Determinants and Consequences of Return to Office Policies*

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First Draft: March 12, 2024
This Draft: March 5, 2025

Abstract

We study the return to office (RTO) policies of publicly-traded firms by hand collecting and classifying announcements for the Russell 3000 firms. Most firms allow some remote work but few allow fully remote work. We then examine RTO policy choice in a model where firms trade off in-person productivity benefits with an in-person wage premium. Consistent with the model's predictions, office rents in the firm's headquarters city determine RTO policy. We also find that larger firms choose more stringent policies and firms with female CEOs choose laxer policies. Finally, we find no significant stock market reaction to policy announcements.

Key words: Remote work. Work From Home. WFH. Return to office (RTO).
JEL codes: G14, M12, M54, R33.

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1 Introduction

The widespread adoption of Work-From-Home (WFH) technology during the COVID-19 pandemic has major consequences for the future of work. Many firms are struggling with how frequently to require their employees to come into the office, if at all, amid some employees demanding to be 100% remote and evidence that most employees prefer to do at least some remote work. Mas and Pallais (2017), He, Neumark, and Weng (2021), and Moens, Verhofstadt, Van Ootegem, and Baert (2024) all find evidence that employees require more compensation to work 100% in the office than they do to work at least part of the time from home, suggesting that firms can economize on their wage bill by offering employees the option of some WFH.

At the same time, at least some in-person work is likely positive for firm-wide productivity and the productivity of an individual employee. What firms are uncertain of is how to balance employee preferences for WFH against the productivity effects. While firms may be eager to see employees back in the office, they are also aware that an excessively stringent return-to-office (RTO) policy will harm employee retention or require paying higher wages. An RTO policy that requires too much in-person time may result in a productivity gain that is outweighed by the higher wage bill it requires. Conversely, if the productivity loss from a very accommodating RTO policy exceeds the reduction in wages, firms can increase their profits by mandating more days in the office.

In this paper, we study the RTO policies of Russell 3000 firms by hand collecting data on policies announced publicly from March 1, 2020, through June 1, 2023. We document several findings related to the distribution of RTO policies. First, roughly 30% of the Russell 3000 firms had publicly announced an RTO policy by June 1, 2023. Announcing firms tend to be larger than firms that do not announce, and announcers

are concentrated in industries such as Information, and Professional Services. In contrast, we find fewer announcements for firms in the Mining/Oil&Gas industry, and Accommodation and Food Services industry.

Focusing on the firms that announce policies in our sample period, we then document a wide range of working arrangements that entail a mix of working in-person and remotely. We develop a classification system that assigns each firm to one of five possible RTO categories. These categories vary in the degree to which the firm requires employees to work from the office or remotely and in whether the mix of in-person and remote work is set at the firm-wide level or left to the discretion of lower-level managers. We manually assign firms to one of the five possible categories. Announcing firms rarely require employees to work from the office five days per week, but fully-remote work is also relatively rare: fully in-person and fully remote policies each constitute around 10% of announced policies.

After describing the distribution of RTO policies across the Russell 3000, we develop a model that captures the tradeoffs firms face in choosing their optimal policy. Following the theoretical literature on remote work, our model captures three key determinants of the firm's policy: the firm-specific productivity of remote work, the average commute time employees face, and the costs of both office space and residential housing. Our model predicts that firms will choose a greater share of in-person work when: (1) the productivity gain from in-person work relative to remote work is larger, (2) the average commute time is shorter, (3) office space is less costly to rent, (4) residential housing costs more, and (5) when they are headquartered in larger cities.

Next, we explore the determinants of policy type in a multivariate setting. Motivated by our model, we study a number of economic and firm-specific determinants, including industry characteristics, real estate prices, city commute times, city size,

firm size and age, and CEO characteristics. Firms headquartered in cities with more expensive office space and smaller firms choose more remote work. Additionally, firms with younger CEOs and female CEOs tend to choose more remote work.

Next, we analyze the stock market reaction to RTO policy announcements. Because many firms make multiple announcements during our sample period, we analyze market reactions to three specific rounds of announcements: the first, second, and final announcement. Regardless of which announcement round we consider, we do not find significant announcement returns. The lack of any positive or negative market reaction suggests firms correctly balance the benefits and the costs of remote work, or at least that the market does not have better information about these benefits and costs than firm executives.

