer fixed effects. Column (4) displays the estimates for worker-employer match effects. The standard errors are two-way clustered at the worker and firm level.

Table 9: Workers Moving from Targets – By Within-Firm Earnings Distribution

	(1) log(Earnings)	(2) Transition	(3) Employer FE	(4) Match Effect
Post × Treated	-0.040*** (0.010)	0.160*** (0.008)	0.019*** (0.004)	-0.038*** (0.004)
Post × Treated × Q5	-0.048*** (0.018)	0.006 (0.005)	-0.002 (0.004)	-0.039*** (0.006)
Mean at t = -1 (Q1 = 1)	10.47	0.00	0.23	0.02
Mean at t = -1 (Q5 = 1)	11.56	0.00	0.25	0.08
Adj. R squared	0.739	0.258	0.892	0.212
Worker-Year Obs. (Q1 = 1)	186,410	186,820	184,800	181,590
Worker-Year Obs. (Q5 = 1)	168,660	168,990	167,160	166,290

Notes: This table reports the difference-in-differences estimates for the impacts of M&As for workers in the first quintile (Q1) of the within-firm earnings distribution in one year prior to the event and moving from target firms after the event. The triple interaction term captures the triple-difference estimates for workers in the fifth quintile (Q5) of the within-firm earnings distribution and moving from target firms after the event. Columns (1) displays the estimates log of total earnings. Column (2) displays the estimates for the probability of transition. Column (3) displays the estimates for employer fixed effects. Column (4) displays the estimates for worker-employer match effects. The standard errors are two-way clustered at the worker-firm level.

ONLINE APPENDIX:

Job Transitions and Employee Earnings After Acquisitions: Linking Corporate and Worker Outcomes

David Arnold (daarnold@ucsd.edu) Kevin Milligan (kevin.milligan@ubc.ca)
Terry Moon (tsmoon@mail.ubc.ca) Amirhossein Tavakoli (ah.tavakoli@ubc.ca)

A Robustness Checks

In Appendix A, we provide results from robustness tests discussed in Sections 4 – 6.

A.1 Different Clustering

Our main firm-level results are based on clustering at the firm level and our main worker-level results are based on two-way clustering at both firm level and worker level. We also do robustness tests on the key firm-level and worker-level outcomes, where standard errors are clustered at the market level (defined at the four digit NAICS by commuting zone) for firm-level results, and are two-way clustered at the worker and market level for worker-level results. Figure A1 and Table A1 show that the results on employment, total revenue, profit margins, and worker-level earnings are similar to the main estimates. Note that the coefficient estimates on these outcomes are slightly different from our main estimates, even though we only change the way we cluster our standard errors. This is because some firms and workers have missing commuting zone information, so they are dropped from our analysis sample when we cluster the standard errors at the market level.

A.2 Using Matched Control firms in Different Markets

Matching on size, province, and sector finds firms that would plausibly exhibit common trends in the absence of an M&A activity. However, it is possible that firms can be matched within the same market (defined at the four-digit NAICS industry by commuting zone), which is potentially concerning if M&As have impacts on local labor markets through increased concentration. If M&As have negative effects on firms in the same market, then the impact of M&As on firms and workers will be biased towards zero. To minimize this concern, we do a robustness check by matching firms within the same province, but across different markets, and find similar results to our main results where we allow M&A firms to be matched with control firms within the same market. Figure A2 and Table A2 show that the effects on the key firm-level and worker-level outcomes from this approach are qualitatively similar to our main estimates.

A.3 Alternative Measures of Firm Performance

In Section 5, we show that profit margins for both treated and control firms decrease after M&As. We consider two alternative measures of firm performance used in the corporate finance and labor economics literature: (1) returns on assets, defined as net income divided by total assets, and

(2) EBITDA per worker. Figure A3 and Table A3 show that both return on assets and EBITDA per worker decrease for targets and acquirers after M&As, consistent with our results on profit margins. Therefore, we conclude that the decline in firm performance in the medium-run is robust and consistent across different measures.

A.4 Outcomes in Levels (Replacing Missing Observations with Zeros)

We show results on the key outcomes, such as employment, revenue, average payrolls, and worker-level earnings, in logs. A potential concern with this approach is that we cannot account for firms and workers exiting the sample after M&As. This concern is especially relevant for target firms and for displaced workers from targets that might exit the sample. Although we find the vast majority of target firms continue to operate independently and most displaced workers find a job at a different firm (see Figure A8), we run our main analyses in levels, replacing missing observations with zeros, to account for a small share of firms and workers who exit the sample after M&As. Figure A4 and Table A4 show that the main outcomes are qualitatively similar to the ones in logs.

A.5 Aggregate Firm-level Outcomes Using Extended Sample

In Section 5, we show aggregate (targets and acquirers combined) firm-level outcomes. We repeat the same analysis by adding previously missing firms in target-acquirer pairs (mostly acquirers that were not matched to control firms) to our main analysis sample for this aggregate analysis, so that we can comprehensively look at the overall impacts of M&As on both targets and acquires combined. Figure A5 and Table A5 show that the results are qualitatively similar to the ones in Figure 3 and Table 3.

A.6 Using Private Firms Only

Prior research points out that publicly listed firms engage in M&As more than private firms during merger waves, and that acquisitions can be efficiency improving, especially when buyers and sellers are publicly listed firms during on-the-wave mergers (Maksimovic et al., 2013). While the vast majority (96 percent) of firms that go through M&As in our matched sample are private, we repeat our analysis focusing only on private firms, since the effects of M&As on firm-level outcomes might be different between listed and private firms. Figure A6 and Table A6 show that the results on firm and worker outcomes are similar to our main results where we include publicly listed companies, implying that our results are robust to just focusing on private firms in our sample.

A.7 AKM Assumptions

We test the main assumptions underlying the estimation of the AKM specification following [Lachowska et al. \(2020\)](#).

A.7.1 Assumption 1: Sufficient Mobility

The firm wage premium in the AKM model is identified by workers who move between firms. For this reason, the sample formation strategy (and the underlying mobility pattern) need to exhibit sufficient mobility to allow the firm wage premiums to be estimated. In the average year during our sample period, roughly 18 workers per employer move to other firms. Among full-time workers, the average number of movers per employer is about 8. Across the entire sample, 77 percent of workers make at least one move to a different firm during our sample period. Therefore, the mobility rates in the sample we use to estimate the AKM model appear to be high and comparable to the mobility rate in the sample used by [Lachowska et al. \(2020\)](#).

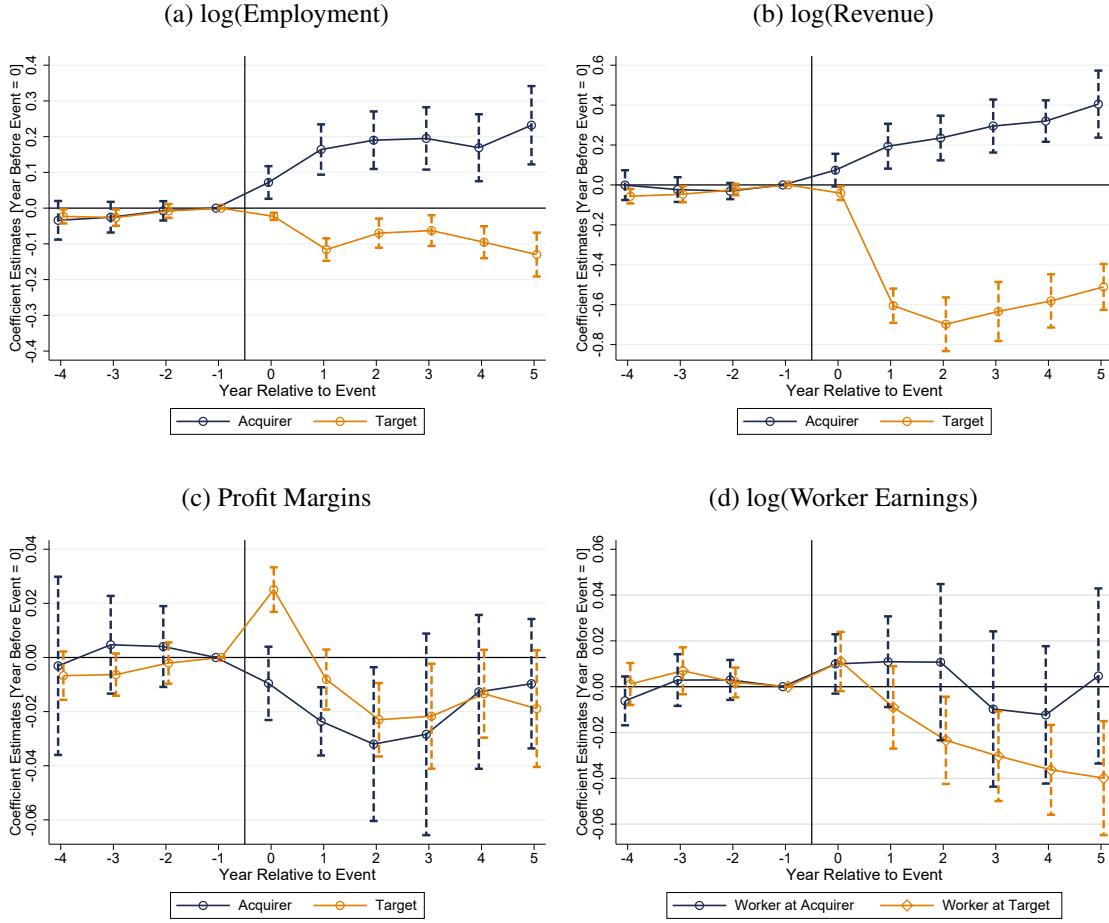
A.7.2 Assumption 2: Exogenous Mobility

Since the firm wage premium in the AKM model is identified by workers who move between firms, the model requires an assumption of exogenous mobility of workers between firms. If this assumption fails, then the firm wage premium would be biased because the workers who move would be different than those who do not move. We test this using a similar test as in [Lachowska et al. \(2020\)](#) who builds off an exercise in [Card et al. \(2013\)](#). We group firms into quartiles by their estimated firm fixed effects and study the wages of workers who move between firms. If wages of movers are determined by the quartile of the firm effects symmetrically both when moving from high to low and low to high firms, this symmetry supports the assumption that mobility is exogenous. In contrast, if movers show systematic wage gains regardless of the fixed effects of the origin firms and destination firms, then the assumption of exogenous mobility could be violated.

In Figure A7, we plot the log wages of job movers for eight different quartile-to-quartile transitions. The top of the figure shows workers moving from the top (fourth) to the top quartile of firms. The wages of these workers are high and stay high. The same stable pattern can be seen for those going from the bottom (first) to the bottom quartile; their wages are low and stay relatively low. In contrast, for workers going from the fourth to the first quartile of firm fixed effects, their wages drop significantly. Symmetrically, those going from the first to the fourth quartile of firm fixed effects see a strong increase in wages. Because the wage quality of the firm drives the wage change of the moving worker, this provides support for the exogenous mobility assumption.

