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

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Abstract

This paper connects changes in employer characteristics through job transitions to employee earnings following mergers and acquisitions. Using firm balance sheet data linked to individual earnings data in Canada and a matched difference-in-differences design, we find that earnings of workers at target firms decrease after M&As, largely driven by those who move to other firms. Workers leaving targets move to larger and more profitable firms, but still experience wage declines. These decreased earnings are also concentrated among workers with longer tenure. These results are consistent with workers losing valuable match-specific premia after M&A-induced job transitions.

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

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1 Introduction

Mergers and acquisitions (M&As hereinafter) often result in important changes in corporate structure and worker composition for both target and acquiring firms. 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.[1] In theory, M&As may have positive or negative impacts on worker earnings. If M&As lead to efficiency gains for the involved parties, workers at acquiring firms or target firms may experience a wage increase through rent sharing. By contrast, M&As may lead to layoffs through labor restructuring which could lead to earnings losses for displaced workers. 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 worker and firm 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.[2] This allows us to not only assess employee-level outcomes, but also to study firm outcomes to connect and pin down potential mechanisms behind our findings. Specifically, the detailed joint information on firms and workers allows us to study the connection between changes in employer characteristics via job transitions and employee earnings after M&As.

In the first part of the paper, we explore how firm outcomes change around the time of an M&A event. To do so, we implement a matched difference-in-differences design, where we match

[1] There exists a large body of literature that examines the M&A impacts on firm performance, including Schoar (2002), Hoberg and Phillips (2010), Boucly et al. (2011), Davis et al. (2014), Braguinsky et al. (2015), Blonigen and Pierce (2016), Malmendier et al. (2018), and Demirer and Karaduman (2024). A growing body of studies assesses the impacts on workers, including Brown and Medoff (1988), Siegel and Simons (2010), Dessaint et al. (2017), Ouimet and Zarutskie (2020), Prager and Schmitt (2021), Arnold (2021), Lagaras (forthcoming), and He and le Maire (2022).

[2] While Arnold (2021) also uses employer-employee matched data in the U.S., the LEHD dataset 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.

firms that go through M&A events to otherwise similar firms that never undergo M&As during our sample period. Importantly, in our setting, around 80 percent of M&A events involve acquisitions, where the target sells its assets, divisions, or only a part of its shares, and remains operating as a separate entity following the M&A event. This allows us to keep track of the target's and the acquirer's outcomes after the event, so that we can assess the impacts on targets and on acquirers separately. By contrast, in mergers, the entirety of the target is sold to (or merged with) the acquirer, meaning there is a definite change of control. Given that there can be qualitative or quantitative differences in firm-level impacts depending on whether there is a change of control, we separate our firm-level analyses into those involved in acquisitions and those involved in mergers, although we do not find meaningfully different results in the aggregate between the two types. Given that the majority of M&As in Canada involve acquisitions, analyzing these activities in addition to mergers allows us to exploit more events and to examine a broader sample of relevant firms and workers.

Focusing on these acquisitions, we find that acquirers expand, while targets shrink substantially after M&As. Acquirers' employment increases by 18.8 log points, without much change in average payrolls relative to their matched control firms after M&As. By contrast, targets' employment and average payrolls decrease by 8.9 log points and 2.6 log points on average, respectively. At the aggregate (pooling targets and acquirers) level, however, we find almost no changes in employment or average payrolls in either mergers or acquisitions. Furthermore, we find decreases in profitability for both targets and acquirers following the M&A event.

To interpret our firm-level results as causal, one would require that selection into M&A activities is independent conditional on the variables included in the matching procedure. This may be a strong assumption in practice. A priori, the sign of the bias is unclear and likely context dependent; therefore, another way to interpret our evidence is as a descriptive exercise of how firm outcomes evolve around M&A events, without attributing the changes to the causal impact of the M&A. Since the main focus of our analysis is studying worker outcomes, we can assess how changes in the firm-level outcomes are related to the changes at the worker level.

In the next part of the paper, we turn to our main focus: worker-level outcomes. To do so, we

study incumbent workers that were employed at the M&A firms for at least 4 years prior to the M&A event. For the worker-level analysis, our identifying assumption is that workers do not selectively enter firms that are participating in M&A events in the future. Because the workers make this decision many years before the M&A event, we find this to be a plausible assumption, which is validated by studying pre-trends before the event. In this analysis, we do not make a distinction between acquisitions and mergers, not only because we can track individual worker transitions, but also because we find similar results in both cases. For workers at acquiring firms, we find relatively stable earnings after M&As. However, for target workers, we find their earnings decrease by 1.2 percent. Conceptually, this decline in worker earnings may stem from two channels. First, workers at target firms may face an increased risk of job displacement. 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&As 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. Therefore, even though in aggregate employment does not change, the M&A event is disruptive for incumbent workers. We also find that most of these post-M&A job transitions are to different companies, rather than to unemployment. By contrast, for workers at acquiring firms, we find no change in the probability of job transitions.

For individuals who remain at target firms, we observe gradual and medium-run declines in their earnings, resulting in a statistically insignificant decrease in earnings (0.8 percent) on average. However, target workers who move jobs after an M&A event suffer immediate earnings losses 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 losses for workers in this group, the next part of the paper explores the source of this decline in earnings.

First, we explore whether changes in the characteristics of the firm employing the worker can explain the drop in earnings, following a recent literature on job displacement (Schmieder et al. 2023 and Lachowska et al. 2022). The firm balance-sheet data allows us to test whether there are observable differences between the target firm and the new firm that target workers move to. In fact,

we find that the new firms are larger, more profitable, and have higher firm-specific wage premia on average compared to the target firms. This result suggests that the decline in job movers' earnings cannot be explained by these workers moving to observably worse firms. Importantly, most of these job movers from target firms move to non-acquiring firms, meaning that this transition to larger firms is not mechanically driven by worker reallocation toward acquirers.

Similar to the job displacement literature that utilizes mass layoffs as exogenous separation events, M&As may be conceptualized as generating exogenous separations for workers (Jacobson et al., 1993; von Wachter et al., 2009; Lachowska et al., 2022; Schmieder et al., 2023). Our findings suggest the context of the layoff may matter for future job prospects, as we find distinct patterns relative to the prior literature. First, while we find job movers drive the earnings declines for target workers, the losses for these movers are significantly less than those found in the mass-layoff literature. Additionally, the patterns of re-hiring are distinct, with the workers in our setting moving to observably better-paying firms, but still suffering earnings losses. While the prior literature differs on the contribution of firms to earnings losses (Schmieder et al., 2023; Lachowska et al., 2022), we find that earnings losses would be even larger in the absence of changes in firm characteristics.

These results are therefore potentially useful for understanding job transition dynamics and the importance of match effects in the labor market. To further explore these results, we conduct heterogeneity analyses based on worker tenure measured one year before the event. We find that the declines are almost entirely driven by workers with longer tenure. In our final section, we discuss two broad classes of models that are consistent with our evidence. The first class of models is based on settings in which contracts are structured in a way that long-tenure workers earn more than their marginal productivity (Lazear, 1979; Burdett and Coles, 2003, 2010). In this case, an M&A may destroy inefficient jobs from the perspective of the firm. In the second class of models, high-tenure workers are especially productive at the firm either due to firm-specific human capital or job-shopping mechanisms (Lazear, 2009; Menzio and Shi, 2011; Schaal, 2017; Bagger et al., 2014). In this case, an M&A may destroy productive jobs in the labor market. While we highlight two broad classes of models to understand the earnings losses for target workers, we acknowledge

that there may be other classes of models and mechanisms consistent with our overall findings.

This paper contributes to several distinct literatures. Most directly, we contribute to a literature on the impacts of M&As on the labor market. There are two broad classes of papers within this literature. One set of papers focuses on market-level impacts due to concentration (Prager and Schmitt, 2021; Arnold, 2021), while the other set focuses on direct impacts within M&A firms and workers (Lagaras, forthcoming; He and le Maire, 2022; Todd and Heining, 2024). Our paper is mostly related to the latter set of papers, as we find that most of our events generate limited impacts on concentration in our setting and the results are inconsistent with increased market power.

Relative to this second set of papers, we have two primary contributions. First, these prior studies argue that changes in firm characteristics are an effective way to explain post-M&A earnings changes. For example, Todd and Heining (2024) finds increased earnings of workers who stay at a target firm, and attributes this to shared rents between the acquiring firm and target firm. He and le Maire (2022) finds that firms with high-wage managers are displaced in target firms, which can impact workers who stay at the firm. Similar to our paper, Lagaras (forthcoming) focuses on job movers from target firms, finding that their earnings losses are largely explained by transitions to lower-paying firms. By contrast, our balance-sheet data allows us to go beyond firm wage premia and look at the actual firm characteristics. An important argument in the prior work is that rent-sharing potentially drives worker outcomes. This could be rents within the merging firm and how they are shared (He and le Maire, 2022; Todd and Heining, 2024) or rents at the new destination firm for job movers (Lagaras, forthcoming). The balance sheet data allows us to get direct measures of profitability, providing direct evidence on this rents channel.

Our second main contribution is that we find notably different results compared to the prior literature. Our worker-level evidence seems inconsistent with changes in firm rents driving the outcomes. In particular, workers who leave targets move to firms with higher wages and profitability, yet still suffer earnings losses. This highlights one important takeaway from this recent literature on how M&A events impacts workers: M&A events can be heterogeneous, and results in one context may not apply to others.

Lastly, there is a large literature in finance and industrial organization on how M&As affect firm performance, finding mixed results (Schoar 2002, Hoberg and Phillips 2010, Boucly et al. 2011, Davis et al. 2014, Braguinsky et al. 2015, Blonigen and Pierce 2016, and Malmendier et al. 2018). 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 profitability. We then use these firm outcomes to rule out alternative mechanisms, such as changes in firms' market power, behind the decline in worker earnings. Our ability to link these firm outcomes to the worker outcomes is unique to the literature.

This paper is organized as follows. Section 2 provides institutional details, Section 3 describes our data, Section 4 describes our design, Section 5 shows our main results, and Sections 6 and 7 discuss potential mechanisms behind and interpretations of our findings. Section 8 concludes.

2 Institutional Background

This section describes relevant institutional details about competition policy. Competition policy in Canada is administered by the Competition Bureau, which enforces a two-step process for merger reviews, similar to the American process with notification thresholds 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 the parties and the size of the transaction. Both of these must be met to trigger a pre-merger notification.[3] In our analysis sample, most M&A deals and involved parties are not large enough to trigger these thresholds.

Until recently, the Competition Act featured an "efficiencies defence" of mergers, allowing anti-competitive mergers to proceed if potential cost savings outweighed the losses to consumers through higher prices. In the U.S. and many other jurisdictions, efficiency is also considered as a factor in antitrust decisions for mergers but is given less weight.[4] Recent legislation repealed

[3]The combined parties must have aggregate assets in Canada, or aggregate annual gross revenue in or from 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 in or from Canada generated from those assets, must be greater than 93 million Canadian dollars.

[4]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).

the efficiencies defence for merger reviews after December 2023. In Appendix C, we provide institutional details regarding the relevant labor regulation in Canada.

3 Data

3.1 SDC Platinum Database

The SDC Platinum database is used extensively both in the finance industry and among academic researchers as it provides comprehensive coverage of M&A activities, including near-universal coverage of transactions for publicly traded as well as private companies in Canada.[5] This database is also used by other related papers studying M&As, such as Boucly et al. (2011), Cunningham et al. (2021), and Lagaras (forthcoming).[6] The SDC database contains variables that indicate the type of a transaction, such as a merger or different kind of acquisition, and identify the target firm and the acquiring firm in each transaction. Our main analyses include both mergers and acquisitions, although we also show our results separately for these two types of events. Since the literature focuses on the change of control as a key determinant of post-M&A outcomes, we include acquisitions given that many of them may result in a change of control. To understand this choice, we provide details on how the SDC database categorizes each M&A transaction in Appendix C. Furthermore, the SDC dataset includes names of the parties, NAICS industry codes, and addresses. 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. The match rate is around 75 percent on average from 2001 to 2017, comparable to Boucly et al. (2011) and Lagaras (forthcoming) that match the SDC data with French and Brazilian administrative data, respectively.[7]

[5]The SDC Platinum is available from London Stock Exchange Group, which acquired the Refinitiv platform from Thomson Reuters. It is used by industry professionals to research industry trends (e.g., market share of M&A deals across firms) and to compare the financial aspects of past deals. While the main purpose of this data being collected may be industry use, the database is also marketed broadly to academic researchers.

[6]While Barrios and Wollmann (2024) notes that the SDC data may not cover all M&A deals in the U.S., identifying potentially missing M&As in Canada (which might be a small share) is beyond the scope of our study.

[7]In Boucly et al. (2011) and Lagaras (forthcoming), the number of identified mergers is 1,193 and 2,926, and the final sample after data matching contains 839 and 2,096 relevant transactions for a gross match rate of 70 and 72 percent, respectively.

3.2 Canadian Employer Employee Dynamics Database (CEEDD)

The Canadian Employer-Employee Dynamics Database combines individual (T1) and corporate (T2) tax return records with job-level information from T4 employee tax records, Record of Employment (ROE) data on work history, and firm-level information from the National Accounts Longitudinal Micro-data File (NALMF) from 2001 to 2017. The main firm-level outcome variables are employment, average payrolls, and profitability. Employment is defined as the average number of employees reported on the NALMF. Average payrolls are defined as the sum of workers' earnings at a given firm divided by the number of employees from T4 records. We use two different measures of profitability: (1) profit margins, defined as total revenue minus total expenses scaled by total revenue, and (2) returns on assets, defined as total revenue minus total expenses divided by total assets. 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 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.

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 difference-in-differences design by estimating a regression of the following form:

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

where Y_{jt} is an outcome variable for firm j in 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. To absorb any industry-specific shock affecting M&A

activities in a given year (Maksimovic and Phillips 2001), we include 4-digit industry dummies interacted with year dummies as control variables. Furthermore, we include a quartic function in firm age to ensure that our results are not driven by differences in financial constraints of firms. The standard errors are clustered at the firm level. Note that for firms that go through M&As more than once, we focus on their first M&A event although we still allow the subsequent M&A event(s) to affect their outcomes in the post-event period.[8] Furthermore, most of the M&A firms and their matched control firms are private companies (96 percent) in our analysis sample, so our results remain nearly unchanged even if we focus our analyses exclusively on private firms (Appendix A).

In our matched sample described in the next subsection, roughly 80 percent of M&A events involve acquisitions. Relative to a merger, an acquisition results in the target firm continuing its operation as an independent entity, which allows us to keep track of the target's outcomes separately from the acquirer's outcomes after the event. When assessing acquisitions, we look at targets and acquirers separately. In contrast, when assessing mergers, we look at the aggregate (targets and acquirers pooled) outcomes. Additionally, we use the worker-level data to examine the extent to which workers reallocate from targets to acquirers.

To assess worker-level impacts, we estimate a similar difference-in-differences model:

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

where y_{it} is an outcome variable for incumbent worker i in year t and ω_i are worker fixed effects. The standard errors are two-way clustered at the worker-by-firm level.[9]

The identifying assumptions necessary for interpreting our event-study estimates as causal impacts of M&As depend on the unit-of-analysis. To interpret β_k^{MA} in Equation (1) as the causal impact of M&As on firm-level outcomes, we need to assume that selection into a M&A activity

[8] When focusing on the first acquisition or merger, we still cover the subsequent event(s) in the post-event period for firms that go through M&As more than once. While the majority (roughly 70 percent) of firms go through a merger or an acquisition only once during our sample period, there exists a handful of acquirers that engage in M&As more than once. Our main analysis sample still includes these acquirers involved in multiple M&As over time. In addition, we separately examine acquirers that go through multiple M&As in Appendix A.

[9] Our 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.

is independent of u_{jt}, conditional on the observables that are used in the matching process. This may be a strong assumption in practice. A priori, the sign of the bias is not obvious. For example, Demirer and Karaduman (2024) finds that high-performing firms target underperforming firms and improve efficiency. This could suggest that target firms are on a downward trend, which could bias the estimated impacts of M&As on firm-level outcomes. By contrast, Cunningham et al. (2021) finds that innovative firms are bought as a way to preempt competition, suggesting that these target firms would have been on an upward trajectory before the M&A event. For the acquiring firm, a literature in corporate finance has posited various motivations for engaging in M&A activities. For example, Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) argue that overvalued companies may engage in M&As to take advantage of their overpriced stock. While most of our M&As are not stock purchases, a similar concern remains: firms that acquire other firms may be on a different trajectory than firms that do not buy other firms.

Our main approach is to examine parallel trends in the years prior to the M&A to understand whether the acquiring or target firms are on different trajectories relative to their matched control firms. While we find validation for this design, coinciding shocks or information revealed in the M&A process may also impact firm outcomes following the event. Furthermore, even though the trends are parallel prior to the event, the question still remains whether firms involved in M&As and firms not involved in M&As are truly comparable over time. Therefore, one way to interpret these results is that it allows us to descriptively trace out how outcomes at firms are evolving relative to an M&A event. Since the main focus of this paper is studying labor market impacts, assessing firm-level outcomes allows us to connect changes in firm characteristics with changes in worker-level results, which helps us understand potential mechanisms behind worker outcomes.

At the worker-level, the identifying assumptions are arguably more plausible. To identify the causal impacts of M&As on workers, we need to assume that workers are not selecting into firms based on future M&A activities. Since we match workers at treated firms to workers in the matched control firms (which have similar trends in firm-level outcomes in the pre-period), we find this to be a plausible assumption, particularly because we impose a 4-year tenure restriction which

ensures that the M&A event occurs many years after the worker makes the decision to work at the firm. The identification strategy at the worker-level is similar in spirit to the pioneering work of Jacobson et al. (1993) which studies the impact of job displacement on workers using mass layoffs as exogenous events. In their study, they require workers to not selectively enter firms that will or will not engage in a mass layoff in the future. Similarly, we require workers to not selectively enter a firm based on a future M&A activity.

4.1 Matched Samples

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 with enough pre-period observations, and drops most small businesses that are not comparable to either acquiring or target firms. Additionally, we drop a small share of firms that have missing observations for the key variables used for matching, such as sector, firm-level average payrolls (from firm balance sheets), and firm age, measured one year prior to the event. During our sample period, the total number of M&A events is 765 per year on average among the sample of firms eligible for matching (see Figure 1). We then match each firm one year prior to an M&A event to a control firm in the same province and 2-digit NAICS sector. 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 firm-level average payrolls and is in the same 15-quantile bins in total revenue and firm age one 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 (one-to-one matching within a caliper), which is estimated by predicting treatment using a linear probability model with a quadratic function in total revenue, average payrolls, and firm age in year $[t-1]$. The matching strategy finds a control firm in about 79 percent of all cases among the eligible sample. We provide descriptive statistics on the sample of unmatched eligible M&A firms and show robustness test results including these excluded firms in Appendix A.

[10] Our main results remain robust to using firms' profitability as an additional matching variable (Appendix A).

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. Identification here comes from differences in always-treated and never-treated units over time, not from units coming in and out of treatment.[11]

Matching on size, sector, and province finds treatment-control pairs that would plausibly exhibit common trends in the absence of 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 raises 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. To minimize this concern, we do a robustness check by matching firms within the same province, but in different markets (Appendix A).

To construct the worker-level sample, we extract all workers who were continuously employed in the matched firms during the entire pre-event period (4 years). 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., 2022). The tenure restriction limits the possibility that workers select into firms that are likely to get acquired in the near future. Additionally, we restrict workers to have at least 3,900 CAD in annual earnings and drop multiple jobholders to ensure that we study full-time workers with stable income and attached to their firms (Card et al., 2013; Sorkin, 2018), given that we do not observe work hours in our data. 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 (one-to-one matching within a caliper), where the propensity score is estimated by predicting treatment

[11] We let the first M&A event in our analysis sample start from 2005 to ensure that our matched control firms did not go through any M&A event at least 4 years prior to (or after) the first M&A event, given that our data starts from 2001. In this way, we ensure that none of the matched control firms went through any M&A event from 2001 to 2017.

using a linear probability model with a squared function in worker age. In total, about 60 percent of workers at treated firms are matched to control workers among the sample of eligible workers at matched control firms. We provide descriptive statistics for the unmatched workers and show robustness test results including these excluded workers in Appendix A.