Our paper contributes to four strands of literature. The first consists of a small number of papers that document the evolution and impact of firms' remote work policies. Ding and Ma (2024) study why S&P 500 firms announce RTO policies. We document a similar share of publicly-traded firms that publicly announce RTO policies in the Russell 3000 compared to what they find in the S&P 500. In contrast to their work, we study the determinants of the specific type of RTO policy that is announced. Van Dijcke, Gunsilius, and Wright (2024) study the impact of RTO on employee retention and find that requiring employees to come back to the office may result in an outflow of senior employees. Hansen, Lambert, Bloom, Davis, Sadun, and Taska (2023) use a large language model to show the increase in the share of job postings that allow for some remote work. Bick, Blandin, and Mertens (2023) use a different methodology than Hansen et al. (2023) but find a similar rise in the share of work that allows for some remote work. Neither of these papers distinguishes between fully remote and hybrid arrangements. Because fully remote workers can live in a different city than the one in which their firm is located, and because the

productivity of hybrid work may differ substantially from that of fully remote work, differentiating between these types of policies is helpful. CBRE Consulting (2024), a commercial real estate brokerage and consultancy, surveyed its clients and found a similar share of firms that are choosing hybrid work arrangements compared to our analysis. However, they report a much smaller share of firms choosing fully remote policies, perhaps because firms choosing fully remote policies are no longer CBRE clients. Barrero, Bloom, and Davis (2023) survey workers and find a larger number of firms choosing fully in-person arrangements than our paper. Bloom, Barrero, Davis, Meyer, and Mihaylov (2023) use the Survey of Business Uncertainty, which gathers data from business executives across various industries to assess their expectations and uncertainty regarding future business conditions and also report a larger number of firms choosing fully in-person arrangements than we find.

We also contribute to a growing body of work that examines the impact of remote work on productivity. A key finding that emerges in this literature is that the adverse impacts of too much remote work on productivity often occur in the future rather than immediately. For example, Bloom, Liang, Roberts, and Ying (2014) leverage call-processing employee data and report that primarily remote workers were more productive after controlling for adverse selection into primarily remote work.[1] However, primarily remote workers were promoted at lower rates suggesting lower rates of human capital accumulation.[2] Consistent with a large amount of remote work reducing future productivity, Emanuel, Harrington, and Pallais (2023) find that software engineers receive more feedback on their code from colleagues who are physically proximate compared to those sitting further away, consistent with less human

[1]We use the term "primarily" to allow for the possibility of arrangements wherein a worker would have to commute perhaps once a month or quarter. However, the reader can consider these workers 100% or "fully" remote for practical purposes.

[2]Emanuel and Harrington (2024) also find evidence of adverse selection into primarily remote work among call-processing employees but find that, after controlling for selection, primarily remote workers handle fewer calls than on-site workers indicating lower productivity.

capital accumulation among workers doing a lot of remote work. Kruger, Maturana, and Nickerson (2023) find that finance researchers posted more working papers during the pandemic, presumably completing already conceived ideas, even as Barber, Jiang, Morse, Puri, Tookes, and Werner (2021) find a marked drop in the self-reported research productivity of academics during the COVID-19 pandemic. Our analysis of stock market prices, which incorporate expectations of future productivity, complements these studies by capturing the dynamic effects of RTO policies on productivity.

Importantly, existing literature suggests that the productivity loss associated with primarily remote work may be mitigated by hybrid work, because some tasks can more productively be done remotely, whereas other tasks are easier to do in person. Atkin, Chen, and Popov (2022) and Brucks and Levav (2022) study the effects of remote work on knowledge flows and idea generation respectively, and find an overall positive return to in-person interactions for both metrics of innovation. Bloom, Han, and Liang (2024) study engineers, finance, and marketing professionals and find no statistically significant difference in the productivity of hybrid work relative to fully in-person work. Davis, Ghent, and Gregory (2024) find that off-site work is not a perfect substitute with on-site work indicating that primarily remote work is much less productive than hybrid work. Choudhury, Khanna, Makridis, and Schirmann (Forthcoming) use a field experiment and find that hybrid work increases productivity. Duchin and Sosyura (2021) find that remote CEOs are less productive than CEOs who work on-site, consistent with fully remote work being subject to more productivity loss than hybrid or fully in-person work. The focus in our paper is on workers wanting more remote work than the optimal level from a productivity standpoint, consistent with the model of Behrens, Kichko, and Thisse (2024) wherein too much remote work decreases output. The contrasting findings in the existing literature underscore the possibility that the productivity of WFH might be highly industry and/or role-dependent. Our comprehensive approach allows us to study WFH across a wide

spectrum of industries and job types. By doing so, we provide a more generalized understanding of WFH productivity.