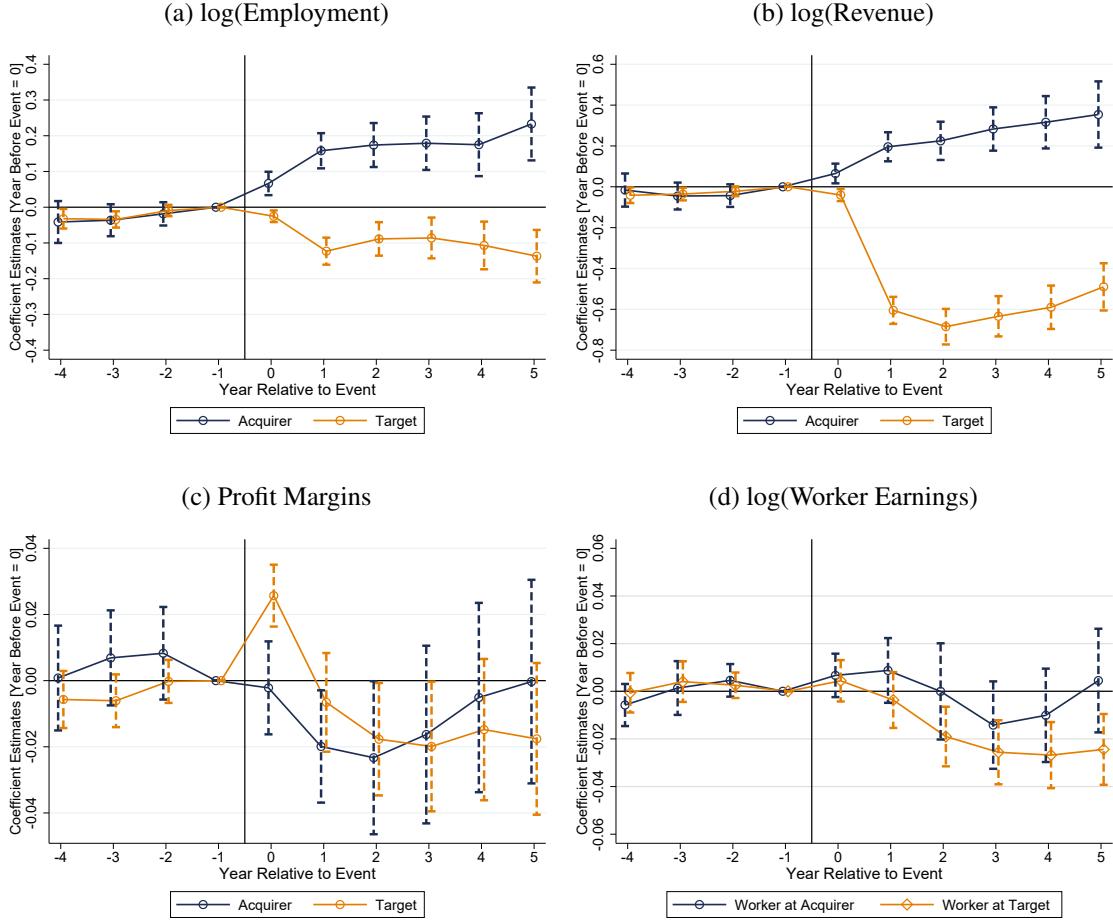
While the approximate symmetry of gains and losses implies that idiosyncratic match effects are not the main drivers behind changes in earnings of job movers in our entire sample, this symmetry may not hold for our analysis sample of M&A workers, thereby violating the exogenous mobility assumption and highlighting the importance of match effects within our sample of M&A firms and workers. A violation of the exogenous mobility assumption partly explains why we estimate the match effects to understand the role of worker-employer match quality behind changes in employee earnings after job transitions, following [Woodcock \(2015\)](#) and [Lachowska et al. \(2020\)](#).

Figure A1: Different Clustering



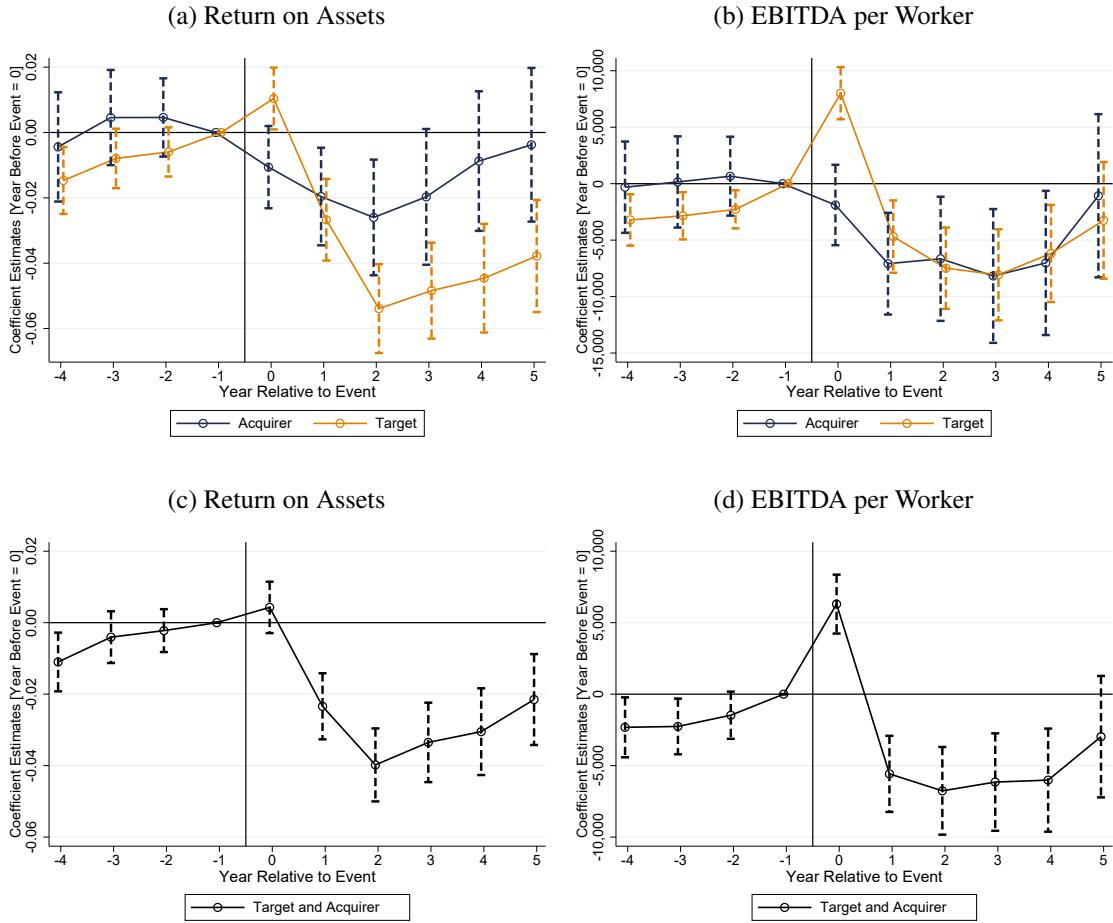
Notes: These figures display event-study estimates for the impact of M&As on the main firm-level and worker-level outcomes. Panel (a) shows the estimates for log of employment. Panel (b) shows the estimates for log of total revenue. Panel (c) shows the estimates for profit margins. Panel (d) shows the estimates for worker-level earnings. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the market-level (by 4-digit NAICS \times commuting zone) for Panels (a) – (c) and at the worker and market level for Panel (d). The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure A2: Matched Control Firms in Different Markets



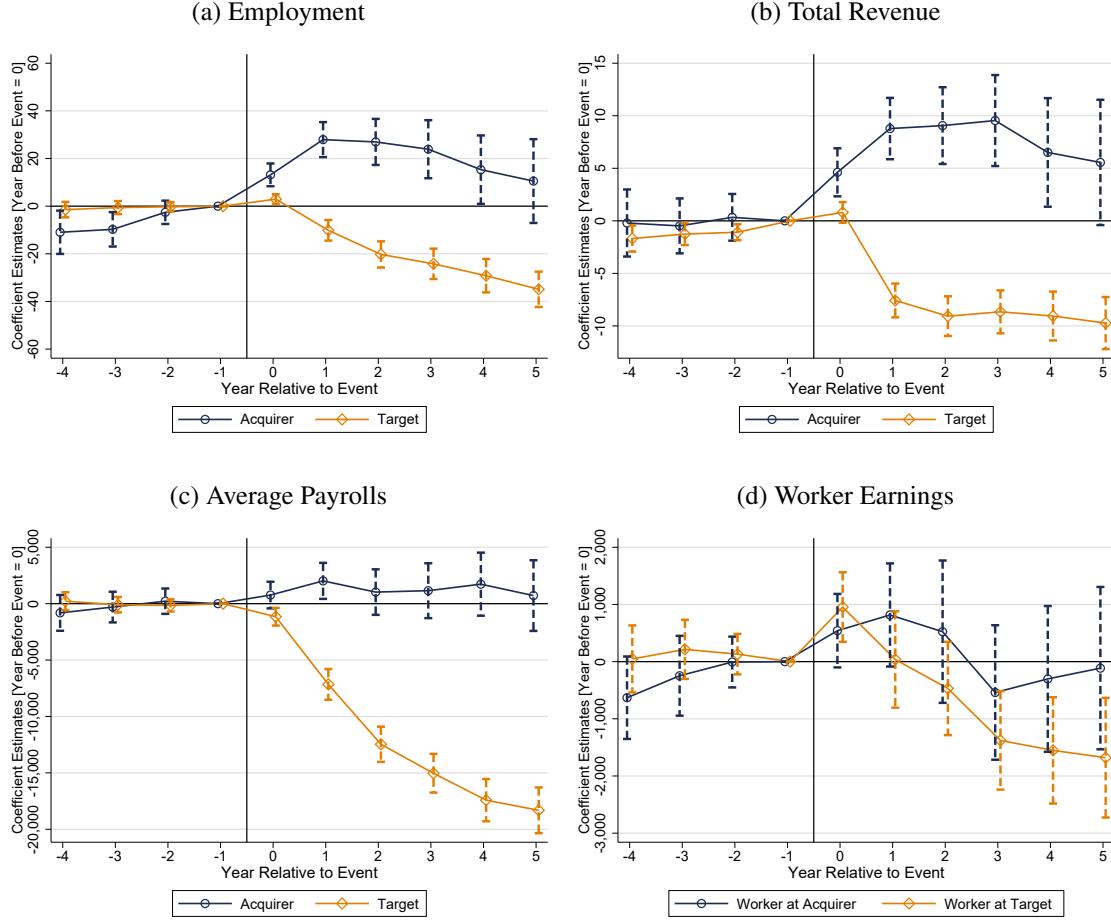
Notes: These figures display event-study estimates for the impact of M&As on the main firm-level and worker-level outcomes. For this analysis, we implement the same matching procedure (described in Section 4), except that we restrict M&A firms to be at different markets (defined by 4-digit NAICS \times commuting zone) from matched control firms. Panel (a) shows the estimates for log of employment. Panel (b) shows the estimates for log of total revenue. Panel (c) shows the estimates for profit margins. Panel (d) shows the estimates for worker-level earnings. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the firm level for Panels (a) – (c) and at the worker and firm level for Panel (d). The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure A3: Alternative Measures of Firm Performance



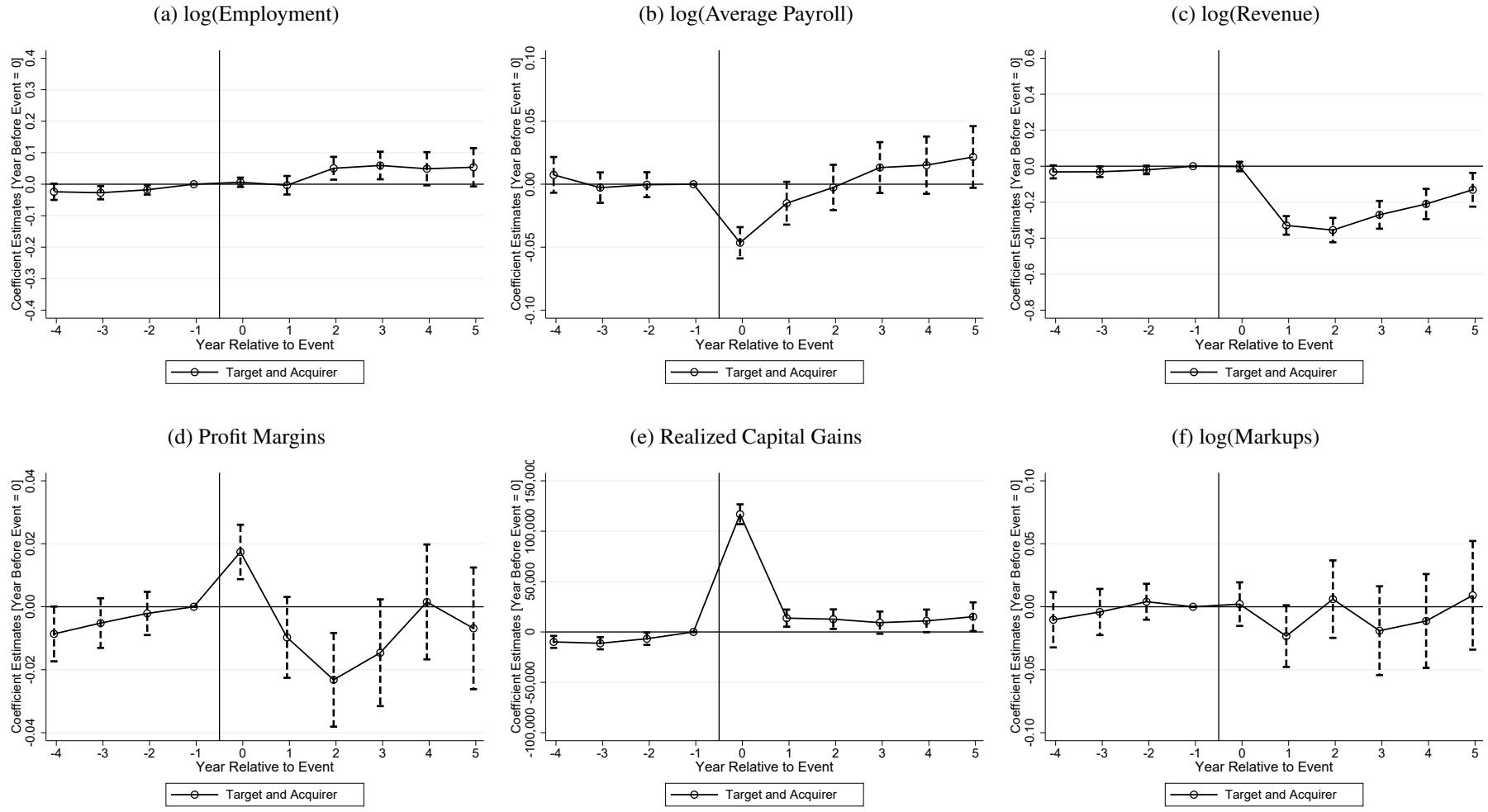
Notes: These figures display event-study estimates for the impact of M&As on firm performance using two alternative measures. Panel (a) shows the estimates for return on assets, defined as net income divided by total assets, separately for targets and for acquirers. Panel (b) shows the estimates for EBITDA per worker, separately for targets and for acquirers. Panel (c) and (d) show the estimates for return on assets and EBITDA per worker, respectively, for targets and acquirers combined. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure A4: Outcomes in Levels (Replacing Missing with Zeros)



