The Labor Market Impact of Shareholder Power: Worker-Level Evidence*

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Abstract

Using worker-level data from the US Census Bureau's LEHD program, we show that increases in shareholder power lead to persistent earnings losses for employees. We track worker earnings up to six years after their firms experience a material increase in ownership concentration by institutional shareholders ("treated workers"), relative to employees of firms that experience a similarly sized increase in institutional ownership level but not concentration ("control workers"). We find that the cumulative earnings of the treated workers decline by 10% of their annual earnings over the next six years. Workers with higher earnings and top managers, such as chief executives, experience larger earnings losses. The earnings losses are larger for dedicated and activist institutions. The increase in ownership concentration slows down firm hiring. The collection of evidence is consistent with increased shareholder power reducing rent sharing with employees.

Key words: Institutional ownership concentration; shareholder power; worker earnings; rent sharing; imperfectly competitive labor markets

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1. Introduction

Public corporations, which account for half of private employment in the US, underwent radical changes in their ownership structure with the rise in institutional ownership concentration. Figure 1 shows how one common measure of ownership concentration for US public firms—"block" institutional ownership, defined as equity stakes larger than 5%—increased threefold from 1980 to 2014. By the end of the period, the block institutional shareholders held on average over 13% of the equity shares of US public corporations. Over this period, wage stagnation and falling employment are stylized facts of US labor markets (see, e.g., Autor and Katz, 1999; Pierce and Schott, 2016).

Classical agency theory of the firm (e.g., Jensen and Meckling, 1976) suggests that there may be a direct link between the ownership structure of public corporations and their employee earnings. For instance, prominent commentators in the popular press and CEOs of large corporations have recently expressed concerns that the so-called "shareholder capitalism"—i.e., the North American style of governance that since the 1980s has centered around the maximization of shareholder value as the main objective of the firm—may have hurt employees.[1] Growing evidence on the impact of governance on employment (e.g., Bertrand and Mullainathan, 2003; and Davis et al., 2014) and on the effect of declining worker power on wages (e.g., Stansbury and Summers, 2020; and Farber et al., 2021) suggests that the impact of increases in shareholder power on employees could be substantial. Yet, even though concentrated institutional shareholders now control a large share of publicly traded firms, there is a dearth of systematic evidence on their impact on worker earnings.

To study the earnings impact of increases in shareholder power, proxied by institutional ownership concentration, this paper uses representative longitudinal data on individual earnings from the US Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) databases. We combine the data with detailed firm-level information on institutional ownership for the universe of publicly-traded US corporations. Specifically, we assemble a rich worker-level data set that spans the 1993 to 2015 period and contains quarterly

[1] See, for example, Business Roundtable Statement on the Purpose of the Corporation (2019) at https://opportunity.businessroundtable.org/ourcommitment/, Posner (2019), Krugman (2015), and Stiglitz (2019).

information on workers' employment status, earnings, and on their employers' ownership structure. Using this data set, we show that increases in shareholder power, as measured by concentration of institutional ownership, lead to reductions in individual worker-level earnings over the medium to long run.

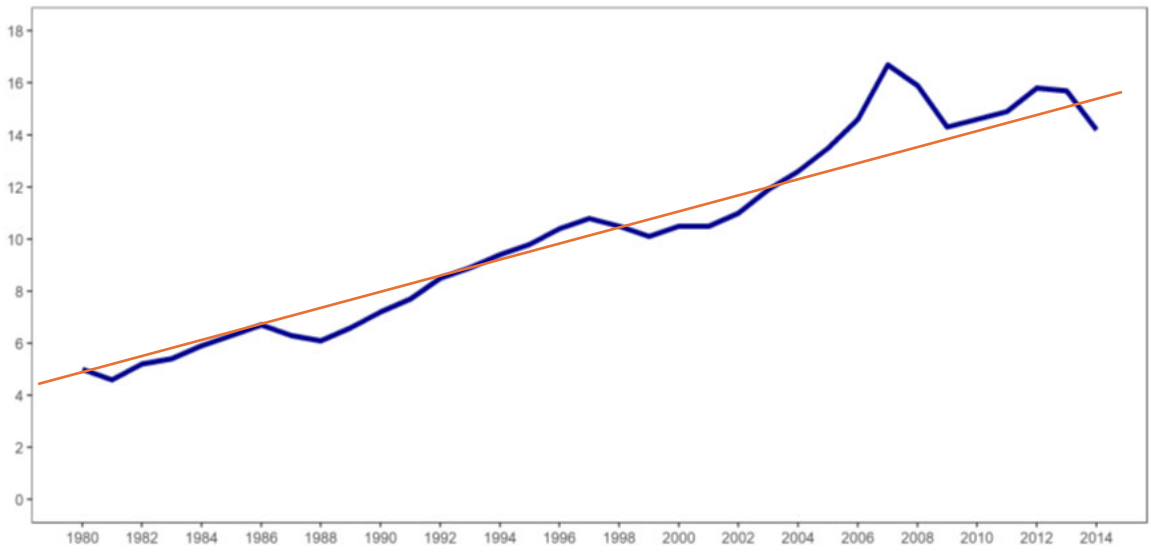


Figure 1: Trends in Concentrated Institutional Ownership of Public Firms in the US, 1980–2014. This figure plots the average block institutional ownership for public firms (blue solid line) in the US for the period 1980–2014. The red line shows a linear time trend. Institutional ownership is from Thomson Reuter 13F filings. Block institutional ownership is the percentage owned by institutional blockholders, defined as the institutional investors with more than 5% holdings as filed through Form 13F. The average block ownership is calculated excluding firms in the agriculture, financial, utilities, and public administration sectors.

The LEHD data allow us to follow individual workers across firms over time, observing their earnings and other characteristics of employment such as industry and geographical location. This high-quality administrative data, combined with the universal data on ownership of US public firms provide two main advantages. First, we can construct measures of earnings changes for a given set of individuals over the medium to long run. Second, we employ a difference-in-differences type design that exploits large increases in institutional ownership concentration, as measured by block ownership. Specifically, we examine firms that experience an at least 5-percentage point increase in total block institutional ownership as our "treatment" group and track the earnings trajectories of workers who were employed by the firms one year before treatment (year "t-1"), relative to the *t-1* employees of

a "control" group of firms that experience an at least 5-percentage point increase in overall institutional ownership but not total block institutional ownership—i.e., a less than 5-percentage point change. This research design addresses identification concerns regarding possible correlations between ownership concentration and other time-varying firm characteristics such as growth prospects. As ownership concentration is but one of many forces that may have impacted the earnings of US workers, we add a rich set of controls for other determinants including time-varying industry and local market conditions, such as technological changes and product or labor market competition, as well as a standard set of worker characteristics.

Our analysis is guided by the classical agency theory of the firm, which dates back to Jensen and Meckling (1976; see Shleifer and Vishny, 1997; and Stein, 2003, for comprehensive reviews). In this class of theory, fundamental conflicts of interests exist over the allocation of firm resources between shareholders and stakeholders including workers. Ownership concentration gives "power" (or "voice") to shareholders—i.e., greater ability to influence firm decisions by reducing coordination costs among investors (Grossman and Hart, 1980). This power, in turn, allows shareholders to allocate a greater share of firm resources from workers to shareholders by reducing workers' relative bargaining power or firms' labor demand, leading to reductions in workers' earnings.

Consistent with this agency view of the firm, we find that an increase in shareholder power due to growing institutional ownership concentration is associated with lower worker earnings. Specifically, in the difference-in-differences (DD) type design that exploits large changes in institutional ownership, we find that the average cumulative earnings of the treated employees decline by about 10% of their pre-event annual earnings over the next six years. The cumulative earnings decline is about 4% over the first three years with the balance being over the next three years, suggesting that there is both short-term and long-term impacts. The effect is robust to several alternative specifications, which include controlling for time-varying industry and local market conditions and individual characteristics, as well as using propensity-score reweighting to control for selection on observables. Further, we repeat the analysis over a five-year period *before* the treatment and find insignificant effects on employee earnings, pointing to no differential pre-trends between employees of treated and control firms.