Our paper also relates to the labor economics literature studying the value employees place on non-monetary amenities, specifically, flexible working arrangements. Building on the insights provided by Mas and Pallais (2017), He, Neumark, and Weng (2021), Moens, Verhofstadt, Van Ootegem, and Baert (2024), and Colonnelli, McQuade, Ramos, Rauter, and Xiong (2023), who provide experimental evidence showing that employees demand higher compensation for in-person work, our paper broadens the scope of this analysis. We acknowledge the importance of this compensation tradeoff as a factor in developing RTO policies. However, our model moves beyond just the in-person work premium, and incorporates several factors that can influence the level of workplace flexibility offered by employers. These include commute times, the industry-specific feasibility of remote work, and the costs associated with residential and commercial real estate.[3]

In the next section we describe our data on RTO policies and summarize the distribution of RTO policy types across industries, cities, and firm characteristics. Section 3 provides a conceptual framework underlining the factors that determine firms' choice of RTO policies. Based on this model, we generate testable predictions about how firms select the optimal policy. In Section 4 we empirically test these predictions and summarize the role of different determinants in the RTO policy choice. Section 5 analyzes stock market reactions to RTO announcements and changes in office leasing. Section 6 concludes.

[3]A large literature studies the impact of teleworking on residential and commercial real estate prices and spatial sorting patterns. See, for example Gupta, Mittal, Peeters, and Van Nieuwerburgh (2022), Haslag and Weagley (2024), Howard, Liebersohn, and Ozimek (2023), Li and Su (2023), and Van Nieuwerburgh (2023).

2 RTO Policy Data

In this section, we describe how we gather our data on RTO policies and construct our main dataset. We also summarize the distribution of RTO policy types across industries, cities, and firm characteristics.

2.1 Policy Data Collection

The firms in our sample consist of Russell 3000 constituents as of December 31, 2019, obtained via Bloomberg. Of the initial 3000 firms, 2,808 remain after dropping some due to lack of data on stock returns and accounting for dual class shares and mergers and acquisitions that occurred between 2019 and the beginning of our announcement collection period. We order these firms using a randomly generated serial number to avoid alphabetical bias in the data gathering process. We then collect announcement date information and details about the RTO policies using Factiva news sources. Factiva collects news and information on millions of firms using "newspapers, magazines, journals, websites, blogs, market research and multimedia formats from credible, reliable sources."[4] Therefore, the RTO announcements come from a variety of sources, including traditional print media, earnings call transcripts, regulatory filings (10-Ks, 10-Qs, etc.), company websites, and interviews with firm executives. We do not limit the type of announcement source in order to have the widest and most granular information possible on firms' RTO policies.

We restrict our Factiva search to articles published between March 1, 2020, and June 1, 2023. We then search for all articles containing one or more of the following keywords and phrases that might be indicative of their RTO policy choice: "hybrid work", "remote work", "working remotely", "remotely working", "return to work", "re-

[4] See `https://www.dowjones.com/professional/glossary/factiva/` for more information.

turn to office", "return-to-office", "return to the office", "back to work", "back-to-work", "reopen", "work from home", "back to the office", "back to office", "flexible work", "working flexibly", "flexible working", "hybrid model", "return to workplace", "in person", "in-person". To maintain sequential continuity in the data gathering process and to track how firms' optimal response may have evolved over time, we sort the articles from oldest to newest. After sorting the articles, we filter out any article that does not announce an explicit RTO policy. We do this because, in some cases, the discussion of the firm's RTO policy is too vague or ambiguous for us to determine the exact nature of where employees will be working (in office, at home, or a mix). In other cases, the article simply mentions that the firm plans to delay its RTO policy decision.[5]

This process identifies explicit RTO policy announcements for 800 of the firms in the initial search. There are many announcers for which we flag multiple articles containing one or more of our search phrases during the sample period, because announcers may make multiple distinct announcements. For example, a firm may make an initial RTO policy announcement early in the sample period, and then amend or change its RTO policy in an announcement later in the sample period. For announcers that make multiple announcements, it is uncommon that the first policy announced is different from the policies announced subsequently–firms tend to stick to the same policy throughout their announcement rounds. Therefore, we focus on the first announcement in most of our analysis.[6]

Firms announce their policies via executive interviews, in their environmental impact statements, in statements regarding employee benefits, and sometimes in discussions of cybersecurity risks. In climate impact statements, firms often note that more flexible policies reduce their carbon footprint because of reduced emissions associated

[5]For an example of an article that contains a discussion of RTO that is too vague to be considered an announcement, see Appendix A.2.2.

[6]For an example of a firm that makes multiple announcements, see Appendix A.2.3.

with employee travel. In both executive interviews and personnel policy statements, flexibility is seen as a critical factor for attracting and retaining top talent, with firms believing that offering flexible work arrangements enhances their competitiveness relative to peers. Many firms note that more remote work introduces cybersecurity risks that must be managed.