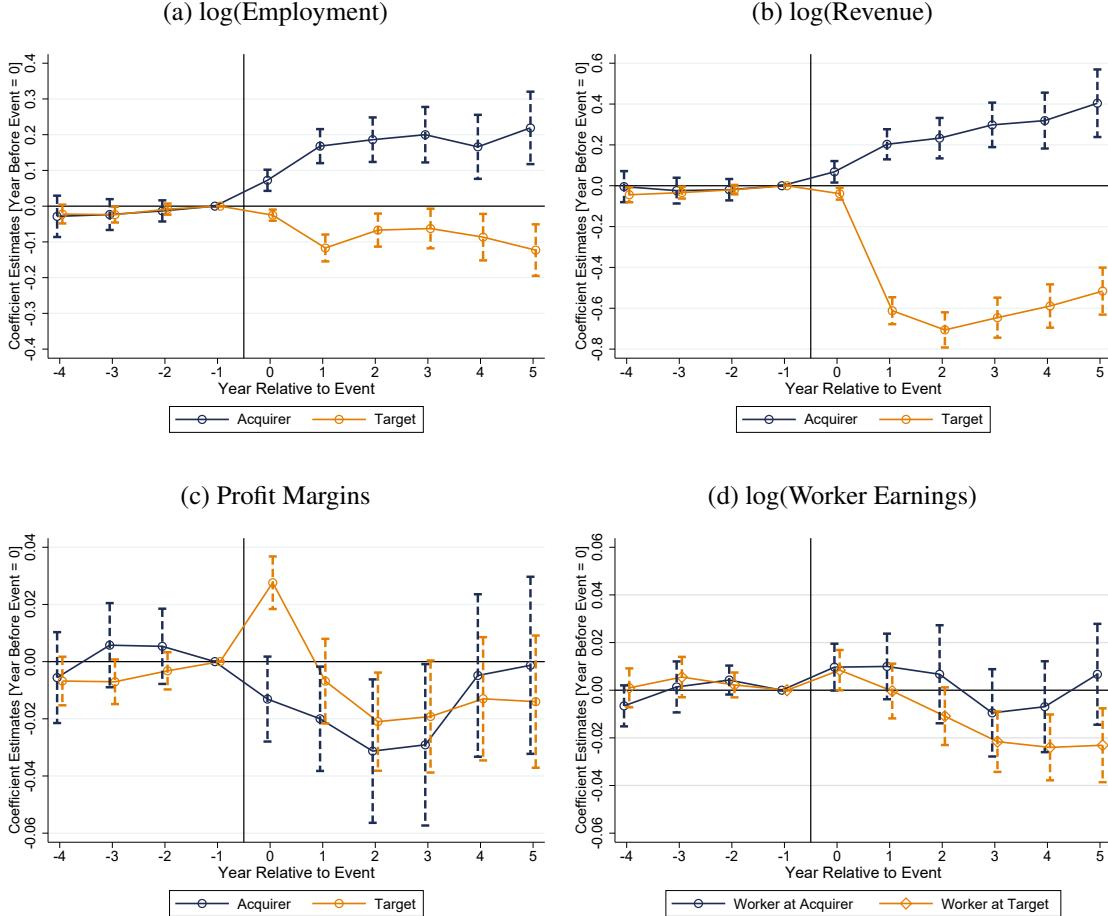
Notes: These figures display event-study estimates for the impact of M&As on the main firm-level and worker-level outcomes in levels, where we replace missing observations with zeros if the firms or workers exit the sample. Panel (a) shows the estimates for number of employees. Panel (b) shows the estimates for total revenue. Panel (c) shows the estimates for average payrolls. Panel (d) shows the estimates for worker-level earnings. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the firm level for Panels (a) – (c) and at the worker and firm level for Panel (d). The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure A5: Aggregate Firm Size and Performance After M&As



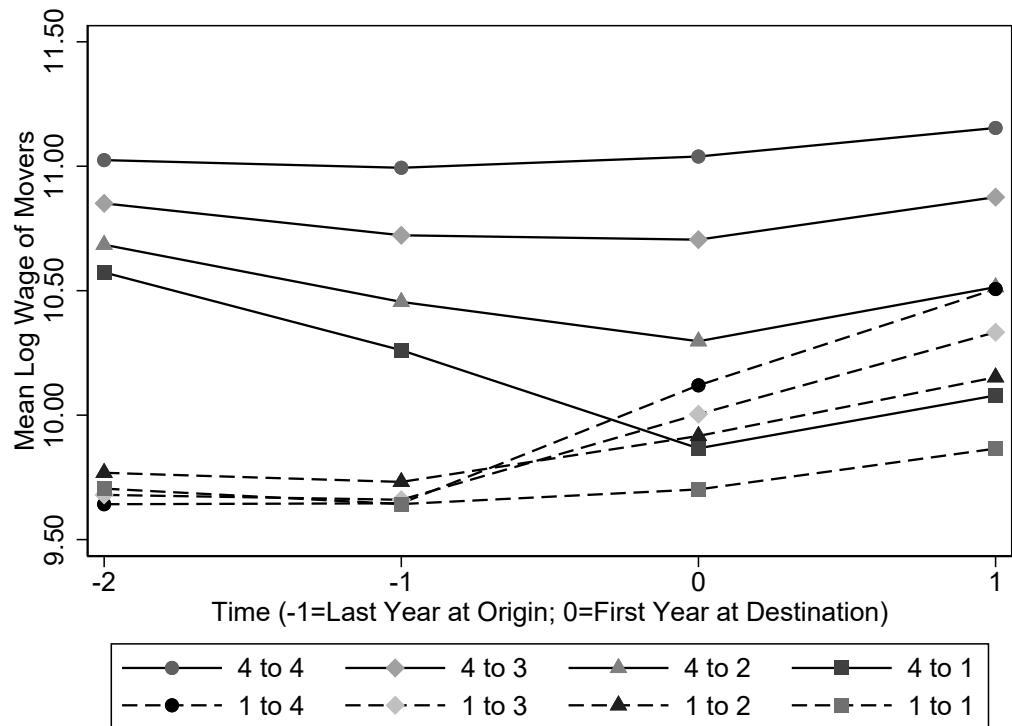
Notes: These figures display event-study estimates for the impact of M&As on aggregate firm-level (targets and acquirers combined) outcomes, where we add previously missing firms in target-acquirer pairs (mostly acquirers that were not matched to control firms) to our main analysis sample. Panel (a) shows the estimates for \log of employment. Panel (b) shows the estimates for \log of total revenue. Panel (c) shows the estimates for profit margins. Panel (d) shows the estimates for worker-level earnings. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the firm-level for Panels (a) – (c) and at the worker and firm level for Panel (d). The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure A6: Private Firms Only



Notes: These figures display event-study estimates for the impact of M&As on the main firm-level and worker-level outcomes only for private firms/workers in the matched sample. In our matched sample, 96 percent of firms are private throughout the sample period. Panel (a) shows the estimates for log of employment. Panel (b) shows the estimates for log of total revenue. Panel (c) shows the estimates for profit margins. Panel (d) shows the estimates for worker-level earnings. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the firm level for Panels (a) – (c) and at the worker and firm level for Panel (d). The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

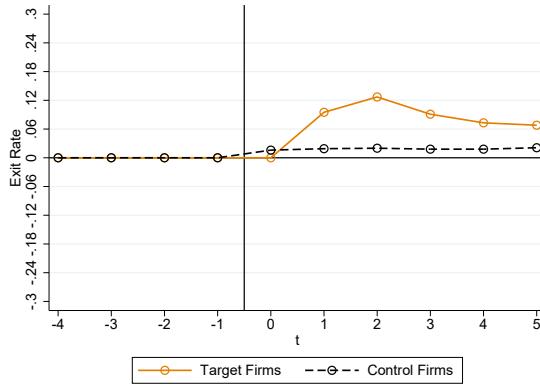
Figure A7: Exogenous Mobility Assumption



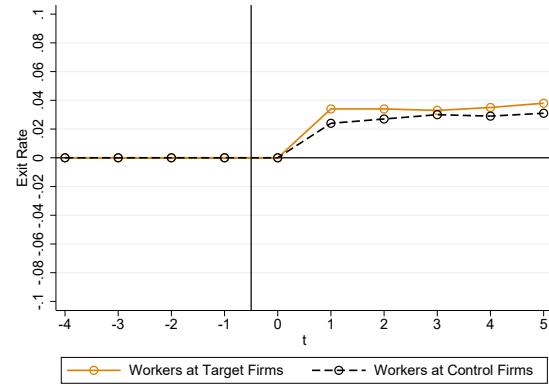
Notes: This figure reports the estimates of the average log earnings of movers for the four-year period around their transition. The estimates are classified based on the quartile of firm effects at origin firms (year = -1) and destination firms (year = 0).

Figure A8: Probability of Exit for Target Firms and Workers

(a) Firm Exit Rate



(b) Worker Exit Rate



Notes: Panel (a) displays the exit rate of firms in the matched sample, separately for target firms and their control firms. After the event, the probability of exiting the sample increases by 6.9 percentage points (SE = 0.002) for target firms relative to control firms on average. Panel (b) displays the exit rate of workers in the matched sample, separately for workers at target firms and for their control workers. After the event, the probability of exiting the sample increases by 0.5 percentage points (SE = 0.000) for target workers relative to their control workers on average.

Table A1: Different Clustering

	(1) log(Employment)	(2) log(Revenue)	(3) Profit Margins	(4) log(Earnings)
Target	-0.083*** (0.011)	-0.512*** (0.049)	-0.010* (0.005)	-0.021*** (0.008)
Mean at t = -1	3.97	16.35	0.01	11.02
Adj. R squared	0.872	0.820	0.361	0.650
Firm/Worker-Year Obs.	80,020	81,790	82,290	1,954,480
Acquirer	0.170*** (0.035)	0.254*** (0.048)	-0.019** (0.009)	0.002 (0.012)
Mean at t = -1	4.54	17.00	0.02	11.03
Adj. R squared	0.888	0.857	0.355	0.642
Firm/Worker-Year Obs.	27,840	27,860	28,040	1,296,770

Notes: This table reports the difference-in-differences estimates for the impacts of M&As on the main firm-level and worker-level outcomes. The outcome variables in column (1) to (4) are log of employment, log of total revenue, profit margins, and log of worker-level earnings. The standard errors of the firm-level estimates are clustered at the market level (defined by 4-digit NAICS \times commuting zone). The standard errors of the worker-level estimates are two-way clustered at the worker and market level. Note that the coefficient estimates also changed from clustering at the market-level because the information on commuting zone is missing for a small share of firms and workers, resulting in a slightly different sample compared to our main analysis sample.

