«Institutional Investors and the Job Market: Do Firms Reduce Hiring Under Pressure?»

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Abstract

In this analysis we study the influence of institutional owners on firms' hiring intentions. While substantial research explores the effect of institutional ownership on corporate governance and environment practices, this study aims to investigate the social aspect of firm activities with a focus on hiring decisions using the extensive data of job postings from Lightcast. Implementing regression discontinuity design to instrument institutional ownership for firms in the Russell 1000 and Russell 2000 near the 1000 threshold, we are able to identify the causal effect. Our main result suggests that higher institutional ownership is associated with fewer job postings indicating that institutional owners discipline managerial hiring decisions on average. This study also serves as a starting point for a deeper investigation into the social dimension of firm activities under the presence of institutional ownership.

1. Introduction

Institutional investors have become the key shareholders of listed firms, holding around 80% of the US market capitalization. They can exert significant influence over management to change firm policies and serve as effective monitors (Appel et al., 2016), aligning strategic decisions with market shareholders preferences. They can improve financial performance (Appel et al., 2016) and change ESG policies (Cohen et al., 2023). Nevertheless, while prior research has studied the influence of institutional ownership on corporate governance ("G") and environmental practices ("E"), their impact on the social dimension of firm activities ("S"), and specifically on the firms' workforce, is understudied.

In this paper, we study the influence of institutional owners on firms' hiring intentions. The influence of institutional investors is expected to increase shareholders' influence over managers preferred hiring decisions, and this has important consequences for workers. In particular, risk averse managers and managers with empire building tendencies are expected to favor more generous hiring policies and higher total employment levels (Williamson, 1964). However, institutional investors can serve as effective monitors of shareholders' interests and are expected to prefer a leaner workforce, emphasizing return over growth. This will have a significant interest in workers conditions and employment opportunities, not only at their firm but across all firms where the influence of institutional ownership is being felt. Understanding this relationship is increasingly relevant in the context of a rapidly evolving labor market, characterized by frequent career transitions, the adoption of automation technologies, and organizational restructuring. Institutional investors preferences will have effects for hiring policies, employment levels, job compositions, and skills valued in the job market.

To investigate the causal impact of institutional investors on firms hiring decisions we exploit the exogenous variation in institutional ownership for firms in the Russell 1000 and

Russell 2000 near the 1000 threshold and implement a regression discontinuity design (RDD) to instrument institutional ownership (Crane et al., 2016; Appel et al., 2016). Our main result indicates that a 1% increase in institutional ownership leads to a 1.18% decrease in job postings**,** on average. We document a strong first stage: assignment near the cutoff causes shifts in institutional ownership in the predicted direction. In the second stage, higher institutional ownership is associated with economically meaningful reductions in job postings—consistent with institutions curbing expansion and favoring leaner growth. Estimates are robust across bandwidths, outcome definitions (next-year postings and posting shares), and controls; with statistical significance depending on the error structure.

Our paper contributes to several strands of the literature. First, we contribute to the agency theory literature, and specifically to the empirical literature that studies how changes in corporate governance force managers to change their policies (Bertrand and Mullainathan, 2003). Second, we also contribute to the empirical literature showing that institutional owners can be effective monitors for the shareholders alleviating agency problems (Appel et al. 2016). Finally, we directly contribute to the recent study of the impact of institutional owners to corporate hiring decisions. Specifically, our paper is closest to Ghaly et al. (2020) and Falato et al. (2022). Ghaly et al. (2020) show that the presence of long-term institutional investors is associated with significantly more efficient employment, as measured by economic fundamentals. While their study focuses on the role of long-term investors, our paper considers a broader set of institutional investor types, making the analysis more generalizable. Falato et al. (2022) prove that an increase in ownership by larger and more concentrated institutional shareholders results in lower employment using Difference-in-Difference approach and the Longitudinal Business Database (LBD) from the US Census Bureau. This results are consistent with ours, however, there are some differences. First, we consider all institutional investors. This is important because large firms tend to have a less concentrated

investors base. Second, technically, we employ a regression discontinuity design which allows us to overcome some shortcomings of the Difference-in-Difference approach. Additionally, in our analysis rather than analyzing actual employment, we use job postings, which reflect firms' decisions, over which investors are expected to have a direct influence. In contrast, employment level is determined in equilibrium not only by individual firms decisions but by competition, regulation and many market and economic forces over which investors are likely to have little control. Therefore, our approach is particularly useful given our hypothesis that institutional investors influence firms to improve efficiency and reallocating existing resources rather than hiring more.

This paper also serves as a starting point for a deeper investigation into the social dimension of firm activities in general: the effect of institutional ownership on hiring decisions (changes in compensation, required skills, and demand for specific professions), and commitment to commonly accepted labor standards. A description of the planned further research is provided in Section 6.

The rest of the paper proceeds as follows. Section 2 presents the literature review and hypothesis development. Section 3 describes the empirical method chosen. Sample selection and data are specified in section 4. Section 5 contains the results of the empirical analysis. Section 6 outlines the planned further research. Finally, Section 7 concludes.

2. Literature Review and Hypothesis Development

2.1. Agency Theory and the Relationship between Managers, Workers and Shareholders

The separation of ownership and control in corporations creates an agency problem between shareholders (principals) and managers (agents). In their classic work, Berle and Means (1932) first document how disperse ownership allows managers discretion that may not

always align with owners' interests. Subsequent theory formalized this principal-agent conflict. Ross (1973) introduces the agency theory, highlighting that managers have incentives to pursue private benefits or shirking unless constrained by contracts or monitoring. Jensen and Meckling (1976) further developed agency theory by modelling how managerial ownership and debt can mitigate agency costs – the loss in firm value due to misaligned incentives. They argue that when managers do not bear the full wealth effects of their decisions, they may engage in value-destroying activities (e.g., empire-building) at shareholders' expense. Fama (1980) emphasized that even without one dominant owner, efficient capital and labor markets can partially discipline managers – for instance, concern for reputation and the threat of replacement can curb egregious behaviour. These forces usually prove insufficient, necessitating additional governance mechanisms. Grossman and Hart (1983) and other formal analyses of the principal-agent problem make clear that optimal incentive contracts are difficult to achieve under information asymmetry, leaving a role for active monitoring. Indeed, research in organizational economics (e.g., Eisenhardt 1985) confirms that without effective governance, agency conflicts will persist. In summary, the literature establishes that managers require oversight to ensure they maximize shareholder value, rather than pursuing strategies that advance their own interests or preferences at the expense of the firm's performance.