4.2 Descriptive Statistics

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 markups, 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 regard to their average employee compensation and financing structure prior to the event. Importantly, as we show in Section 5 and Appendix B, M&A firms and their control firms share parallel pre-trends on these variables, implying that they exhibited similar patterns not only in terms of employment and average payrolls, but also with regards to sales and profitability, prior to the M&A event. The dominant sectors are manufacturing, wholesale, and services.

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 71,386 CAD among workers at acquiring firms and workers at the matched control firms, respectively. Annual earnings are 70,625 CAD and 72,317 CAD among workers at target firms and workers at the matched control firms, respectively. 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 payrolls at a given firm may not equal the average annual earnings of workers at a given firm in our matched sample.

5 Results

5.1 Post-M&A Firm Size and Average Payrolls

Figure 2 plots estimates of β_k^{MA} from equation (1) across the main firm-level outcomes using our matched sample. As mentioned in Section 4, we show these results separately for targets and for acquirers involved in acquisitions (Panels (a) and (b)) and for the aggregate (targets and acquirers pooled, Panels (e) and (f)). 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. While acquirers' employment significantly increased after the event, targets' employment decreased relative to the matched control firms. Panel (b) shows that the pre-event trends for average payrolls are also similar between M&A firms and their control firms. While acquirers' average payrolls stayed flat after the M&A event on average, targets' average payrolls significantly decreased relative to the control firms' average payrolls.[12] In Panels (e) and (f), we pool targets and acquirers and compare their outcomes with those of their matched control firms before and after the M&A event. Here, we simply drop the distinction between acquirers and targets when estimating equation (1) so that acquirers, targets, and their matched control pairs are all in the same estimation. The black line and red line indicate the aggregate outcomes for those involved in mergers and for those involved in acquisitions, respectively. In the case of acquisitions, employment and average payrolls did not change much after the event on average, except for the initial drop in average payrolls. Similarly, in the case of mergers, employment and average payrolls stayed flat after the event on average, except for an initial but temporary rise in employment.

To interpret the magnitude of these results, Table 2 presents the difference-in-differences estimates on these outcomes, separately for targets and for acquirers involved in acquisitions (Columns 1 and 2) and for the aggregate (Columns 3 and 4). Column (1) shows that target firms' employment and average payrolls fell by 8.9 log points and 2.6 log points, respectively, after the event. Col-

[12] To account for a small share of firms (especially among targets) that exit the sample after the M&A event, we repeat the same analysis using outcomes measured in levels instead of in logs, where we replace the missing observations with zeros. We find qualitatively similar results when we use the outcomes in levels (see Appendix A).

umn (2) shows that acquiring firms' employment increased by 18.8 log points, without significant changes in average payrolls, after the event. Columns (3) and (4) show these outcomes in the aggregate, separately for those involved in acquisitions and for those involved in mergers. Columns (3) and (4) show that employment and average payrolls did not change much on average in the aggregate in the case of either acquisitions or mergers.[13] Overall, our results show that M&As lead to mechanical firm-size adjustments when we look at targets and acquirers separately, but in the aggregate, firm size remains relatively flat both in acquisitions and in mergers. To get a better sense of the impacts on worker reallocation and average payrolls, we use worker-level data to assess the impacts of M&As on worker earnings and job transitions in Section 5.3.

5.2 Post-M&A Firm Profitability

Next, we examine how firm performance changes after M&As. We use two measures of profitability: profit margins and returns on assets.[14] Panel (c) of Figure 2 shows the results on profit margins, separately for targets and for acquirers involved in acquisitions. Before the M&A event, both targets' and acquirers' profitability moved in parallel with those of their matched control firms. While acquirers' profit margins decreased significantly after the event, targets' profit margins spiked in the year of M&A, and decreased afterwards. The initial spike in profits at targets may be due directly to the M&A transaction, rather than a long-term increase in profitability of the firm. Panel (g) shows the aggregate outcomes (targets and acquirers pooled) separately for those involved in acquisitions and for those involved in mergers. In both cases, we find that profit margins decreased after the event in the aggregate. We find similar results for return on assets (Panel (d) and (h)).

To interpret the magnitude of these results, Table 2 presents the difference-in-differences estimates on these outcomes. Columns (1) and (2) show that targets' profit margins decreased by 0.7 percentage points, while acquirers' profit margins decreased by 1.9 percentage points on average after the event. Columns (3) and (4) show that in the aggregate, profit margins decreased

[13] In Column (3), the average estimates are weighted by the relative sample sizes between targets (Column 1) and acquirers (Column 2), where the target sample size is much larger. Therefore, the negative coefficient estimates from the targets carry a larger weight than the positive coefficient estimates from the acquirers, leading to zero (or slightly negative and insignificant) effects on average at the aggregate level.

[14] We also find qualitatively similar results using another performance measure, NIBTEI per worker (Appendix B).

by 0.9 percentage points in the case of acquisitions, while they decrease by 1.9 percentage points in the case of mergers. Columns (1) and (2) show that targets' returns on assets decrease by 3.3 percentage points, while acquirers' returns on assets decrease by 1.3 percentage points on average. Columns (3) and (4) show that in the aggregate, returns on assets decrease by 2.7 percentage points in the case of acquisitions, while they decrease by 2.9 percentage points in the case of mergers.

While efficiency gains through synergies are often argued as potential benefits of M&As, we do not find any evidence of increased profitability for either acquiring or target firms after M&As. This is a potentially puzzling finding, but consistent with a body of literature in corporate finance. For instance, Malmendier et al. (2018) finds that acquiring firms that win bidding contests for target firms suffer losses in stock returns relative to competitors. Several theoretical models show that M&As can reduce firms' profits. For example, Jensen (1986) posits that CEOs may engage in M&As due to empire-building motives, as managing a larger firm gives the CEO potentially more influence. Malmendier and Tate (2005) shows that CEO overconfidence (measured by personal investment in their company) is associated with increased M&As, and drops in stock prices are particularly large when overconfident CEOs pursue mergers. Even in the absence of these motives, it is possible that firms may lose profits after M&As for other unobserved reasons, given that the decision to go through M&As is endogenous. It is also possible that these firms may experience an increase in profits in the long run, as it could take a while to recoup the benefits of M&As. Therefore, instead of claiming that M&As *caused* declines in profits for firms involved in M&As, we state that the decline in profitability seems inconsistent with the rise in firms' market power at least in the medium run in our setting, a key potential channel we discuss in Section 6.

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

Given the considerable turnover at target firms after M&As, changes in average payrolls may reflect changes in worker composition. For example, the decrease in firm-level wages could be driven by laying off high-wage workers or reducing wage growth for existing workers, or both. We turn to the worker-level data that allows us to flexibly control for composition by tracking the same workers over time. We focus on incumbent workers who were already employed at their firms

before the event and follow their outcomes throughout our sample period. Here, we do not make a distinction between workers involved in acquisitions and workers involved in mergers, although the results are similar when we assess them separately (Appendix B).

Panel (a) of Figure 3 shows that annual earnings for incumbent 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 incumbent workers at acquiring firms trend similarly to those of their matched control workers and stay flat after the event. Column (1) of Table 3 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 (1) shows that the annual earnings of workers at acquiring firms did not change much on average.

The drop in employment at target firms suggests that job transitions could explain a part of the decline in worker-level earnings. However, 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 unemployment. In our data, most of the workers who leave their original employers do so involuntarily, but find a job afterwards.[15] Panel (b) of Figure 3 plots the estimates of equation (2) with an indicator for a job transition as the outcome, which equals one in year t if a worker is employed in a different firm in year t than in year $t-1$. As shown in the figure, job transitions spike in $t = 1$, meaning that many workers transitioned to another firm in the year of the M&A event. Relative to control workers, target-firm workers are about 20 percentage points more likely to transition jobs in the year of the M&A event. Transition rates then drop, but remain elevated relative to workers in the control group. Given this notable increase in job separations especially in the year of the M&A event, part of the effects on earnings may be coming from departures from their employers rather than within-firm decreases in earnings. This also helps

[15] Our data have 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 has "unknown" as the reason for job separation. Among the other half, about three quarters of workers moving from target firms left involuntarily after the M&A event.

explain the immediate drop in target firms' average payrolls in $t = 0$ (Panel (b) of Figure 2), which reflects a large compositional change due to the significant worker departures. 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 3 restricts the analysis to workers who stay in the same firm in the years following the event. We make this restriction for both treated workers and control workers so that the treatment group does not mechanically contain workers who have more stable job histories. Column (3) of Table 3 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.

To understand how these job transitions occur, Panel (b) of Figure 4 plots the impact of M&A on job transitions for the job mover sample. As the figure shows, most of the transitions happen immediately at the time of the M&A, with the treated workers 70 percent more likely to move jobs in the M&A year than the control group. However, transition rates continue to be elevated in the following years, albeit much lower than the initial spike. Even though we focus on workers who move within the first two years after the event, we allow these movers to subsequently transition to other firms after their first move. While most seem to be happening immediately, we do see some movers transitioning in later years as well. It is possible that the initial transition disrupts careers, leading to higher transition rates than in the control group even after the initial transition.

Panel (a) of Figure 4 shows how these transitions lead to large and immediate drops in earnings of workers who move from targets to other firms within the first two years after the event. Column (1) of Table 4 shows that these job movers experience a decline of 4 log points in their earnings on average.[16] Importantly, about 80 percent of these workers move to non-acquiring firms, meaning that most of these job transitions are not driven by a reallocation of workers from targets to acquirers. Interestingly, as Panel (c) and Columns (3) – (4) show, target workers who move to non-

[16]Note that the reason why the earning drops in $t = 1$ even though most of these workers moved to other firms in $t = 0$ is because the annual earning in $t = 0$ reflects the earnings from both the original employer and the new employer, and most job transitions at $t = 0$ happened late in the calendar year, meaning the annual earnings mostly reflect the earnings from the original firm on average.

acquiring firms experience larger and more immediate drops in their earnings on average, relative to workers who move to acquiring firms. Panel (d) and Column (5) show that a non-trivial share of these workers are moving to other firms in a different industry, implying that switching an occupation via moving to a different industry could partly explain why these job movers suffer earnings losses.[17] In the next section, we explore potential mechanisms behind the post-M&A decline in worker earnings and assess the characteristics of the firms these workers move to after M&As.

6 Heterogeneity Analyses and Potential Mechanisms

So far we have found little evidence that the M&A events are beneficial to either firms or target workers. In this section we explore heterogeneity across types of M&A events and types of workers to better understand potential drivers behind our worker-level results.

6.1 Market Power

In principle, both increased labor-market power and increased product-market power may impact firm outcomes as well as worker outcomes. For example, Prager and Schmitt (2021) and Arnold (2021) study how M&As that generate large shifts in concentration generate market-level declines in wages. Similarly, shifts in product-market power could impact earnings through two channels. First, if product-market power increases, firms may cut quantity 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. A key prediction of models in which market power increases is that firm profits should also increase. As already discussed in Section 5, we find that both targets and acquirers experience declines in their profitability after the event. Therefore, our firm-level results provide the first direct evidence against the increased market power driving our worker outcomes.[18] Given these results, we next exam-

[17] In Appendix B, we show that target workers who move to firms in a different industry experience a larger decline in earnings relative to those who move to firms within the same industry after M&A events.

[18] In Appendix B, we perform a variety of heterogeneity analyses to provide more evidence against the market power channel. For example, we do not find larger declines in target workers' earnings when an M&A event happens within the same labor market, within markets with high initial concentration, within non-tradable sectors, or within the same industry (i.e. 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.

ine movers from targets who experience immediate and significant declines in their earnings after M&As. We focus on those who move within the first two years after the event because most job transitions from target firms happen within the first two years and are likely induced by the M&A event. Note that control workers who were matched to these job movers are also allowed to move to other firms after the event, but empirically, we find that most of these control workers stay at their original firm.

6.2 Impacts on Job Movers

As we discussed in the previous section, we find the largest impacts for workers who transition from target firms after the event. In this section, we empirically assess mechanisms through which job transitions impact workers. A large body of evidence studies job transitions through mass layoffs. M&A events provide a different source of variation to study job transitions. First, the reason for the transition, as well as the broader labor-market context, may vary significantly between M&A events and mass layoff events. For example, while we find similar patterns of earnings losses, the magnitude is much lower in our setting. Second, M&A events tend to be more procyclical on average (Rhodes-Kropf and Viswanathan, 2004) in contrast to mass layoffs.

To understand the sources of job movers' earnings losses, we consider two broad classes of mechanisms. First, job transitions may cause impacts purely from the type of firms individuals are employed at. If M&A events cause workers to move from highly productive and large firms to low productivity and small firms, then these compositional impacts could rationalize our results. However, we find the opposite in practice. To understand why workers still suffer earnings losses despite moving to better firms, we consider heterogeneity in the types of workers. We find significant heterogeneity that can be rationalized by models of the labor market where there exists a complementarity between the worker and the firm that is specific to a given employment relationship. We discuss potential models consistent with this evidence in Section 7.

6.2.1 Firm Composition

To understand the role of the firm, we estimate an analogue to equation (2), substituting in as the outcome variable observable firm characteristics, such as total revenue, profit margins, and a

firm's wage premium. To construct our comparison sample, we take movers from target firms and their control workers, but do not condition on movement for the control workers, following the job displacement literature. Again, we define a job transition as occurring in time t if the worker is in a different firm at t relative to $t-1$. Therefore, if a M&A occurs in time $t = 0$, and the worker appears in a new firm at $t = 1$, then we define the job transition as occurring at $t = 1$. This is why we observe a large spike in job transitions at $t = 1$ in the data.

A natural way to study this question is to understand how the wage premium paid by the firm changes after a transition. If workers are transitioning to firms that pay on average lower, conditional on worker quality, then this would rationalize the reason why target workers suffer earnings losses. This approach was taken by Lachowska et al. (2022) and Schmieder et al. (2023) to understand the long-term earnings losses due to mass layoffs. We measure wage premia utilizing an AKM model by Abowd et al. (1999) that 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):

$$y_{ijt} = \phi_{j(i,t)} + \omega_i + \tau_t + u_{ijt} \tag{3}$$

We can then assess the role played by employers 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 change in the firm fixed effect. Note that we omit M&A firms in the year of the event to avoid changes in composition affecting firm effects estimation, although including them does not affect our estimates.

Panel (a) of Figure 5 shows estimates on the wage premia for workers at target firms who move to other firms after the M&A event. Relative to their matched control workers, job movers from target firms show a significant increase in their firm fixed effects after the event, implying that on average, they move to firms with higher wage premia. Column (1) of Table 5 shows that movers from target firms experience 3.2 log points increase in firm-specific wage premia after the event.

Importantly, most of these workers who leave target firms move to non-acquiring firms, mean-

ing that this transition is not mechanically driven by worker reallocation toward acquirers. There are important limitations to keep in mind when interpreting these results. The AKM methodology relies on having sufficient mobility across firms to avoid limited mobility bias as well as transitions being independent of potential match effects. While we probe the validity of these assumptions in Appendix A, the power of these tests is still in debate. In particular, Borovičková and Shimer (2024) shows that common exogenous mobility tests may be underpowered in practice by presenting a model in which match effects are important to mobility, yet data generated from this model pass exogenous mobility tests. The fact that we find firm premia are not good predictors of wage changes suggests match effects are important for our subsample of workers who move after M&As.

One way to quantify this is to use an extension of the AKM model that directly estimates match effects, first proposed by Woodcock (2015) and applied by Lachowska et al. (2022) to decompose sources of earnings losses after job displacement. Intuitively, if the earnings for an individual at a firm tend to be higher than expected given the individual's person and firm fixed effects, then it follows that the match effect is high at that firm. In Panel (b) of Figure 5 and Column (2) of Table 5 we estimate match effects following Woodcock (2015), finding that movers from targets experience a 9-log points decline in firm-specific match effects after the event.

Given the potential issues with interpreting the AKM effects, we also take advantage of the rich firm-balance sheet data. Our interpretation of the AKM results is that despite moving to better-paying firms on average, workers suffer losses. Our goal next is to understand if these better-paying firms look positively-selected on other dimensions as well. Figure 5 shows changes in 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. Starting from $t = 1$, 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, relative to changes in firm characteristics of their matched control workers. Among a variety of outcomes, we again find a qualitatively similar story as the AKM results. Table 5 presents the difference-in-differences results summarizing these impacts, finding workers from

target firms move to firms with higher revenue and higher profit margins on average after the event. In the next section we explore potential mechanisms for this earnings decline.

6.2.2 Heterogeneity by Workers

In this section, we explore heterogeneity by workers to understand who is most impacted by these job transitions. This will allow us to explore various theoretical mechanisms through which workers are affected by M&As. In particular, it will allow us to understand why workers still suffer earnings losses despite moving to larger and more profitable firms. First, we consider heterogeneity by the worker's tenure. To do so, we divide workers who move from target firms into two groups: those with 4 years of tenure (short tenure), and those with 7 or more years of tenure (long tenure) prior to the event.[19] In Panel (a) of Figure 6, for short-tenure workers, we find small, short-run negative impacts that disappear two years after the event. Long-tenure workers experience a large and persistent decline in their earnings after M&As. As shown in Column (1) of Table 6, they suffer earnings losses of about 4.5 log points on average relative to workers with 4 years of tenure, who experience no change in earnings on average.

Next, we exploit heterogeneity by within-firm earnings quintiles to understand the distributional impacts of job transitions due to M&As. In Panel (c) of Figure 6 we plot the impacts of M&As for job movers from targets at the bottom quintile of the earnings distribution versus job movers from targets at the top quintile of the distribution.[20] For workers at the top quintile, we see a 4.6 log points larger decline in earnings when they move to other firms after the event, relative to job movers at the bottom quintile of the earnings distribution, as shown in Column (1) of Table 6.

7 Discussion

To summarize, we find that despite moving to observably better-paying firms, workers with long-tenure suffer substantial earnings losses. These results can be rationalized by models in which

[19] For this analysis, we implement another matching strategy to ensure control workers are in the same tenure bin as the target workers. Note that our main matching strategy does not include workers' tenure, but our results remain similar when we use tenure as part of matching. We also find qualitatively similar results when we use a different cut (9 or more years) to define long-tenure workers (Appendix B).

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

there is a complementarity between the worker and the firm that grows with tenure. The results are therefore inconsistent with data-generating processes in which wages are linear in worker and firm effects, as in the AKM literature. In this section, we discuss potential models consistent with this evidence, breaking them into two broad categories: contract-based mechanisms and productivity-based mechanisms. In the former, contracts are structured in a way that workers earn less early in their tenure at the firm and more later in their tenure, even if their productivity is constant over time. In the latter, workers either become more productive at the firm over time or move to firms in which they enjoy relatively high match effects. We find this a useful way to categorize potential mechanisms as the productivity-based channels suggest that M&As can destroy productive matches, while the contract-based mechanisms are ambiguous regarding the productive impacts of M&As. In particular, the M&A may destroy matches in which workers are being paid above their marginal productivity, thereby increasing efficiency overall.

7.1 Contract-based Mechanisms

A number of theoretical approaches have been used to explain why wages may increase with tenure within the firm, even if productivity is constant. Intuitively, many of these approaches argue that increasing wages with tenure provides incentives for workers not to shirk. For example, Lazear (1979) shows that when monitoring effort is costly, firms will optimally structure wages so that workers are initially paid below their marginal product, but since wages rise with tenure, they eventually are paid above their marginal product. Because workers do not want to lose the above-productivity wages, they do not shirk in equilibrium. A similar mechanism is proposed in Shleifer and Summers (1988), which shows that hostile takeovers may explicitly be done to breach these contracts in which workers are overpaid.

Another set of models that can rationalize our results through contracts come from the search literature. Burdett and Coles (2003) extends the Burdett and Mortensen (1998) search framework to a setting in which wage contracts are posted. In their model, firms again post wage contracts that increase with tenure in equilibrium to increase the expected value of remaining with the firm over time. Instead of shirking while on the job, the contracts in these models are structured in a

way that reduces an employee's desire to quit and transition to a new job.[21] Regardless of the exact mechanism, these models all share some features relevant to our setting. First, wage profiles are increasing in tenure, but not due to increasing worker productivity. In these models, firms generally must be able to commit to the contract, otherwise they would renege on contracts in which workers are being paid above their marginal productivity. M&As then offer an opportunity to renege on these contracts. This could then explain why high-tenure workers suffer earnings losses despite moving to better firms.