Table A2: Matched Control Firms in Different Markets

	(1) log(Employment)	(2) log(Revenue)	(3) Profit Margins	(4) log(Earnings)
Target	-0.094*** (0.021)	-0.507*** (0.035)	-0.008 (0.006)	-0.016*** (0.005)
Mean at t = -1	3.97	16.36	0.02	11.01
Adj. R squared	0.873	0.821	0.352	0.739
Firm/Worker-Year Obs.	79,290	81,370	81,900	1,960,640
Acquirer	0.164*** (0.028)	0.240*** (0.040)	-0.011 (0.008)	-0.001 (0.007)
Mean at t = -1	4.55	17.02	0.02	11.02
Adj. R squared	0.887	0.857	0.357	0.731
Firm/Worker-Year Obs.	27,670	27,780	27,960	1,282,810

Notes: This table reports the difference-in-differences estimates for the impacts of M&As on the main firm-level and worker-level outcomes. For this analysis, we implement the same matching procedure (described in Section 4), except that we restrict M&A firms to be at different markets (defined by 4-digit NAICS \times commuting zone) from matched control firms. The outcome variables in column (1) to (4) are log of employment, log of total revenue, profit margins, and log of worker-level earnings. The standard errors of firm-level estimates are clustered at the firm level. The standard errors of worker-level estimates are two-way clustered at the worker and firm level.

Table A3: Difference-in-differences Estimates on Firm Performance

	(1) Return on Assets	(2) EBITDA per Worker
Target	-0.033*** (0.005)	-3,609*** (13,434)
Mean at t = -1	0.07	15,557
Adj. R squared	0.387	0.431
Firm-Year Obs.	84,110	79,270
Acquirer	-0.015** (0.007)	-5,315*** (2013)
Mean at t = -1	0.05	17,261
Adj. R squared	0.421	0.463
Firm-Year Obs.	28,540	27,500
Target and Acquirer	-0.024*** (0.004)	-3,530*** (1,159)
Mean at t = -1	0.06	17,554
Adj. R squared	0.396	0.440
Firm-Year Obs.	127,600	119,060

Notes: This table reports the difference-in-differences estimates for the impacts of M&As on firm performance using alternative measures. The outcome variables in column (1) and (2) are return on assets (defined as net income divided by total assets) and EBITDA per worker. The standard errors are clustered at the firm level.

Table A4: Outcomes in Levels (Replacing Missing with Zeros)

	(1) Employment	(2) Revenue	(3) Average Payrolls	(4) Earnings
Target	-19.288*** (2.401)	-7,214,683*** (821,629)	-11,925*** (657)	-681* (353)
Mean at t = -1	105.23	34,450,250	50,380	70,625
Adj. R squared	0.831	0.806	0.695	0.790
Firm/Worker-Year Obs.	89,440	93,600	89,300	2,026,430
Acquirer	19.632*** (4.680)	7,345,470*** (1,670,150)	1,234 (890)	154 (465)
Mean at t = -1	187.30	62,300,425	52,742	70,046
Adj. R squared	0.849	0.829	0.715	0.793
Firm/Worker-Year Obs.	30,070	30,690	30,000	1,345,330

Notes: This table reports the difference-in-differences estimates for the impacts of M&As on the firm-level and worker-level outcomes in levels, where we replace missing observations with zeros if the firms or the workers exit the sample. The outcome variables in column (1) to (4) are employment, total revenue, average payroll, and worker-level earnings. The standard errors of firm-level estimates are clustered at the firm level. The standard errors of worker-level estimates are two-way clustered at the worker and firm level.

Table A5: Difference-in-differences Estimates on Aggregate Firm Outcomes

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Revenue)	(4) Profit Margins	(5) Realized Capital Gains	(6) log(Markups)
Target and Acquirer	0.036** (0.017)	-0.002 (0.007)	-0.216*** (0.028)	-0.006 (0.005)	29,757*** (3,501)	-0.006 (0.012)
Mean at t = -1	4.27	10.71	16.57	0.01	41,821	0.42
Adj. R squared	0.885	0.792	0.83	0.366	0.255	0.758
Firm-Year Obs.	121,320	121,240	124,630	125,670	81,980	71,570

Notes: This table reports the difference-in-differences estimates for the impacts of M&As on aggregate firm-level (targets and acquirers combined) outcomes, where we add previously missing firms in target-acquirer pairs (mostly acquirers that were not matched to control firms) to our main analysis sample. The outcome variables in column (1) to (6) are log of employment, log of average payroll, log of total revenue, profit margins, owners' realized capital gains aggregated at the firm level, and log of markups. The standard errors are clustered at the firm level.

Table A6: Private Firms Only

	(1) log(Employment)	(2) log(Revenue)	(3) Profit Margins	(4) log(Earnings)
Target	-0.080*** (0.021)	-0.518*** (0.034)	-0.008 (0.006)	-0.012** (0.005)
Mean at t = -1	3.97	16.36	0.02	11.01
Adj. R squared	0.873	0.82	0.352	0.739
Firm/Worker-Year Obs.	78,370	80,430	80,910	1,990,940
Acquirer	0.169*** (0.028)	0.254*** (0.042)	-0.017** (0.008)	0.003 (0.007)
Mean at t = -1	4.56	17.00	0.02	11.02
Adj. R squared	0.893	0.862	0.354	0.732
Firm/Worker-Year Obs.	26,410	26,520	26,670	1,308,270

Notes: This table reports the difference-in-differences estimates for the impacts of M&As on the main firm-level and worker-level outcomes using only private firms in the matched sample. In our matched sample, 96 percent of firms are private throughout the sample period. The outcome variables in column (1) to (4) are log of employment, log of total revenue, profit margins, and log of worker-level earnings. The standard errors of firm-level estimates are clustered at the firm level. The standard errors of worker-level estimates are two-way clustered at the worker and firm level.

Table A7: Mean Log Wage Before and After Employer Change by Quartile of Mean Workers' Wages at Origin and Destination Firms

Origin to Destination Quartile	Number of Observations	Mean Log Wage of Movers				Change from $t = -2$ to $t = +1$	
		Two Years Before	One Year Before	One Year After	Two Year After	Unadjusted	Adjusted
		(1)	(2)	(3)	(4)	(5)	(6)
1 to 1	1,355,190	9.70	9.64	9.70	9.87	0.16	0.00
1 to 2	834,130	9.77	9.73	9.92	10.15	0.38	0.22
1 to 3	429,280	9.68	9.66	10.00	10.33	0.65	0.49
1 to 4	306,100	9.64	9.65	10.12	10.51	0.86	0.70
2 to 1	384,560	10.05	9.89	9.80	9.99	-0.06	-0.18
2 to 2	1,110,570	10.30	10.22	10.26	10.42	0.12	0.00
2 to 3	777,090	10.38	10.33	10.44	10.63	0.26	0.14
2 to 4	383,820	10.27	10.23	10.48	10.77	0.51	0.39
3 to 1	160,360	10.30	10.05	9.82	10.03	-0.27	-0.38
3 to 2	429,880	10.51	10.35	10.31	10.50	-0.01	-0.12
3 to 3	1,009,290	10.66	10.61	10.65	10.77	0.11	0.00
3 to 4	956,990	10.72	10.70	10.79	10.92	0.20	0.09
4 to 1	97,140	10.57	10.26	9.87	10.08	-0.49	-0.62
4 to 2	187,550	10.68	10.45	10.30	10.51	-0.17	-0.30
4 to 3	413,630	10.85	10.72	10.71	10.88	0.03	-0.10
4 to 4	1,250,900	11.02	10.99	11.04	11.15	0.13	0.00

Notes: This table reports the average of log of earnings for workers who move and are observed for at least two years prior to a job transition, and for two years after. We define quartiles based on the average earnings of coworkers at the origin firm in the year prior to transition, and at the destination firm in the year after. The adjusted earnings change is estimated as the average change for each origin-destination group, minus the average change for switchers from the same origin quartile who remain in the same quartile.

Table A8: Characteristics of Unmatched M&A Firms

	(1)	(2)	(3)	(4)
	Acquirer		Target	
	Without Restriction	With Restriction	Without Restriction	With Restriction
<i>Panel A: Firm Characteristics</i>				
Total Revenue	16	60	12	30
Number of Employees	171	342	91	187
Average Wage Bill	46,749	44,023	46,029	42,188
Number of Firms	2,690	640	4,560	1,420
<i>Panel B: Sectors (Firms)</i>				
Construction	0.02	0.01	0.03	0.03
Manufacturing	0.06	0.15	0.09	0.13
Wholesale	0.04	0.05	0.06	0.08
Retail	0.02	0.03	0.04	0.03
Transportation	0.02	0.03	0.03	0.06
Information	0.05	0.14	0.09	0.18
Services	0.18	0.16	0.26	0.20
Other Sectors	0.62	0.43	0.41	0.30

Notes: This table reports descriptive statistics on M&A firms excluded from the matched sample, measured in one year prior to the event. Columns (1) and (2) report these statistics for acquiring firms and column (3) and (4) report these statistics for target firms. We use the following restrictions for matching: (1) firms must have at least 10 employees in one year prior to the event, (2) firms must not have any missing values for matching variables such as total revenue, average payrolls, age, sector, and province in one year prior to the event. Column (1) and (3) report these statistics for all unmatched M&A firms, and columns (2) and (4) report these statistics for unmatched M&A firms satisfying these restrictions. Panel A reports characteristics of firms such as total revenue, number of employees, and average payroll. Panel B reports the distribution of firms across 2-digit NAICS sectors. Other sectors include (1) Agriculture, forestry, and fishing, (2) Mining, quarrying, and oil and gas extraction, (3) Utilities, (4) Real estate and rental and leasing, (5) Arts, entertainment and recreation, (6) Accommodation and food services, (7) Other services, and (8) Public administration.

B Additional Heterogeneity Results

In Appendix B, we provide heterogeneity results in addition to those discussed in Section 6. Here, we focus on target workers to see whether alternative mechanisms can explain the decline in their earnings after M&As. For most of the heterogeneity results, we separately look at stayers at targets and job movers from targets to get a better sense where the effects come from.

B.1 By Local vs. National M&As

While checking common pre-trends is reassuring for a causal interpretation when implementing a difference-in-differences design, contemporaneous shocks that occur with M&A events could still bias our results. For example, there could be a negative demand shock that affects a commuting zone and causes both a decline in employment and an increase in M&A activities as firms get purchased before they shut down. In this case, M&A activities are correlated with shocks that decrease labor demand. We can also have the opposite scenario.

We address this concern by also looking at M&As that are less likely to have been triggered by local economic conditions of the firm. Specifically, we consider the impact of national M&As that occur among domestic firms with multiple establishments across different commuting zones. The intuition is that these changes in ownership are less likely to be driven by the local economic conditions of the firms or workers. Figure B1 and Table B1 show that the effect of local M&As on earnings of target workers is statistically indistinguishable from the effect of national M&As on the same outcome. Therefore, the decline in earnings of workers at target firms is unlikely driven by local economic conditions of firms where M&A activities occur.

B.2 By Partial Acquisitions vs. Mergers

In our analysis sample, roughly 80 percent of M&A events are partial acquisitions (75 percent for the whole M&A events). In other words, the vast majority of M&A events in Canada (and in North America) involves an acquirer purchasing a part of a target's businesses. It is possible that a wage decline is larger (or smaller) in case of a full merger, where there is a complete transfer of ownership. We explore whether impacts on worker earnings are larger in case of a merger, compared to a partial acquisition. We examine these impacts separately for stayers and job movers, so that we can see in which group the effects are concentrated. In Figure B2 and Table B2, we find that decreases in workers' earnings in target firms where M&As involve mergers were not larger than decreases in workers' earnings where M&As involve partial acquisitions, suggesting that our

results are not driven by the fact the majority of our M&A events involves partial acquisitions. In other words, both merger and partial acquisition events create job separations of workers from target firms, resulting in a wage loss that we observe in the data.

B.3 By Within vs. Across Labor Markets

We explore whether impacts on worker earnings are larger in markets where merging firms are located in the same labor market (defined at the four-digit industry by commuting zone level), following [Prager and Schmitt \(2021\)](#). Once again, we look at these impacts separately for stayers and job movers, so that we can see where the effects come from. In Figure B3 and Table B3, we find that decreases in workers' earnings in target firms where M&As occur within the same market were not larger than decreases in workers' earnings where M&As occur across different markets, suggesting a limited role for the change in concentration in explaining the change in worker earnings after M&As.