After establishing the negative effect of shareholder power on employee earnings, we explore the mechanism by examining which workers experience larger earnings declines. We find dramatic heterogeneity by worker type. Employees who are likely to have "high skills" and top managers experience larger earnings cuts—average cumulative earnings losses are 16% and 63% of pre-event annual earnings for workers in the top tercile of the within-firm earnings distribution and CEOs. In contrast, shareholder power little affects the earnings of employees with relatively low pay. Moreover, the earning losses are concentrated among incidences of increased ownership by "dedicated" institutions with stronger incentives to engage management due to their concentrated holdings and long-term investment horizons.

We also find heterogeneity in the impacts by employee hiring vs. separation margins, with the latter being muted relative to the former. These findings have two important implications. First, the decline in employment due to increases in ownership concentration shown in previous work (Falato, Kim, and von Wachter, 2022) is driven by slowing down in hiring, as opposed to increasing separation (such as layoffs). Second, separations are unlikely to be the main driver of the employee earnings losses we find, except for the very highest earners who, as we show below, experience losses conditional on separations. The collection of evidence is in line with reduced employee rents in the presence of powerful shareholders—if higher-earning employees share greater rents to begin with (e.g., Klein, Petkova, Williams, and Zidar, 2019), a reduction in overall rents shared by workers, due to increases in ownership concentration, will have a greater negative impact on the higher-earning workers.

Our paper provides the first evidence of the impacts of institutional ownership concentration on individual worker earnings for the universe of institutional shareholders and publicly traded firms in the US. We thereby contribute to the literature on the employee effects of corporate ownership, much of which thus far has focused on the effects of large ownership stakes by individual intuitional investors on wages and employment at the firm or establishment level.[2] This paper contributes to the literature by shifting the focus from aggregate firm or establishment-level responses to adjustments at the worker level. In particular, our analysis complements Falato, Kim, and von Wachter (2022), who show declines

[2] See Davis et al. (2014; 2021), Brav, Jiang, and Kim (2015), and Falato, Kim, and von Wachter (2022) on private equity, activist hedge fund ownership, and institutional ownership concentration and establishments.

in employment and payroll at establishments in response to increases in institutional ownership concentration. Because that paper uses employment and payroll information aggregated at the establishment level, it cannot examine how individual workers adjust to increasing concentration of corporate ownership, accounting for changes in work compositions, nor heterogeneity across workers.

Another primary contribution of this paper is to assess the impact of the substantial growth of powerful institutional shareholders in the US over recent decades on the sluggish earnings growth in the US. Our finding that the rise in stock ownership concentration has helped to depress earnings complements a number of important explanations set forth, including technology (Acemoglu, 2002), product market competition (Autor, Dorn, and Hanson, 2013; Acemoglu, Autor, Dorn, Hanson, and Price, 2016; Pierce and Schott, 2016; and Autor, Dorn, Katz, Patterson, and Van Reenen, 2020), and labor market competition (Benmelech, Bergman, and Kim, 2022). A related recent literature also examines the role of firms in wage-setting (see, for example, Card, Heining, and Kline, 2013; and Song, Price, Guvenen, Bloom, and von Wachter, 2019). Our results reinforce these findings by providing a novel rationale for the role of firms in wage-setting decisions. In particular, the results point toward greater wage-setting role of the firm for higher-earnings workers, consistent with greater frictions in their labor markets.

2. Data and descriptive statistics

This section describes the datasets used in the empirical analysis, sample selection procedures, and resulting samples.

2.1. Data sources

2.1.1. Longitudinal Employer-Household Dynamics

To measure individual earnings and demographic characteristics, we employ the Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program, which is a comprehensive matched employer-employee dataset for the US labor market. The earnings data are based on state unemployment insurance (UI) records and correspond to the report of an individual's UI-covered earnings. According to the Bureau of Labor Statistics (BLS), UI

coverage is comprehensive and comparable across states. Among the databases available from the LEHD infrastructure, we use the Employment History Files (EHF), which contain annual and quarterly earnings records, locations (state and county), and industries for each worker-firm pair, and the Individual Characteristics Files (ICF), which provide worker-level demographic variables including age, gender, imputed education, and race.

The LEHD draws the demographic information from several federal government sources, including the Decennial Census and the Social Security Administration's Numident file. Some demographic characteristics, such as education, are imputed for a subset of individuals, due to incomplete coverage of the data sources and imperfect linkages (Vilhuber, 2018). The reported earnings in the EHF include gross salaries and wages as well as bonuses, exercised stock options, and other cash pay. In some states, employer contributions to certain deferred compensation plans, such as 401(k)s, are included in total earnings.[3]

We focus on the LEHD databases from 1993 to 2015 covering 23 participating US states (see Appendix Table 1 for the list). The annual earnings records in a given state's LEHD-EHF are non-missing as long as an individual reports positive earnings in that state in any of the four quarters in a given year.

2.1.2. Thomson Reuters 13F

To measure institutional ownership, we use Thomson Reuters 13F Securities and Exchange Commission (SEC) filings, from which we obtain data on institutional common stock holdings. All institutional investment managers with greater than $100 million in equity assets under discretionary management are required to file a Form 13F with the SEC on a quarterly basis. All common stock holdings of 10,000 or more shares or having a value of $200,000 or more must be reported. Qualified securities include stocks listed for trading on US exchanges. The quarterly holdings reported in the Form 13F represent the aggregate holdings of an institution (e.g., the Vanguard family of funds), rather than the holdings of any individual portfolio (e.g., the Contra fund in the Fidelity family of funds). Throughout the

[3] See https://www.bls.gov/opub/hom/cew/pdf/cew.pdf at the BLS.

paper, an institutional investor (or shareholder) is defined as an institution that files a form 13F report.

The main ownership variables of interest are defined as the holdings in a given firm's equity shares by a given type of institutional investors as a percentage of shares outstanding. *Overall institutional ownership* is the percentage owned by all institutional investors. *Total block ownership* is the percentage owned by all blockholding institutions defined as the institutional investors with more than 5% holdings as filed through Form 13F.

2.1.3. Firm-level data from LBD and Compustat

In addition to our worker-level data from the LEHD, we use the Longitudinal Business Database (LBD) to obtain variables for firm employment and payroll. The LBD covers all private firms with at least one employee (Jarmin and Miranda, 2002; Chow et al., 2021). The relevant variables in the database include employment, annual payroll, and parent firm identifiers. We supplement the LBD variables with other firm characteristics from Compustat including book and market values of assets, the market-to-book ratio, and return on assets (ROA).

We use the Census Bureau's bridge file to match firms in the LEHD, LBD, and Compsutat-13F databases. Firms are matched to institutional ownership variables from Thomson Reuters 13F as of the second quarter of a given year. We then construct a worker-level data set with individuals' demographic characteristics and cumulative earnings (from the LEHD) around changes in the employing firm's ownership (from Thomson Reuters), and relevant firm characteristics from the LBD and Compustat.

2.2. Sample construction

A key challenge to identifying the effect of institutional ownership concentration on individual worker earnings is that institutional investors may choose to invest in firms with specific characteristics such as size, profitability, and market valuation, and changes thereof, which may be correlated with the employees' outcomes. To address this challenge, we employ an event-study approach that exploits large increases in institutional ownership. More specifically, we designate firms that experience an at least 5-percentage point increase in total

block ownership in a given year relative to the previous year as our treatment group. The control group includes firms that experience an at least 5-percentage point increase in overall institutional ownership and a less than 5-percentage point increase in total block ownership in a given year relative to the previous year.

In our analysis, we track full-time employees of the treated and control firms as of one year before the events, our baseline year. We define workers as full-time in a given year if they earn above the quarterly earnings of a "full-time minimum-wage worker" in their respective states in all of the following six quarters: the fourth quarter of the previous year, all four quarters of the current year, and the first quarter of the following year (see, e.g., Bloom et al., 2021). The quarterly earnings of a full-time minimum wage worker in a given state-year are calculated as follows: the state's minimum hourly wage in the year × 35 (hours/week) × 13 (weeks/quarter). When the state's minimum wage is less than the prevailing federal minimum wage, we use the federal in place of the state minimum wage. We also require that the workers have at least one year of post-event earnings.