7.2 Productivity-based Mechanisms

Another class of models that could rationalize our findings are models in which displaced workers were particularly productive at the firm prior to the M&A event, and that the M&A event disrupts this match effect. There are two classes of models that may generate such dynamics. First, match effects could arise endogenously during an employment spell due to the accumulation of firm-specific human capital, as in Lazear (2009). Since this type of productivity is firm-specific, it is not portable across employers, implying we could see declines in wages even for workers moving to overall better-paying firms. There are also models in the macroeconomics literature on directed search in which workers sort to firms where they enjoy particularly high match effects. For example, Menzio and Shi (2011) develop a directed search model in which matches are formed and persist when worker and firm complementarities are high.[22] In contrast to the contract-based mechanism, this productivity-based mechanism suggests high-value matches are being destroyed by the M&A activity, which results in large losses for workers, and could impact firm profits.

[21] Since Burdett and Coles (2003), other work has incorporated additional features of the labor market, such as incorporating firm heterogeneity (Burdett and Coles, 2010). A distinct mechanism arises in certain models with imperfect information. For example, Harris and Holmstrom (1982) present a model of the labor market in which the worker and firm are unsure about worker quality, and risk aversion on the worker side generates contracts in which senior workers earn more on average.

[22] Schaal (2017) builds on Menzio and Shi (2011) to construct a search-and-matching model that allows for firms of different sizes as well as long-term contracts. Again in this model, high tenure reflects that the worker and firm have found good matches. Other models also combine aspects of human capital accumulation as well as job search. Bagger et al. (2014) builds a general equilibrium model of careers, allowing workers to both accumulate human capital over their careers, which increases wages, as well as to receive competing wage offers that increase over time.

7.3 Suggestive Evidence on the Mechanism

An ideal way to test between these mechanisms would be to have a measure of worker productivity at each point in time. If the main mechanism is that workers are earning high wages due to long-term contracts that pay more later in an employment spell, we would expect to see relatively stable productivity over time and across employment spells. In contrast, mechanisms due to firm-specific human capital accumulation or climbing the job ladder to good matches would suggest a rise in productivity over time, and a fall when a worker transitions due to a layoff.

While we cannot observe worker-level productivity, there are two findings that are potentially informative about this discussion. First, if the firm fires workers who are paid above their marginal product of labor, we would expect the firm's profits to rise after the M&A event. However, we see the opposite in practice. To rationalize the worker-level impacts through firing of overpaid workers, one would need to believe that there are multiple off-setting decisions being made by new management. In other words, in this story, new managers lay off unproductive workers, so that overall productivity increases, but at the same time, they make other inefficient decisions, so that overall productivity decreases at the firm. M&As are of course heterogeneous events, so multiple channels may be at play. Second, the contract-based mechanisms also predict who is fired during an M&A event. If the firm wants to fire overpaid workers, then it should target the high-tenure workers at the firm. However, we find similar job separation rates between two groups.

To our knowledge, our paper is the first example of a setting in which workers face exogenous layoff risk and end up moving to observably better firms, but still earn less. While a recent literature on job displacement differs in the amount that can be attributed to firm effects, the evidence consistently finds workers moving to lower-paying firms after a mass layoff. Our setting therefore offers a novel alternative to study similar questions and also raises the question about how the context of a job transition impacts workers' future outcomes.

8 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. We find that the decrease in earnings of workers at targets is largely driven by those who move to other firms after the M&A event. While these workers move to larger firms with higher profit margins on average, they experience a decline in their earnings.

Our results provide new evidence of the negative impact of M&As on wages and raise doubts about the efficiency arguments made in support of M&As. Our results can also inform discussion of competition policy. The Department of Justice 2023 Merger Guidelines expanded consideration of the impact of competition policy on labor.[23] In Canada, recent changes to the Competition Act targeted both the impact of M&As on labor and how potential efficiency gains are weighed in merger decisions. It is difficult, however, to make precise statements about the welfare implications of our findings for two reasons. First, we note above that without data on worker productivity it is not possible to know if worker separations enhance productivity through liquidating overpaid workers or reduce productivity by destroying productive worker-firm matches. If data on worker productivity could be added, further investigation would be warranted to better characterize the efficiency and welfare consequences of our findings. Second, to the extent there are worker welfare losses, policymakers must consider difficult tradeoffs between potential worker welfare losses and firm efficiency gains. Determining how these tradeoffs are weighted is an active area of policy debate, and understanding how to model and quantify these various tradeoffs would be a fruitful area for future research.[24]

[23] See discussion of the historical context of the labor and other provisions in the new Guidelines in Francis (2025). The case for considering labor market inefficiency in competition policy is put forward in Hemphill and Rose (2018) and Naidu et al. (2018).

[24] See a full exploration of labor market power and competition policy in Azar and Marinescu (2024a,b).

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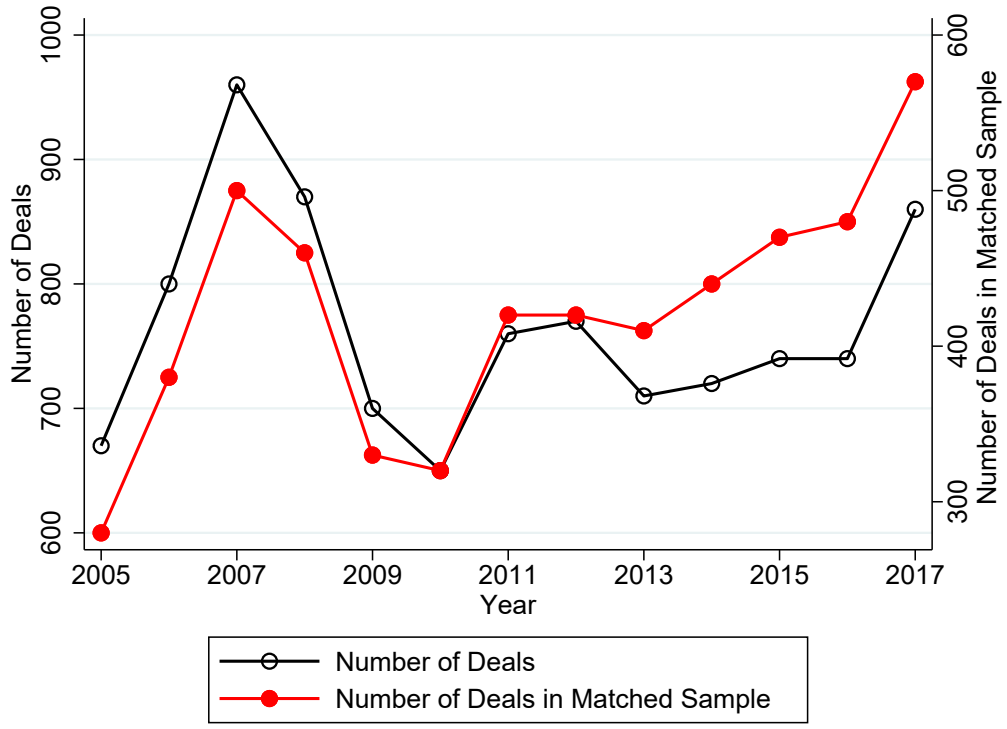
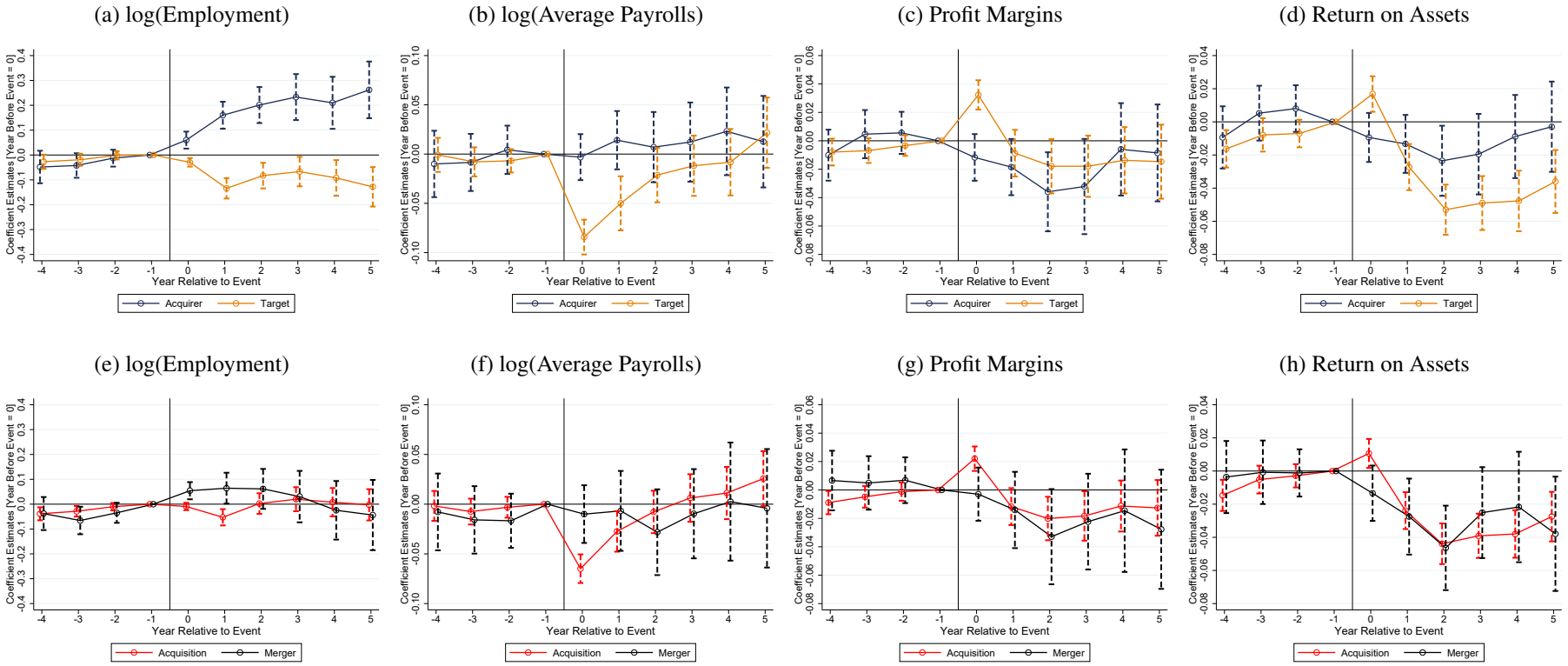
Figure 1: Number of M&A Events



Notes: During our sample period, the number of M&A events is 765 per year (including multiple events for a given firm) on average among the sample of firms eligible for matching as explained in Section 4 (black line). Among these eligible firms, the number of M&A events in the matched sample is 422 per year (including multiple events for a given firm) on average (red line). Section 4 describes how we construct our matched sample of firms. During our sample period, the number of unique firms eligible for matching is 5,200. Among these firms, the unique number of matched firms (both targets and acquirers) is 4,100. Therefore, the matching strategy finds a counterfactual firms for about 79 percent of all eligible treated firms.

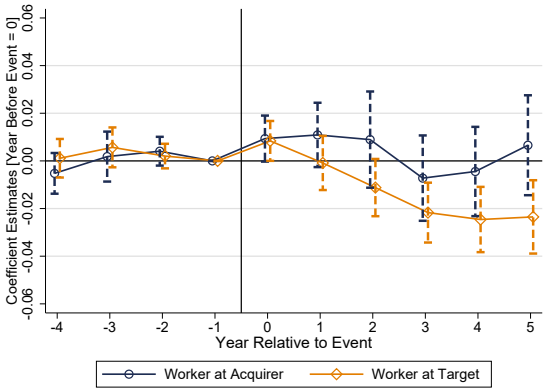
Figure 2: Employment, Average Payrolls, and Profitability After M&As



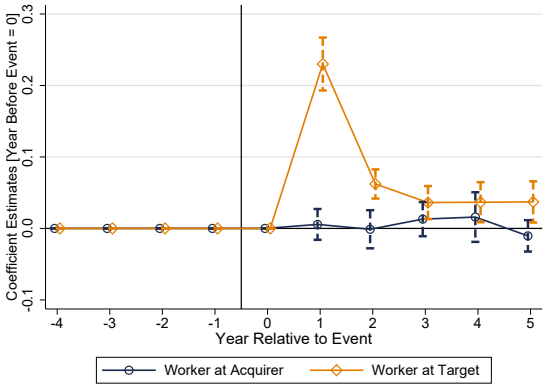
Notes: These figures display event-study estimates for the impact of M&As on firm-level outcomes: log(employment), log(average payrolls), profit margins, and return on assets. Panels (a) to (d) show the estimates for the impact of acquisitions, separately for acquiring firms (navy line) and for target firms (orange line). Panels (e) to (h) show the estimates on the aggregate firm-level (targets and acquirers pooled) outcomes, separately for those involved in acquisitions (red line) and for those involved in mergers (black line). 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 is normalized to be zero in year -1.

Figure 3: Worker Earnings and Job Transitions After M&As

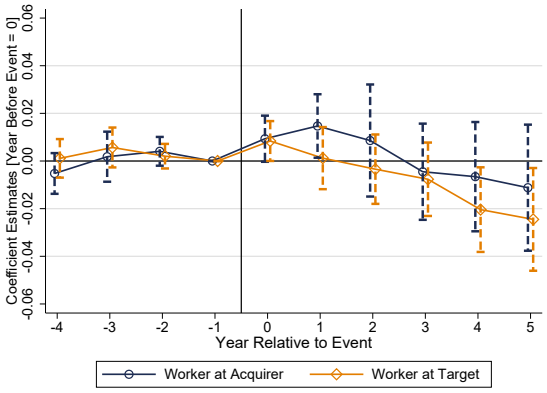
(a) log(Earnings)



(b) Job Transition

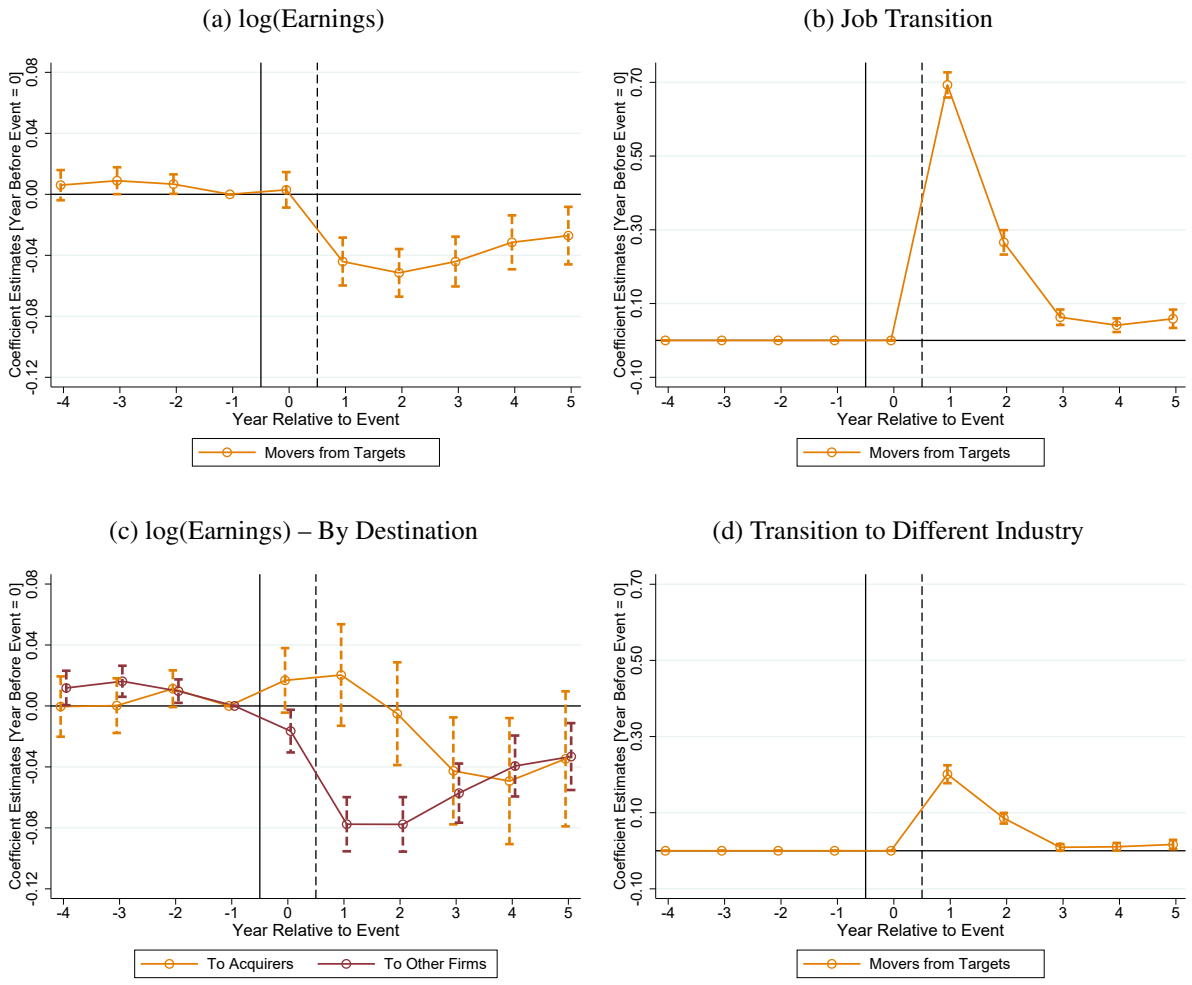


(c) log(Earnings) for Stayers



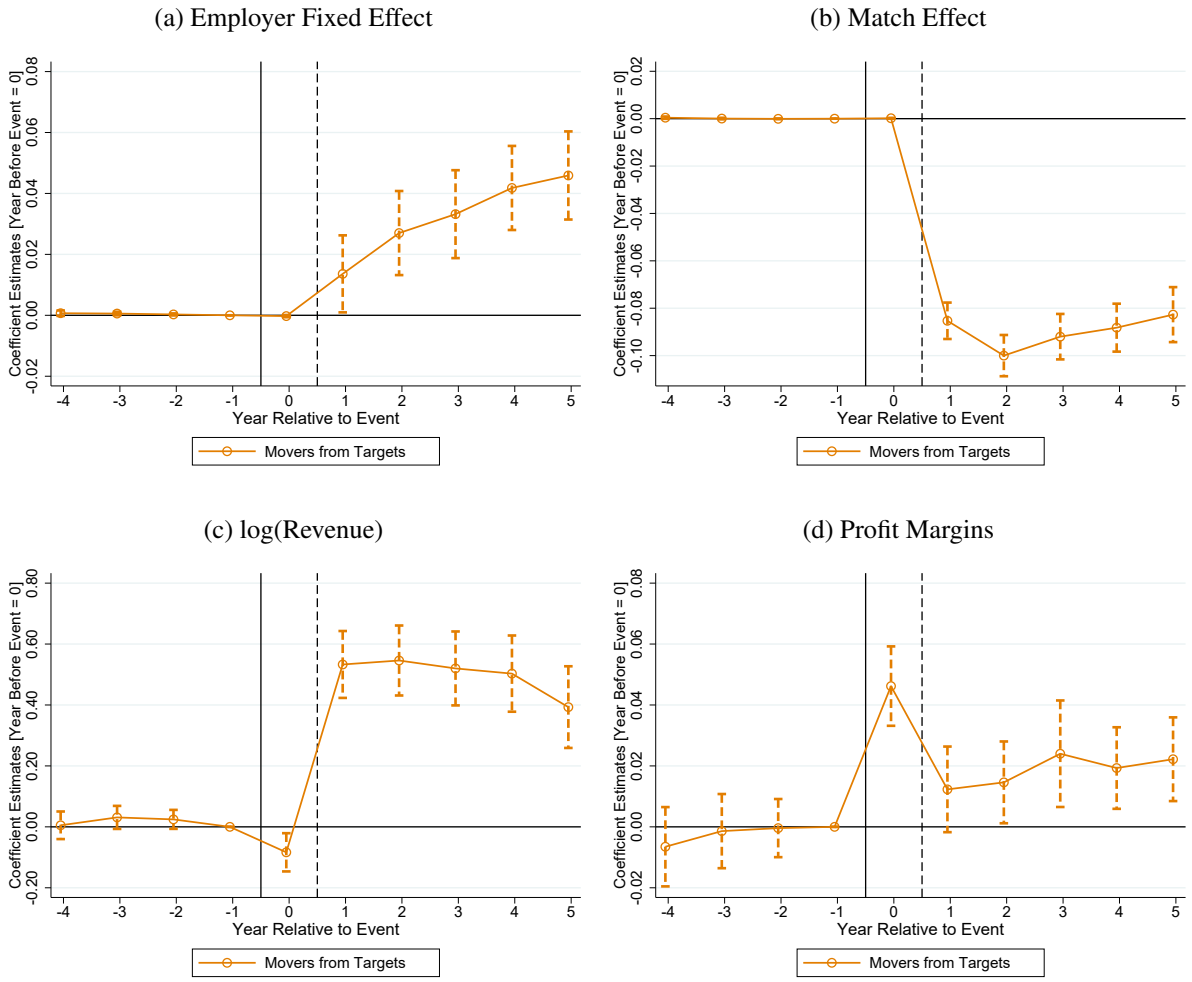
Notes: These figures display event-study estimates for the impact of M&As on worker-level outcomes, separately for workers at acquiring firms (navy line) and for workers at target firms (orange line). Panel (a) shows the estimates for log of total earnings. Panel (b) shows the estimates for job transition probabilities. Panel (c) shows the estimates for log of total earnings for firm 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 is normalized to be zero in year -1.