B.4 Distribution of HHI Across Markets

Before we assess the heterogeneity based on the initial level of concentration (measured in Herfindahl-Hirschman Index) in labor markets, we examine the distribution of labor market concentration across different markets (defined at the four-digit industry by commuting zone level) in our data. Panel (a) in Figure B4 shows that the distribution of HHI across the entire labor market is a bit skewed towards the left, with some spikes around the middle and at the very right tail. Column (1) in Table B4 shows that the average and median HHI are 0.38 and 0.28 across the entire labor market in Canada during our sample, with roughly 12 percent of labor markets have a single employer in each market. Focusing on labor markets in the entire sample with any M&A event during our sample period, however, the distribution becomes a lot more left-skewed, with only 3 percent of labor markets having a single firm, as shown in panel (b) of Figure B3. Column (2) of Table B4 shows that the average and median HHI are 0.264 and 0.175. These statistics become even smaller (to 0.138 and 0.069, respectively, as shown in Column (3) of Table B4) when we zoom in on labor markets with any M&A event in our matched analysis sample, with less than one percent of labor markets having a single employer. Therefore, while the labor markets in the entire sample are reasonably concentrated, the markets in our analysis sample are not very concentrated on average to begin with, which can explain why M&A events in our analysis sample have little impacts on concentration in our setting.

B.5 By Initial Level of Concentration

Our findings on the decreases in employment and worker-level earnings in target firms can be potentially rationalized by an increase in monopsony power of firms through increased concentration. [Prager and Schmitt \(2021\)](#) and [Arnold \(2021\)](#) study this channel in the U.S. context and find that M&A events that generate large shifts in concentration result in market-level declines in earnings. While this channel may still be a factor for a subset of the M&A events we study in Canada, we rule it out as being the only factor determining wage losses.

In particular, we find that 99 percent of M&A events have a zero predicted change in local labor-market concentration. This is consistent with the description on the distribution of HHI in our analysis sample in the previous subsection. In contrast, [Prager and Schmitt \(2021\)](#) and [Arnold \(2021\)](#) isolate M&A events with statistically significant increases in concentration.

To examine this in more detail, in Figure B5 and Table B5, we turn to a metric that antitrust authorities consider: the initial concentration level. To study this channel, we split the analysis sample by quintiles in the HHI measured in one year before the event. In both the high-concentration markets (fifth quintile) and the low-concentration markets (first quintile), we find similar levels of declines in earnings of either stayers at or job movers from target firms.²¹ This is not surprising given most of these events do not actually increase concentration in the local labor market. Furthermore, Columns (3) and (4) of Table B4 show that these results hold even if we restrict our sample to be M&A events that happen within the same labor market, so that the change in market power would be more direct and meaningful.

Taken together, these results, along with the results from Section B3, suggest that increased monopsony power due to changes in local labor-market concentration or outside options is unlikely to be the primary driver of declines in worker earnings in our setting.²²

B.6 By Initial Level of (flows-adjusted) Concentration

In the previous subsection, we show our estimates on worker earnings, separately for markets with low level (below the first quintile) of HHI and for markets with high level (above the last quintile)

²¹Given that the change in concentration after M&As was close to zero for about 99 percent of labor markets in our sample, cutting our analysis sample based on the predicted change in HHI after M&As, as in [Arnold \(2021\)](#), is not meaningful in our setting due to the lack of variation in the predicted change in HHI.

²²Even if the results are not driven by changes in concentration, changes in bargaining power of workers may be independent of concentration changes. For example, [He and le Maire \(2022\)](#) finds that M&A events in Denmark result in high-wage managers being replaced in target firms. Such a change in management may result in shifts in bargaining power of workers at target firms. However, a change in bargaining power through a change in management is only relevant for incumbent or new workers at target firms, and thus is unlikely to explain the decline in earnings of workers leaving target firms.

of HHI measured in one year before the event. A standard Herfindahl-Hirschmann Index (HHI) takes as given the definition of the market and then computes

$$HHI = \sum_j s_j^2, \quad (B1)$$

as the measure of concentration. We describe a flows-adjusted concentration measure that takes into account transitions across markets, following [Arnold \(2021\)](#). To begin, let market m be defined by the interaction between 4-digit NAICS and commuting zone. The flows-adjusted concentrated measure (denoted \tilde{C}) requires computing transition rates across markets. While, in theory, transition rates across markets may change, we instead choose to pool the entire sample in order to retrieve a consistent and more precise measure of the rate of transitions across markets. The share of firm j in market m is given by:

$$\tilde{s}_{jm} = \frac{l_{jm}}{\sum_k \alpha_{m \rightarrow k} L_k} \quad (B2)$$

where

$$\alpha_{m \rightarrow k} = \frac{P(k|m)}{P(m|m)} \frac{L_m}{L_k} \quad (B3)$$

where $P(k|m)$ is the probability an individual from market m transitions to market k conditional on experiencing a transition. The intuition behind this formulation is that jobs in other markets likely provide viable options for workers. [Arnold \(2021\)](#) shows that one can use a discrete choice model and empirical flows across markets (*i.e.*, $\alpha_{k \rightarrow m}$) to measure the value a worker from a given market places on another market.

Intuitively, if we observe a large number of flows from market m to k , then k likely serves as a viable outside option. Additionally, we need to take into account the relative sizes of the markets. For example, if k is a relatively small market, but we still observe high rates of flows to this market, it must provide a particularly good option for the workers. This is why the relative size between m and k is taken into account when determining the value individuals from m place in receiving a job in market k . The concentration in market m is given by:

$$\tilde{C} = \sum_j \tilde{s}_{jm}^2 \quad (B4)$$

One key difference in this formulation relative to [Arnold \(2021\)](#) is that transitions across both industries and locations are taken into account. In [Arnold \(2021\)](#), the market shares depend only employment in other industries within the same commuting zone. In this more general version, the

market share depends on employment in other commuting zones as well.

Second, the relative size term in $\alpha_{m \rightarrow k}$ (i.e. $\mathbb{E}[\frac{L_k}{L_m}]$) is now the expected relative size of industries across commuting zones. To understand this factor, imagine there are two equally sized industries that use similar workers but are generally located in different areas. For example, imagine plastic manufacturing and rubber manufacturing plants hire similar workers, but plastic manufacturing primarily takes place in Texas while rubber manufacturing primarily takes place in Ohio. In this case, the aggregate relative size of the industries will be quite different than the expected relative size within a commuting zone given the two industries primarily operate in different commuting zones. Therefore, a low volume of flows between the two industries does not necessarily reflect low substitutability, but rather they are generally located in different areas.

The flows-adjusted local labor market concentration measure, C_{mc} , is defined as:

$$C_{mc} = \sum_{j \in c} (\tilde{s}_{jmc})^2 \quad (B5)$$

Figure B6 and Table B6 show the effects of M&As on earnings of workers at target firms, separately for markets with high (flow-adjusted) HHI and for markets with low (flow-adjusted) HHI. Similar to our main results based on the regular HHI, these results show that the decline in worker earnings is not larger for high-HHI markets.

B.7 By Tradable vs. Non-Tradable Sectors

There are several results that suggest product market power is not the main driver of the observed labor-market impacts. First, we find that profit margins decrease for both target and acquiring firms. If product market power increased on average after M&A events, we would expect to see a rise in profits, not a decline. Additionally, we estimate markups and do not find any statistically significant impacts of M&A events on markups for either target or acquiring firms.

To explore this channel further, we also conduct our analysis separately by tradable and non-tradable goods sectors. The intuition is that an M&A would have a larger impact on a firm's market power if the firm does not face competition outside its geographical (i.e., international) markets. We define firms as active in tradable good sectors if they fall under Agriculture, Forestry, Fishing, Mining, Quarrying, and Oil and Gas Extraction, and Manufacturing. Firms active in other sectors (i.e., Construction, Retail, Real Estate, Services, etc) are defined as falling under non-tradable sectors (Berger et al., 2022; Delgado et al., 2014). Figure B7 and Table B7 show that the declines in worker earnings at target firms are similar for tradable and for non-tradable sectors. Therefore,

this finding, along with the results on decreased profit margins without a much change in markups, suggests that an increase in product market concentration seems to be unlikely the key driver behind the decline in target workers' earnings.

B.8 By Within vs. Between Industry M&As

In the previous subsection, we show that the decline in earnings of workers at target firms is similar between M&As that happen in tradable sectors and those that happen in non-tradable sectors, suggesting a limited role for the change in product market power in explaining the change in worker earnings. To further support this conclusion, we also conduct our analysis separately by within-industry M&As and between-industry M&As. The intuition is that an M&A would have a larger impact on firms' market power if the acquirer buys another firm within the same industry (i.e., horizontal mergers). We divide our sample of all M&A firms based on the industries of the parties involved in a transaction. A merger is a within-industry M&A if the industries (4-digit NAICS) of both parties are identical and it is between-industry M&A (i.e., vertical mergers) if the industries are different. For firms with one transaction, we define a firm as "within" if it participated in a within-industry M&A and as "between" if it participated in a between-industry M&A. For firms with multiple M&A deals, we consider the majority of transactions to determine the within- and between-indicator. Figure B8 and Table B8 show that the difference in the decline in worker earnings is statistically indistinguishable from zero between within-industry M&As and across-industry M&As. These results imply that a rise in product market power is unlikely the main driver behind the results on worker earnings.

B.9 By One-time vs. Repeat Acquirers

Prior research points out that a part of motives behind M&As involves empire-building, which could result in losses in efficiency and profitability after the event ([Jensen, 1986](#)). Even though it is practically difficult to discern whether a particular acquirer is an empire-builder in our data, we test whether the effects on firm sizes and profitability are different depending on whether an acquirer engages in multiple M&A transactions. Specifically, we compare the outcomes of acquirers involved in a single M&A deal relative to the outcomes of acquirers involved in multiple M&A deals during our sample period. Figure B9 and Table B9 show that acquirers involved in repeat M&A transactions tend to grow larger, in terms of the number of employees and total revenue, pay higher average salaries, but become less profitable after the event, compared to acquirers involved in a single M&A deal. While these results provide suggestive evidence consistent with the empire-building story, these differences could be also simply driven by the fact that acquirers involved

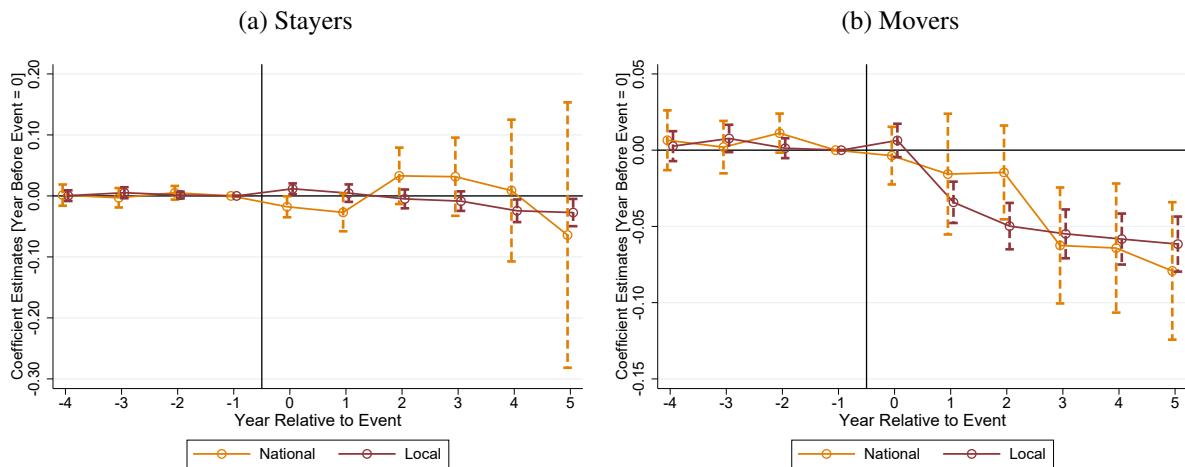
in multiple deals might mechanically increase in sizes more, and lose more profits through larger accumulated acquisition costs.

B.10 By Worker Characteristics

We additionally explore whether the decline in earnings of workers at target firms is different based on worker characteristics, such as gender and age. Prior studies have found differential impacts of firm-level shocks on worker earnings depending on their gender and age ([Kline et al. 2019](#); [Saez et al. 2019](#)). Figure B10 and Table B10 show that the decline of workers' earnings at target firms is similar between male workers and female workers.