Research examines the manifestations of agency problems in corporate decisions. One such domain is corporate employment policy, including hiring and firing decisions. Agency theory predicts that, lacking proper incentives, managers might make labor choices that deviate from shareholders' value maximization. For instance, managers may engage in empire-building by expanding the firm's workforce beyond shareholders preferred level, thereby increasing their power, span of control, and personal prestige. This over-hiring or reluctance to downsize can be an agency-driven form of over-investment in labor analogous to investing in negative NPV projects – it benefits managers and workers (through a larger empire

and possibly more comfortable “quiet life”) but hurts shareholders through inflated costs. On the other hand, managers might also under-invest in labor in certain situations – for example, a risk-averse or short-term oriented CEO could delay hiring needed staff or curtail investment in human capital to boost short-term earnings, even if it sacrifices long-run growth (a form of under-investment driven by myopic incentives). Both types of deviations – having too many employees (or retaining unproductive workers) and having too few to seize growth opportunities – represent inefficiencies that lower firm value (Bertrand and Mullainathan, 2003; Pagano and Volpin, 2005; Ghaly et al. 2020). They arise when managers’ objectives (e.g., personal utility, job security, or bonus targets) diverge from shareholders’ objective of value maximization.

Theory and empirical evidence support the view that managers often favour policies that provide personal comfort or security at a cost to shareholders, especially in the labour domain. Theoretically, Hellwig (2000) and Pagano and Volpin (2005) argue that workers and managers are natural allies against noncontrolling shareholders. Specifically, Pagano and Volpin (2005) develop a model of political determinants of the degree of shareholder and employment protection. One system implies a low degree of shareholder protection and high degree of employment protection. On the other hand, the other benefits shareholder with weak employment protection. Bertrand and Mullainathan (2003) provide empirical evidence showing that managers enjoy “the quiet life”, implying that «insulated» managers avoid difficult and unpleasant tasks such as aggressive cost-cutting or layoffs. In their study, firms protected by anti-takeover laws – which reduce external discipline – saw higher payroll expenses and a lack of downsizing in response to negative shocks, suggesting managers kept excess staff and paid higher wages when governance was weak. This behaviour is consistent with managers shirking the hard work of restructuring and instead enjoying more amicable

relations with employees, even if it erodes efficiency, which in the long term could cause lower growth and firings.

These studies underline that labor and employment policies are an important battleground for agency conflicts: without proper governance, managers have both the incentive and ability to use labor decisions (hiring, firing, wage setting) in ways that maximize their private benefits (e.g., a larger empire, more support from employees, or simply a less contentious work environment), rather than shareholder value.

2.2. Institutional Ownership and Corporate Governance

A central mechanism to mitigate agency problems is effective corporate governance, including monitoring by large shareholders. Shleifer and Vishny (1986) argue that concentrated ownership can alleviate the free-rider problem in monitoring – a large shareholder has both the incentive and power to bear the costs of active oversight and to push management towards value maximization. In the modern corporate landscape, institutional investors (such as mutual funds, pension funds, and other financial institutions) have emerged as the predominant concentrated shareholders in many firms. Institutions often own significant fractions of outstanding shares, giving them the clout to influence management decisions and the motivation to protect the value of their investments. Theoretically, institutional ownership should serve as a disciplinary governance mechanism: by closely monitoring managers and exercising their voting rights or threat of exit, institutions can curb managerial opportunism and align decisions with shareholder interests.

The evidence confirms that institutional shareholders indeed play an important monitoring role. For example, Crane et al. (2016) use a regression discontinuity design around the Russell index cutoff to establish a causal effect of institutional ownership on corporate payout policy. They find that higher institutional ownership leads to significantly greater dividend payouts, interpreting this as institutions pressuring managers not to misuse free cash.

Notably, Crane et al. (2016) conclude that even non-activist institutional investors help mitigate agency problems, as reflected in increased dividends and shareholder-friendly voting outcomes when institutional ownership rises. Similarly, Appel et al. (2016) document that the rise of passive index funds – investors with broadly diversified, long-term holdings – has had a beneficial impact on governance. In other words, "passive" investors are not necessarily passive owners: despite not picking stocks, index funds still exert influence through their large voting blocs, promoting governance structures that hold management accountable and ultimately enhancing firm performance. Indeed, a growing finance literature suggests that institutional ownership strengthens corporate governance and reduces agency costs across various settings (Shleifer and Vishny 1986; Gillan and Starks 2000; Appel et al. 2016).

Moreover, recent work has begun to refine our understanding of which institutions are most effective monitors. For instance, the influence of passive institutions has been subject to debate. While Appel et al. (2016) find that passive mutual funds actively improve governance, Gormley and Kim (2025) suggest that the impact of index fund growth on governance is more nuanced, potentially finding no significant improvement in some governance outcomes after correcting for identification issues of Heath et al. (2022). This emerging debate does not overturn the fundamental premise that large shareholders can discipline management, but it indicates heterogeneity: the type of institutional owner and their investment horizon can matter.

In particular, institutions with longer investment horizons and larger stakes are expected to be more vigilant monitors, whereas those with very transient holdings or tiny stakes may exert less oversight. For example, Cremers et al. (2020) show that an increase in short-horizon investors is associated with cuts to long-term investment. On the other hand, short-term institutional investors are more active and flexible: they introduce new products, intensify innovation effects. Thus, they can react better to shocks that change a competitive environment

(Giannetti et al. 2021). So it is important to analyze different channels of their effect on firm activities.

2.3. Institutional Investors and Corporate Hiring Decisions

Given the agency issues surrounding managers' labor decisions and the governance role of institutional owners, an important question is how institutional ownership influences corporate hiring and firing behaviour. We build on the idea that institutional investors, by mitigating agency problems, will push managers toward more efficient employment decisions. Specifically, institutions can discourage the "quiet life" tendencies and empire-building through which managers might otherwise maintain excess staff or avoid necessary layoffs.

On the other hand, we need to consider the negative side of the excessive control as well. Goshen et al. (2022) highlights that strong governance mechanisms can distort the equilibrium between shareholders and workers, resulting in lower wages and less hiring.

Nevertheless, with vigilant shareholders in the background, managers face pressure to justify their hiring needs and employee productivity. For example, a CEO who might be inclined to keep an underperforming division staffed (to avoid conflict or out of personal loyalty) will be more likely to downsize or redeploy those resources if large institutional investors demand cost discipline. Conversely, if a manager is skimping on talent acquisition to inflate short-term profits, active owners can encourage investment in the workforce to support long-term growth. In essence, institutional monitoring should align labor investments with the firm's economic needs, counteracting the distortions introduced by managerial motives.

Recent empirical work strongly supports this governance effect in the labor domain. Using a sample of U.S. firms, Ghaly et al. (2020) find that the presence of long-term institutional investors is associated with significantly more efficient hiring decisions. They measure labor investment efficiency by the deviation of actual net hiring from the level justified by economic fundamentals (as in Pinnuck and Lillis 2007). When long-horizon institutions

hold larger stakes, these deviations – whether excessive hiring or under-hiring – are substantially reduced. In other words, firms with dedicated, patient institutional owners tend to hire and fire in a manner much closer to the optimal benchmark, reflecting less agency-driven inefficiency. Ghaly et al. (2020) attribute this to the monitoring role of long-term shareholders.

By keeping an eye on management, these investors prevent both over-investment in labor (over-hiring or failing to trim bloated payrolls) and under-investment (neglecting to hire when growth prospects warrant it). Their findings are economically meaningful; for example, an increase in the stability of institutional ownership leads to a sizable decline in abnormal net hiring (Ghaly et al. 2020). This evidence corroborates the view that institutional governance can discipline managerial behaviour even in granular operating decisions like staffing levels.