Figure 4: Workers Moving from Targets



Notes: These figures display event-study estimates for the impact of M&As for workers moving from target firms within the first two years after the event, as described in Section 5. 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 log of total earnings based on their destination. A small share of workers also moves within their original parent company; however, we do not observe any impact for these workers, so we do not report their estimates here. Panel (d) shows the estimates for the probability of transition to a different industry. 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 is normalized to be zero in year -1.

Figure 5: Firm Characteristics of Workers Moving from Targets

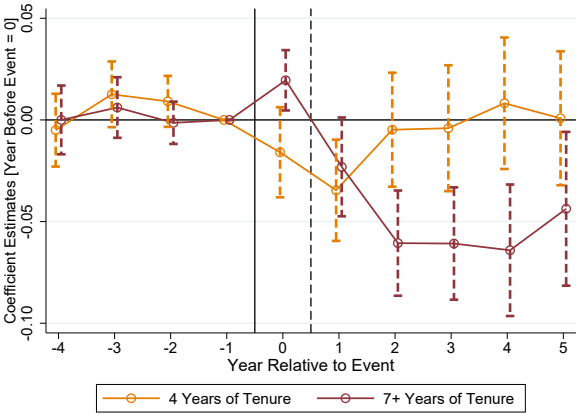


Notes: These figures display event-study estimates for changes in average firm characteristics of workers moving from target firms within the first two years after the event, as described in Section 6. Panel (a) shows the estimates for employer fixed effects. Panel (b) shows the estimates for match effects between the employer and employee. The estimations for employer fixed effects and match effects are described in Section 6. Panel (c) shows the estimates for log of revenue. Panel (d) shows the estimate 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 is normalized to be zero in year -1.

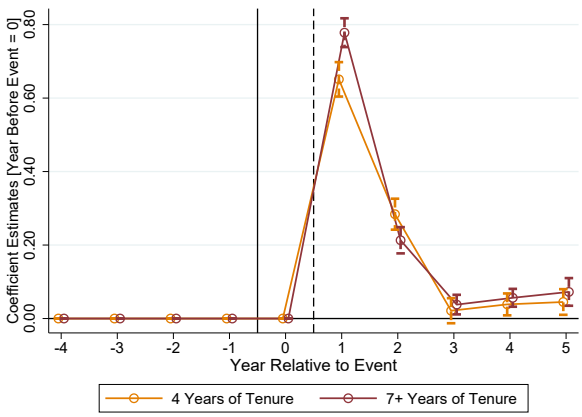
Figure 6: Workers Moving from Targets – By Worker Tenure and Within-Firm Wage Distribution

Panel A: By Worker Tenure

(a) log(Earnings)

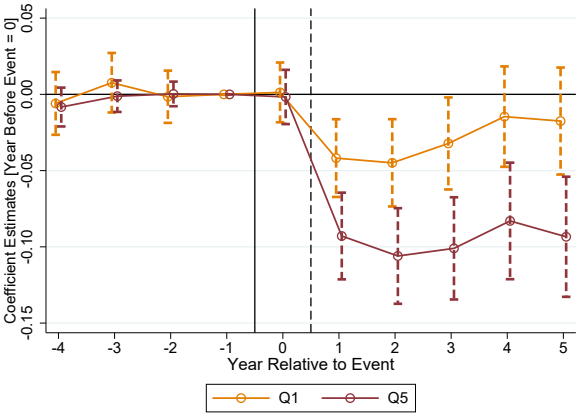


(b) Job Transition

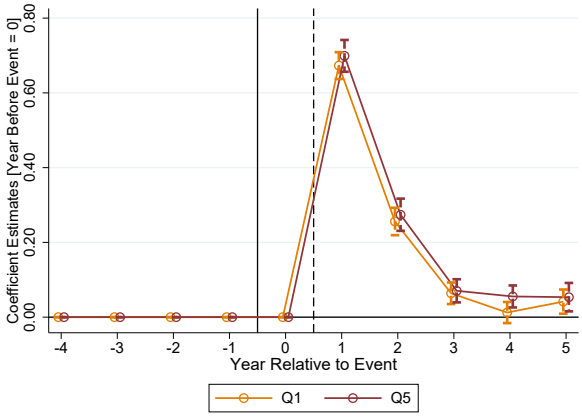


Panel B: By Within-Firm Earnings Distribution

(c) log(Earnings)



(d) Job Transition



Notes: These figures display event-study estimates for the impact of M&As for workers moving from target firms within the first two years after the event. Panel A displays the estimates for those with 4 years of tenure and for those with 7 or more years of tenure measured one year before the event. Panel B displays the estimates for those at the bottom quintile (Q1) and for those at the top quintile (Q5) of the within-firm earnings distribution. Panels (a) and (c) show the estimates for log of total earnings. Panel (b) and (d) show the estimates for job transition probabilities. 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 is normalized to be zero in year -1.

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

	(1) Acquirer	(2) Control	(3) Target	(4) Control
Panel A: Firm Characteristics				
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 Payrolls	52,472	51,956	50,380	49,175
Leverage Ratio	0.65	0.67	0.70	0.65
Markups	1.88	1.68	1.88	1.68
Number of Firms	1,040	1,040	3,060	3,060
Panel B: Sectors (Firms)				
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
Panel C: Worker Characteristics				
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
Panel D: Sectors (Workers)				
Construction	0.03	0.03	0.02	0.02
Manufacturing	0.49	0.49	0.5	0.5
Wholesale	0.16	0.16	0.10	0.10
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 one year prior to the event. Panel A reports firm characteristics such as total revenue, total expenses, profit margins, number of employees, average payrolls, 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 worker characteristics such as total annual earnings, age, and gender. Columns (1) and (3) report these statistics for workers at acquiring firms and for workers at target firms, 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)	(2)	(3)	(4)
	Acquisition		**Aggregate**	
	Target	Acquirer	Acquisition	Merger
log(Employment)	-0.089***	0.188***	-0.006	0.024
	(0.023)	(0.033)	(0.018)	(0.038)
Mean at t = -1	4.00	4.55	4.14	4.02
Adj. R squared	0.875	0.891	0.879	0.880
Firm-Year Obs.	66,680	21,930	89,230	19,100
log(Average Payrolls)	-0.026**	0.011	-0.009	-0.009
	(0.011)	(0.014)	(0.008)	(0.017)
Mean at t = -1	10.69	10.74	10.70	10.73
Adj. R squared	0.796	0.817	0.799	0.800
Firm-Year Obs.	66,590	21,870	89,080	19,040
Profit Margins	-0.007	-0.019**	-0.009*	-0.019
	(0.007)	(0.009)	(0.005)	(0.012)
Mean at t = -1	0.02	0.02	0.02	0.00
Adj. R squared	0.356	0.355	0.352	0.380
Firm-Year Obs.	68,910	22,200	91,730	19,520
Return on Assets	-0.033***	-0.013	-0.027***	-0.029***
	(0.006)	(0.008)	(0.005)	(0.010)
Mean at t = -1	0.08	0.05	0.07	0.04
Adj. R squared	0.384	0.420	0.387	0.433
Firm-Year Obs.	69,900	22,390	92,900	19,690

Notes: This table reports the difference-in-differences estimates for the impact of M&As on firm-level outcomes: log(employment), log(average payrolls), profit margins, and return on assets. Columns (1) and (2) report the estimates for the impact of acquisitions on target firms and on acquiring firms, respectively. Columns (3) and (4) report the estimates on the aggregate firm-level outcomes (targets and acquirers pooled) for those involved in acquisitions and for those involved in mergers, respectively. Standard errors, reported in parentheses, are clustered at the firm level.

Table 3: Difference-in-differences Estimates on Worker Outcomes

	(1) log(Earnings)	(2) Transition	(3) log(Earnings) - Stayers
Workers at Target	-0.012**	0.067***	-0.008
	(0.005)	(0.007)	(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	0.004	0.002
	(0.007)	(0.006)	(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. The dependent variables in columns (1) and (2) are log of total earnings and the probability of job transitions, respectively. 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 4: Workers Moving from Targets

	(1)	(2)	(3)	(4)	(5)
	log(Earnings)	Transition	log(Earnings) - By Destination		Transition
			To Acquirer	To Other Firms	To Diff Industry
Workers Moving from Targets	-0.040***	0.224***	-0.016	-0.050***	0.064***
	(0.007)	(0.006)	(0.013)	(0.007)	(0.004)
Mean at t = -1	10.98	0.00	10.96	10.93	0.00
Adj. R squared	0.739	0.317	0.765	0.736	0.167
Worker-Year Obs.	689,900	691,120	144,550	430,750	691,120

Notes: This table reports the difference-in-differences estimates for the impacts of M&As for workers moving from target firms within the first two years after the event. Column (1) displays the estimates for log of total earnings. Column (2) displays the estimates for the job transition probabilities. Columns (3) and (4) display 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 moves 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 the probability of transition to a different industry. The standard errors are two-way clustered at the worker and firm level.

Table 5: Changes in Average Firm Characteristics of Workers Moving from Targets

	(1) Employer Fixed Effect	(2) Match Effect	(3) log(Revenue)	(4) Profit Margins
Workers Moving From Targets	0.032***	-0.090***	0.499***	0.018***
	(0.006)	(0.004)	(0.055)	(0.007)
Mean at t = -1	0.20	0.06	18.22	0.05
Adj. R squared	0.881	0.205	0.803	0.466
Worker-Year Obs.	684,800	677,750	649,220	650,510

Notes: This table reports the difference-in-differences estimates for changes in average firm characteristics of workers moving from target firms within the first two years after the event. Column (1) displays the estimates for employer fixed effects. Column (2) displays the estimates for match effects between the employer and employee. Column (3) displays the estimates for the log of revenue. Column (4) displays the estimates for profit margins. Standard errors, reported in parentheses, are two-way clustered at the worker and firm level.

Table 6: Workers Moving from Targets – By Tenure and By Within-Firm Earnings Distribution

	(1) log(Earnings)	(2) Transition
Panel A: By Tenure		
Post × Treated	0.005	0.180***
	(0.011)	(0.008)
Post × Treated × 7+ Years of Tenure	-0.045***	0.012
	(0.014)	(0.010)
Mean at t = -1 (4 Years of Tenure)	10.96	0.00
Mean at t = -1 (7+ Years of Tenure)	11.03	0.00
Adj. R squared	0.745	0.404
Worker-Year Obs. (4 Years of Tenure)	186,170	186,660
Worker-Year Obs. (7+ Years of Tenure)	251,020	251,340
Panel B: By Earnings Quintile		
Post × Treated	-0.027**	0.181***
	(0.012)	(0.006)
Post × Treated × Q5	-0.046**	0.007
	(0.021)	(0.005)
Mean at t = -1 (Q1 = 1)	10.45	0.00
Mean at t = -1 (Q5 = 1)	11.56	0.00
Adj. R squared	0.745	0.324
Worker-Year Obs. (Q1 = 1)	126,710	126,980
Worker-Year Obs. (Q5 = 1)	119,950	120,160

Notes: This table reports difference-in-differences estimates for the impacts of M&As for workers moving from targets within the first two years after the event. Panel A presents the estimates separately for workers with 4 years of tenure measured one year prior to the event. The triple interaction term captures the triple-difference estimates for those with 7 or more years of tenure. Panel B presents the estimates separately for workers in the bottom quintile (Q1) of the within-firm earnings distribution measured one year prior to the event, with the triple interaction term capturing the triple-difference estimates for those in the top quintile (Q5). Column (1) displays the estimates for the log of total earnings, and Column (2) displays the estimates for the probability of job transition. Standard errors are two-way clustered at the worker and firm level.

ONLINE APPENDIX:

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

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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 and average payrolls, 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, sector, and province 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 Outcomes in Levels (Replacing Missing Observations with Zeros)

We show results on the key outcomes, such as employment, 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 our 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, 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 A3 and Table A3 show that the main results are qualitatively robust to the specification where the outcomes are measured in levels.

A.4 By One-time vs. Repeat Acquirers

Prior research points out that a part of the motive 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 has an empire-building motive in our data, we test whether the effects on firm size and average payrolls are different depending on whether an acquirer engages in multiple M&A transactions (roughly 30 percent of our analysis sample). Specifically, we compare the outcomes of acquirers involved in a single acquisition relative to the outcomes of acquirers involved in multiple acquisitions during our sample period. Figure A4 and Table A4 show that acquirers involved in multiple M&A transactions tend to grow a bit larger, in terms of the number of employees and average payrolls 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 size more.

A.5 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 sell-

ers 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 firms and private firms. Figure A5 and Table A5 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.6 Using Profitability as Additional Matching Variable

In our main specification, we match firms based on their size (total revenue), average payrolls, and age within the same sector and province to make our matched control firms comparable in terms of their size, worker pay, and age. We do a robustness check where we additionally use a pre-M&A measure of firms' profitability (returns on assets) as another variable in our propensity score matching so that M&A firms and matched control firms are also comparable in terms of profitability. Figure A6 and Table A6 show that the effects on the key firm-level and worker-level outcomes from this approach are qualitatively similar to our main results.

A.7 Use Sample of Unmatched Firms and Workers

In our main analysis sample, roughly 20 percent of M&A firms eligible for matching (as described in Section 4) are not matched to their control group either because of their sector, location, or firm characteristics. Correspondingly, about 68 percent of workers in M&A firms (eligible for matching) are not matched to their control group either because their firms were not matched or there are not enough control workers to be matched (as we impose that only one worker is matched with a treated worker). In Table A8, we show characteristics of these unmatched firms and workers. Panel A shows that unmatched firms are quite similar to our matched control firms on average in terms of total revenue, total expenses, and leverage ratio, but are much larger in terms of the number of employees, average payrolls, and markups. Panel C shows that unmatched workers have much lower earnings relative to our matched control workers on average. Note that the number of workers eligible for matching includes those at unmatched M&A firms eligible for

matching. Therefore, the match rate for workers decreases from about 60 percent (as indicated in Section 4) to 32 percent once we include all eligible workers across all eligible firms. The match rate for our main worker sample (around 60 percent) is computed using the sample of all eligible workers among the matched sample of firms only.

An external validity concern is whether our matched sample of M&A firms and workers are representative within Canada. We argue that our matched sample of firms and workers are representative of overall M&A activities in Canada, given that we have a good match rate among firms and workers eligible for matching. Still, we test whether our results significantly change once we incorporate these previously unmatched set of firms and workers that were eligible for matching.

Panel (a) of Figure A7 shows the results on employment, separately for targets and for acquirers involved in acquisitions, including previously unmatched M&A firms. Here, we just add these unmatched acquirers and targets as part of the treated (M&A) group, without matching them with possible control firms, so we still use the same set of matched control firms in this analysis. As shown in the figure, the parallel pre-trend appears to get a bit weaker once we include previously unmatched firms, but we still find qualitatively similar results on employment after M&As. We find similar results on average payrolls in Panel (b). Panel (c) shows the results on worker-level earnings, separately for workers at targets and for workers at acquirers, including previously unmatched workers from M&A firms. While evidence for parallel pre-trends is now weaker (Panel (a) of Figure 3), we still find qualitatively similar results on worker-level earnings after the event. Therefore, these results suggest that our results are not driven by a particular sample of matched M&A firms and workers in our data.

A.8 AKM Assumptions and Estimation of Match Effects

In this section, we replicate tests aimed at validating the AKM estimation of firm effects following Card et al. (2013) and Lachowska et al. (2022), and discuss the estimation of match effects discussed in Section 6.

A.8.1 AKM 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 premi 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. (2022).

A.8.2 AKM 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 the exercise discussed 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 A8, 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. However, recent work (Borovičková and Shimer, 2024) shows that common exogenous mobility tests may be underpowered in practice by presenting a model in which match effects are important to mobility, yet still passes proposed exogenous mobility assumptions. In our case, for the workers that leave M&A firms after moving, this does indeed to be violated as we find declines in worker earnings despite workers moving to higher-paying firms on average. This suggests that a portion of the estimated firm effect might be driven by match effects.

A.8.3 Match Effects

Following prior studies, we estimate match effects based on Lachowska et al. (2022) which implements a strategy based on Woodcock (2015). For each employee-employer spell, we first calculate the average of residualized log earnings ($\overline{y_{ij}}$) 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 (3), but using within-match averages as the dependent variable:

$$\overline{y_{ij}} = \alpha_i + \pi_{j(i,t)} + e_{ij} \tag{A1}$$

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 (A1) and interpret them as worker-employer match effects averaged over the years we observe a given worker-employee match:

$$\hat{e_{ij}} = \overline{y_{ij}} - \hat{\alpha}_i - \hat{\pi}_{j(i,t)} \tag{A2}$$

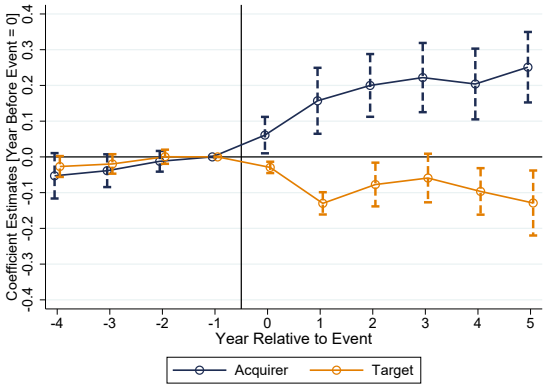
We proceed to take the estimated $\hat{e_{ij}}$ terms relevant for the employee in each time period and use them as the dependent variable in equation (2) to see the contribution of match effects in explaining the earnings loss of target workers who move to other firms after the event. The decline in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

effects may imply that these workers lose the benefit of a specific employee skill set that fits better with the previous employer. Also, the decrease in match effects could simply indicate that these workers lose an employer-specific contract that yields a better work environment or amenity.

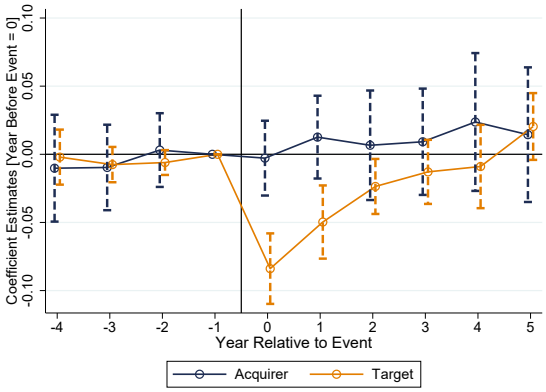
In Figure A9, we decompose the earnings losses of job movers from targets into (1) firm AKM effects, (2) match effects, and (3) direct effects, where we compute the direct effects as the residuals net of the firm AKM and match effects (Lachowska et al. 2022). As the figure shows, the decline in job movers' earnings cannot be attributed to the changes in firm fixed effects or direct effects; instead, it is mostly driven by the changes in match effects.