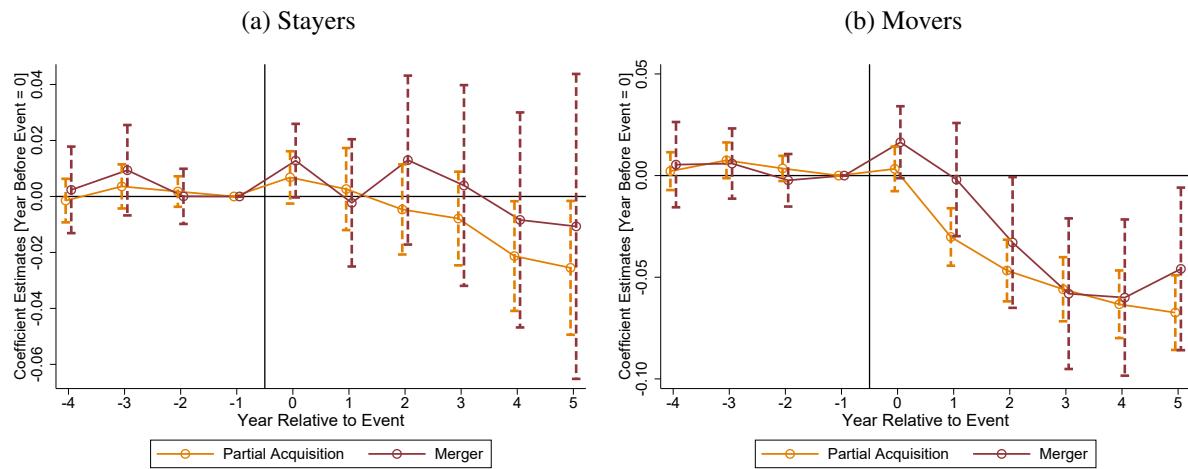
As shown in Section 6, the decline in workers' earnings at target firms is entirely driven by those who move to other firms after the M&A event. Therefore, we focus on the job movers from target firms, and estimate what happens to their earnings, job transitions, employer fixed effects, and match effects separately across different age groups. Figure B11 and Table B11 show that while we observe declines in earnings and match effects across all age groups for workers moving from target firms, the decline in earnings and match effects is largest among movers who are at least 50 years old before the event, without a much change in wage premiums. Taken together, these results imply that there exists a substantial degree of heterogeneity across age groups for changes in worker earnings, employer fixed effects, and match effects after the M&A event, and that older workers end up moving to other firms with worse match qualities, likely because of greater accumulation of firm-specific human capital at their previous firms. These results are consistent with our main results based on worker tenure in Section 6.

Figure B1: By National M&As vs. Local M&As (Targets)



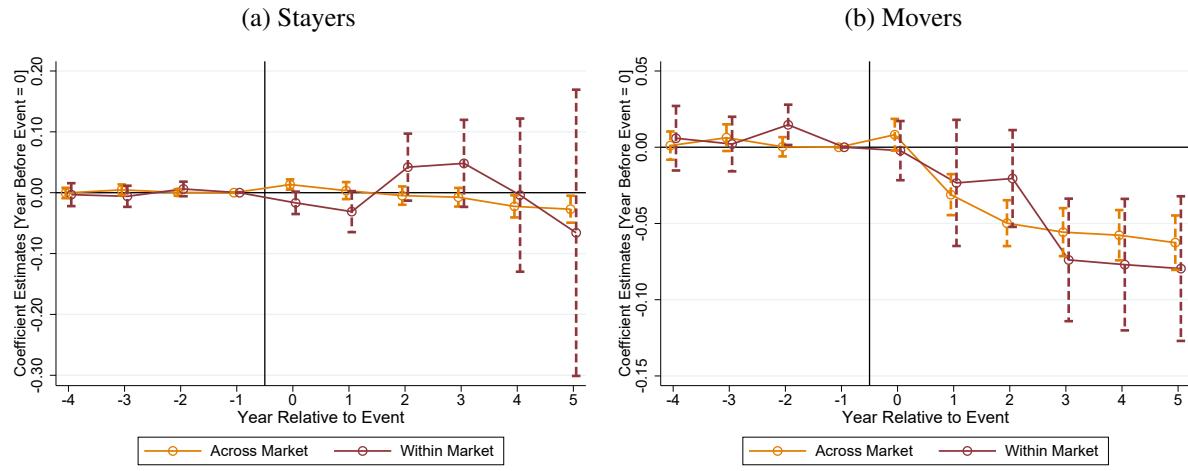
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for national M&A deals and local M&A deals. Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from target firms. The dashed lines indicate 95 percent confidence intervals where the standard errors are two-way clustered at the worker-firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure B2: By Partial Acquisitions vs. Mergers (Targets)



Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for partial acquisitions and full mergers. Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from targets. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the worker and firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

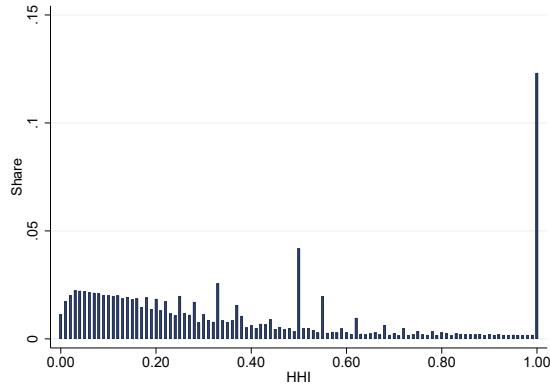
Figure B3: By Within Market M&As vs. Across Market M&As (Targets)



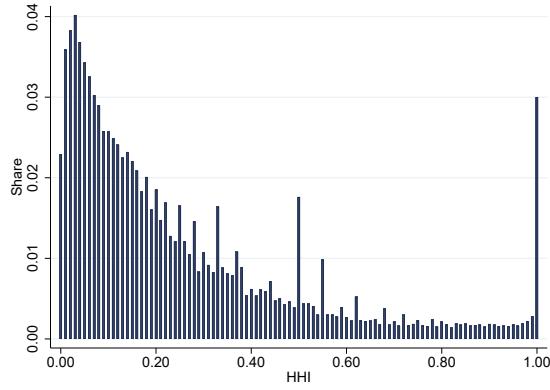
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for M&As that happen within the same labor market and for M&As that happen across different labor markets. Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from targets. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the worker and firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure B4: Distribution of Concentration across Labor Markets

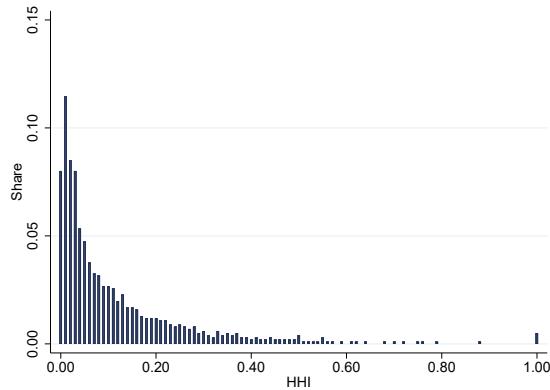
(a) All Markets in the Entire Sample



(b) Markets with any M&A Deal in the Entire Sample

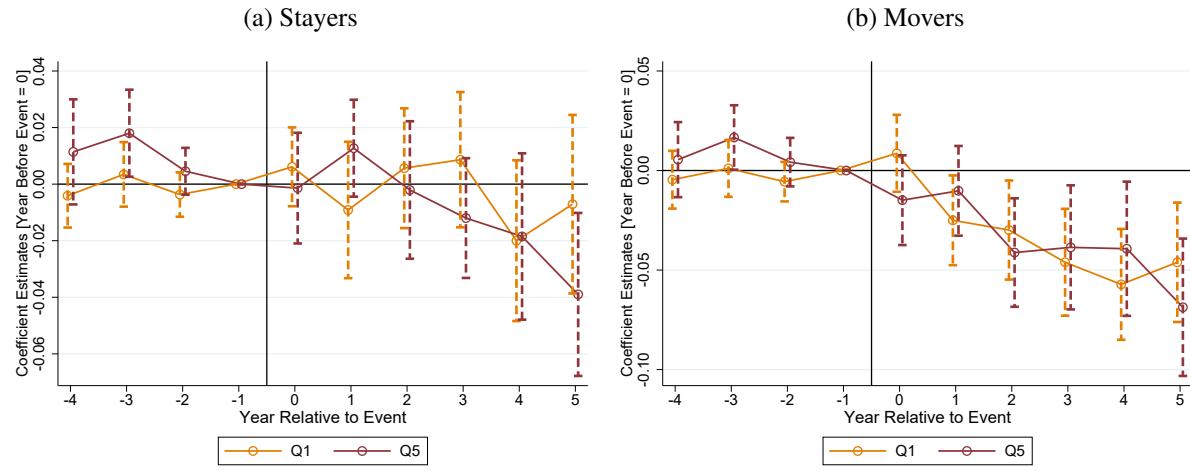


(c) Markets with any M&A Deal in the Matched Sample



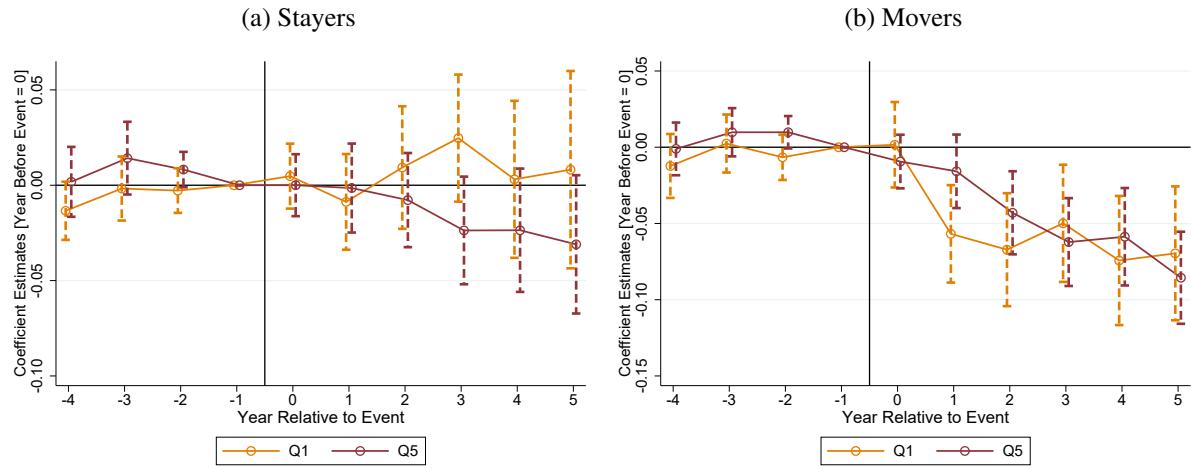
Notes: These figures display the distribution of concentration (measured by HHI) across labor markets. Panel (a) displays the distribution across all labor markets in the entire sample. Panel (b) displays the distribution across labor markets with at least one M&A deal in the entire sample during our sample period. Panel (c) displays the distribution across labor markets with at least one M&A deal in our matched sample (used for the main analyses).