Similar results are obtained by Falato et al. (2022), who used Difference-in-Difference approach to prove that an increase in ownership by larger and more concentrated institutional shareholders results in lower employment according to Longitudinal Business Database (LBD) from the US Census Bureau.

Falato and Liang (2016) demonstrate that when external discipline intensifies – in their case, when creditors gain control rights after loan covenant violations – firms respond with sharp cuts to employment. While their focus is on creditor monitoring, it parallels shareholder monitoring in showing that stronger oversight prompts managers to remove labor slack and reduce agency costs in personnel decisions. Moreover, research on internal labor markets suggests that managers sometimes retain workers during downturns or smooth employment to shelter employees from risk (Ellul et al. 2018). Such practices, which can be viewed as providing implicit insurance or fairness at the cost of firm profits, are more feasible with weak governance. Under robust shareholder monitoring, however, managers are pressured to justify any retention of excess staff in downturns or any deviation from value-maximizing labor policies. In sum, theory and evidence indicate that institutional owners serve as a critical check

on managerial preferences in hiring: they press for downsizing or workforce optimization when firms are inefficiently bloated, and they support hiring investments when firms are starved of human capital. This disciplining mechanism aligns with classical agency theory – institutions mitigate the agency conflict by ensuring managers do not pursue personal agendas (be it a quiet life or short-termism) in employment decisions.

It is also important to recognize that the effectiveness of institutional monitoring on hiring may vary with the environment, particularly the costs of adjusting labor. Hiring and firing involve frictions: recruiting and training new employees is costly, and layoffs can incur severance costs or damage morale. Moreover, legal and regulatory frameworks such as employment protection laws influence these adjustment costs. For example, Bai et al. (2020) examine the adoption of stricter wrongful-discharge laws in U.S. states and find that stronger employment protection reduces firms' risk-taking and investment, consistent with higher labor adjustment costs making managers more cautious. In contexts of very high labor adjustment costs, managers might naturally be reluctant to hire aggressively (to avoid costly future layoffs) or unable to fire even if they wish to, potentially dampening both over-hiring and timely downsizing. We expect that institutional monitoring remains crucial in such contexts – arguably even more so, because when labor decisions are more costly or constrained, any agency-driven inefficiency can be especially value-destroying. Active owners may push managers to overcome institutional rigidities or find innovative ways to optimize the workforce despite the frictions. Conversely, in contexts with very flexible labor markets (low adjustment costs), managers have more freedom to adjust employment, which can be positive if they act optimally but also opens the door for greater agency-driven misalignment if unchecked. In those scenarios, having institutional owners monitor management ensures that this flexibility is used to benefit shareholders rather than to facilitate managerial indulgence. Overall, the influence of institutional ownership on labor decisions is likely most pronounced when agency

problems in labor investment are severe – for instance, when managers have ample scope to misallocate labor, or when external labor market frictions make reversals difficult. This insight aligns with the broader governance literature which finds that governance matters more when the potential for managerial slack or misbehaviour is greater (Shleifer and Vishny 1997; Bertrand and Mullainathan 2003).

2.4. Hypothesis Development

Drawing on the above literature, we develop our testable hypotheses about the impact of institutional ownership on firms' hiring behaviour. Agency theory predicts that managers may deviate from optimal employment levels in the absence of monitoring. The governance literature suggests that institutional shareholders serve to realign managerial decisions with shareholder interests. We thus expect institutional ownership to be associated with more disciplined and efficiency-oriented hiring decisions.

Hypothesis 1: *Institutional ownership disciplines managerial hiring decisions. In firms with higher institutional ownership, managers will decrease additional hiring focusing on the existing workforce.*

This hypothesis implies that the strength of governance (through institutional monitoring) increases, the agency-driven inefficiencies in labor investment will decline. High institutional ownership should curb any tendencies for managers to maintain a "quiet life" with excessive payrolls, as well as mitigate short-term under-investment in human capital, thereby aligning employment levels more closely with firm needs.

We will further consider how this effect might vary across different contexts and types of owners. Prior studies indicate that the monitoring intensity and efficacy can depend on investor horizons and external constraints. Long-term, dedicated institutional investors have more incentive to monitor and engage in oversight of management (Bushee 1998; Ghaly et al. 2020), whereas transient investors may exert less influence on strategic decisions like hiring.

We will also need to account for firms' growth level (which can be measured with sales growth or Tobin's Q). In addition, as discussed, labor market frictions can either amplify or constrain the scope for managerial agency in employment decisions.

3. Empirical Methods

In order to identify a causal effect of institutional ownership on hiring policy, we exploit the variation in institutional ownership for firms in the Russell 1000 and Russell 2000 near the 1000 threshold. Since there is a jump in institutional ownership for stocks at the top of the Russell 2000 relative to stocks as the bottom of the Russell 1000, we can instrument institutional ownership with an assignment to the Russell 2000 in a given year. To make sure that the inclusion is random, we need to restrict the sample to a certain bandwidth. Thus, we exploit the regression discontinuity design to isolate exogenous variation in institutional ownership near the threshold and then use that exogenous variation as an instrument to identify the effect on hiring intentions.

Beginning in 2007, Russell introduced a more nuanced index assignment methodology known as banding. Under this regime, stocks only switch indices if their market capitalization deviates by more than ±2.5% from the total market capitalization of the Russell 3000E Index. This is assessed relative to the breakpoint— the market capitalization of the 1,000th largest firm, which separates the Russell 1000 from the Russell 2000. As a result, some stocks remain in their current index even if their market capitalization ranking suggests a change, reducing unnecessary index turnover.

However, even though the new system complicates the previous assignment process—where firms changed index membership based on whether their raw market capitalization was just above or below that of the firm ranked 1000 on May 31—there is still a noticeable discontinuity in institutional ownership around the 1000th rank.

Moreover, with introduction of this more nuanced approach, the predictability of the assignment is becoming even more complicated, strengthening the exogeneity assumption.

Using Russell index inclusion as a source of exogenous variation in institutional ownership (*InstOwnPct*), we can estimate the effect on hiring policy in a narrow bandwidth around the threshold (+/- 200 ranks around the threshold) as a function of instrumented *InstOwnPct* following Lee and Lemieux (2010) and Crane et al. (2016):

$$InstOwnPct_{it} = \alpha_t + \tau\, Russell2K_{it} + \delta_1 RankDist\_100_{it} + \delta_2\, FloatDiff\_100_{it} + \varepsilon_{it} \quad (1)$$

$$Y_{it} = \theta_t + \beta\, InstOwnPct_{it}(instrumented) + n_{it} \quad (2)$$

Our first-stage regression exploits a sharp regression discontinuity design (RDD) with a binary treatment variable, $Russell2K_{it}$, that represents inclusion of firm *i* in the Russell 2000 in year *t*. The outcome variable (Y_{it}) for firm *i* in year *t* is either (i) the logarithm of job postings ($LogJobPost_{it}$) or (ii) the share of job postings, i.e. the number of job posting of firm *i* in year *t* divided by total number of job postings of firm *i* during all the sample years ($PostShare_{it}$).