Figure A1: Different Clustering

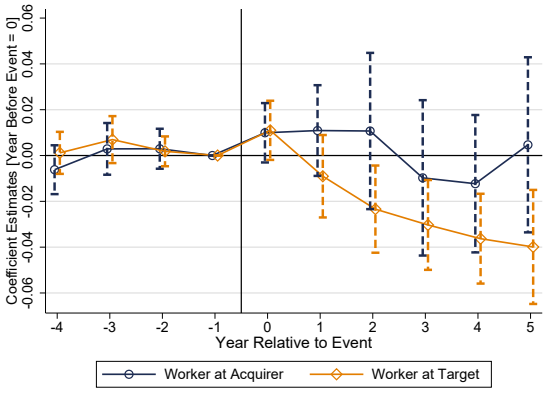
(a) log(Employment)



(b) log(Average Payrolls)



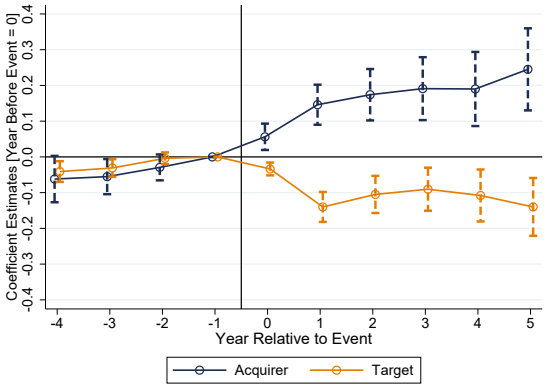
(c) log(Earnings)



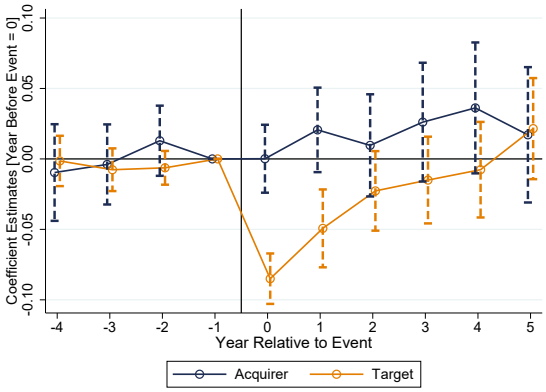
Notes: These figures display event-study estimates for the impact of M&As on the main firm-level and worker-level outcomes. Panel (a) shows the estimates for log of employment for those involved in acquisitions. Panel (b) shows the estimates for log of average payrolls for those involved in acquisitions. Panel (c) shows the estimates for log of worker-level earnings. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the market-level (defined by 4-digit NAICS × commuting zone) for Panels (a) and (b), and two-way clustered at the worker and market level for Panel (c). 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

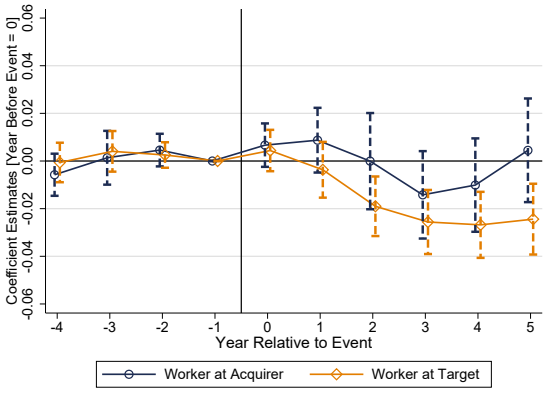
(a) log(Employment)



(b) log(Average Payrolls)



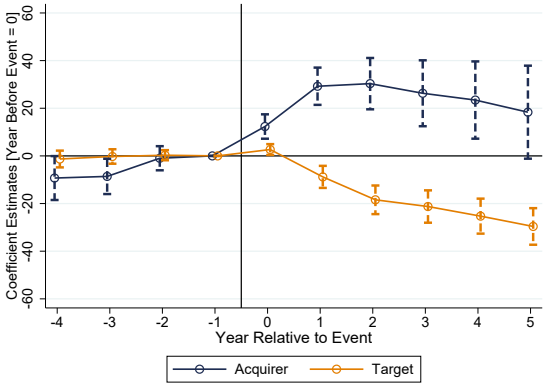
(c) log(Earnings)



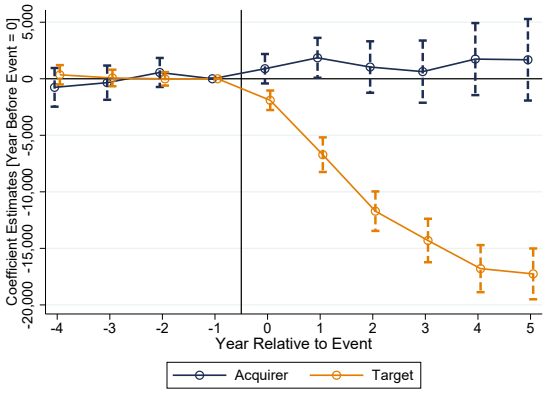
Notes: These figures display event-study estimates for the impact of M&As on the main firm-level and worker-level outcomes. For this analysis, we implement the same matching procedure (Section 4), except that we restrict M&A firms to be at different markets (defined by 4-digit NAICS × commuting zone)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

Figure A3: Outcomes in Levels (Replacing Missing with Zeros)

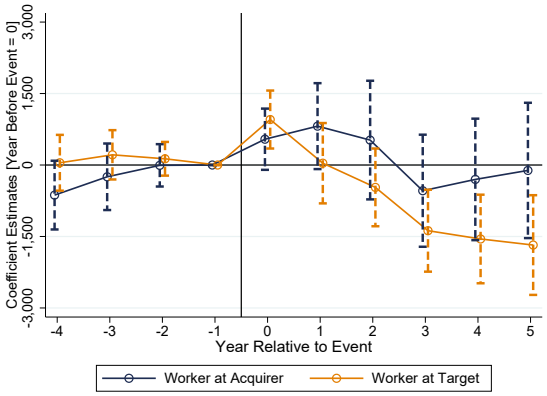
(a) Employment



(b) Average Payrolls



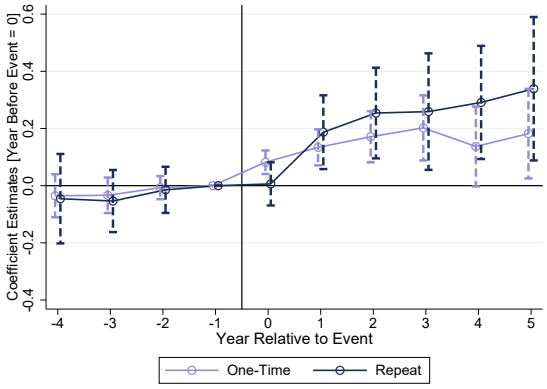
(c) Earnings



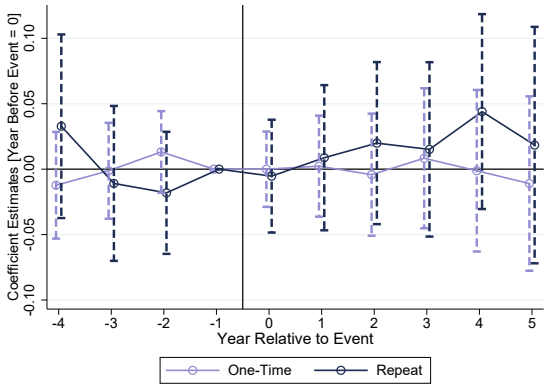
Notes: These figures display event-study estimates for the impact of M&As on the main firm-level and worker-level outcomes in levels, where we replace missing observations with zeros if the firms or workers exit the sample. Panel (a) shows the estimates for employment for those involved in acquisitions. Panel (b) shows the estimates for average payrolls for those involved in acquisitions. Panel (c) 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) and (b), and two-way clustered at the worker and firm level for Panel (c). The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure A4: By One-time vs. Repeat M&As (Acquirers)

(a) log(Employment)



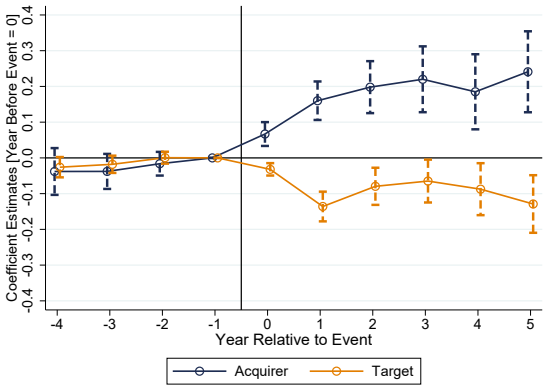
(b) log(Average Payrolls)



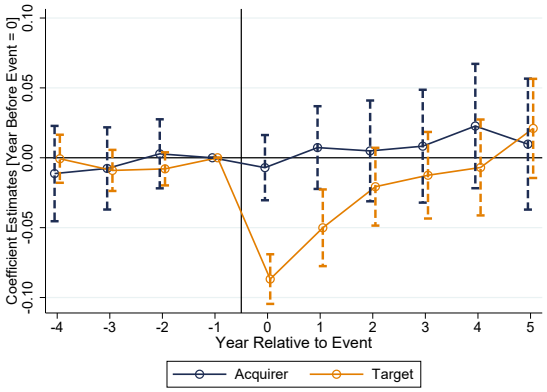
Notes: These figures display event-study estimates for the impact of M&As on the main firm-level outcomes, separately for acquiring firms that go through an M&A only once throughout our sample period and for acquiring firms with multiple M&A events. Panel (a) shows the estimates for log of employment. Panel (b) shows the estimates for log of average payrolls. 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 A5: Using Private Firms Only

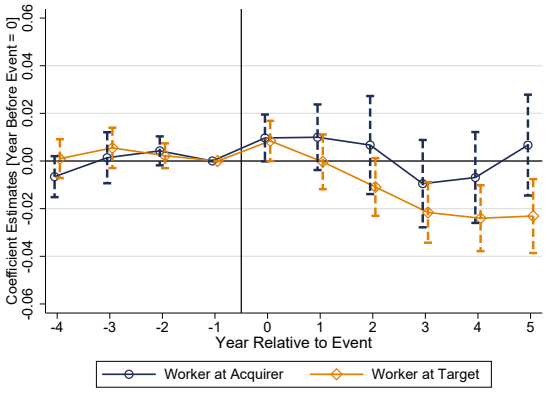
(a) log(Employment)



(b) log(Average Payrolls)



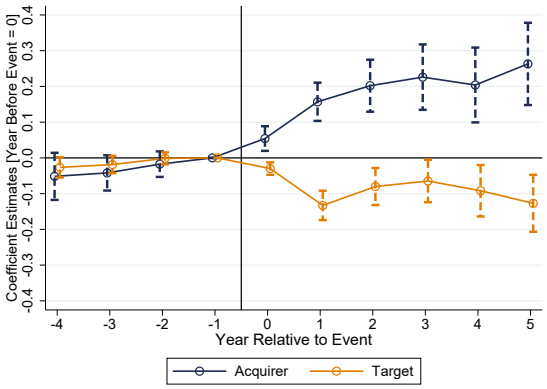
(c) log(Earnings)



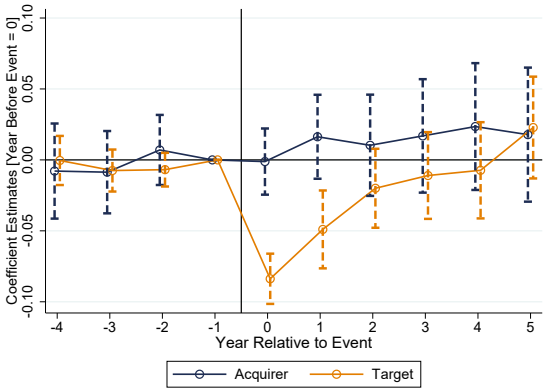
Notes: These figures display event-study estimates for the impact of M&As on the main firm-level and worker-level outcomes using only private firms/workers in the matched sample. In our matched sample, 96 percent of firms are privately-owned during our sample period. Panel (a) shows the estimates for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

Figure A6: Return on Assets as Additional Matching Variable

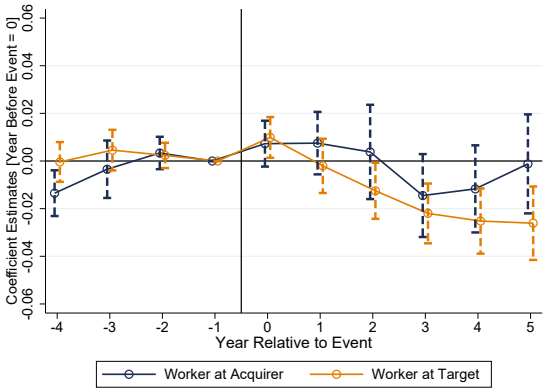
(a) log(Employment)



(b) log(Average Payrolls)



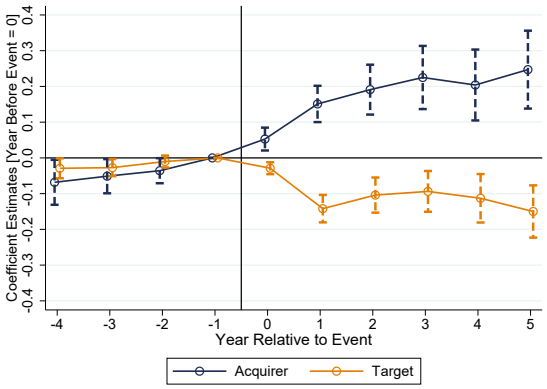
(c) log(Earnings)



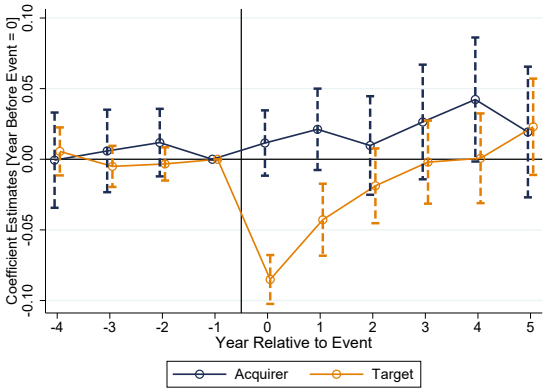
Notes: These figures display event-study estimates for the impact of M&As on the main firm-level and worker-level outcomes. For this analysis, we implement the same matching procedure (Section 4), except that we include return on assets (ROA) as an additional matching variable in the propensity score estimation. Panel (a) shows the estimates for log of employment for those involved in acquisitions. Panel (b) shows the estimates for log of average payrolls for those involved in acquisitions. Panel (c) shows the estimates for log of worker-level earnings. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the firm level for Panels (a) and (b), and two-way clustered at the worker and firm level for Panel (c). The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure A7: Including Unmatched Eligible Firms and Workers

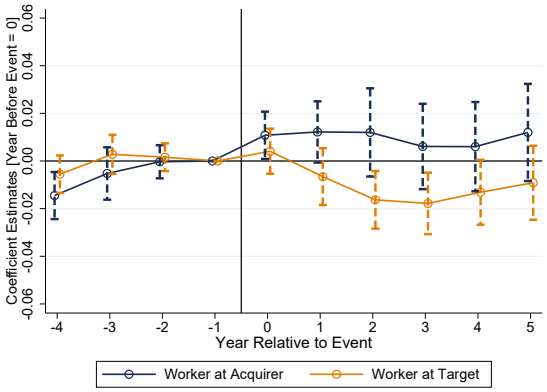
(a) log(Employment)



(b) log(Average Payrolls)

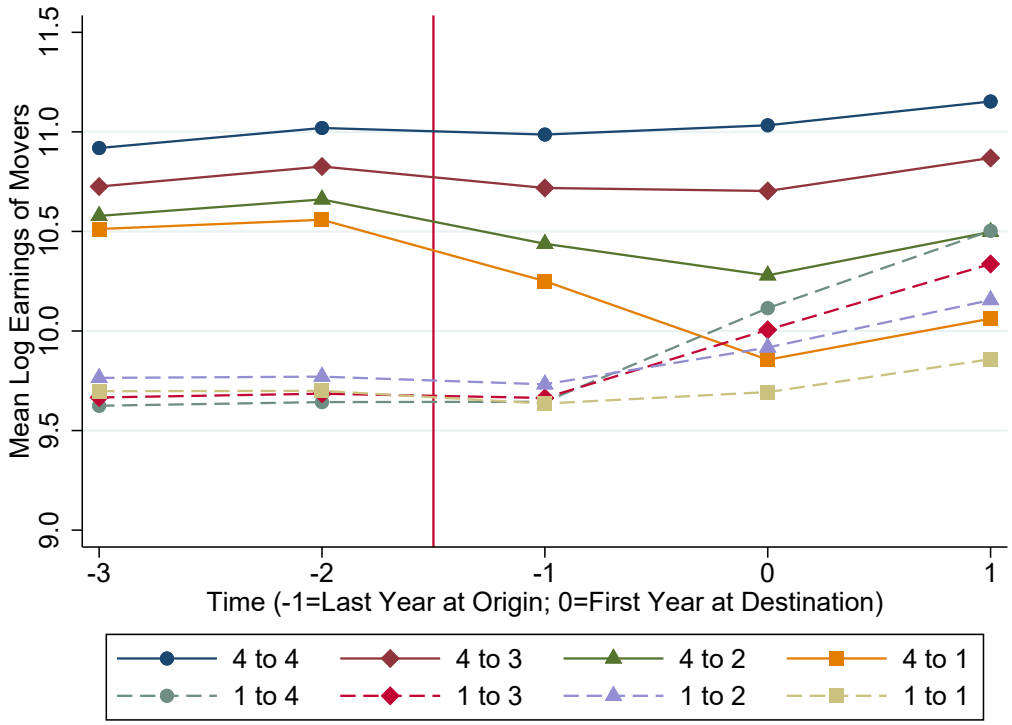


(c) log(Earnings)



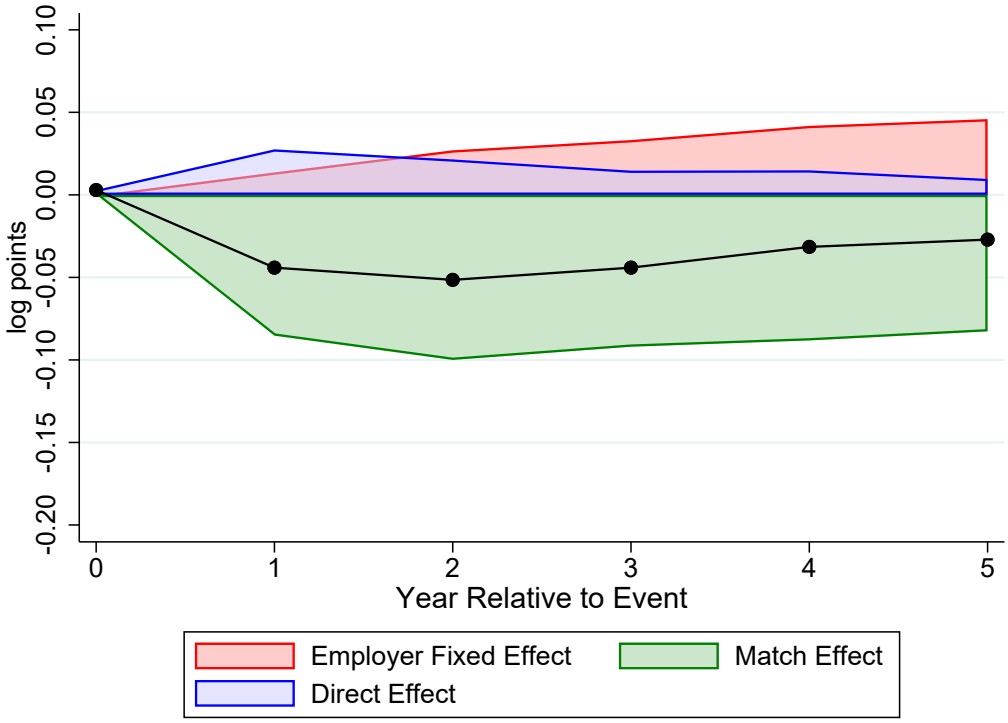
Notes: These figures display event-study estimates for the impact of M&As on the main firm-level and worker-level outcomes, including the eligible but unmatched sample of treated firms/workers in our analysis sample. Panel (a) shows the estimates for log of employment for those involved in acquisitions. Panel (b) shows the estimates for log of average payrolls for those involved in acquisitions. Panel (c) shows the estimates for log of worker-level earnings. The dashed lines indicate 95 percent confidence intervals where the standard errors are clustered at the firm level for Panels (a) and (b), and two-way clustered at the worker and firm level for Panel (c). The M&A event is in year 0 and the coefficient estimate is normalized to be zero in year -1.