We allow firms (and workers) to be in the treatment and control groups multiple times in the baseline analysis. (See Appendix Table A6 for a robustness that limits the maximum number of treatment to two for a given firm.) To allow for workers to have up to five years of pre- and post-event observations, we restrict our event years from 1998 to 2010 (vs. the 1993-2015 LEHD data period). This sample selection procedure results in approximately 9,000,000 worker-year observations employed by 15,000 treated and control firm-years. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

2.3. Descriptive statistics

2.3.1 Firm characteristics

Table 1, Panel A shows descriptive statistics for treatment and control firms one year before they experience large increases in block and overall institutional ownership, respectively (year "t-1"). The statistics are weighted by the firms' employees in the LEHD, which represent the unit of our empirical analysis. The average public firm in the sample is large, highly profitable, and have high institutional ownership with the average overall ownership higher than 60% across the treatment and control firms. Importantly, most firm characteristics,

including the book value of assets, total payroll, and ROA, are comparable between treatment and control firms with the differences being insignificant. The variables that are significantly different include the pre-event overall and block institutional ownership and total employment. We implement a procedure that reweights the observations to account for these differences biasing the estimated treatment effect of an increase in institutional ownership concentration (Busso, DiNardo, and McCrary, 2009).

[Insert Table 1 here.]

2.3.2 Employee characteristics

Table 1, Panel B shows descriptive statistics for the employees of treatment and control firms in the year before the increases in institutional ownership. The sample consists of approximately 6,203,000 treated and 2,835,000 control firm employees. The workers in the two groups are generally comparable along observable characteristics including education, race, age, tenure, and pre-event earnings. All earnings variables are CPI-adjusted to 2005 dollars. One year before the changes in institutional ownership, treated full-time workers on average earn $66,420 annually with a standard deviation of $178,000, while control workers earn $69,570 with a standard deviation of $250,800. Treated CEOs and executives on average earn $1.18 million and $637,000 respectively, whereas control CEOs and executives earn on average $1.29 million and $682,300 respectively (see Section 4.2 for how we define CEOs and executives). These balanced worker characteristics show that the employees of treated and control firms are similar *ex-ante*, in the absence of large changes in ownership.

3. Effects of institutional ownership concentration on employee earnings

This section provides baseline estimates for the impact that institutional ownership concentration has on the cumulative earnings of firm employees.

3.1 Baseline estimates

Our baseline empirical model to estimate the effects of institutional ownership concentration on employee earnings takes the form:

$$Y_{ijkct} = \alpha_{kct} + \beta Treat_{ijt} + X'\Gamma + \varepsilon_{ijkct}, \quad (1)$$

where $Y_{ijkct} = \frac{\sum_{\tau=0}^{5} y_{ijkct\tau}}{\bar{y}_{ijkct-1}}$ is (up to) six years of cumulative earnings from the year of ownership changes, scaled by the pre-event average annual earnings of worker *i* employed by firm *j* in three-digit NAICS industry *k*, county *c*, and event year *t*. The pre-event average annual earnings, $\bar{y}_{ijkct-1}$, are calculated by taking the mean of annual earnings of worker *i* from as far as years *t-5* to *t-1*. Relative to the conventional approach of taking the logarithm of earnings, this normalization has two advantages: (i) baseline earnings are constructed with pre-event data only and so are not contaminated by post-event outcomes; and (ii) scaling post-event earnings by the pre-event baseline circumvents the problem that log earnings are undefined when income from some period is zero.

For a worker who holds multiple jobs in a given year, we use the worker's total earnings aggregated across all her jobs in that year. For these cases firm *j* is the "primary firm" where worker *i* has the highest earnings in a given year. a_{kct} represents industry-by-county-by-year fixed effects; $Treat_{ijt}$ is an indicator equal to one if worker *i* is employed by firm *j* that experiences an at least 5-percentage point increase in total block institutional ownership, and zero if an at least 5-percentage point increase in overall institutional ownership in year *t* relative to *t-1*; *X* is a vector of worker-level controls including age, tenure, indicators for race, ethnicity, education,[4] and gender; and ε_{ijkct} is the residual. Standard errors are clustered at the firm level.

Table 2, Panel A presents baseline estimates of Equation (1). Columns (1) through (6) use specifications that include increasingly stringent controls. Columns (1) through (5) include different levels of fixed effects namely, year fixed effects, industry-by-year fixed effects, county-by-year fixed effects, industry-by-year and county-by-year fixed effects, and industry-by-county-by-year fixed effects, respectively, but no worker-level controls. The coefficient of interest β represents the estimated change in an employee's cumulative earnings as a fraction of her pre-event average annual earnings due to an increase in institutional ownership concentration relative to the control group that experiences an increase in overall institutional ownership but not the concentration. We use column (6), which controls for time-varying

[4] Education is measured by the following categories in the LEHD-ICF: less than high school, high school graduate, some college, and college graduate and above. Categories for race are (all non-Hispanic) White, Black, Asian, and all other races. Ethnicity is an indicator for Hispanic.

industry-by-local market conditions as well as worker-level demographics, as the preferred specification.

Across all columns, we find that the coefficient estimates on *Treat* are significantly negative at the 10% level or less, indicating that employees of firms that experience an increase in institutional ownership concentration lose significant earnings, relative to employees of firms that experience an increase in the level of institutional ownership. Our preferred estimate in column (6) is -0.102 and significant at the 1% level. This estimate implies that relative to the control group, treated workers lose 10.2% of their average annual earnings over the up to six-year period (from years *t* through *t+5*) as a result of the increase in institutional ownership concentration. Column (7) shows the estimated treatment effect is a 1.7% loss in earnings on an annual basis.

[Insert Table 2 here.]

The identifying assumption for our research design is that in the absence of the treatment, treated and control firms' employee earnings would have evolved in a parallel manner. Column (1) in Table 3 provides a test for the assumption by repeating our analysis on workers employed *before* the treatment. Specifically, we estimate a variant of Equation (1) on a sample of the treated and control firms' employees in year *t-5*. We then calculate cumulative earnings for these workers from years *t-4* through *t-1*, scaled by their earnings in year *t-5*. The estimate on *Treat* in this specification is economically small at -0.010 and statistically insignificant, pointing to no differential pre-trends between the two groups.

[Insert Table 3 here.]

3.2 Estimates using propensity-score reweighting

Table 1, Panel A shows that the treated and control firms differ in some characteristics such as total employment, even though these differences are not economically large. To account for potential bias in estimated treatment effects due to selection on those observable characteristics, we use a propensity-score estimator that reweights worker observations (e.g., Busso, DiNardo, and McCrary, 2009). Specifically, we first pool all treatment and control workers across all years and estimate the propensity score $\hat{p}$, the probability of being treated as a function of overall and block institutional ownership and log employment, which are

significantly different between the treated and control groups. Next, we assign inverse probability weights using this estimated propensity score as follows: Treated workers receive a weight of $\frac{1}{\hat{p}}$ and workers in the control group receive a weight of $\frac{1}{1-\hat{p}}$. Intuitively, treated workers with a low propensity score are more similar to observations in the control group and therefore are given a bigger weight. Similarly, control group workers with a high propensity score are given a larger weight as they are more similar to observations in the treatment group. Before reweighting, the two groups are over-represented by observations that are unlike each other in terms of observable characteristics. This reweighting procedure makes the treatment and control groups more comparable on observables, allowing us to disentangle the treatment effect from other factors captured by the observables.[5]

The results of the weighted regressions in Panel B of Table 2 show that the coefficients on *Treat* range from -0.141 to -0.072 with most being significant at the 1% to 5% levels. These estimates are very similar in magnitude and level of significance to the unweighted counterparts in Panel A. This robustness of the estimates to reweighting indicates that selection on observables does not have a considerable influence on the estimated effects of institutional ownership concentration on worker earnings.

4. Heterogeneity in effects of institutional ownership concentration on employee earnings

Next, we explore how institutional ownership concentration affects workers' earnings across different subsets of our baseline sample. We form these subsamples based on their pre-event earnings, education level, gender, and whether they stay or leave the pre-event firm. These heterogeneity analyses shed light on the mechanism at play in the baseline results. We continue to use the preferred specification as in column (6) in Table 2, with industry-by-county-by-year fixed effects and worker-level controls included, in the subsequent analyses.

[5] See Busso, DiNardo, and McCrary (2009) and King and Nielson (2019) for evidence that the finite sample properties of this propensity-score reweighting estimator are superior to the propensity score matching techniques. Also, Dehjia and Wahba (1999) show that this reweighting procedure yields a consistent estimate of the parameter of interest.