FloatDiff_100 is computed as the difference between the rank implied by the May 31st raw market capitalization and the actual rank assigned by Russell in June (float-adjusted), divided by 100. If the *FloatDiff_100* is positive, it means that a firm is positioned higher based on its float-adjusted market capitalization. It is the important element for prediction of institutional ownership as institutional owners can only invest when enough shares are available for sale. It is also the signal of share liquidity for these companies. The division by 100 is applied to rescale the measure, making small results easier to interpret.

We also include $RankDist\_100_{it}$ in the first stage to represent the distance to the threshold of observed market capitalization rankings based on the May 31st raw market

capitalization[1]. The variable is also divided by 100 to ensure consistency in the rescaling approach for ranks.

Given the fact that the procedure for Russell reconstitution has changed since 2017, other alternative approaches have also been used to identify a causal effect, in particular the difference-in-differences (DiD) approach.

However, the main challenge in using DiD is ensuring that the companies that switched to another index and those that almost switched satisfy the parallel trends assumption. Since reconstitution happens every year, it is important to make sure that parallel trends hold in each and every year. Not accounting for specific nuances—such as controlling for a stock's starting index—can lead to biased results, as detailed by Gormley and Kim (2025). In this case RDD does not require parallel trends, as it relies on the fact that firms close to the threshold are already almost identical in market capitalization.

Moreover, firms tend to switch indexes several times across the years, making this DiD setup dynamic. Multiple subsequent switches can lead to biased estimates of index-switching effects when constructing treated and control groups and making sure they have the parallel trends.

In contrast, RDD is methodologically straightforward and transparent: the discontinuity at the threshold is directly observable and verifiable. DiD, on the other hand, requires more extensive assumptions about unobservable factors and comparability over longer periods and multiple reconstitutions.

[1] Crane et al. (2016) also uses the interaction term *Russell2KxRankMinus1000* to control for the mechanical relationship with market capitalization ranking when a firm is included in the Russell 2000. However, as we restrict our sample for the bandwidth +/- 200 ranks from the threshold, this adjustment is not necessary in our setting.

4. Sample Selection and Data

Our analysis uses a comprehensive dataset constructed by merging several data sources to examine the effect of institutional ownership dynamics around the Russell 1000 and Russell 2000 index reconstitution events. The process begins with all firm-year observations of U.S. public companies listed in the Russell 3000 Index over the chosen sample period from 2010 to 2024. The Russell 3000 covers the 3,000 largest publicly traded U.S. firms (about 98% of the U.S. equity market). This dataset provides a broad universe of relatively large firms and includes basic firm identifiers and years when they are in the index.

The construction of the dataset proceeds in several steps. Step 1 begins with the initial dataset, sourced from the LSEG Russell Monthly Index Holdings, containing 44,816 firm-year observations across 6,964 unique companies as of the end of September. Step 2 involves merging the dataset with Russell's float-adjusted weight data as of the end of June to construct the rankings based on float market capitalization. Step 3 adds institutional ownership information from LSEG Institutional Holdings based on 13F filings. This data is merged using CUSIP and year identifiers, resulting in 42,917 firm-year observations across 6,602 unique firms[2]. Step 4 integrates the Compustat information about common shares outstanding (CSHOM) and stock prices from Compustat as of the end of May to calculate raw market capitalization. After removing duplicates and retaining the primary issue-level identifier (IID=01), this second merge yields 35,885 firm-year observations for 4,982 unique firms. Step 5 adds firm-year observations from Lightcast matching each Russell firm to its job postings based on its name. Lightcast (formerly Burning Glass) is a database of online job postings collected from company websites and job boards. It contains detailed information on job vacancies (employer names, job titles, skills, dates, etc.) This step reduces the dataset to

[2] We identify and address potential data issues noted in WRDS documentation, such as double-counting or omission of short positions, ensuring data reliability.

27,138 observations for 3,850 unique firms. In step 6, following Liu (2025), we limit our sample to firms actively using online recruitment platforms, identified by maintaining at least 12 job postings per year on average over the study period. This further reduces our sample to 24,005 firm-year observations across 3,396 unique firms. We do not restrict the sample based on certain industries because of the balanced representation of industries in Russell index and to avoid losing additional observations.

After applying these merges and exclusions, the final sample retains 53.56% of the initial firm-year observations. To analyze the model with additional controls, we performed the merge with Compustat in Step 7.

Table 1 summarizes the data construction process, including the steps for merging and filtering. The resulting dataset, which includes the full set of control variables, comprises 13,782 firm-year observations across 1,616 unique firms. Continuous variables are winsorized at the 1% level to mitigate the influence of outliers.

5. Results

5.1. Institutional Ownership Discontinuity

Figure 1 shows the discontinuity (or jump) in institutional ownership percentages at the Russell 1000/2000 float-adjusted market-cap rank cutoff (rank 1000). The horizontal axis represents firms' rankings based on float-adjusted market capitalization, with the cutoff at exactly 1000. Firms ranked below this threshold (ranks <1000) belong to the Russell 1000 index, and firms ranked above it (ranks >1000) belong to the Russell 2000 index. The vertical axis represents the percentage of institutional ownership. The "bandwidth of 500" means the figure zooms into firms ranked within ±500 ranks around the cutoff (from rank 500 to rank 1500). The discontinuity shown by the fitted lines indicates how institutional ownership sharply changes precisely at rank 1000. The figure reveals a clear increase (or jump upwards) in

institutional ownership for firms immediately above the cutoff (Russell 2000 firms), compared to firms immediately below it (Russell 1000 firms). This visible gap provides strong graphical evidence that inclusion in the Russell 2000 significantly boosts institutional ownership, validating the first-stage assumption in the regression discontinuity design.

Figure 2 repeats the analysis of Figure 1 but uses a narrower "bandwidth of 200," zooming in closer to the cutoff (firms ranked from 800 to 1200). This narrower bandwidth provides a more precise view of the discontinuity, capturing only firms closely surrounding the Russell cutoff. A narrower bandwidth ensures that comparing firms that are more similar in size and characteristics, strengthening the causal interpretation of the findings.

Figure 3 and 4 plot the discontinuity (or jump) in number of job postings at the Russell 1000/2000 float-adjusted market-cap rank cutoff (rank 1000). The vertical axis represents the number of job postings. The figures reveal a slight decrease (or jump downwards) for firms immediately above the cutoff (Russell 2000 firms), compared to firms immediately below it (Russell 1000 firms).