Figure A8: Exogenous Mobility Assumption



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

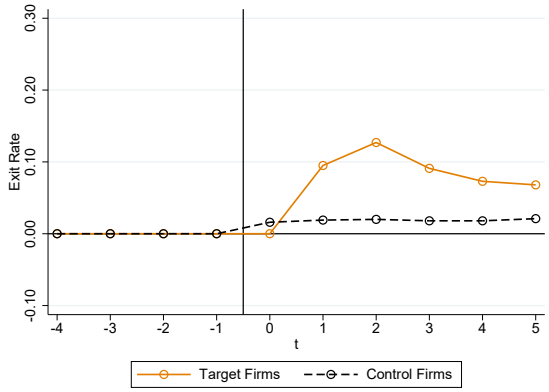
Figure A9: Decomposition of Earnings for Movers from Target Firms



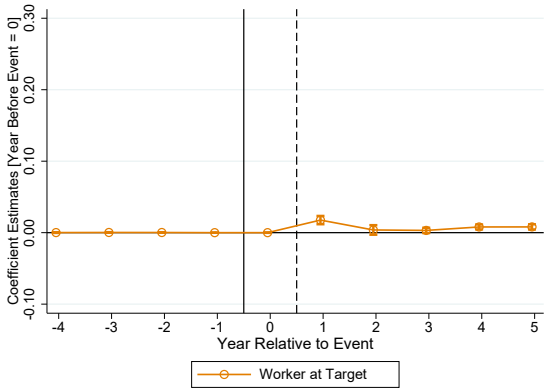
Notes: This figures displays the decomposition of log earnings for workers who move from targets within the first two years after the event. The decomposition is attributable to the change in employer effects, the change in employee-employer match effects, and the change in direct effects.

Figure A10: Probability of Exit and Transition to Unemployment

(a) Firm Exit Rate



(b) Worker Transition to Unemployment



Notes: Panel (a) displays the exit rate of firms in the matched sample, separately for target firms and for their control firms. After the event, the probability of exiting the sample increases by 2.4 percentage points (SE = 0.006) for target firms (mostly those involved in mergers) relative to control firms on average. Panel (b) displays the event-study estimates for the impact of M&As on workers' transition to unemployment. After the event, the probability of transitioning to unemployment increases by 0.7 percentage points (SE = 0.001) for target workers relative to their control workers on average. 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 A1: Different Clustering

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Earnings)
Target	-0.087***	-0.026***	-0.021***
	(0.023)	(0.009)	(0.008)
Mean at t = -1	4.00	10.69	11.02
Adj. R squared	0.876	0.798	0.650
Firm/Worker-Year Obs.	66,380	66,260	1,954,480
Acquirer	0.183***	0.011	0.002
	(0.038)	(0.013)	(0.012)
Mean at t = -1	4.55	10.74	11.03
Adj. R squared	0.892	0.819	0.642
Firm/Worker-Year Obs.	21,830	21,760	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 Columns (1) to (3) are log of employment, log of average payrolls, and log of worker-level earnings. Columns (1) and (2) show the results for firms involved in acquisitions. The standard errors of the firm-level estimates are clustered at the market level (defined by 4-digit NAICS × 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 slightly 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(Average Payrolls)	(3) log(Earnings)
Target	-0.103***	-0.026**	-0.016***
	(0.023)	(0.011)	(0.005)
Mean at t = -1	4.00	10.69	11.01
Adj. R squared	0.877	0.798	0.739
Firm/Worker-Year Obs.	65,740	65,620	1,960,640
Acquirer	0.167***	0.018	-0.001
	(0.033)	(0.014)	(0.007)
Mean at t = -1	4.56	10.73	11.02
Adj. R squared	0.891	0.815	0.731
Firm/Worker-Year Obs.	21,620	21,560	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 (Section 4), except that we restrict M&A firms to be at different markets (defined by 4-digit NAICS × commuting zone) from their matched control firms. The outcome variables in Columns (1) to (3) are log of employment, log of average payrolls, and log of worker-level earnings. Columns (1) and (2) show the results for firms involved in acquisitions. 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: Outcomes in Levels (Replacing Missing with Zeros)

	(1) Employment	(2) Average Payrolls	(3) Earnings
Target	-16.784***	-11,447***	-681*
	(2.535)	(732)	(353)
Mean at t = -1	105.69	49,191	70,625
Adj. R squared	0.845	0.696	0.790
Firm/Worker-Year Obs.	73,430	73,340	2,026,430
Acquirer	23.330***	1,304	154
	(5.172)	(1,003)	(465)
Mean at t = -1	177.75	51,060	70,046
Adj. R squared	0.860	0.732	0.793
Firm/Worker-Year Obs.	23,300	23,250	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 Columns (1) to (3) are employment, average payrolls, and worker-level earnings. Columns (1) and (2) show the results for firms involved in acquisitions. 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 A4: By One-time vs. Repeat M&A (Acquirer)

	(1) log(Employment)	(2) log(Average Payrolls)
Post × Treated	0.130***	0.008
	(0.038)	(0.016)
Post × Treated × Repeat	0.130**	0.005
	(0.066)	(0.027)
Mean at t = -1 (One-Time Acquirer = 1)	4.40	10.73
Mean at t = -1 (Repeat Acquirer = 1)	4.85	10.75
Adj. R squared	0.892	0.817
Firm-Year Obs. (One-Time Acquirer = 1)	15,400	15,360
Firm-Year Obs. (Repeat Acquirer = 1)	7,110	7,090

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. The standard errors are clustered at the firm level.

Table A5: Using Private Firms Only

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Earnings)
Target	-0.088***	-0.026**	-0.012**
	(0.023)	(0.011)	(0.005)
Mean at t = -1	4.01	10.69	11.01
Adj. R squared	0.876	0.797	0.739
Firm/Worker-Year Obs.	65,560	65,450	1,990,940
Acquirer	0.178***	0.008	0.003
	(0.033)	(0.014)	(0.007)
Mean at t = -1	4.56	10.73	11.02
Adj. R squared	0.894	0.818	0.732
Firm/Worker-Year Obs.	21,040	20,990	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 privately-owned firms/workers in the matched sample. In our matched sample, 96 percent of firms are private during our sample period. The outcome variables in Columns (1) to (3) are log of employment, log of average payrolls, and log of worker-level earnings. Columns (1) and (2) show the results for firms involved in acquisitions. 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 A6: Using Return on Assets as Additional Matching Variable

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Earnings)
Target	-0.088***	-0.025**	-0.013***
	(0.023)	(0.011)	(0.005)
Mean at t = -1	4.00	10.69	11.01
Adj. R squared	0.875	0.796	0.738
Firm/Worker-Year Obs.	66,640	66,550	2,017,810
Acquirer	0.184***	0.014	-0.001
	(0.023)	(0.033)	(0.014)
Mean at t = -1	4.55	10.74	11.02
Adj. R squared	0.890	0.816	0.731
Firm/Worker-Year Obs.	21,970	21,910	1,334,050

Notes: Columns (1) and (2) report the difference-in-differences estimates for the impacts of M&As on the main firm-level outcomes separately for targets and for acquirers involved in acquisitions. For this analysis, we implement the same matching procedure (Section 4), except that we include return on assets (ROA) as an additional matching variable in the propensity score estimation. Column (3) reports the difference-in-differences estimates for the impact of M&As on worker-level earnings, following the same matching. 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: Including Unmatched Eligible Firms and Workers

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Earnings)
Target	-0.105***	-0.021**	-0.010*
	(0.021)	(0.010)	(0.005)
Mean at t = -1	4.00	10.65	10.83
Adj. R squared	0.872	0.794	0.732
Firm/Worker-Year Obs.	73,670	73,580	3,815,300
Acquirer	0.178***	0.022	0.010
	(0.032)	(0.014)	(0.007)
Mean at t = -1	4.53	10.69	10.93
Adj. R squared	0.890	0.815	0.697
Firm/Worker-Year Obs.	24,610	24,580	3,143,520

Notes: Columns (1) and (2) report the difference-in-differences estimates for the impacts of M&As on the main firm-level outcomes separately for targets and for acquirers involved in acquisitions, including the eligible but unmatched sample M&A firms for matching. Column (3) reports the difference-in-differences estimates for the impact of M&As on worker-level earnings, including the eligible but unmatched sample of workers at M&A firms. 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 A8: Descriptive Statistics on Unmatched Eligible Firms and Workers

	(1) Acquirer	(2) Target
Panel A: Firm Characteristics		
Total Revenue (in millions)	42	24
Total Expense (in millions)	40	24
Number of Employees	238	155
Average Wage Bill	64,637	64,653
Leverage Ratio	0.67	0.73
Markups	2.97	2.87
Number of Firms	290	810
Panel B: Sectors (Firms)		
Construction	0.01	0.02
Manufacturing	0.14	0.13
Wholesale	0.05	0.08
Retail	0.04	0.03
Transportation	0.03	0.06
Information	0.15	0.19
Services	0.12	0.19
Other Sectors	0.46	0.30
Panel C: Worker Characteristics		
Total Earnings	61,611	55,731
Age	47.0	45.0
Female	0.39	0.43
Number of Workers	115,866	112,539
Panel D: Sectors (Workers)		
Construction	0.03	0.01
Manufacturing	0.15	0.23
Wholesale	0.07	0.08
Retail	0.10	0.43
Transportation	0.37	0.02
Information	0.06	0.02
Services	0.08	0.08
Other Sectors	0.13	0.13

Notes: This table reports descriptive statistics on the sample of eligible for matching but unmatched M&A firms and workers, measured one year prior to the event. Panel A reports firm characteristics such as total revenue, total expenses, number of employees, average payrolls, leverage ratio, and markups. Panel B reports the distribution of firms in the matched sample across 2-digit NAICS sectors. Panel C reports worker characteristics such as total annual earnings, age, and gender. 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.

B Additional Heterogeneity Results

In Appendix B, we provide results from heterogeneity analyses in addition to those discussed in Sections 4 – 6. Here, for worker-level analyses, 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 are concentrated.

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 wages 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 considering 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 economically 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 Acquisition vs. Merger

In our analysis sample, roughly 80 percent of M&A events are acquisitions (75 percent among the entire sample of 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. As discussed in Section 4, it is possible that a wage decline is larger (or smaller) in the case of a merger, where

there is a complete transfer of ownership. We explore whether impacts on worker earnings are larger in the case of a merger, compared to an 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 in the case of mergers were not larger than decreases in workers' earnings in the case of acquisitions, suggesting that our results are not driven by the fact the majority of our M&A events involves acquisitions. In other words, both mergers and acquisitions 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 are concentrated. 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 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 the vast majority of M&A events have a zero predicted change in local labor-market concentration, and even among the remaining 1 percent, the predicted change

is not large enough to generate any meaningful variation. 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 B4 and Table B4, 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 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.[25] This is not surprising given most of these events do not actually increase concentration in the local labor market.

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.[26]

B.5 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) of HHI measured one year before the event. A standard Herfindahl-Hirschmann Index (HHI) takes as given the definition of the market and then computes

$$HHI = \sum_j s_j^2, \tag{B1}$$

as the measure of concentration. We describe a flows-adjusted concentration measure that takes

[25] Given that the change in concentration after M&As was close to zero for the vast majority 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.

[26] Even 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.

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 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:

$$\tilde{s}_{jm} = \frac{l_{jm}}{\sum_k \alpha_{m \to k} L_k} \tag{B2}$$

where

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

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.,* $\alpha_{k \to m}$) 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:

$$\tilde{C} = \sum_j \tilde{s}_{jm}^2 \tag{B4}$$

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 on 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.

Figure B5 and Table B5 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.6 Revenue, NIBTEI per worker, Markups, and Realized Capital Gains

To get a better sense of why acquirers' and targets' profitability decreases after M&As (as discussed in Section 5), we assess other firm outcomes such as total revenue, NIBTEI (Net Income Before Taxes and Extraordinary Items) per worker, markups and realized capital gains. We define the markup as the elasticity of output with respect to variable 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) based on the U.S. data 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: $\hat{\theta}_{st} * \frac{Sales}{Costs\ of\ Goods}$. Furthermore, we link ownership data with the firm-level data to compute realized capital gains by owners for a given firm in each year. After merging individual tax returns data with the ownership data at the investor level, we aggregate owners' realized capital gains for each firm in each year to compute total realized capital gains by these investors at the firm level.

Panel (a) of Figure B6 shows the results on total revenue, separately for targets and for acquirers involved in acquisitions. Both targets' and acquirers' sales were in a parallel trend with those of their matched control firms prior to the event. We find that while acquirers' revenue increases significantly after the event, targets' revenue declines after the event. Even though acquirers' sales increase after M&As, their profit margins can decrease if the costs of acquisitions outweigh the benefits in the short to medium run. Furthermore, while the decline in targets' revenue is mechanical in the case of acquisitions, the decrease in profitability happens if they sold a profitable part of their businesses to acquirers. Panel (d) shows the aggregate outcomes (targets and acquirers

pooled) separately for those involved in acquisitions and for those involved in mergers. In both cases, revenue significantly decreases after the event in the aggregate.

Panel (b) of Figure B6 shows the results on NIBTEI per worker, separately for targets and for acquirers involved in acquisitions. Both targets' and acquirers' NIBTEI per worker were in a parallel trend with those of their matched control firms prior to the event, and significantly decreased after the event. Panel (e) shows the aggregate outcomes (targets and acquirers pooled) separately for those involved in acquisitions and for those involved in mergers. In both cases, we see significant decreases in NIBTEI per worker for targets and acquirers on average. These results are consistent with the decreases in profit margins and returns on assets discussed in Section 5.

Panel (c) of Figure B6 shows the results on markups, separately for targets and for acquirers involved in acquisitions. Both targets' and acquirers' markups were in a parallel trend with those of their matched control firms prior to the event, and remained relatively unchanged after the event. Panel (f) shows the aggregate outcomes (targets and acquirers pooled) separately for those involved in acquisitions and for those involved in mergers. In the case of acquisitions, markups do not change much after the event. In the case of mergers, markups decrease after the event in the aggregate. These results, in conjunction with the results on profitability, provide more direct evidence that firms' product market power did not increase after the event at least in the short to medium run.

Panel (d) of Figure B6 shows the results on realized capital gains, separately for targets and for acquirers involved in acquisitions. We find that while acquirers' realized capital gains decreased slightly after the event, targets' realized capital gains increase significantly after the event. The increase in realized capital gains at targets is driven by their initial investors selling a part of their shares ("cashing out") to those in acquiring firms, while the slight decrease in realized capital gains at acquiring firms indicate that their investors were net buyers of shares after the event. Panel (g) shows the aggregate outcomes (targets and acquirers pooled) separately for those involved in acquisitions and for those involved in mergers. In both cases, we see increases in realized capital gains. These results imply that even though targets' profitability did not improve after the event,

initial investors still benefitted from the transactions by selling a part of their shares to acquirers.

To interpret the magnitude of these results, Table B6 presents the difference-in-differences estimates on these outcomes. Columns (1) and (2) show that targets' revenue decreases by 54.5 log points, while acquirers' revenue increases by 26.9 log points on average. Columns (3) and (4) show that in the aggregate, revenue decreases by 30.7 log points in the case of acquisitions, while it decreases by 10.3 log points in the case of mergers. Columns (1) and (2) show that targets' NIBTEI decreases by 2,887 CAD per worker, while acquirers' NIBTEI decreases by 4,570 CAD per worker on average. Columns (3) and (4) show that in the aggregate, NIBTEI decreases by 3,428 CAD per worker in the case of acquisitions, while it decreases by 7,106 CAD per worker in the case of mergers. Columns (1) and (2) show that acquirers' and targets' markups do not change much after the event on average. Columns (3) and (4) show that in the aggregate, markups do not change in the case of acquisitions, while they decrease by 4.2 log points in the case of mergers. Columns (1) and (2) show that targets' realized capital gains increase by 27,558 CAD, while acquirers' realized capital gains decrease by 13,071 CAD on average. Columns (3) and (4) show that in the aggregate, realized capital gains increase by 21,646 CAD in the case of acquisitions, while they increase by 28,002 CAD in the case of mergers. Overall, the decrease in profitability, without much change in markups, suggests that neither targets nor acquirers experienced an increase in market power after M&As at least in the short to medium run (De Loecker et al. 2020).

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 profitability decreased 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 (De Loecker et al. 2020). 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). Figure B7 and Table B7 show that the declines in worker earnings at target firms are not larger for non-tradable sectors. Therefore, this finding, along with the results on decreased profit margins without 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 Horizontal M&As vs. Vertical 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 horizontal M&As and vertical 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 M&As). We divide our sample of all M&A firms based on the industries of the parties involved in a transaction. An M&A is within-industry if the industries (4-digit NAICS) of both parties are identical and it is between-industry (i.e., vertical M&As) if the industries are different. For firms involved in a single M&A 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 involved in 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 decline in worker earnings is similar in both types of 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 Staying Within Industry/Sector vs. Moving to Different Industry/Sector

Since a non-trivial share of workers at target firms move to other firms in a different industry or sector, we next look at job movers from targets who stay within the same industry/sector versus those who move to a different industry/sector. As before, we examine job movers within the first two years after the event, and focus on the firm's industry after the first move. Then we analyze the impacts of M&As on their earnings, separately for those who stay within the same industry (or sector) and for those who switch to a different industry (or sector) after the event. Panel (a) of Figure B9 and Column (1) of Table B9 show earnings of workers at target firms who stay within the same industry versus those who move to a different industry. We see larger and more persistent declines in earnings of workers who move to a different industry after M&As. Furthermore, Panel (b) and Column (2) show similar patterns for workers who stay within the same sector versus those who move to a different sector.

B.10 By Reasons for Job Separations

When workers are displaced, they may suffer larger wage losses, relative to workers who voluntarily leave their firms, due to the deterioration in their bargaining position. Therefore, we 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.[27] If our results are driven by either contract-based mechanisms or productivity-based channels (as discussed in Section 7), we would expect the displaced workers to experience larger declines in earnings, relative to workers that voluntarily leave their firm. Panel (a) of Figure B10 and Column (1) of Table B10 show 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.

[27] The 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 (similar to the effects for workers who move to other firms voluntarily).

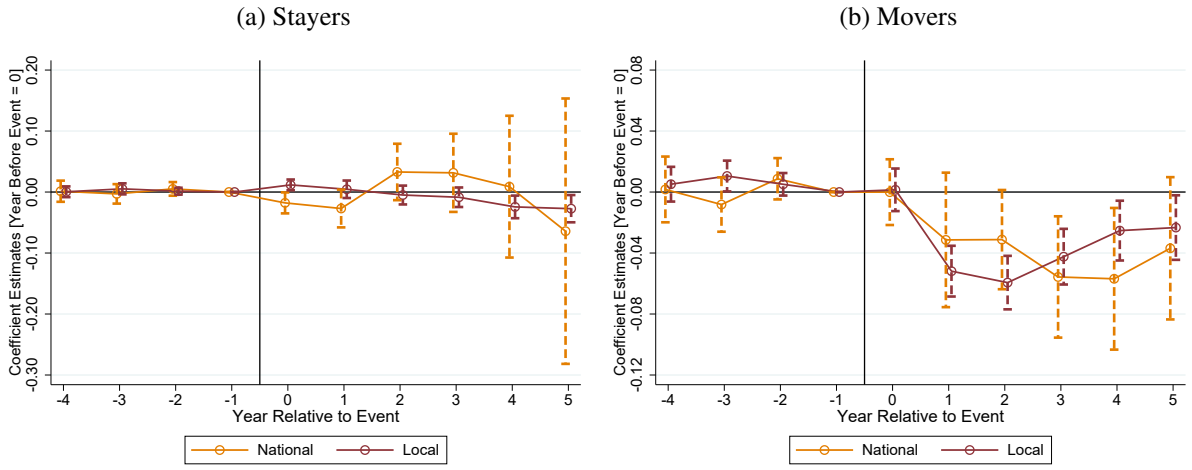
B.11 Using Longer Tenure Cutoff

In our main sample, we define short-tenure workers as those with 4 years of tenure and long-tenure workers as those with 7 or more years of tenure prior to the event. Here, we re-define long-tenure workers as those with 9 or more years of tenure, while maintaining the same definition for short-tenure workers to see if our heterogeneity results based on worker tenure are robust to a different tenure cut. Panel (a) of Figure B11 and Column (1) of Table B11 show earnings of workers at target firms who move to other firms, separately for short-tenure workers and long-tenure workers. These results are very similar to our findings in Figure 6 and in Table 6.