4.1. High vs. low earnings

We first analyze how the effect of increases in institutional ownership concentration on employee earnings differs by pre-event average annual earnings rank within firms by splitting the sample into terciles. Table 4, Panels A and B present unweighted and weighted estimates of the treatment effect for each tercile. Column (1) in Panel A shows that treated firm employees in the top earnings tercile experience the greatest losses—over the six years since the increase in ownership concentration, their cumulative earnings decrease by 16.4%, on average, relative to their pre-event average earnings, all compared to the cumulative earnings of the control firm employees. Treated workers in the middle tercile also experience a statistically significant decline in earnings of 9.1%. These estimates are significant at the 1% and 5% levels, respectively. However, we find an insignificant change in cumulative earnings for employees in the bottom tercile. The results are robust to employing the inverse probability weights as indicated by the little differences in the magnitude and significance of estimates across the two panels (e.g., -0.164 and -0.161 in column (1), both of which are significant at the 1% level). Columns (2) through (4) in Table 3 test for differential pre-trends by tercile group (based on the *t-5* earnings distribution within firms) and find no significant difference between treatment and control workers. This finding provides a support to the identifying assumption for a causal interpretation of the by-tercile group estimates.

[Insert Table 4 here.]

A natural explanation for this heterogeneity in the treatment effect across earnings ranks is that institutional investors with concentrated ownership may view cutting wages of highly paid employees as an effective way to reduce costs and boost shareholder value. Equivalently, higher-earning (and likely higher-skilled) workers tend to share more economic rents to begin with, consistent with recent worker-level evidence on rent-sharing (see, e.g., Klein, Petkova, Williams, and Zidar, 2019).

To illustrate how this heterogeneity in rent-sharing may explain our results for the effects of ownership concentration, consider a typical bilateral Nash bargaining model of wage determination, in which the worker's wage takes the form: $w(p) = b + \beta(p - b)$, where $(p - b)$ and β represent the "rents"—i.e., the worker's productivity at the current firm minus outside option—and bargaining power, respectively (e.g., Mortensen, 2003). In this framework, an

increase in institutional ownership concentration—the treatment—can be thought of as a decrease in β. Thus, assuming the rents do not change post-treatment, wages would decrease due to treatment. In this framework, if higher-earning workers have the (proportionally) larger gap between productivity at the current firm and outside option, $(p - b)$, then a given decrease in β will lead to greater earnings losses for them.

Mutually non-exclusive models of the labor market could justify the higher rents for higher-earning workers. First, "monopsony" models suggest that if the labor market for higher-earnings workers is characterized as less competitive, in that their labor supply to the firm is less elastic, then the wedge between productivity in the current firm and outside option (i.e., rents) would be larger for higher-earning workers (e.g., Manning, 2003).[6] Second, learning or "specific human capital investment" models posit that workers with higher ability tend to accumulate greater rents ex-post (e.g., Jovanovic, 1979; and Neal, 1998). We further explore these mechanisms in the next section.

4.2. Top managers vs. rank-and-file employees

In this section, we explore the rent-sharing explanation further by comparing the earnings patterns of top managers and rank-and-file employees after an increase in institutional ownership concentration. Given that the LEHD data do not have information on job titles or occupations, we infer whether jobs are for chief executive officers (CEOs), executives, or rank-and-file based on earnings ranks as follows: "CEOs" are defined as the top earner of the firm, "executives" are the top five earners including CEOs, and "rank-and-file employees" make up the rest. Table 5, columns (1) through (3) show the estimated treatment effects for CEOs with increasingly stringent fixed effects. Given that the analysis of the firm's CEO (and executive) earnings is essentially at the firm level, we prefer the specification in column (1) with industry-by-year fixed effects and worker-level controls to those including county-by-year or industry-by-county-by-year fixed effects as in columns (2) or (3).

[6] See Bachmann, Demir and Frings (2022) and Seegmiller (2023) for evidence that labor supply elasticities are relatively low for workers performing nonroutine cognitive tasks and those with high Abowd, Kramarz, and Margolis (1999) worker fixed effects. This heterogeneity in labor supply elasticity across earnings groups suggests another, plausible explanation for our results—increases in ownership concentration inward-shifts the firm's labor demand curve by reducing managers' "excess" demand for labor. This demand shift would have the greatest impact on the wage of workers whose labor supply is the least elastic—highest-paid employees.

Estimates in column (1) show that after the increase in ownership concentration, the highest earner of the treated firm ("CEO") loses 63.4% of her annual earnings over the six years (or about 10.6% per year) relative to the top earner of the control firm, which is significant at the 1% level. Similarly, estimates in column (4) show that the top five earners of the firm ("executives") experience a 42.9% reduction in cumulative earnings across the six years (or about 7.2% per year) on average, which is significant at the 1% level. In contrast, rank-and-file employees of the treated firm experience a decrease in their cumulative earnings of 9.6%, more in line with the average effect for the full sample (e.g., -10.2% in column (6) in Table 2, Panel A). Panel B shows that the results for top managers and rank-and-files are robust to the reweighting approach. Table 3 columns (5) through (7) show no significant pre-trends for CEOs, executives, and rank-and-files, respectively.

[Insert Table 5 here.]

These patterns of earnings losses across the job ranks (proxied by within-firm earnings rank) are broadly consistent with the finding in the previous section that higher earners experience larger cuts in earnings after the increase in shareholder power. Thus, a plausible explanation is that managers had earned the largest rents among all workers before the increase in ownership concentration, which are then cut as shareholders' relative bargaining power increases. The larger rents for top managers relative to rank-and-files could be due to their generally higher and more specialized skills, which imply higher mobility costs and thus a larger gap between productivity in the current firm and outside option. In addition, bargaining is more likely between shareholders and managers than for rank-and-files.[7]

4.3. Firm leavers vs. stayers

In Table 6, we compare treatment effects for employees who stay vs. leave the firm post-event, as measured by their employment status in year $t+3$. Focusing on all workers, column (1) shows that among firm stayers, who account for 52% of workers in our sample (Table 1, Panel B), treated firm employees experience significant decreases in cumulative earnings of about 11% relative to control firm employees. The heterogeneity in earnings losses

[7] See Hall and Krueger (2008) and Caldwell, Haegele, and Heining (2024) for evidence that firms are more likely to bargain with managers than non-managers, and in high-skill labor markets in general..

for the stayers mimic that for the full sample—losses due to increased ownership concentration are greater for higher-earnings employees. It is plausible that workers who stay with the firm have accumulated greater rents than those who leave the firm, on average. Thus, these results are consistent with the losses being due to reduced rents shared by employees.

We then examine the firm leavers by whether workers are employed or not.[8] If workers who have found jobs at other firms had the smallest gap between productivity at the original firm and outside option, *(p – b)*, then the treatment effect on earnings would be the smallest for them. Consistent with this hypothesis, we find that among leavers to employment, treated workers on average do not experience significant changes in cumulative earnings relative to control workers. In contrast, among leavers who have not found employment, treatment leads to a 7.8% reduction in cumulative earnings. This significant treatment effect among leavers to non-employment is consistent with these workers having accumulated considerable rents at the original firm.

Columns (2) through (6) show the heterogeneity in the treatment effect across within-firm earnings ranks. The results are largely in line with those in column (1), with treated workers both in the stayers and leavers to non-employment experiencing significant decreases in cumulative earnings across sub-groups. That said, the estimates are largely significant for CEOs and Top 5 employees whether they stay with or leave the firm. This finding suggests that workers at the very top of the earnings distribution face significant gaps between their productivity at the original firm and outside option, independent of their post-treatment employment status.

[Insert Table 6 here.]

5. Economic Mechanisms

5.1. Worker hiring and departure

Our results so far show that increases in concentration of institutional ownership significantly reduce earnings of highly-paid employees including top managers. To shed further light on the impact of increased shareholder power on the firm's employees and human

[8] The LEHD data contain information on whether a given worker is employed in any of 50 states and DC in a given year.

capital, we analyze whether an increase in ownership concentration leads to significant changes in the pace at which the firm hires new employees and existing employees leave the firm using our event-study framework. For example, a slowdown in hiring and/or employee departure would indicate reduced churning in the firm's human capital.[9] Our specification to estimate the effect of institutional ownership concentration on firm-level employee hiring and departure takes the form:

$$Y_{jkt} = \alpha_{kt} + \beta Treat_{jt} + \varepsilon_{jkt}, \quad (2)$$

where $Y_{jkt} = \frac{\sum_{\tau=0}^{5} y_{jkt\tau}}{\bar{y}_{jkt-1}}$ is the cumulative number of new hires or employee departures from years *t* through *t*+5, scaled by the pre-event average number of new hires or employee departures for firm *j* in three-digit NAICS industry *k* in year *t*, calculated by taking the means from as far as year *t-5* to *t-1*. a_{kt} represents industry-by-year fixed effects; $Treat_{jt}$ is an indicator equal to one if firm *j* experiences an at least 5-percentage point increase in total block ownership, and zero if an at least 5-percentage point increase in overall institutional ownership in year *t* relative to *t-1*; and ε_{jkt} is the residual. Standard errors are clustered at the firm level.