5.2. Descriptive Statistics

Table 2 presents the descriptive statistics for the key variables. *InstOwnPct* is the percentage of shares owned by institutions. It ranges from a minimum of 0.0000442 to a maximum of 3.4, indicating the presence of extreme values and exceeding 1 because of short positions. This justifies the need for winsorization to reduce the influence of outliers. The mean of institutional ownership is 0.79, with the 25st percentile at 0.69 and the 75th percentile at 0.93**.**

Regarding the dependent variable, the number of job postings has a mean of 2,544 postings per year, with values ranging from a minimum of 13 to a maximum of 48,785 per year, reflecting substantial variation across firms and time. This variable is also winsorized and used in logs in the estimations. The number of institutional owners shows considerable

heterogeneity as well, ranging from 1 to 5,260**,** underscoring the diverse ownership structures present in the sample.

The correlation table (Panel B Table 2) reveals no relevant correlations among independent variables (higher than 0.5), suggesting absence of potential multicollinearity problems. The highest correlation occurs for the pair of number of job postings *(JobPost*) and firm size, measured either as the total assets *(At* with a correlation coefficient of 0.39) or the total number of employees, (*Emp* with correlation coefficient of 0.68). Indeed, large firms have higher number of job postings. However, as job postings and size are so closely related, using these variables as a control in the regression would absorb a lot of variation in job postings. Thus, rather than controlling for size using At or Emp, we use the number of job postings in year t divided by total number of job postings for all the years (*PostShare*) as dependent variable. This division by total number of job postings for all the years for the same company helps to control for size.

Panel B Table 1 lists each industry (according to standard SIC) and the number (frequency) of firm-year observations in the final dataset belonging to that industry. It also calculates the percentage each industry represents out of the total sample.

Industries such as "Manufacturing", "Retail Trade", or "Information Technology" show the highest frequencies, reflecting their prominent representation within Russell indexes. In contrast, sectors like "Mining," "Construction," or specialized services appear less frequently.

5.2 Regression Results

In Table 4 panel A we report the estimates of institutional ownership for those firms just included in the Russell 2000 (first stage). The panel presents estimates calculated over +/- 200 ranks from the threshold. Standard errors are clustered by firm, year fixed effects are implemented.

Being included to the Russell 2000 index increases institutional ownership by approximately 2.99 percentage points compared to firms outside Russell 2000. The result is statistically significant at the 1% level. R^2 is 0.258, which is consistent with the results obtained by Crane et al. (2016).

FloatDiff_100 is also positive and significant, meaning that institutional ownership increases with the availability of shares for sale.

RankDist_100 is not statistically significant. This is expected because we restrict the sample for +/- 200 ranks from the threshold and this implies a low variation in ranks. However, it still may be helpful to control for the factors related to raw market capitalization.

Panel B in Table 4 presents an estimate of the effect of instrumented institutional ownership on hiring intensity. It shows that a 1 percentage point increase in institutional ownership leads to a 1.18% decrease in job postings**,** on average with a 10% significance level. F-statistic in the first stage is 22.54 which exceeds the threshold suggested by Stock and Yogo (2005).

We also re-estimate the model using the logarithm of job postings in the following year as the dependent variable (column 3 in Table 4), under the assumption that the effect of institutional ownership may materialize with a time lag. In this specification, the impact of institutional ownership becomes more pronounced, with results indicating a 1.2% decrease in job postings associated with a 1 percentage point increase in institutional ownership. An alternative option is to control for total posting across all the years for the same company. We construct additional variable – *PostShare*, which represents the percentage of job postings in a given year t divided by total number of job postings across the years for the same firm to include it as dependent variable. A 10-percentage point increase in institutional ownership is associated with 1% decrease in job postings in a given year relative to total hiring across all the years at a 5% significance level (column 4 of Table 4).

Table 5 presents instrumental variable estimates with additional controls. Column 1 presents the effect for hiring when controlling for book leverage. A 1 percentage point increase in institutional ownership leads to an approximately 1.6% decrease in job postings**,** on average, for firms around the Russell 1000/2000 cutoff (significant at 10% level). However, when additional controls for Tobin's Q and cash holdings are introduced, following Bai et al. (2020), the negative effect on job postings remains but is no longer statistically significant at the 10% level. However, F-statistic and number of observations in this specification are also lower, which reduces the precision of the instrumental variable estimates.

Book leverage (BookLevg) exhibits a positive association with job postings, suggesting that firms with higher leverage may possess greater financial capacity to support additional hiring. In contrast, cash holdings (CashHold) demonstrate a negative relationship with job postings, indicating that available financial resources are not used for increased hiring activity. Interestingly, Tobin's Q ratio (TobinQRat) also shows a negative effect on job postings. While this may initially appear counterintuitive—since a higher Tobin's Q typically signals growth opportunities—it is important to note that the sample consists primarily of large, established firms, for which a high Tobin's Q does not necessarily correspond to active growth or expansion. Moreover, Tobin's Q is a complex measure of growth because it focuses on investors expectations about future profitability relative to current profitability, therefore, it may be biased by investors short-termism. Therefore, the negative relationship could be explained by short-term preferences of active institutional investors in the spirit of Cremers et al. (2020).

5.3. Robustness Tests

Table 6 reports Robustness tests. Column 1 presents the results of the model, where 20% of observations were randomly dropped. The results are consistent with the previous

results and even more pronounced – a 1 percentage point increase in institutional ownership leads to a 1.4% decrease in job postings (significant at the 5% level).

The negative results hold for ±150 and ±250 bandwidths. A 1 percentage point increase in institutional ownership leads to a 1% decrease in job postings (±150 bandwidth), however not significant at 10% level (Column 2). On the other hand, 250 bandwidth show the significance at 5% level: a 1 percentage point increase in institutional ownership leads to a 1.2% decrease in job postings (Column 3).

5.4. Extensions

So far, we have looked at the overall impact of institutional investors as a group on hirings. The fact that their presence reduces hirings could have several interpretations. Therefore, to deepen our understanding of our results we need to study the differences across firms, depending on both the (i) extent of their agency problems (that can be measured through managerial ownership) and (ii) their growth level (which can be measured with sales growth or Tobin's Q), and also differences across time, depending on industry and overall economic growth. Moreover, we need to separate institutional investors depending on their investment horizon (long term versus short term), and expected level of influence over firms' policies (which will depend on their concentration and investment strategies).

As a first step in this direction Table 7 presents the results of the interaction between institutional ownership (InstOwnPct) and Tobin's Q (TobinQRat). The positive coefficient on this interaction term suggests that the negative effect of Tobin's Q on job postings is attenuated in the presence of greater institutional ownership. In some cases, this interaction may even result in a positive net effect, indicating that institutional investors can play a moderating role, and growth opportunities can have positive effect on hiring decisions. The result stays positive when introducing additional controls (column 2-3 of Table 7). However, the result is not statistically significant and should therefore be viewed as suggestive rather than conclusive.

6. Future research

We also propose some further research directions.

Hershbein and Kahn (2018) state that the Great Recession accelerated the change in the labour demand towards higher-skilled workers, that could complement new technologies. Similarly, we expect the increase in institutional ownership to serve as a force to change the composition of hiring. Employers under the presence of institutional owners are likely to demand higher automation-complementary requirements from their employees, enabling a more effective use of new technologies. Such requirements can imply increased demand for education, experience, cognitive skill, and computer skills.