B.12 By Worker Age

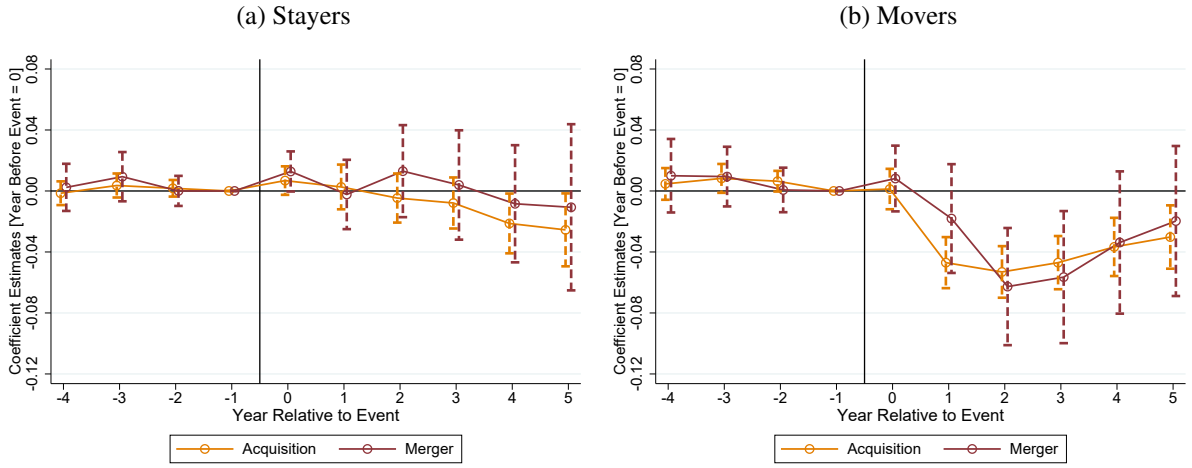
We additionally explore whether the decline in earnings of workers at target firms is different based on workers' age. Prior studies have found differential impacts of firm-level shocks on worker earnings depending on their age (Kline et al. 2019; Saez et al. 2019). As shown in Section 5, the decline 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 job movers from target firms, and estimate what happens to their earnings, separately across different age groups. Figure B12 and Table B12 show that while we observe declines in earnings across all age groups for workers moving from target firms, the decline in earnings is largest among movers who are at least 50 years old before the event. Taken together, these results imply that there exists a substantial degree of heterogeneity across age groups for changes in worker earnings after the M&A event. These results are consistent with our main results based on worker tenure in Section 6.

Figure B1: Worker-level Earnings By National M&As vs. Local M&As (Targets)



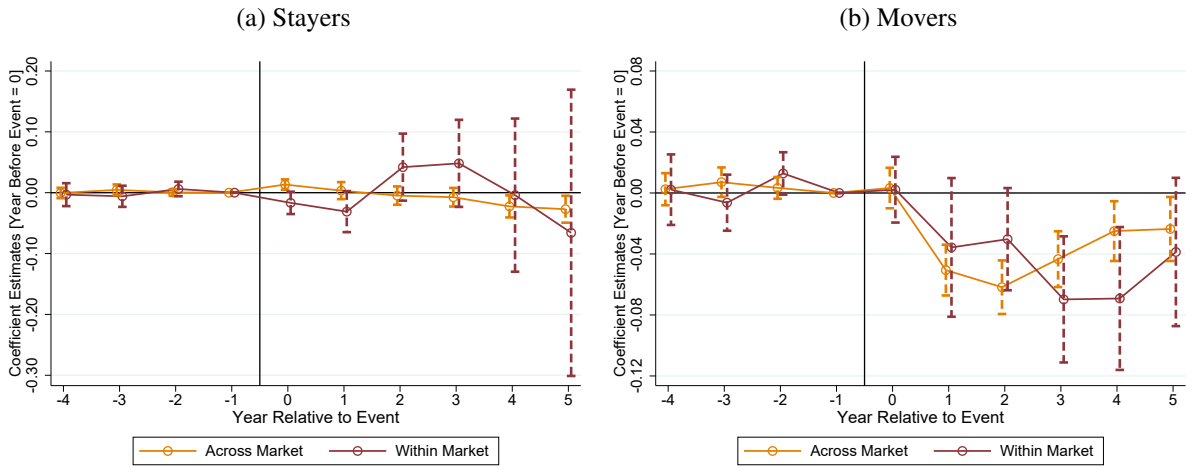
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for those involved in national M&A deals and for those involved in local M&A deals. An M&A event is labeled as national if it occur among domestic firms with multiple establishments across different commuting zones, otherwise it is labeled as local. Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from target firms within the first two years after the event. 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: Worker-level Earnings By acquisition vs. Merger (Targets)



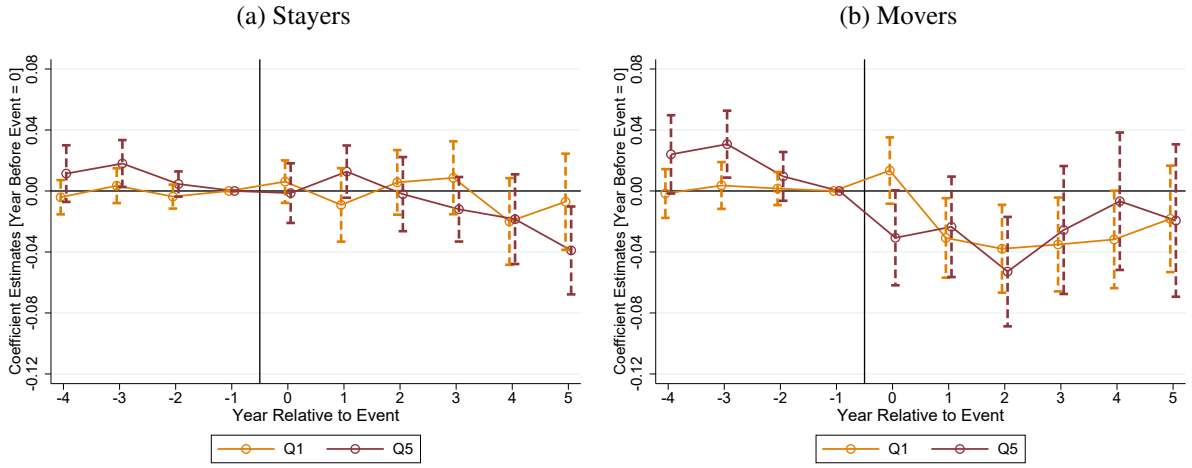
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for those involved in acquisitions and for those involved in mergers. Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from target firms within the first two years after the event. 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 B3: Worker-level Earnings By Within-Market M&As vs. Across-Market M&As (Targets)



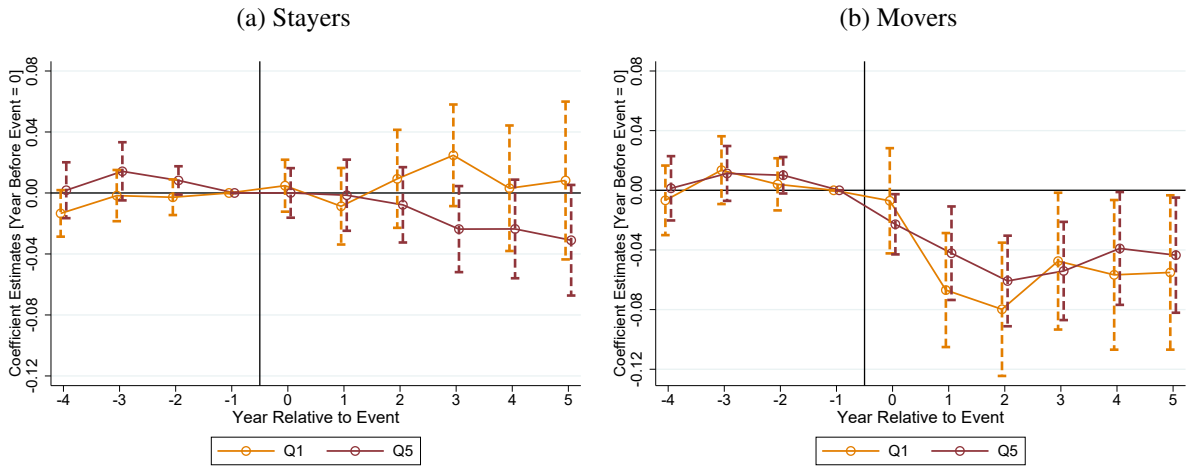
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for M&As that happen within the same labor market and for M&As that happen across different labor markets. Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from target firms within the first two years after the event. 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 B4: Worker-level Earnings By Initial Level of HHI (Targets)



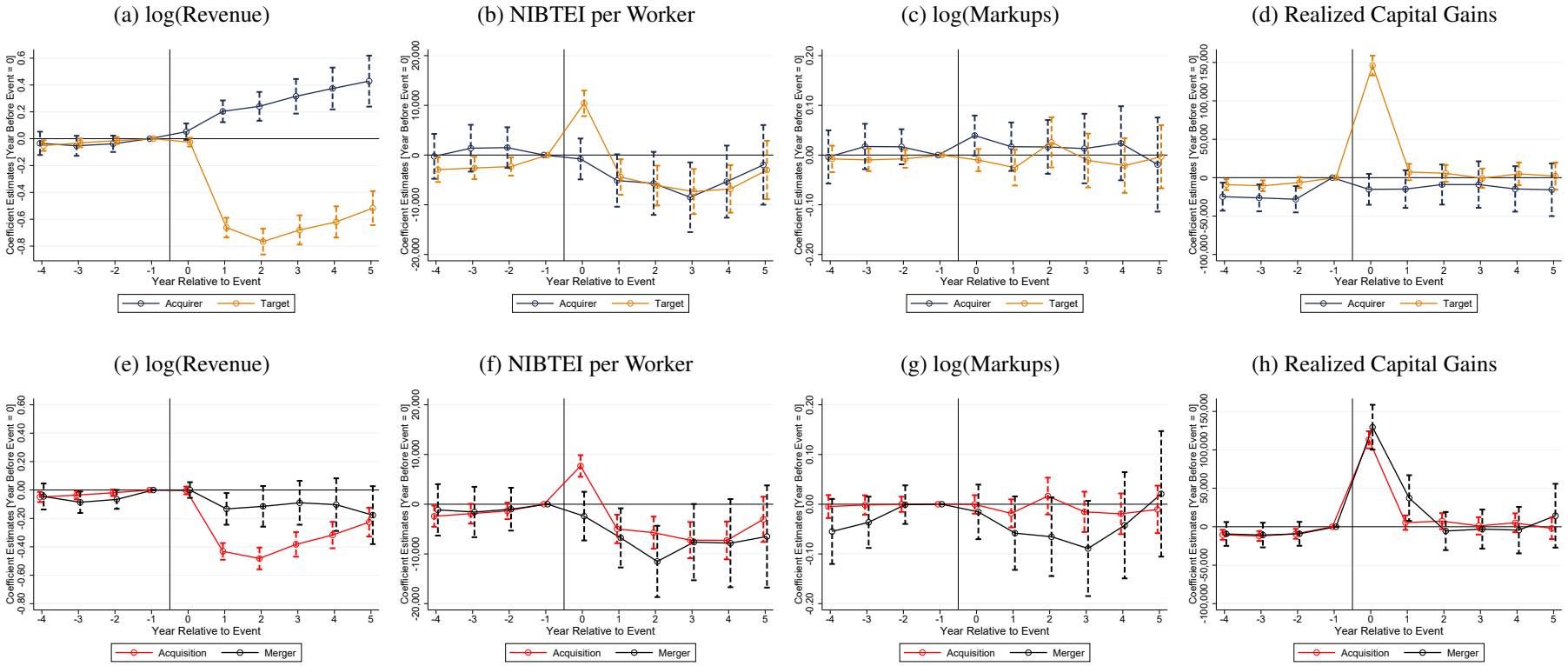
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for those in markets with low initial level of concentration (first quintile) and for those in markets with high initial level of concentration (fifth quintile). Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from target firms within the first two years after the event. 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 B5: Worker-level Earnings By Initial Level of Flow-adjusted HHI (Targets)



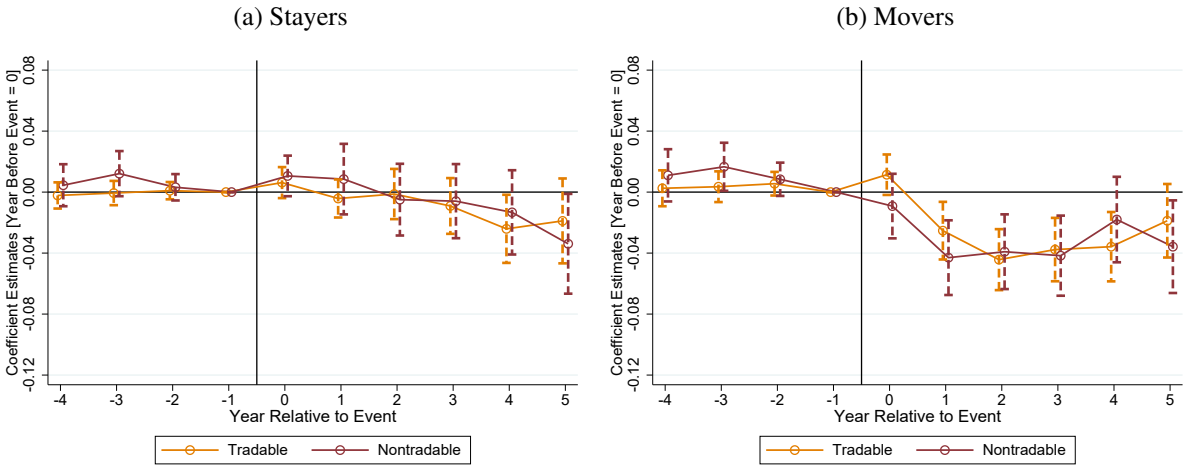
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for those in markets with low initial level of concentration (first quintile) and for those in markets with high initial level of concentration (fifth quintile). Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from target firms within the first two years after the event. 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: Difference-in-differences Estimates on Revenue, Profitability, Markups, and Payouts



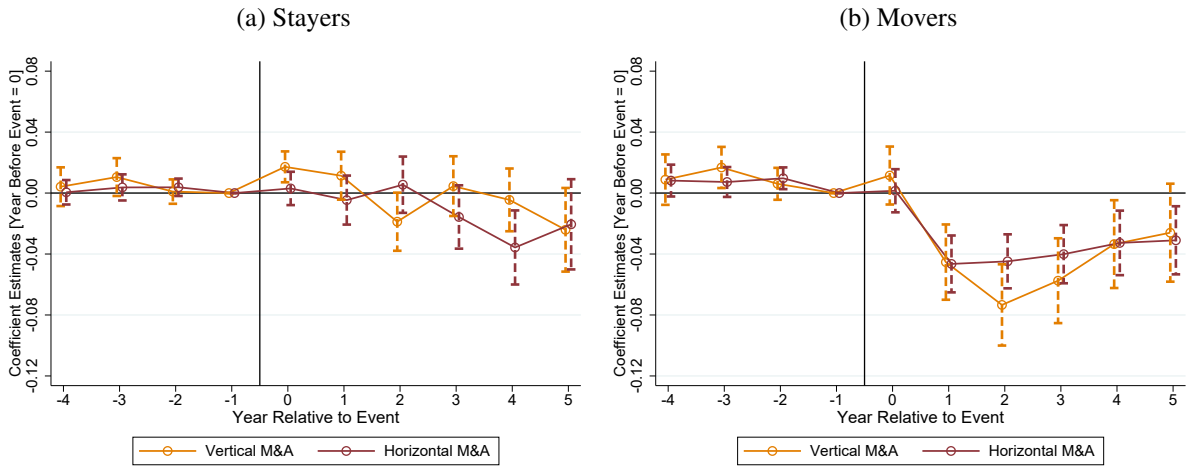
Notes: Panels (a) – (d) display event-study estimates for the impact of M&As on other firm-level outcomes for firms involved in acquisitions, separately for acquiring firms (navy line) and for target firms (orange line). Panel (a) shows the estimates for log of total revenue. Panel (b) shows the estimates for NIBTEI (Net Income Before Taxes and Extraordinary Items) per worker. Panel (c) shows the estimates for log of markups. Panel (d) shows the estimates for owners' realized capital gains aggregated at the firm level. Panels (e) – (h) display event-study estimates for the impact of M&As on the aggregate firm-level (targets and acquirers pooled) outcomes, separately for those involved in acquisitions (red line) and for those involved in mergers (black line). 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 is normalized to be zero in year -1.

Figure B7: Worker-level Earnings By Tradable Sectors vs. Non-tradable Sectors (Targets)



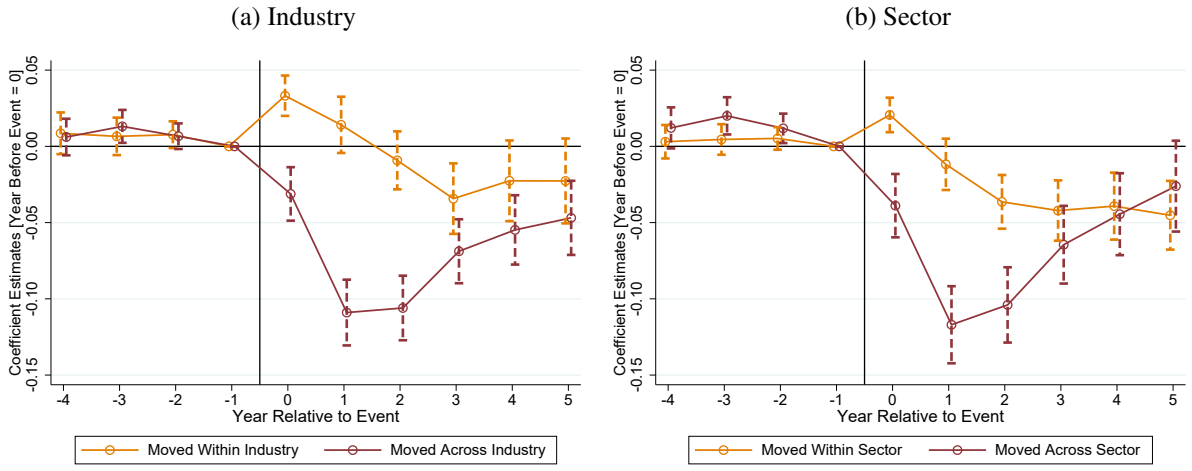
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for those in tradable sectors and for those in non-tradable sectors. We define firms as active in tradable good sectors if they fall under Agriculture, Forestry, 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. Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from target firms within the first two years after the event. 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 B8: Worker-level Earnings By Vertical M&As vs. Horizontal M&As (Targets)



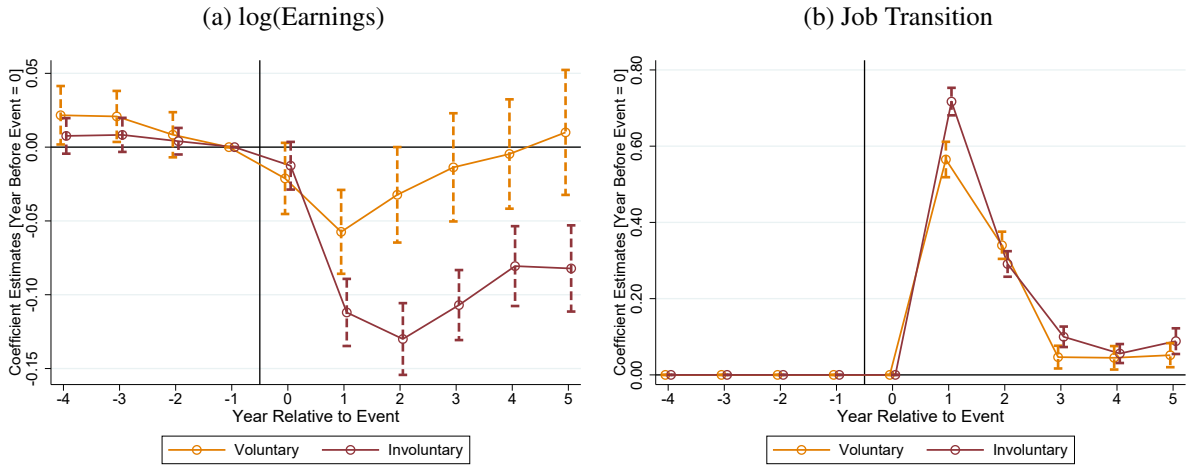
Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers at target firms, separately for those involved in (horizontal) M&As that happen within the same industry and for those involved in (vertical) M&As that happen across different industries. Panel (a) displays the estimates for stayers and panel (b) displays the estimates for workers moving from target firms within the first two years after the event. 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 B9: Worker-level Earnings By Transition Across and Within Industry/Sector (Targets)



Notes: These figures display event-study estimates for the impact of M&As on log of total earnings for workers moving from target firms within the first two years after the event, separately for those workers who move across sectors/industries and for those workers who move within a sector/industry. Panel (a) displays the estimates separately for those who move to firms within the same industry and for those who move to firms in a different industry. Panel (b) displays the estimates separately for those who move to firms within the same sector and for those who move to firms in a different sector. 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.