Table 7, Panels A and B present the unweighted and weighted estimates for Equation (2). The coefficient of interest β represents the estimated change in the firm's cumulative number of new hires (or employee departures) as a fraction of the pre-event average annual number of new hires (or departures) due to an increase in institutional ownership concentration. Columns (1) and (2) use the scaled numbers of new hires and employee departures as the dependent variable, respectively.

[Insert Table 7 here.]

The coefficient on *Treat* in column (1) in Panel A is -4.038 and significant at the 1% level, indicating that over the six years post-event, treated firms reduce new employee hires by about four times of their pre-event annual average number. This magnitude represents a considerable slowdown in the treated firms' hiring activities relative to the control firms. Further, the coefficient on *Treat* in column (2) is -1.110 but insignificant. This result indicates that the treated firms maintain their existing employees similarly to the control firms,

[9] The LEHD data do not allow us to distinguish whether an employee's departure from a firm is voluntary or involuntary (i.e., due to a layoff).

consistent with the similar fractions of employees staying with the treated and control firms as shown in Panel B of Table 1. Therefore, the result reinforces the earlier implication that worker separation may not be the main driver of treated firm employees' earnings losses.

Moreover, the firm-level results on hiring and employee departure help understand how ownership concentration affects firm employment. The results are consistent with the idea that institutional investors with concentrated ownership on average may take a "conservative" approach to cutting employment in an effort to improve shareholder value (see Falato, Kim, and von Wachter, 2022 for establishment- and firm-level evidence)—instead of actively laying off employees, it appears that the concentrated shareholders may push for significant slowing down of hiring new workers. Combined with the considerable earnings cuts for high-skill employees shown above, this significant reduction in new employee hiring points toward losses in the treated firm's human capital, and thus potentially explains a stagnation in productivity that Falato, Kim, and von Wachter (2022) document.

5.2. Institutional Investor Type

Dispersed ownership limits equity holders' scope to influence the firm due to coordination costs among shareholders (e.g., Grossman and Hart, 1980). Thus, by reducing the coordination costs, an increase in ownership concentration gives power or "voice" to shareholders—i.e., greater ability to influence firm decisions. In this section, we shed light on this mechanism by examining whether the impacts of ownership concentration on worker earnings are attributable to institutions with such control motives to influence firm decisions.

Specifically, we follow Bushee's (1998) classification of institutional ownership into "quasi-index," "dedicated," and "transient" types. Transient institutions in this classification have high portfolio turnover and diversified portfolios, while dedicated institutions have low turnover and more concentrated portfolio holdings. Quasi-indexer institutions have low turnover but diversified holdings. For each institution type, we refine the treatment (but not control) status by requiring that the respective ownership stake increases by 5 percentage points or more, while leaving the control group the same.

[Insert Table 8 here.]

Table 8 shows that the estimated treatment effects are significantly negative across all employees and managers for dedicated institutions only, which have long-term investment horizons and stronger incentives to engage management due to their concentrated holdings. The estimates for CEOs and Top 5 earners in columns (2) and (3), while significant also for other types of institutions, are considerably larger for events with increased ownership by dedicated institutions.

6. Robustness Tests

We examine sensitivity checks for the baseline estimates, which are robust to: i) restricting the post-event window to just the first three years, instead of six in the main analysis (Appendix Table 2); ii) proxying for high-skill/earning employees with worker characteristics including education (college versus no college) and gender (Appendix Table 3); iii) using alternative cutoffs for the size of the institutional ownership shocks (Appendix Table 4); iv) restricting the sample to firms with relatively low pre-event block institutional ownership (Appendix Table 5); v) excluding firms that are subject to more than one repeat treatment (Appendix Table 6); vi) scaling worker earnings by their levels at *t-1*, one year before the event, instead of the average across years *t-5* through *t-1* (Appendix Table 7); vii) restricting the sample to firms that are domestic based on existence of foreign income taxes from Compustat, with most workers employed in LEHD states (see Appendix Table 1 for the list), or headquartered in LEHD states (Appendix Table 8); viii) defining treatment based on alternative measures of ownership concentration, which include ownership by the largest institutional shareholder, ownership by the largest five institutional shareholders, and the HHI of institutional ownership (Appendix Table 9).

7. Conclusion

In the past few decades there have been dramatic increases in concentration of ownership for US public firms, while wages of typical workers were stagnant. Using worker-level data from the US Census Bureau's LEHD program over the 1993-2015 period, we show that increasing concentration of firm ownership leads to large earnings losses for workers. Those with "high skills" and top managers (such as chief executives) experience the largest

losses. We also show that institutional ownership concentration significantly reduces firms' hiring. The collection of results is consistent with ownership concentration increasing shareholder power, which allows shareholders to extract more rents from employees.

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Table 1: Descriptive Statistics

Panel A: Firm Characteristics

	(1)	(2)	(3)	(4)	(5)
	Treated, t-1		**Control, t-1**		**Treated-Control**
	Mean	**STD**	**Mean**	**STD**	***t*-stat.**
Overall IO (%)	67.48	21.99	60.08	20.98	7.95
Total Block IO (%)	13.9	12.99	16.3	12.73	-3.46
Percent Change in Overall IO	6.59	11.7	9.994	6.56	-8.18
Percent Change in Block IO	11.59	8.059	-1.915	5.119	45.16
Total employment	37,050	55,390	29,990	44,740	1.82
Total payroll ($m)	2,053.00	3,266.00	1,769.00	2,671.00	1.05
Book value of assets ($m)	33,500	115,800	36,780	129,400	-0.37
ROA	0.138	0.098	0.142	0.1	-0.73
Market-to-book	2.282	1.804	2.438	2.073	-1.12
Observations	10,000		5,000		-

Panel B: Worker Characteristics

	(1)	(2)	(3)	(4)	(5)
	Treated, t-1		**Control, t-1**		**Treated-Control**
	Mean	**STD**	**Mean**	**STD**	***t*-stat.**
Age	42.07	10.9	41.76	10.9	1.99
Fraction of males	0.613	0.487	0.624	0.484	-1.59
Tenure	5.297	3.426	5.222	3.373	0.91
Percent of leavers to employment (firm)	0.394	0.489	0.392	0.488	-0.15
Percent of leavers to non-employment (firm)	0.088	0.284	0.090	0.286	0.99
Percent of leavers (Industry)	0.436	0.496	0.432	0.495	-0.45
Percent of leavers (County)	0.358	0.479	0.354	0.478	-0.48
Fraction high school	0.235	0.424	0.229	0.42	1.31
Fraction some college	0.306	0.461	0.301	0.459	1.55
Fraction college and above	0.374	0.484	0.385	0.487	-1.12
Pre-event annual earnings (CEO)	1,175,000	4,125,000	1,290,000	4,041,000	1.93
Pre-event annual earnings (Top 5)	637,000	2,430,000	682,300	2,270,000	1.62
Pre-event annual earnings (Rank & File)	76,240	197,000	72,220	117,900	-1.04
Pre-event annual earnings (Top Tercile)	155,500	512,500	145,500	401,800	-1.11
Pre-event annual earnings (Middle Tercile)	53,150	13,820	52,950	13,580	-0.73
Pre-event annual earnings (Bottom Tercile)	31,150	9,884	31,170	9,773	0.08
Pre-event annual earnings (Baseline)	66,420	178,100	69,570	250,800	-1.23
Observations	6,203,000		2,835,000		-