The shift in job composition and importance of certain skills imply that this change is reflected in wage distribution. Thus, composition of hiring is worth studying along with the dynamics of compensation.

Additionally, we plan to investigate the common skills requirements when institutional ownership increases. Given the growing importance of technology, it is relevant to explore whether skills such as brainstorming, problem solving, creativity are becoming in higher demand with the increase in oversight by institutional investors.

Another strand of the research can be the analyzing firms' commitment to labor standards in the presence of different concentration or types of institutional owners (long or short horizon, passive or active). Falato A. et al. (2022) show that the decrease in labor with the increase of institutional ownership is more pronounced in industries where labor is relatively less unionized. Thus, it is interesting to analyze if there is the effect on labour practices. Reprisk provides the incident-based data that includes social business conduct. For example, principle 3 implies the freedom of association and collective bargaining. Violation tracker can provide the data about the cases of wage theft and overworking.

7. Conclusions

In this analysis we study the influence of institutional owners on firms' hiring intensions. As institutional investors have become a dominant force influencing firms' corporate decisions, the effect is extended to hiring decisions as well. Acting as the active monitors, institutional owners aim at reducing inefficiencies in hiring policy focusing on optimizing the existing workforce.

To identify causal relationship between institutional investors' ownership and hiring intensions, we focus on annual Russel reconstitution. Those firms included in Russell 2000 have much higher proportion of institutional ownership if they are placed near 1000 threshold than the ones in Russell 1000. The placement of firms near the threshold in each of the index is as good as random because of the many factors considered by Russell, which makes it impossible to predict the placement ex-ante. Using this discontinuity, we instrument institutional ownership to identify the effect on hiring intensions.

Our main result indicates that a 1% increase in institutional ownership leads on average to a 1.18% decrease in job postings at a 10% significance level.

All our results suggest that institutional ownership disciplines managerial hiring decisions. In firms with higher institutional ownership, managers will decrease additional hiring focusing on the existing workforce.

The results are consistent with those of Crane et al. (2016), who showed that institutional owners have the effect on firms' governance, and Ghaly et al. (2020) and Falato et al. (2022), who showed that the presence of investors influences equilibrium employment levels. We go beyond those papers by focusing on detailed data on firms' hiring decisions which can be directly controlled by investors.

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Appendix A. Variables definitions

Variable label	Description	Source of the data
Dependent variables		
JobPost	The number of unique job postings by the firm in year *t*. Reported in descriptive statistics to illustrate the number of job postings in absolute numbers.	Lightcast
LogJobPost	Natural logarithm of the number of unique job postings by the firm in year *t*. This is a primary outcome measuring hiring intensity.	Lightcast
LogPostNxt	Natural logarithm of the number of unique job postings by the firm in year *t+1* (the following year). Used as an alternate dependent variable to test lagged effects.	Lightcast
PostShare	Percentage of a firm's job postings in year *t* divided by the total number of its postings across all years. Used as an alternative dependent variable capturing the yearly share of postings.	Lightcast
Independent variables		
InstOwnPct	Percentage of the firm's outstanding shares held by institutional investors.	LSEG Institutional Holdings
Russell2K	Dummy variable = 1 if the firm is included in the Russell 2000 index in year *t*, and 0 otherwise.	LSEG Russell Monthly Index
RankDist_100	Distance of the firm's raw market-cap rank from the 1000th rank threshold (Russell 2000 cutoff) in a given year *t, divided by 100*.	Holdings LSEG Russell Monthly Index Holdings
FloatDiff_100	Difference between the firm's rank by raw market cap (May 31) and its float-adjusted rank (June), divided by 100. The variable reflects float adjustments and eligibility rules.	Russell's float-adjusted weight data, Compustat
Control variables		
BookLevg	Book leverage, defined as the ratio of the firm's total debt to its total assets.	Compustat
TobinQRat	Tobin's Q ratio – the ratio of the firm's market value to the replacement cost of its assets.	Compustat
CashHold	Cash holdings as a proportion of the firm's total assets.	Compustat
At	Total assets in millions of dollars. Reported in descriptive statistics to illustrate the correlation with JobPost	Compustat
Emp	The total number of employees in absolute numbers. Reported in descriptive statistics to illustrate the correlation with JobPost	Compustat
InstOwners	The count of distinct institutional investors holding the firm's shares (i.e. number of institutional owners). Reported in descriptive statistics to illustrate ownership breadth.	Compustat

Figures

Figure 1. Institutional ownership discontinuity (bandwidth - 500)

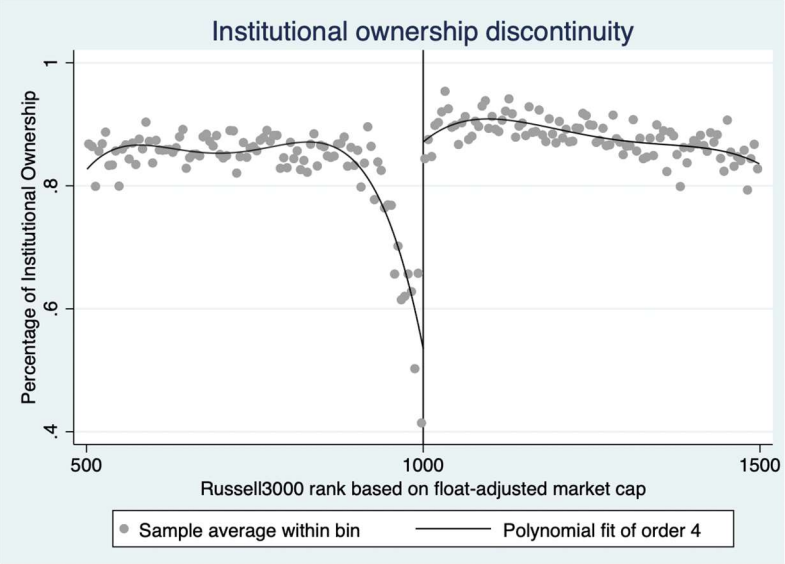

Figure 2. Institutional ownership discontinuity (bandwidth - 200)

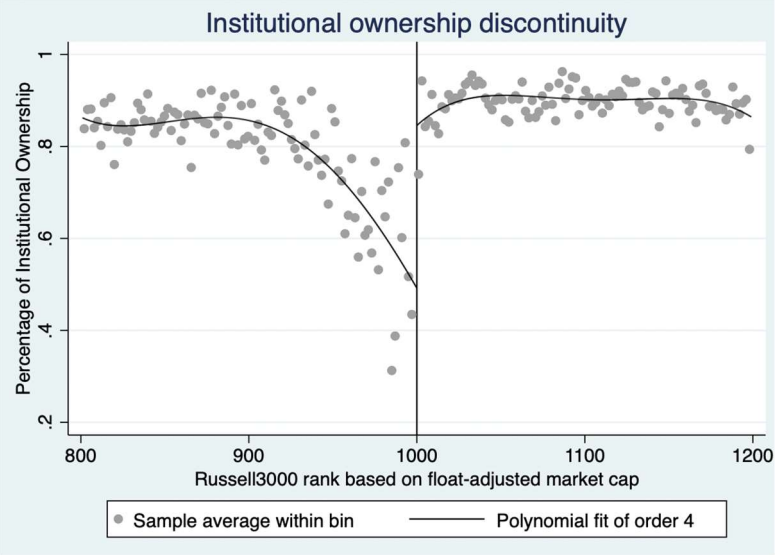

Figure 3. Job postings discontinuity (bandwidth – 500)