Figure B5: By Initial Level of Concentration (Targets)



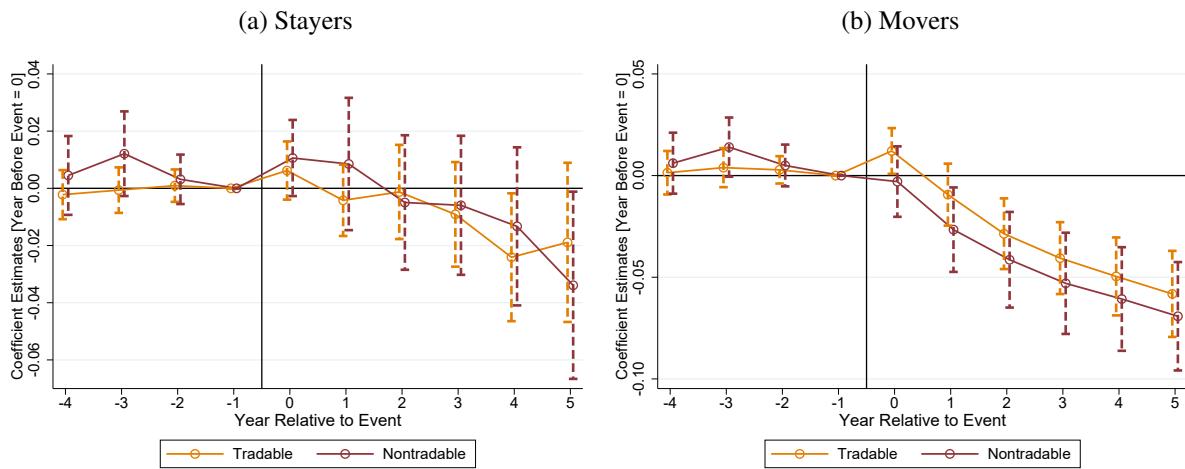
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for workers in markets with low initial level of concentration (first quintile) and for workers in markets with high initial level of concentration (fifth quintile). Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from target firms. The dashed lines indicate 95 percent confidence intervals where the standard errors are two-way clustered at the worker-firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure B6: By Initial Level of Flows-adjusted Concentration (Targets)



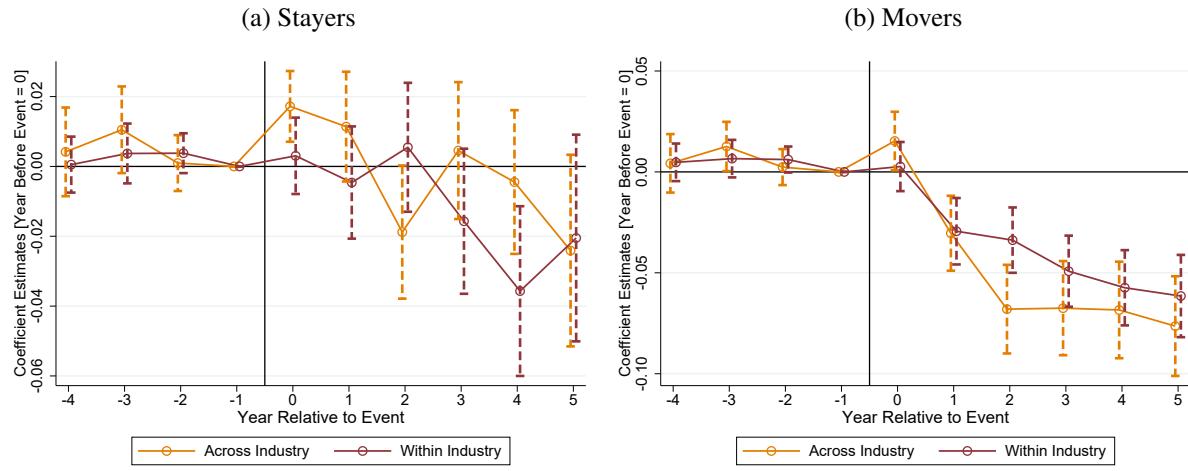
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for workers in markets with low initial level of concentration (first quintile) and for workers in markets with high initial level of concentration (fifth quintile). Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from target firms. The dashed lines indicate 95 percent confidence intervals where the standard errors are two-way clustered at the worker-firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure B7: By Tradable Sectors vs. Non-tradable Sectors



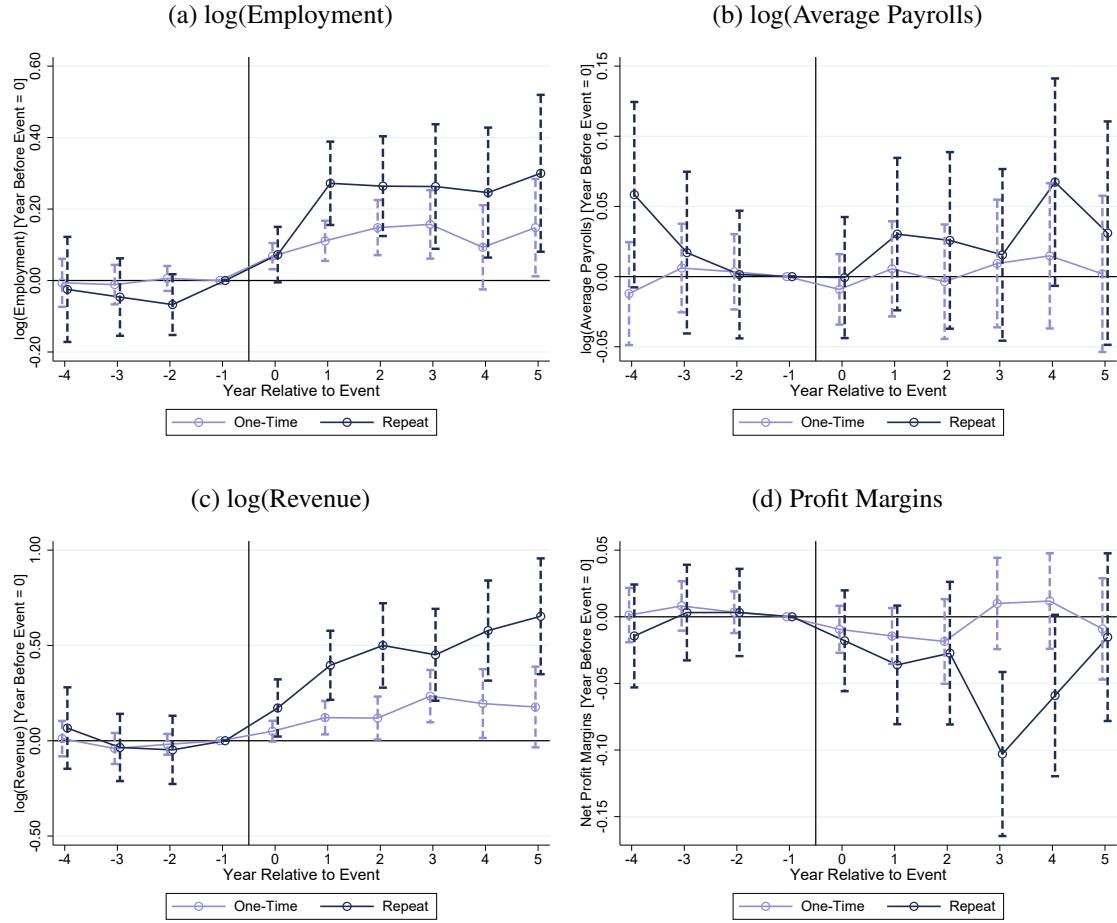
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings, separately for workers in tradable sectors and for workers in non-tradable sectors, as defined in Section B7. Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from target firms. The dashed lines indicate 95 percent confidence intervals where the standard errors are two-way clustered at the worker and firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure B8: By Within-Industry M&As vs. Across-Industry M&As (Targets)



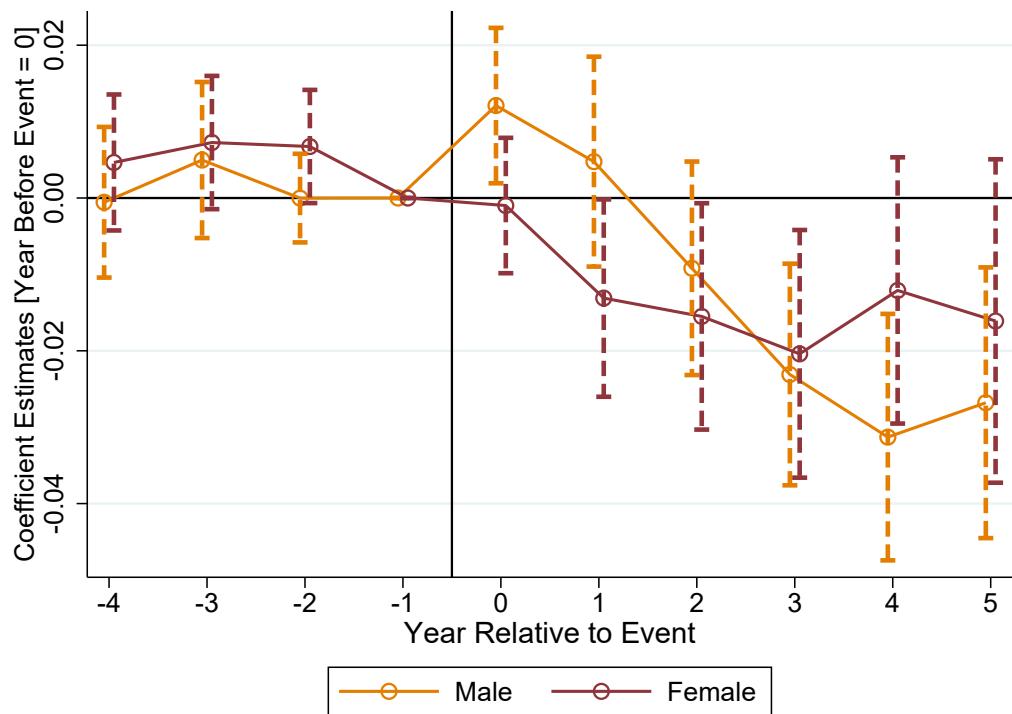
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for (horizontal) M&As that happen within the same industry and for (vertical) M&As that happen across different industries. Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from targets. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the worker and firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure B9: By One-time vs. Repeat M&As (Acquirers)



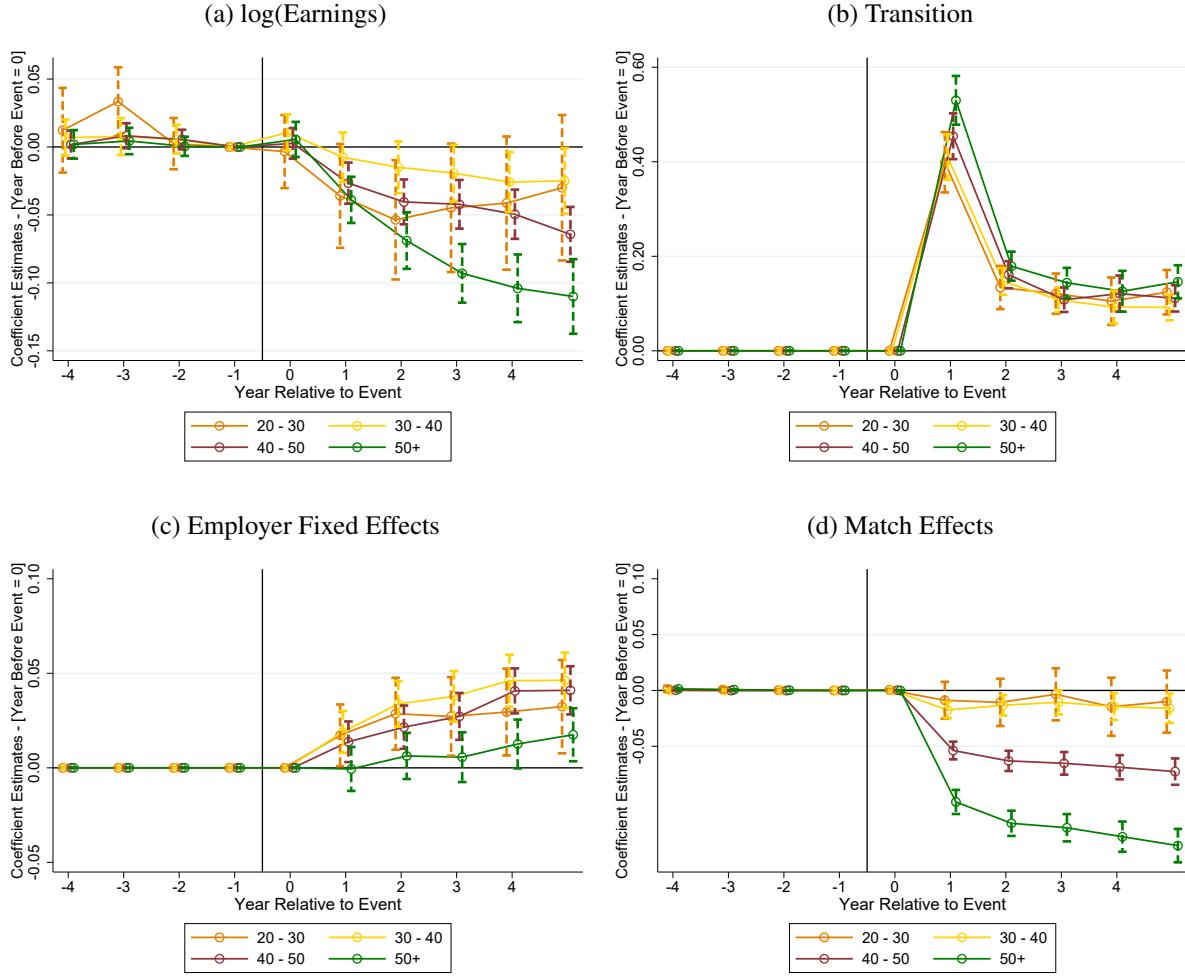
Notes: These figures display event-study estimates for the impact of M&As on the main firm-level outcomes, separately for acquiring firms that go through an M&A only once throughout our sample period and for acquiring firms with repeated M&A events. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure B10: By Worker Gender (Targets)