Note: This table presents descriptive statistics on and diagnostic tests examining covariate balance between the treated and control firms and workers from the Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program. The sample consists of employees of firms that experience an at least 5% increase in total block ownership (treatment) and firms that experience an at least 5% increase in overall institutional ownership and a less than 5% increase in total block ownership (control) over the previous year ("t-1"). Panel A presents

firm characteristics weighted by the firms' workers in the LEHD data. "Overall IO" is the percentage of shares owned by all institutional investors and "Block IO" is the percentage of shares owned by blockholders, which are defined as institutional investors with more than 5% holdings from Thomson Reuters 13F SEC filings. "Total employment" is the total number of firm employees and "Total payroll ($m)" is the total wage bill in million dollars across all firm employees from the Census Bureau's Longitudinal Business Database (LBD). "Book value of assets ($m)" is total book assets in million dollars; "Return on Assets (ROA)" is operating income before depreciation and amortizations scaled by lagged book assets; and "Market-to-book" is the sum of total debt (which is the sum of long term and short-term debt) and market equity, scaled by the sum of total debt and book equity from Compustat. Panel B presents worker characteristics from the LEHD databases. "Tenure" is the number of years the employee has worked at the firm; "Percent of leavers (to employment/to non-employment)" is the fraction of workers who no longer work for the firm three years after the large increase in block or overall institutional ownership and found employment elsewhere or did not find employment respectively. "Percent of leavers (to Industry/County)" the fraction of workers who no longer work in the three-digit NAICS industry/county three years after the large increase in block or overall institutional ownership; "Fraction education" is the fraction of workers whose highest level of education is in a given category; "Pre-event average earnings" is the annual average earnings before the large increase in block or overall institutional ownership categorized by within-firm earnings levels. All earnings variables are CPI-adjusted in 2005 constant dollars. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Table 2: Baseline Estimates – Effects of Institutional Ownership Concentration on Worker Earnings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dep. Var.:	Scaled Cumulative Earnings						Scaled Cumulative Earnings/post-event years
Panel A: Unweighted							
Treatment	-0.111**	-0.097***	-0.076*	-0.090***	-0.106***	-0.102***	-0.017***
	(-0.054)	(-0.032)	(-0.04)	(-0.029)	(-0.038)	(-0.035)	-0.004
R^2	0.004	0.057	0.052	0.086	0.166	0.234	0.238
Panel B: Weighted							
Treatment	-0.141**	-0.095***	-0.072*	-0.081***	-0.110***	-0.104***	-0.017***
	(-0.056)	(-0.032)	(-0.038)	(-0.028)	(-0.039)	(-0.036)	-0.004
R^2	0.005	0.061	0.055	0.091	0.17	0.237	0.239
Worker-level Controls						Y	Y
Year FE	Y						
Industry × Year FE		Y		Y			
County × Year FE			Y	Y			
Industry × County × Year FE					Y	Y	Y
Observations	9,037,000	9,037,000	9,037,000	9,037,000	9,037,000	9,037,000	9,037,000

Note: This table presents the estimated effects of institutional ownership concentration on employee earnings. Panel A shows unweighted estimates and Panel B uses inverse probability weights to control for selection on overall and block institutional ownership, and total employment. The dependent variable for columns (1) through (6) is the cumulative post-event earnings (from t to t+5) scaled by the pre-event average earnings. The dependent variable for column (7) is the cumulative post-event earnings scaled by the pre-event average earnings and the number of post-event years worked. "Treatment" is an indicator equal to one if a worker is employed by a firm that experiences an at least 5% increase in total block ownership, and zero if an at least 5% increase in overall institutional ownership and a less than 5% increase in total block ownership. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Table 3: Worker Earnings Pre-trends Test

	(1) Baseline	(2) Top Tercile	(3) Middle Tercile	(4) Bottom Tercile	(5) CEO	(6) Top 5	(7) Rank and File
Dep. Var.:	Pre-event Scaled Cumulative Earnings						
Treatment	-0.010	0.002	-0.015	0.005	-0.017	-0.030	0.011
	(-0.025)	(-0.037)	(-0.026)	(-0.019)	(-0.0556)	(-0.027)	(-0.017)
R^2	0.247	0.287	0.285	0.238	0.404	0.207	0.128
Worker-level Controls	Y	Y	Y	Y	Y	Y	Y
Industry × Year FE					Y	Y	Y
Industry × County × Year FE	Y	Y	Y	Y			
Observations	6,895,000	2,344,000	2,275,000	2,275,000	12,000	57,000	6,838,000

Note: This table tests for differences in the earnings trajectories of workers (by income levels) in treatment and control firms before a large change in institutional ownership. This sample differs from Table 2 in that this table uses the set of employees who worked at treated or control firms five years before the event (t-5). The dependent variable is the cumulative earnings of these workers from t-4 to t-1 scaled by their earnings at t-5. "Treatment" is defined as in Table 2. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Table 4: Heterogeneity of Effects of Institutional Ownership Concentration by Within-firm Earnings Rank

	(1) Top Tercile	(2) Middle Tercile	(3) Bottom Tercile
Dep. Var.:	Scaled Cumulative Earnings		
Treatment	-0.164***	-0.091**	-0.039
	(0.042)	(0.036)	(0.058)
R^2	0.255	0.287	0.254
Worker-level Controls	Y	Y	Y
Industry × County × Year FE	Y	Y	Y
Observations	3,073,000	2,982,000	2,982,000

Note: This table presents the estimated effects of institutional ownership concentration on employee earnings conditional on the tercile of the pre-event with-firm earnings distribution in which the worker is. The dependent variable is the scaled cumulative post-event earnings as defined in Table 2. "Treatment" is defined as in Table 2. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Table 5: Top Managers and Rank-and-File Employees

	(1) CEOs	(2) CEOs	(3) CEOs	(4) Top 5	(5) Top 5	(6) Top 5	(7) Rank-and-file
Dep. Var.:	Scaled Cumulative Earnings						
Treatment	-0.634***	-0.586***	-0.696**	-0.429***	-0.429***	-0.440***	-0.096***
	(0.084)	(0.104)	(0.271)	(0.046)	(0.049)	(0.084)	(0.035)
R^2	0.193	0.347	0.751	0.115	0.190	0.459	0.235
Worker-level Controls	Y	Y	Y	Y	Y	Y	Y
Industry × Year FE	Y	Y		Y	Y		
County × Year FE		Y			Y		
Industry × County × Year FE			Y			Y	Y
Observations	15,500	15,500	15,500	74,000	74,000	74,000	8,963,000

Note: This table presents the estimated effects of institutional ownership concentration on earnings of the top earner of the firm ("CEO"), the top five earners ("managers"), and workers not in the top five ("rank-and-file"). The dependent variable is the scaled cumulative post-event earnings as defined in Table 2. "Treatment" is defined as in Table 2. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Table 6: Heterogeneity in Effects of Institutional Ownership Concentration for Stayers and Leavers

	(1) Baseline	(2) Top Tercile	(3) Middle Tercile	(4) Bottom Tercile	(5) CEO	(6) Top 5
Dep. Var.:	Scaled Cumulative Earnings					
Panel A: Stayers						
Treatment	-0.116***	-0.159***	-0.118***	-0.026	-0.584***	-0.447***
	(0.039)	(0.047)	(0.040)	(0.058)	(0.128)	-0.064
R^2	0.337	0.345	0.416	0.406	0.295	0.186
Observations	4,684,000	1,718,000	1,623,000	1,342,000	7,200	34,500
Panel B: Leavers to Employment						
Treatment	-0.040	-0.099**	-0.032	-0.004	-0.466***	-0.298***
	(0.037)	(0.058)	(0.038)	(0.037)	(0.144)	(0.064)
R^2	0.255	0.290	0.331	0.269	0.299	0.164
Observations	3,546,000	1,102,000	1,103,000	1,342,000	6,100	31,000
Panel C: Leavers to Non-Employment						
Treatment	-0.078***	-0.136***	-0.062***	-0.039**	-0.208	-0.292***
	(0.018)	(-0.030)	(0.021)	(-0.020)	(0.263)	(0.095)
R^2	0.213	0.268	0.296	0.286	0.443	0.242
Observations	807,000	252,500	257,000	298,000	2,100	8,500
Worker-level Controls	Y	Y	Y	Y	Y	Y
Industry × Year FE					Y	Y
Industry × County × Year FE	Y	Y	Y	Y		