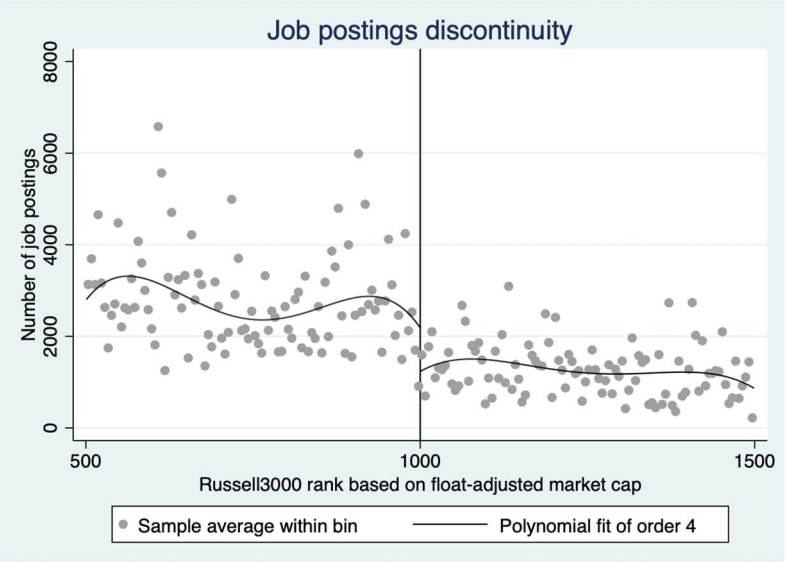

Figure 4. Job postings discontinuity (bandwidth – 200)

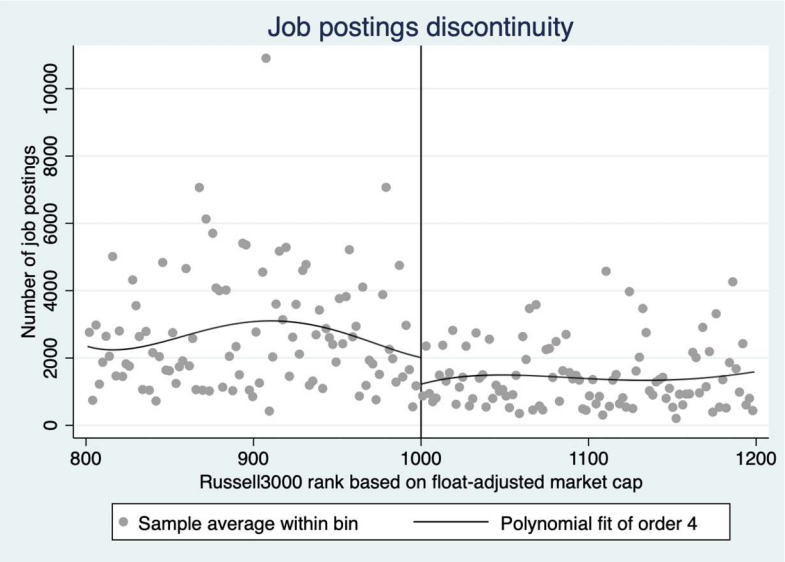

Table 1. Sample selection and Frequency of Observations by Industry

Panel A. Sample Selection

	observations	unique companies
Russell Monthly Index Holdings **(initial dataset)**	44,816	6,964
Preliminary merging (Russell weights as of the end of June)	43,772	6,721
Merging with LSEG Institutional Holdings	42,917	6,602
Merging with Compustat, cshom and prices as of the end of May	35,885	4,982
Merging with Lightcast	27,138	3,850
Additional filter: keep if job postings are at least 12 per year	24,005	3,396
Merging with controls	13,782	1,616

Panel B. Frequency of Observations by Industry

SIC Code	Industry Sector	Observations	% of Sample
6	Retail Trade	3,357	14.00%
3	Manufacturing	3,026	12.60%
2	Construction	2,389	10.00%
7	Finance, Insurance, and Real Estate	1,721	7.20%
4	Transportation and Public Utilities	1,253	5.20%
5	Wholesale Trade	731	3.00%
1	Mining	620	2.60%
8	Services	575	2.40%
9	Public Administration/Nonclassifiable	44	0.20%
0	Agriculture, Forestry, and Fishing	20	0.10%
	Total Classified	**13,736**	**57.20%**
	Missing SIC Codes	**10,269**	**42.80%**
	Total	**24,005**	**100.00%**

Table 1 describes the sample. Panel A reports the steps for sample selection including number of firms–year observations and unique companies in the sample. Panel B reports the distribution of firm–year observations across 1-digit SIC industry sectors for the final sample (N = 24,005). For each sector, we show the count and its share of the total sample.

Table 2. Descriptive Statistics: Institutional Ownership, Hiring, and Firm Characteristics

Panel A. Descriptive Statistics

Variable	Obs	Mean	SD	Min	Max	P25	P75
InstOwnPct	24,005	0.79	0.19	0.2	1.15	0.69	0.93
JobPost	24,005	2.544	6.983	13	48.785	100	1.405
InstOwners	24,005	364	421	1	5260	138	410
BookLevg	13,684	0.27	0.22	0	1	0.08	0.4
CashHold	13,736	0.18	0.21	0	0.91	0.03	0.23
At	13,736	23.324	70.521	105	541.241	1.153	13.598
Emp	13,705	16.618	35.477	87	242.117	1.088	14.943
TobinQRat	12,731	2.17	1.78	0.77	10.7	1.09	2.44

Panel B. Univariate Pearson Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) JobPost	1.00						
(2) InstOwnPct	0.02	1.00					
(3) BookLevg	0.07	0.19	1.00				
(4) TobinQRat	-0.03	0.06	0.02	1.00			
(5) CashHold	-0.12	0.002	-0.20	0.44	1.00		
(6) At	0.39	-0.06	-0.05	-0.13	-0.10	1.00	
(7) Emp	0.68	-0.01	0.08	-0.03	-0.13	0.50	1.00

Table 2 presents the descriptive statistics. Panel A reports summary statistics for the full sample of firm–year observations with non-missing institutional ownership and job-posting measures. Panel B presents the Pearson correlations. All variable definitions are included in Appendix A.