Notes: This figure displays event-study estimates of the impact of M&As on log of total earnings for workers at target firms, separately for male workers and for female workers. The dashed lines indicate 95 percent confidence intervals where the standard errors are two-way clustered at the worker and firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure B11: Workers Moving from Targets – By Worker Age



Notes: These figures display event-study estimates of the impact of M&As on worker-level outcomes for workers moving from target firms, separately for various age groups. Panel (a) shows the estimates for log of total earnings. Panel (b) shows the estimates for job transition probabilities. Panel (c) shows the estimates for employer fixed effects. Panel (d) shows the estimates for worker-employer match effects. The dashed lines indicate 95 percent confidence intervals where the standard errors are two-way clustered at the worker and firm level. The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Table B1: By National M&As vs. Local M&As (Targets)

	(1) Stayers	(2) Movers
Post × Treated	-0.010* (0.006)	-0.043*** (0.006)
Post × Treated × Local	0.003 (0.016)	0.000 (0.012)
Mean at t = -1 (National = 1)	11.00	10.96
Mean at t = -1 (Local = 1)	11.09	11.09
Adj. R squared	0.797	0.734
Worker-Year Obs. (National = 1)	1,373,320	804,430
Worker-Year Obs. (Local = 1)	193,360	180,900

Notes: This table reports the difference-in-differences estimates of the impact of M&As on log of total earnings for workers at target firms involved in national M&As. The triple interaction term captures the triple-difference estimates for workers at target firms in local M&As. Column (1) and column (2) display the estimates for stayers at target firms and workers moving from target firms, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B2: By Partial Acquisitions vs. Mergers (Targets)

	(1) Stayers	(2) Movers
Post \times Treated	-0.008 (0.006)	-0.044*** (0.006)
Post \times Treated \times Merger	-0.004 (0.013)	0.015 (0.013)
Mean at $t = -1$ (Partial Acquisition = 1)	11.01	10.98
Mean at $t = -1$ (Merger = 1)	11.01	11.01
Adj. R squared	0.797	0.734
Worker-Year Obs. (Partial Acquisition = 1)	1,365,630	868,030
Worker-Year Obs. (Merger = 1)	216,200	125,780

Notes: This table reports the difference-in-differences estimates of the impact of M&As on log of total earnings for workers at target firms involved in partial acquisitions. The triple interaction term captures the triple-difference estimates for workers at target firms involved in full mergers. Column (1) and column (2) display the estimates for stayers at target firms and workers moving from target firms, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B3: By Within Market M&As vs. Across Market M&As (Targets)

	(1) Stayers	(2) Movers
Post × Treated	-0.010* (0.006)	-0.043*** (0.006)
Post × Treated × Within Market	0.002 (0.016)	-0.006 (0.012)
Mean at t = -1 (Across Market = 1)	11.00	10.96
Mean at t = -1 (Within Market = 1)	11.10	11.10
Adj. R squared	0.798	0.734
Worker-Year Obs. (Across Market = 1)	1,387,180	811,090
Worker-Year Obs. (Within Market = 1)	171,090	160,590

Notes: This table reports the difference-in-differences estimates of the impact of M&As on log of total earnings for workers at target firms involved in M&As that happen across different labor markets (defined at the four-digit NAICS by commuting zone). The triple interaction term captures the triple-difference estimates for workers at target firms involved in M&As that happen within the same labor market. Column (1) and column (2) display the estimates for stayers at target firms and workers moving from target firms, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B4: Summary Statistics on Concentration across Labor Markets

	(1) All Markets	(2) Markets with M&A (Entire Sample)	(3) Markets with M&A (Matched Sample)
Average	0.3827	0.264	0.1383
Median	0.28	0.1753	0.0694
Min	0.0002	0.0003	0.0004
Max	1	1	1
Market-Year Obs.	745,849	177,629	10,120

Notes: This table reports summary statistics (average, median, min and max) on concentration, measured by HHI, (1) across all labor markets in the entire sample, (2) across labor markets with at least one M&A event in the entire sample, and (3) across labor markets with at least one M&A event in the matched analysis sample.

Table B5: By Initial Level of Concentration (Targets)

	(1)	(2)	(3)	(4)
	Without Restriction		Within-Market Restriction	
	Stayers	Movers	Stayers	Movers
Post × Treated	0.002 (0.009)	-0.037*** (0.008)	-0.057 (0.047)	-0.039** (0.017)
Post × Treated × Q5	-0.016 (0.012)	-0.014 (0.014)	0.076 (0.047)	-0.030 (0.027)
Mean at t = -1 (Q1 = 1)	11.04	11.02	11.27	11.25
Mean at t = -1 (Q5 = 1)	11.03	10.99	10.95	10.97
Adj. R squared	0.797	0.734	0.79	0.737
Worker-Year Obs. (Q1 = 1)	384,680	244,130	59,070	54,290
Worker-Year Obs. (Q5 = 1)	379,950	212,820	30,480	26,830

Notes: This table reports the difference-in-differences estimates of the impact of M&As on log of total earnings for workers at target firms in markets with initially low level of concentration (first quintile). The triple interaction term captures the triple-difference estimates for workers at target firms in markets with initially high level of concentration (fifth quintile). Column (1) and column (2) display the estimates for stayers at target firms and workers moving from target firms, respectively. Column (3) and (4) report the estimates for the same analysis, where we additionally restrict our analysis sample to M&A deals where acquiring firms and target firms are in the same labor market. The standard errors are two-way clustered at the worker and firm level.

Table B6: By Initial Level of Flows-adjusted Concentration (Targets)

	(1) Stayers	(2) Movers
Post \times Treated	0.004 (0.010)	-0.064*** (0.012)
Post \times Treated \times Q5	-0.019 (0.014)	0.019 (0.014)
Mean at $t = -1$ (Q1 = 1)	11.06	11.00
Mean at $t = -1$ (Q5 = 1)	10.97	10.93
Adj. R squared	0.797	0.734
Worker-Year Obs. (Q1 = 1)	166,760	88,280
Worker-Year Obs. (Q5 = 1)	395,900	285,200

Notes: This table reports the difference-in-differences estimates of the impact of M&As on log of total earnings for workers at target firms in markets with initially low level of concentration (first quintile). The triple interaction term captures the triple-difference estimates for workers at target firms in markets with initially high level of concentration (fifth quintile). Column (1) and column (2) display the estimates for stayers at target firms and workers moving from target firms, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B7: By Tradable Sectors vs. Non-tradable Sectors (Targets)

	(1) Stayers	(2) Movers
Post \times Treated	-0.009 (0.008)	-0.051*** (0.009)
Post \times Treated \times Nontradable	-0.001 (0.011)	0.019 (0.012)
Mean at t = -1 (Tradable = 1)	10.97	10.94
Mean at t = -1 (Nontradable = 1)	11.06	11.03
Adj. R squared	0.797	0.734
Worker-Year Obs. (Tradable = 1)	826,180	455,230
Worker-Year Obs. (Nontradable = 1)	755,750	538,740

Notes: This table reports the difference-in-differences estimates of the impact of M&As on log of total earnings for workers in tradable sectors. The triple interaction term captures the triple-difference estimates for workers in non-tradable sectors. Column (1) and column (2) display the estimates for stayers at target firms and workers moving from target firms, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B8: By Within Industry M&As vs. Across Industry M&As (Targets)

	(1) Stayers	(2) Movers
Post × Treated	-0.014** (0.007)	-0.046*** (0.008)
Post × Treated × Within Industry	0.006 (0.010)	0.005 (0.010)
Mean at t = -1 (Across Industry = 1)	10.97	10.91
Mean at t = -1 (Within Industry = 1)	11.04	11.03
Adj. R squared	0.797	0.733
Worker-Year Obs. (Across Industry = 1)	679,830	354,080
Worker-Year Obs. (Within Industry = 1)	902,090	639,880

Notes: This table reports the difference-in-differences estimates of the impact of M&As on log of total earnings for workers at target firms involved in (vertical) M&As that happen across different industries. The triple interaction term captures the triple-difference estimates for workers at target firms involved in (horizontal) M&As that happen within the same industry. Column (1) and column (2) display the estimates for stayers at target firms and workers moving from target firms, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B9: By One-time vs. Repeat M&As (Acquirers)

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Revenue)	(4) Profit Margins
Post × Treated	0.111*** (0.033)	0.012 (0.014)	0.151*** (0.047)	-0.003 (0.009)
Post × Treated × Repeat Acquirer	0.143** (0.057)	-0.003 (0.025)	0.274*** (0.085)	-0.042** (0.019)
Mean at t = -1 (One-Time Acquirer = 1)	4.39	10.74	16.85	0.01
Mean at t = -1 (Repeat Acquirer = 1)	4.85	10.76	17.32	0.04
Adj. R squared	0.878	0.787	0.840	0.373
Firm-Year Obs. (One-Time Acquirer = 1)	19,430	19,380	19,580	19,680
Firm-Year Obs. (Repeat Acquirer = 1)	9,130	9,110	9,110	9,190

Notes: This table reports the difference-in-differences estimates of the impact of M&As on the main firm-level outcomes for acquiring firms with only one M&A event during our sample period. The triple interaction term captures the triple-difference estimates for acquiring firms with repeated M&A events. Column (1) displays the estimates for log of employment. Column (2) displays the estimates for log of average payrolls. Column (3) displays the estimates for log of total revenue, and column (4) displays the estimates for profit margins. The standard errors are clustered at the firm level.

Table B10: By Worker Gender (Targets)

	(1)
	log(Earnings)
Post × Treated	-0.014*** (0.005)
Post × Treated × Female	0.001 (0.007)
Mean at t = -1 (Male = 1)	11.13
Mean at t = -1 (Female = 1)	10.76
Adj. R squared	0.739
Worker-Year Obs. (Male = 1)	1,391,660
Worker-Year Obs. (Female = 1)	634,370

Notes: This table reports the difference-in-differences estimates of the impact of M&As on log of total earnings for male workers at target firms. The triple interaction term captures the triple-difference estimates for female workers at target firms. The standard errors are two-way clustered at the worker and firm level.

Table B11: Workers Moving from Targets – By Worker Age

	(1) log(Earnings)	(2) Transition	(3) Employer FE	(4) Match Effect
20s	-0.035** (0.017)	0.147*** (0.011)	0.022*** (0.008)	-0.008 (0.008)
Mean at t = -1	10.66	0.00	0.13	0.05
Adj. R squared	0.756	0.239	0.872	0.341
Worker-Year Obs.	46,560	46,610	45,900	44,230
30s	-0.014* (0.008)	0.141*** (0.008)	0.030*** (0.005)	-0.012*** (0.004)
Mean at t = -1	10.96	0.00	0.24	0.04
Adj. R squared	0.729	0.211	0.862	0.196
Worker-Year Obs.	226,580	226,800	224,240	221,800
40s	-0.037*** (0.006)	0.159*** (0.008)	0.024*** (0.004)	-0.054*** (0.004)
Mean at t = -1	11.05	0.00	0.25	0.05
Adj. R squared	0.773	0.268	0.896	0.242
Worker-Year Obs.	364,530	365,080	362,070	359,730
50+	-0.068*** (0.008)	0.188*** (0.008)	0.007 (0.005)	-0.102*** (0.004)
Mean at t = -1	10.98	0.00	0.22	0.06
Adj. R squared	0.75	0.298	0.916	0.353
Worker-Year Obs.	353,530	354,620	351,900	348,400

Notes: This table reports the difference-in-differences estimates for the impacts of M&As on worker-level outcomes for moving workers from target firms across various age groups. Columns (1) displays the estimates log of total earnings. Column (2) displays the estimates for the transition probabilities. Column (3) displays the estimates for employer fixed effects. Column (4) displays the estimates for worker-employer match effects. The standard errors are two-way clustered at the worker and firm level.