Note: This table presents the estimated effects of institutional ownership concentration on earnings for employees who stayed or left the firm by income level. Leavers are further divided into those who find or did not find employment after the large increase in institutional ownership. Column (1) shows the effect of the shock for all workers, (2) through (4) for workers in the top, middle, and bottom tercile of the with-firm earnings distribution, (5) for CEOs, and (6) for managers who stay and leave the firm by three years after the events, respectively. The dependent variable is the scaled cumulative post-event earnings as defined in Table 2. "Treatment" is defined as in Table 2. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Table 7: Effects of Institutional Ownership Concentration on Firm-Level Employee Hiring and Departures

	(1)	(2)
Dep. Var.:	Scaled Cumulative New Hires	Scaled Cumulative Departures
Treatment	-4.038***	-1.109
	(1.544)	(1.429)
R^2	0.249	0.290
Industry × Year FE	Y	Y
Observations	14,000	13,000

Note: This table presents the estimated effects of institutional ownership concentration on firm-level employee hiring and departure. The dependent variable in column (1) is the cumulative number of new hires post-event scaled by the pre-event average number of new hires. The dependent variable in column (2) is the cumulative number of employee departures post-event scaled by the pre-event average number of departures. "Treatment" is an indicator equal to one if a firm experiences a more than 5% increase in total block ownership and zero if more than 5% increase in overall institutional ownership and a less than 5% increase in total block ownership. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Table 8: Effects of Institutional Ownership Concentration on Worker Earnings by Institutional Investor Type

	(1) Baseline	(2) CEO	(3) Top 5
Dep. Var.:	Scaled Cumulative Earnings		
Panel A: Quasi-Index IO			
Treatment	-0.025	-0.383***	-0.281***
	(0.035)	(0.106)	(0.056)
R^2	0.240	0.227	0.130
Observations	5,752,000	10,000	49,000
Panel B: Transient IO			
Treatment	-0.049	-0.291**	-0.209***
	(0.052)	(0.131)	(0.069)
R^2	0.252	0.256	0.147
Observations	4,460,000	8,400	40,000
Panel C: Dedicated IO			
Treatment	-0.141***	-0.888***	-0.568***
	(0.050)	(0.162)	(0.084)
R^2	0.254	0.288	0.160
Observations	4,040,000	7,000	34,000
Worker-level Controls	Y	Y	Y
Industry × Year FE		Y	Y
Industry × County × Year FE	Y		

Note: This table presents the estimated effects of institutional ownership concentration on employee earnings by investor type. Column (1) shows the effect of the shock for all workers, (2) for CEOs, and (3) for managers. "Treatment" in Panels A, B, and C is an indicator equal to one if a worker is employed by a firm that experiences an at least 5% increase in total block ownership and Quasi-Index, Transient, and Dedicated institutional ownership respectively. The dependent variable is the scaled cumulative post-event earnings as defined in Table 2. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Appendix Table 1: LEHD Coverage by State

State	State abbreviation	First year	Last year
Arizona	AZ	1992	2015
Arkansas	AR	2002	2015
California	CA	1991	2015
Colorado	CO	1990	2015
Delaware	DE	1998	2015
District of Columbia	DC	2002	2015
Hawaii	HI	1995	2015
Idaho	ID	1990	2015
Illinois	IL	1990	2015
Indiana	IN	1990	2015
Iowa	IA	1998	2015
Kansas	KS	1990	2015
Maine	ME	1996	2015
Maryland	MD	1985	2015
Montana	MT	1993	2015
Nevada	NV	1998	2015
New Mexico	NM	1995	2015
New York	NY	1995	2015
Oklahoma	OK	2000	2015
Oregon	OR	1991	2015
Pennsylvania	PA	1991	2015
Tennessee	TN	1998	2015
Washington	WA	1990	2015

Note: This table presents the coverage of states and years by the US Census Bureau's Longitudinal Employer-Household Dynamics (LEHD)-Employment History Files (EHF). See Vilhuber (2018) for details of the LEHD infrastructure.

Appendix Table 2: Effects of Institutional Ownership Concentration on Worker Earnings in the First Three Years

	(1)	(2)	(3)	(4)	(5)	(6)	(8)
	Baseline	Top Tercile	Middle Tercile	Bottom Tercile	CEO	Top 5	Baseline
Dep. Var.:	Scaled Cumulative Earnings						Scaled Cumulative Earnings/post-event years
Treatment	-0.042***	-0.077***	-0.031**	-0.014	-0.333***	-0.245***	-0.014***
	(-0.015)	(0.020)	(0.013)	(0.026)	(0.043)	(0.023)	(-0.004)
R^2	0.227	0.247	0.282	0.259	0.203	0.113	0.230
Worker-level Controls	Y	Y	Y	Y	Y	Y	Y
Industry × Year FE					Y	Y	
Industry × County × Year FE	Y	Y	Y	Y			Y
Observations	9,037,000	3,073,000	2,982,000	2,982,000	15,000	74,000	9,037,000

Note: This table presents the estimated effects of institutional ownership concentration on employee earnings by income level. "Treatment" is defined as in Table 2. The dependent variable for columns (1) through (6) is the cumulative post-event earnings (from t to t+2) scaled by the pre-event average earnings. The dependent variable for column (7) is the cumulative post-event earnings by the pre-event average earnings and the number of post-event years worked. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Appendix Table 3: Heterogeneity in Effects of Institutional Ownership Concentration by Worker Characteristics

	(1)	(2)	(3)	(4)
	Some college+	No college	Males	Females
Dep. Var.:	Scaled Cumulative Earnings			
Treatment	-0.116***	-0.051	-0.124***	-0.069*
	(-0.035)	(-0.047)	(-0.036)	(-0.038)
R^2	0.232	0.255	0.258	0.221
Worker-level Controls	Y	Y	Y	Y
Industry × County × Year FE	Y	Y	Y	Y
Observations	6,161,000	2,876,000	5,571,000	3,466,000

Note: This table presents the estimated effects of institutional ownership concentration on employee earnings conditional on worker characteristics. Columns (1) and (2) show the effect for workers who have at least some college and no college education respectively. Columns (3) and (4) show the effect for male and female workers respectively. The dependent variable is the scaled cumulative post-event earnings as defined in Table 2. "Treatment" is defined as in Table 2. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Appendix Table 4: Effects of Institutional Ownership Concentration on Worker Earnings (Alternative Institutional Ownership Concentration Increase)

	(1) Baseline	(2) Top Tercile	(3) Middle Tercile	(4) Bottom Tercile	(5) CEO	(6) Top 5
Dep. Var.:	Scaled Cumulative Earnings					
Panel A: 10% Block IO Increase						
Treatment	-0.254***	-0.332***	-0.205***	-0.097*	-0.968***	-0.681***
	(0.051)	(0.070)	(0.051)	(0.056)	(0.130)	(0.069)
R^2	0.237	0.261	0.292	0.258	0.265	0.157
Observations	4,129,000	1,295,000	1,378,000	1,457,000	8,100	39,000
Panel B: 2 SD Block IO Increase						
Treatment	-0.359***	-0.405***	-0.324***	-0.311***	-1.218***	-0.861***
	(-0.071)	(-0.091)	(-0.079)	(-0.085)	(0.212)	(0.107)
R^2	0.250	0.274	0.310	0.271	0.367	0.209
Observations	1,799,000	582,000	586,000	632,000	4,000	19,000
Worker-level Controls	Y	Y	Y	Y	Y	Y
Industry × Year FE					Y	Y
Industry × County × Year FE	Y	Y	Y	Y		

Note: This table presents the estimated effects of institutional ownership concentration on employee earnings by income levels using an alternative definition of the treatment variable used in Table 2. "Treatment" in Panels A and B is an indicator equal to one if a worker is employed by a firm that experiences an at least 10% increase in total block ownership or an at least 2 standard deviation increase in total block ownership respectively. The dependent variable is the scaled cumulative post-event earnings as defined in Table 2. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Appendix Table 5: Small Block Institutional Ownership at t-1