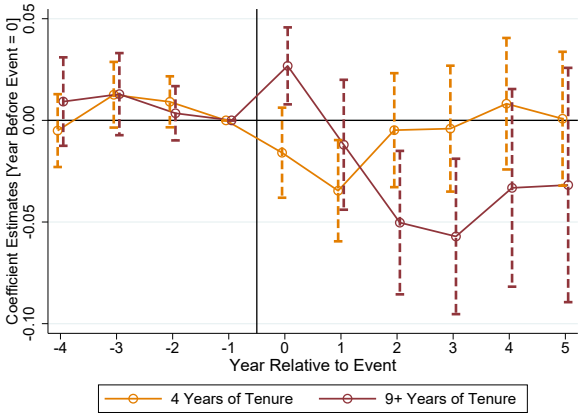
Figure B10: Worker-level Earnings By Type of Separation (Targets)



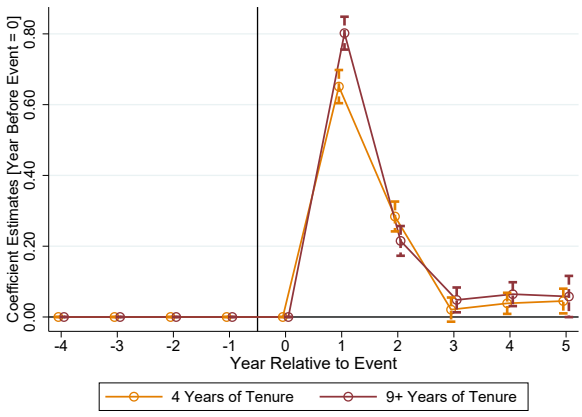
Notes: These figures display event-study estimates for the impact of M&As for workers moving from target firms within the first two years after the event, separately for those who leave voluntarily and for those who are displaced. Panel (a) shows the estimates for log of total earnings. Panel (b) shows the estimates for job transition probabilities. 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: Worker-level Earnings By Tenure (Targets)

(a) log(Earnings)



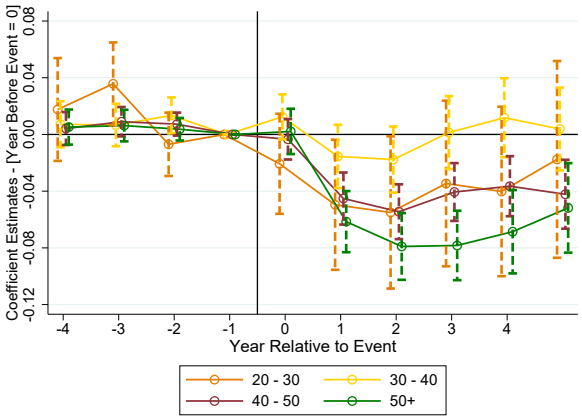
(b) Job Transition



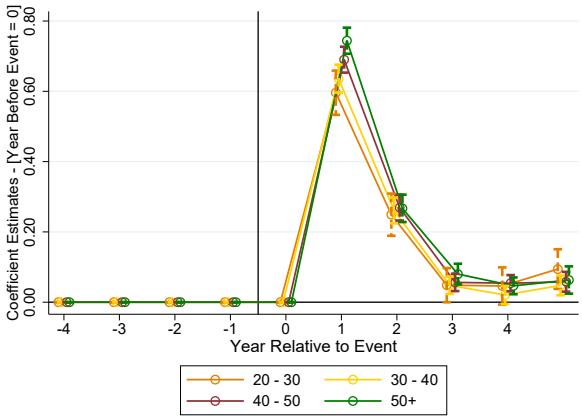
Notes: These figures display event-study estimates for the impact of M&As for workers moving from target firms within the first two years after the event, separately for those with 4 years of tenure and for those with 9 or more years of tenure. Panel (a) shows the estimates for log of total earnings. Panel (b) shows the estimates for job transition probabilities. 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 is normalized to be zero in year -1.

Figure B12: Workers Moving from Targets By Worker Age (Targets)

(a) log(Earnings)



(b) Transition



Notes: These figures display event-study estimates of the impact of M&As on worker-level outcomes for workers moving from target firms within the first two years after the event, separately for various age groups (20-29 years old, 30-39 years old, 40-49 years old, and 50 years old and above). Panel (a) shows the estimates for log of total earnings. Panel (b) shows the estimates for job transition probabilities. 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: Worker-level Earnings By National M&As vs. Local M&As (Targets)

	(1) Stayers	(2) Movers
National	-0.008	-0.033***
	(0.006)	(0.007)
Mean at t = -1	11.00	10.95
Adj. R squared	0.799	0.741
Worker-Year Obs.	1,373,290	549,560
Local	-0.006	-0.035**
	(0.030)	(0.014)
Mean at t = -1	11.09	11.08
Adj. R squared	0.790	0.744
Worker-Year Obs.	193,180	134,420

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, separately for those involved in national M&As and for those involved in local M&As. An M&A event is labeled as national if it occur among domestic firms with multiple establishments across different commuting zones, otherwise it is labeled as local. Columns (1) and (2) display the estimates for stayers and for workers moving from target firms within the first two years after the event, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B2: Worker-level Earnings By Acquisitions vs. Mergers (Targets)

	(1) Stayers	(2) Movers
Acquisition	-0.008	-0.035***
	(0.006)	(0.007)
Mean at t = -1	11.01	10.97
Adj. R squared	0.800	0.743
Worker-Year Obs.	1,365,580	601,180
Merger	0.001	-0.030*
	(0.013)	(0.016)
Mean at t = -1	11.01	11.02
Adj. R squared	0.785	0.726
Worker-Year Obs.	216,050	88,190

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, separately for those involved in acquisitions and for those involved in mergers. Columns (1) and (2) display the estimates for stayers and for workers moving from target firms within the first two years after the event, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B3: Worker-level Earnings By Within Market M&As vs. Across Market M&As (Targets)

	(1) Stayers	(2) Movers
Across Market	-0.007	-0.034***
	(0.006)	(0.007)
Mean at t = -1	11.00	10.95
Adj. R squared	0.799	0.741
Worker-Year Obs.	1,387,150	547,370
Within Market	-0.005	-0.040***
	(0.033)	(0.015)
Mean at t = -1	11.1	11.09
Adj. R squared	0.786	0.743
Worker-Year Obs.	170,870	120,900

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, separately for those involved in M&As that happen across different labor markets (defined at the four-digit NAICS by commuting zone) and for those involved in M&As that happen within the same labor market. Columns (1) and (2) display the estimates for stayers and for workers moving from target firms within the first two years after the event, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B4: Worker-level Earnings By Initial Level of HHI (Targets)

	(1) Stayers	(2) Movers
Q1	-0.003	-0.023**
	(0.009)	(0.011)
Mean at t = -1	11.04	11.03
Adj. R squared	0.814	0.748
Worker-Year Obs.	384,470	186,790
Q5	-0.010	-0.026*
	(0.008)	(0.015)
Mean at t = -1	11.03	11.00
Adj. R squared	0.777	0.744
Worker-Year Obs.	379,700	122,390

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, separately for those in markets with initially low level of concentration (first quintile) and for those in markets with initially high level of concentration (fifth quintile). Columns (1) and (2) display the estimates for stayers and for workers moving from target firms within the first two years after the event, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B5: Worker Earnings By Initial Level of Flows-Adjusted HHI (Targets)

	(1) Stayers	(2) Movers
Q1	0.007	-0.052***
	(0.012)	(0.016)
Mean at t = -1	10.97	10.95
Adj. R squared	0.812	0.735
Worker-Year Obs.	166,590	66,840
Q5	-0.015	-0.044***
	(0.010)	(0.012)
Mean at t = -1	11.06	10.97
Adj. R squared	0.792	0.747
Worker-Year Obs.	395,720	182,240

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, separately for those in markets with initially low level of concentration (first quintile) and for those in markets with initially high level of concentration (fifth quintile). Columns (1) and (2) display the estimates for stayers and for workers moving from target firms within the first two years after the event, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B6: Difference-in-differences Estimates on Revenue, Profitability, Markups, and Payouts

	(1)	(2)	(3)	(4)
	Acquisition		**Aggregate**	
	Target	Acquirer	Acquisition	Merger
log(Revenue)	-0.545***	0.269***	-0.307***	-0.103*
	(0.038)	(0.048)	(0.030)	(0.058)
Mean at t = -1	16.37	17.02	16.53	16.45
Adj. R squared	0.820	0.861	0.829	0.840
Firm-Year Obs.	68,460	22,060	91,140	19,400
NIBTEI per Worker	-2,887*	-4,570**	-3,428***	-7,106***
	(1,484)	(2,329)	(1,205)	(2,731)
Mean at t = -1	15,881	17,906	16,375	14,432
Adj. R squared	0.441	0.458	0.436	0.449
Firm-Year Obs.	65,810	21,600	88,050	18,690
log(Markups)	-0.008	0.015	-0.008	-0.042
	(0.019)	(0.024)	(0.014)	(0.034)
Mean at t = -1	0.42	0.40	0.42	0.39
Adj. R squared	0.758	0.811	0.769	0.746
Firm-Year Obs.	40,800	12,760	54,150	11,170
Realized Capital Gains	27,558***	-13,071	21,646***	28,002***
	(4,310)	(9,386)	(3,736)	(9,603)
Mean at t = -1	37,938	51,147	40,770	35,449
Adj. R squared	0.282	0.209	0.245	0.304
Firm-Year Obs.	42,150	10,820	53,670	9,410

Notes: This table reports the difference-in-differences estimates for the impact of M&As on firms' sales, NIBTEI per worker, markups, and realized capital gains. Columns (1) and (2) report the estimates for target firms and for acquiring firms involved in acquisitions, respectively. Columns (3) and (4) report the estimates on the aggregate (targets and acquirers pooled) outcomes, for those involved in acquisitions and for those involved in mergers, respectively. The standard errors are clustered at the firm level.

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

	(1) Stayers	(2) Movers
Tradable	-0.006	-0.031***
	(0.009)	(0.010)
Mean at t = -1	10.97	10.95
Adj. R squared	0.788	0.739
Worker-Year Obs.	826,140	320,350
Nontradable	-0.009	-0.025***
	(0.007)	(0.008)
Mean at t = -1	11.06	11.00
Adj. R squared	0.804	0.748
Worker-Year Obs.	755,700	369,300

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, separately for those in tradable sectors and for those in non-tradable sectors. 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. Columns (1) and (2) display the estimates for stayers and for workers moving from target firms within the first two years after the event, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B8: Worker-level Earnings By Vertical M&As vs. Horizontal M&As (Targets)

	(1) Stayers	(2) Movers
Vertical M&A	-0.002	-0.037***
	(0.007)	(0.010)
Mean at t = -1	10.97	10.88
Adj. R squared	0.798	0.755
Worker-Year Obs.	679,760	233,960
Hoirzontal M&A	-0.011	-0.032***
	(0.007)	(0.007)
Mean at t = -1	11.04	11.03
Adj. R squared	0.798	0.732
Worker-Year Obs.	901,990	455,670

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, separately for those involved in (vertical) M&As that happen across different industries and for those involved in (horizontal) M&As that happen within the same industry. Columns (1) and (2) display the estimates for stayers and for workers moving from target firms within the first two years after the event, respectively. The standard errors are two-way clustered at the worker and firm level.

Table B9: Worker-level Earnings By Transition Across and Within Industry/Sector (Targets)

	(1) Industry	(2) Sector
Post × Treated	-0.003	-0.023***
	(0.008)	(0.007)
Post × Treated × Moved Across Industry	-0.057***	
	(0.011)	
Post × Treated × Moved Across Sector		-0.029***
		(0.011)
Mean at $t = -1$ (Moved Within = 1)	11.02	11.01
Mean at $t = -1$ (Moved Across = 1)	10.93	10.92
Adj. R squared	0.739	0.739
Worker-Year Obs. (Moved Within = 1)	358,200	464,400
Worker-Year Obs. (Moved Across = 1)	333,080	226,880

Notes: This table reports the difference-in-differences estimates of the impact of M&As for workers moving from target firms within the first two years after the event for those workers who moved within a sector/industry. The triple interaction term captures the triple-difference estimates for those moved across sectors/industries. Column (1) displays the estimates separately for those who move to firms within the same industry and for those who move to firms in a different industry. Column (2) displays the estimates separately for those who move to firms within the same sector and for those who move to firms in a different sector. The standard errors are two-way clustered at the worker and firm level.

Table B10: Workers Moving from Targets By Separation Type (Targets)

	(1) log(Earnings)	(2) Transition
Post × Treated	-0.011	0.173***
	(0.012)	(0.007)
Post × Treated × Displaced	-0.078***	0.033***
	(0.013)	(0.007)
Mean at $t = -1$ (Voluntary = 1)	10.92	0.00
Mean at $t = -1$ (Displaced = 1)	10.92	0.00
Adj. R squared	0.738	0.276
Worker-Year Obs. (Voluntary = 1)	79,420	79,530
Worker-Year Obs. (Displaced = 1)	249,610	249,980

Notes: This table reports the difference-in-differences estimates for the impacts of M&As for workers moving from target firms within the first two years after the event for those who move voluntarily. The triple interaction term captures the triple-difference estimates for those who are displaced. Column (1) displays the estimates for log of total earnings. Column (2) displays the estimates for the job transition probabilities. The standard errors are two-way clustered at the worker and firm level.

Table B11: Worker-level Earnings By Tenure (Targets)

	(1) log(Earnings)	(2) Transition
Post × Treated	0.004	0.180***
	(0.011)	(0.008)
Post × Treated × 9+ Years of Tenure	-0.044***	0.005
	(0.017)	(0.011)
Mean at $t = -1$ (4 Years of Tenure)	10.96	0.00
Mean at $t = -1$ (9+ Years of Tenure)	11.08	0.00
Adj. R squared	0.745	0.446
Worker-Year Obs. (4 Years of Tenure)	186,170	186,660
Worker-Year Obs. (9+ Years of Tenure)	153,750	153,930

Notes: This table reports difference-in-differences estimates of the impacts of M&As for workers moving from targets within the first two years after the event for workers with 4 years of tenure measured one year prior to the event. The triple interaction term captures the triple-difference estimates for those with 9 or more years of tenure. Column (1) displays the estimates for the log of total earnings, and Column (2) displays the estimates for the probability of job transition. Standard errors are two-way clustered at the worker and firm level.

Table B12: Workers Moving from Targets – By Worker Age (Targets)

	(1) log(Earnings)	(2) Transition
20s	-0.036*	0.172***
	(0.021)	(0.011)
Mean at t = -1	10.69	0.00
Adj. R squared	0.764	0.282
Worker-Year Obs.	32,390	32,410
30s	-0.001	0.169***
	(0.009)	(0.006)
Mean at t = -1	10.98	0.00
Adj. R squared	0.73	0.267
Worker-Year Obs.	154,250	154,370
40s	-0.037***	0.188***
	(0.007)	(0.006)
Mean at t = -1	11.05	0.00
Adj. R squared	0.778	0.333
Worker-Year Obs.	246,160	246,510
50+	-0.056***	0.200***
	(0.009)	(0.007)
Mean at t = -1	10.95	0.00
Adj. R squared	0.761	0.369
Worker-Year Obs.	256,090	256,800

Notes: This table reports the difference-in-differences estimates for the impacts of M&As for workers moving from target firms within the first two years after the event across various age groups (20-29 years old, 30-39 years old, 40-49 years old, and 50 years old and above). Column (1) displays the estimates log of total earnings. Column (2) displays the estimates for the transition probabilities. The standard errors are two-way clustered at the worker and firm level.

C Additional Institutional Details and SDC Platinum Data

In Appendix C, we provide additional institutional details regarding the relevant labor regulation in Canada and how the SDC Platinum Database categorizes different types of M&A transactions.

C.1 Labor Regulation in Canada

The Canadian and 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 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 depends on years of service. Non-compete clauses have recently been banned in certain provinces, but were generally unenforceable before the banning (Hanson and Cohen, 2012). Therefore, non-compete clauses are unlikely to be a big issue for worker transitions after M&As in our setting. One difference for labor markets is the degree of unionization. During our sample period, the overall coverage in the private sector by union contracts is 18 percent on average, compared to 8 percent in the U.S.[28] While the higher union coverage may make displacing workers difficult, it may also make M&As an attractive opportunity to restructure the firm.

C.2 SDC Categorization of M&A Transaction

In the SDC Platinum database, a merger is defined as an event in which either two parties become one entity or an acquirer buys 100 percent of a target's stock. By contrast, an acquisition is defined as taking over either a target's assets or a part of its stock. In the sample of all M&As that are matched with our firm-level data in Canada between 2001 and 2017, mergers account for 25 percent (20 percent in our analysis sample) of the cases, while acquisitions account for the rest. Acquisitions are further categorized into the following: (1) acquisition of majority interest, meaning deals in which the acquirer holds less than 50 percent and is seeking to purchase 50 percent

[28]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."

or more, but less than 100 percent of the target company's stock, (2) acquisition of remaining interest, meaning deals in which the acquirer holds over 50 percent and is seeking to purchase 100 percent of the target company's stock, (3) acquisition of partial interest, meaning deals in which the acquirer holds less than 50 percent and is seeking to acquire less than 50 percent, or the acquirer holds over 50 percent and is seeking less than 100 percent of the target company's stock, (4) acquisition of assets, meaning deals in which the assets of a company, subsidiary, division, or branch are acquired, and (5) acquisition of certain assets, meaning deals in which certain assets of a company, subsidiary, division, or branch are acquired. These events are also known as partial acquisitions. While the acquirer may not purchase the entirety of the target in an acquisition, the acquirer gains a controlling stake of the target in the acquisition of majority interest (10 percent of all M&As). In this sense, an acquisition of majority interest is conceptually similar to a merger to the extent that there is a change of control.

By contrast, when the acquirer buys the remaining interest (3 percent of all M&As), there is no change of control since the acquirer already had a controlling stake. Similarly, when the acquirer buys a partial interest (14 percent of all M&As), there is no change of control and the acquirer does not have a controlling stake unless it already had more than 50 percent of the target's stock prior to the event.

On the other hand, when an acquirer buys the assets of the target (47 percent of all M&As), the acquirer can buy the entire company's assets or its division's assets, so the acquirer may or may not have a controlling stake in the case of asset purchases. For example, if an acquirer buys two out of three factories owned by a target, then it appears that the acquirer now has a controlling stake. However, even if the acquirer buys only one factory, it still controls that specific division of the target. Therefore, it is difficult to say whether there is an absolute change of control in the acquisition of assets without more information from the data. If the acquisition of assets leads to a change of control, then again, it is conceptually similar to a merger. In the acquisition of certain assets (1 percent of all M&As), however, it is unlikely that there is a change of control.

Since M&As may lead to different outcomes depending on whether there is a definite change

of control, we divide our firm-level analyses into those involving mergers and those involving acquisitions. Furthermore, M&As may have quantitatively different impacts depending on whether the acquirer buys a part or the entirety of the target, regardless of a change of control. Again, in the acquisition of majority interest, there is a definite change of control and most asset acquisitions likely result in a change of control as well, despite not buying the entire target.[29]

[29]Our main results remain qualitatively similar even if we exclude the acquisition of remaining interest, partial interest, and certain assets (together 18 percent of all M&A deals in our data) where there is no change of control.