Table 4. Regression Results

Panel A. First Stage

VARIABLES	InstOwnPct
Russell2K	0.03***
	(0.01)
RankDist_100	0.004
	(0.004)
FloatDiff_100	0.039***
	(0.007)
Constant	0.92***
	(0.02)
Year fixed effects	Yes
Clustering by firm	Yes
Observations	3,509
R-squared	0.258

Panel B. Instrumental variable estimates

VARIABLES	LogJobPost (1)	LogJobPost (2)	LogPostNxt (3)	PostShare (4)
First stage				
Russell2K	0.03***	0.03***	0.03***	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)
F-statistic	22.54	118.21	19.19	22.54
Second stage				
InstOwnPct	-1.18*	-1.18***	-1.23*	-0.108**
	(0.65)	(0.33)	(0.66)	(0.047)
Constant	6.4***	6.4***	6.8***	0.22***
Year fixed effects	Yes	Yes	Yes	Yes
Clustering by firm	Yes	No	Yes	Yes
Observations	3509	3509	3031	3509

Table 4 presents the regression results based on based on Equations (1) and (2). Panel A estimates first stage fitting $\text{InstOwnPct}_{i,t} = \alpha_t + \tau\text{Russell2K}_{it} + \delta_1\text{RankDist\_100}_{it} + \delta_2\text{FloatDiff\_100}_{it} + \varepsilon_{it,}$ where Russell2K represents a dummy variable equal to 1 if the firm is in the Russell 2000, in a neighborhood around the Russell 1000/2000 threshold. Panel B presents an instrumental variable estimation based on Equations (1) and (2). Both panels present estimates calculated over +/- 200 ranks from the threshold. Columns 1 and 2 of Panel B report results using dependent variable LogJobPost, with and without clustering standard errors by firm, respectively. Column 3 presents results using LogPostNxt as the dependent variable, which is the natural logarithm of the number of unique job postings by the firm in year *t+1* (the following year). Column 4 uses PostShare as the outcome variable, representing percentage of a firm's job postings in year *t* divided by the total number of its postings across all years. Standard errors are clustered by firm, year fixed effects are implemented. *,**, and *** indicate significance of less than 10%, 5%, and 1% level, respectively. All variables are defined in Appendix A.

Table 5. Instrumental variable estimates with additional controls

VARIABLES	LogJobPost (1)	LogJobPost (2)	LogJobPost (3)
Panel A. First stage			
Russell2K	0.034**	0.032**	0.035**
	(0.013)	(0.014)	(0.015)
F-statistic	11.39	10.95	10.36
Panel B. Second stage			
InstOwnPct	-1.568*	-1.415	-1.32
	(0.92)	(0.89)	(0.93)
BookLevg	1.3***	1.09***	1.06***
	(0.392)	(0.37)	(0.397)
CashHold		-1.455***	-1.18***
		(0.29)	(0.379)
TobinQRat			-0.079**
			(0.039)
Constant	6.48***	6.64***	6.6***
Year fixed effects	Yes	Yes	Yes
Clustering by firm	Yes	Yes	Yes
Observations	2057	2057	1918

Table 5 presents an instrumental variable estimation based on Equation (1) $InstOwnPct_{i,t} = \alpha_t + \pi Russell2K_{it} + \delta_1 RankDist\_100_{it} + \delta_2 FloatDiff\_100_{it} + X_{it}\gamma + \varepsilon_{it}$ and Equation (2) $LogJobPost_{i,t} = \theta_t + \beta InstOwnPc_{i,t}(instr.) + X_{it}\gamma + n_{it}$ (2). The table presents estimates calculated over +/- 200 ranks from the threshold. Standard errors are clustered by firm, year fixed effects are implemented. X_{it}: Vector of control variables (BookLevg, CashHold, TobinQRat). *,**, and *** indicate significance of 10%, 5%, and 1% level, respectively. All variables are defined in Appendix A.

Table 6. Robustness tests

VARIABLES	LogJobPost (1)	LogJobPost (2)	LogJobPost (3)
First stage			
Russell2K	0.03***	0.03***	0.03***
	(0.01)	(0.01)	(0.01)
F-statistic	26.66	21.22	22.98
Second stage			
InstOwnPct	-1.45**	-0.94	-1.25**
	(0.71)	(0.66)	(0.63)
Constant	6.6***	6.16***	6.49
Year fixed effects	Yes	Yes	Yes
Clustering by firm	Yes	Yes	Yes
Observations	2805 (random 20% drop)	2569 (+/- 150 ranks from the threshold)	4459 (+/- 250 ranks from the threshold)

Table 6 presents an instrumental variable estimation based on Equations (1) and (2). Column 1 shows the robust test of the model by randomly excluding 20% of the observations. Column 2 and Column 3 are estimated for ±150 and ±250 bandwidths respectively. Standard errors are clustered by firm, year fixed effects are implemented. *,**, and *** indicate significance of less than 10%, 5%, and 1% level, respectively. All variables are defined in Appendix A.

Table 7. Extensions. Instrumental variable estimates with the interaction term InstOwnPct x TobinQRat

VARIABLES	LogJobPost (1)	LogJobPost (3)	LogJobPost (3)
Panel A. First stage			
InstOwnPct as an endogenous variable			
Russell2K	-0.02	-0.02	-0.01
	(0.02)	(0.02)	(0.02)
Russell2KxQ	0.02**	0.02**	0.02***
	(0.009)	(0.009)	(0.009)
F-statistic	10.02	9.71	10.72
InstOwnPctxQ as an endogenous variable			
Russell2K	-0.15	-0.15*	-0.14*
	(0.08)	(0.08)	(0.08)
Russell2KxQ	0.13***	0.14***	0.14***
	(0.05)	(0.05)	(0.05)
F-statistic	10.76	11.57	12.39
Panel B. Second stage			
InstOwnPct	-2.02	-2.05	-2.03
	(1.73)	(1.68)	(1.62)
InstOwnPctxQ	0.31	0.34	0.31
	(0.44)	(0.44)	(0.41)
TobinQRat	-0.43	-0.45	-0.35
	(0.39)	(0.38)	(0.37)
BookLev		1.2***	1.07***
		(0.4)	(0.39)
CashHold			-1.22***
			(0.37)
Constant	7.44***	7.16***	7.22***
Year fixed effects	Yes	Yes	Yes
Clustering by firm	Yes	Yes	Yes
Observations	1924	1918	1918

Table 7 presents an instrumental variable estimation based on the following equation for the first stage $InstOwnPct_{i,t} = \alpha_t + \tau Russell2K_{it} + \delta_1 FloatDiff\_100_{it} + \delta_2 QxRussell2K_{it} + \delta_3 QxFloatDiff\_100_{it} + TobinQRat_{it} + X_{it}\gamma + \varepsilon_{it}$. The second stage estimates $LogJobPost_{i,t} = \theta_t + \beta InstOwnPct_{i,t}(instr.) + TobinQRat_{it} + X_{it}\gamma + n_{it}$ (2). The table presents estimates calculated over +/- 200 ranks from the threshold. Standard errors are clustered by firm, year fixed effects are implemented. X_{it}: Vector of control variables (BookLevg, CashHold). *,**, and *** indicate significance of 10%, 5%, and 1% level, respectively. All variables are defined in Appendix A.