	(1) Baseline (10^{th})	(2) Baseline (0%)	(3) Baseline (2SD)	(4) Top Tercile (2 SD)	(5) Middle Tercile (2 SD)	(6) Bottom Tercile (2 SD)	(7) CEO (2 SD)	(8) Top 5 (2 SD)
Dep. Var.:	Scaled Cumulative Earnings							
Treatment	-0.145*	-0.098*	-0.132***	-0.208***	-0.140***	-0.024	-0.632***	-0.429***
	(0.077)	(0.055)	(0.041)	(0.053)	(0.049)	(0.049)	(0.110)	(0.058)
R^2	0.257	0.251	0.245	0.269	0.303	0.267	0.241	0.140
Worker-level Controls	Y	Y	Y	Y	Y	Y	Y	Y
Industry × Year FE							Y	Y
Industry × County × Year FE	Y	Y	Y	Y	Y	Y		
Observations	3,291,000	4,378,000	5,465,000	1,824,000	1,815,000	1,826,000	9,500	45,500

Note: This table presents the estimated effects of institutional ownership concentration on employee earnings by income level and varying levels of total block ownership one year before the large increase. Column (1) shows the effect for all workers who are employed at firms that have at most the 10^{th} percentile level of total block ownership one year before the large increase. Column (2) shows the effect for all workers who are employed at firms that have 0% total block ownership one year before the large increase. Columns (3) through (8) show the effect for all workers, workers in the top, middle, and bottom terciles, CEOs, and managers who are employed at firms that have less than 6% total block ownership (two standard deviations) one year before the large increase. "Treatment" is defined as in Table 2. The dependent variable is the scaled cumulative post-event earnings as defined in Table 2. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Appendix Table 6: Effects of Institutional Ownership Concentration on Worker Earnings, Firms Treated up to Twice

	(1) Baseline	(2) Top Tercile	(3) Middle Tercile	(4) Bottom Tercile	(5) CEO	(6) Top 5
Dep. Var.:	Scaled Cumulative Earnings					
Treatment	-0.099*	-0.111*	-0.118**	-0.103	-0.603***	-0.441***
	(0.053)	(0.067)	(0.053)	(0.076)	(0.116)	(0.063)
R^2	0.243	0.267	0.305	0.266	0.253	0.141
Worker-level Controls	Y	Y	Y	Y	Y	Y
Industry × Year FE					Y	Y
Industry × County × Year FE	Y	Y	Y	Y		
Observations	3,793,000	1,339,000	1,210,000	1,244,000	8,400	40,000

Note: This table presents the estimated effects of institutional ownership concentration on employee earnings by income level. In contrast to Table 2, this sample only includes the first two times a firm is treated. "Treatment" is defined as in Table 2. The dependent variable is the scaled cumulative post-event earnings as defined in Table 2. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Appendix Table 7: Effects of Institutional Ownership Concentration on Worker Earnings, Cumulative Earnings Scaled by t-1 Earnings

	(1) Baseline	(2) Top Tercile	(3) Middle Tercile	(4) Bottom Tercile	(5) CEO	(6) Top 5
Dep. Var.:	Scaled Cumulative Earnings					
Treatment	-0.080***	-0.127***	-0.069**	-0.022	-0.449***	-0.314***
	(0.029)	(0.036)	(0.032)	(0.042)	(0.063)	(0.034)
R^2	0.214	0.239	0.256	0.211	0.192	0.109
Worker-level Controls	Y	Y	Y	Y	Y	Y
Industry × Year FE					Y	Y
Industry × County × Year FE	Y	Y	Y	Y		
Observations	9,037,000	3,073,000	2,982,000	2,982,000	15,000	74,000

Note: This table presents the estimated effects of institutional ownership concentration on employee earnings by income level. "Treatment" is defined as in Table 2. The dependent variable for columns (1) through (6) is the cumulative post-event earnings (from t to t+5) scaled by earnings one year before the event (t-1). Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Appendix Table 8: Robustness of Effects of Institutional Ownership Concentration on Worker Earnings to Conditioning on More US-Oriented Firms

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Top Tercile	Middle Tercile	Bottom Tercile	CEO	Top 5
Dep. Var.:	Scaled Cumulative Earnings					
Panel A: Domestic Firms						
Treatment	-0.117***	-0.167***	-0.112***	-0.077	-0.724***	-0.469***
	(0.038)	(0.045)	(0.040)	(0.066)	(0.097)	(0.052)
R^2	0.234	0.256	0.287	0.254	0.208	0.122
Observations	8,264,000	2,814,000	2,734,000	2,715,000	13,000	63,000
Panel B: LEHD Only Firms						
Treatment	-0.291***	-0.378***	-0.298***	-0.116	-0.827***	-0.545***
	(0.085)	(0.096)	(0.085)	(0.135)	(0.163)	(0.092)
R^2	0.236	0.239	0.298	0.275	0.274	0.161
Observations	2,377,000	1,024,000	731,000	623,000	5,500	26,500
Panel C: Headquarter States						
Treatment	-0.135**	-0.188***	-0.125**	-0.095	-0.826***	-0.527***
	(0.056)	(0.065)	(0.052)	(0.104)	(0.128)	(0.070)
R^2	0.235	0.250	0.293	0.259	0.254	0.151
Observations	5,556,000	2,061,000	1,762,000	1,733,000	8,400	41,000
Worker-level Controls	Y	Y	Y	Y	Y	Y
Industry × Year FE					Y	Y
Industry × County × Year FE	Y	Y	Y	Y		

Note: This table presents the estimated effects of institutional ownership concentration on employee earnings by income level. Panel A subsets the baseline sample to domestic firms. Panel B subsets the baseline sample to firms where 75% of its workers are located in the states contained in the LEHD data. Panel C subsets the baseline sample to firms with headquarters located in the states contained in the LEHD data. "Treatment" is defined as in Table 2. The dependent variable is the scaled cumulative post-event earnings as defined in Table 2. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.

Appendix Table 9: Alternative Treatments Using Other Ownership Measures

	(1) Baseline	(2) Top Tercile	(3) Middle Tercile	(4) Bottom Tercile	(5) CEO	(6) Top 5
Dep. Var.:	Scaled Cumulative Earnings					
Panel A: Top 1 IO Treated						
Treatment	-0.098	-0.121*	-0.127	0.021	-0.455***	-0.388***
	(0.070)	(0.063)	(0.083)	(0.083)	(0.140)	(0.072)
R^2	0.248	0.276	0.304	0.270	0.276	0.157
Observations	4,316,000	1,467,000	1,424,000	1,424,000	7,800	37,500
Panel B: Top 5 IO Treated						
Treatment	-0.104***	-0.149***	-0.109***	-0.056	-0.700***	-0.450***
	(0.036)	(0.052)	(0.036)	(0.056)	(0.109)	(0.059)
R^2	0.239	0.264	0.295	0.260	0.233	0.135
Observations	6,180,000	2,101,000	2,039,000	2,039,000	11,000	53,500
Panel C: HHI IO Treatment						
Treatment	-0.072**	-0.108***	-0.061**	-0.070**	-0.694***	-0.500***
	(0.028)	(0.040)	(0.028)	(0.032)	(0.053)	(0.032)
R^2	0.229	0.252	0.277	0.247	0.136	0.092
Observations	17,090,000	5,812,000	5,641,000	5,641,000	31,000	146,000
Worker-level Controls	Y	Y	Y	Y	Y	Y
Industry × Year FE					Y	Y
Industry × County × Year FE	Y	Y	Y	Y		

Note: This table presents the estimated effects of institutional ownership concentration on employee earnings by income level. In Panel A "Treatment" is an indicator equal to one if a worker is employed by a firm that experiences a large increase (equivalent to the percentile of what a 5% total block institutional ownership is) in institutional ownership by its largest shareholder and zero if an at least 5% increase in overall institutional ownership. Panel B "Treatment" is an indicator equal to one if a worker is employed by a firm that experiences a large increase (equivalent to the percentile of what a 5% total block institutional ownership is) in institutional ownership by its five largest shareholder and zero if an at least 5% increase in overall institutional ownership. Panel C "Treatment" is an indicator equal to one if a worker is employed by a firm that experiences a large increase (equivalent to the percentile of what a 5% total block institutional ownership is) in HHI institutional ownership and zero if an at least 5% increase in overall institutional ownership. The dependent variable is the scaled cumulative post-event earnings as defined in Table 2. Worker-level demographic controls are age, tenure, indicators for race, ethnicity, education, and gender, as defined in Table 1, Panel B. Standard errors adjusted for sample clustering at the firm level are in parenthesis. ***, **, and * represent significance at the 1%, 5%, and 10% levels. The numbers of observations are rounded to follow the Census Bureau's disclosure rules.