In some analyses, we supplement our Factiva data with data from the Flex Index by Scoop. The Flex Index data records firm RTO policies using "a combination of online surveys and manual entry of publicly available information." According to the methodology, in cases where information is provided directly via online surveys, the submitting employee must have a work email address to "verify their employment." Additionally, once a company's RTO policy is posted, the Flex Index directly contacts executives at the company and gives them an opportunity to add to or edit the information provided by their employee. We are able to gather RTO policies for an additional 434 firms using the Flex Index.[7] Our Factiva and Flex Index searches yield a set of 1,153 firms, which we call "announcers." The remaining firms are "non-announcers."

Before describing how we construct our policy classification system, we note two important assumptions. First, we assume that if a firm announces an RTO policy, then at least some of the employees can feasibly do some of their work remotely. If 100% of the jobs in a particular firm must be done in-person all the time, then it is reasonable to assume that the firm does not need to implement a policy to bring workers back into the office. Related to this, a second assumption we make is that, for firms that do announce (and therefore have some jobs that can be done remotely), the announcement pertains only to those employees who can feasibly work remotely. The vast majority of announcements do not explicitly mention whether the policy applies

[7]See `https://www.flex.scoopforwork.com/about` for more information on the methodology. The Flex Index does not track the announcement date such that we do not know when the RTO policy was announced for Flex announcers.

to corporate/headquarter employees or to all employees. However, it is reasonable to assume that, for a firm in the manufacturing industry, for example, the announced RTO policy only applies to corporate employees who can feasibly work remotely and not to other employees who must complete their job tasks in person.

2.2 Classifying RTO Policy Announcements

For the announcing firms in our sample, we use the Factiva announcement text to construct a classification system that captures how stringent the firm's RTO policy is. A more stringent policy is one that requires more in-person work, or that restricts the ability of employees to choose where they work, or both. A less stringent policy is one that allows more remote work, or that gives employees more ability to choose where they work, or both. We define four categories that lie along the continuum from most stringent to least stringent. The most stringent policy is In-person. An In-person policy requires most of a firm's employees to work in the office five days per week. On the other end of the spectrum is Remote. A Remote policy allows most employees to work remotely five days per week. In cases where an announcement does not explicitly specify the percent of employees that fall under a policy, we use one of two approaches. First, we use the presence of words and phrases such as "large majority" or "most employees" to determine whether the policy is likely to apply to the majority. For example, if the announcement specifies that "most employees" are expected in the office five days per week, we classify it as In-person. Alternatively, we use the announcement text to determine whether the announcing firm is referring to a company-wide policy which is likely to apply to the vast majority of employees. For example, if an announcement states that "the firm" is adopting a virtual-first approach where employees are given the freedom to determine how often they wish to come in (if at all), we classify it as a Remote policy.

After defining the policies at either end of the stringency spectrum, we define two additional policies that lie on the interior. The first is Hybrid. A Hybrid policy is one in which most of a firm's employees are expected in the office at least one day per week, but allowed to work remotely at least one day per week. We do not distinguish between Hybrid policies with different proportions of in-person and remote work. Once again, in instances where firms do not specify the exact percentage of employees its hybrid policy applies to, we rely on the presence of words or phrases that suggest firm-wide applicability of the chosen policy. Our second interior policy is Flexible. The key distinguishing feature of a Flexible policy is that it allows for the RTO decision to be made by lower-level managers on an employee-by-employee or team-by-team basis. Unlike firms with Hybrid, In-person, or Remote policies, firms with Flexible policies do not have a blanket, firm-level policy that applies to all employees. Rather, Flexible policies give workers and their managers individual-level discretion over how the return to office is achieved. A Flexible policy may result in certain employees working 100% Remote, whereas other employees work In-person or Hybrid. However, with a Flexible policy, the specific RTO policy for each employee is not a firm-wide decision, but one that happens at the individual or team level. If the only discretion a manager has over the RTO policy is which specific days of the week an employee is in-person, rather than whether the employee is Remote or Hybrid, for example, we classify the policy as Hybrid. Further, if there is a firm-level policy mandating at least one day a week in the office, and individual managers aren't generally able to waive this requirement, we consider the policy Hybrid.

In addition to these four policies, we define a fifth policy type called Mixed. Firms that use Mixed policies specify different RTO policies for different types of employees. In order for the policy to be defined as Mixed, the announcement must indicate that at least two of the other four policies are used. For example, if the firm announces that 50% of employees will be In-person and 50% will work under a Hybrid setup, this is

considered Mixed. The key distinguishing factor between Mixed and Flexible is that Mixed policies do not give lower-level managers or employees discretion over how they will return to office, even though employees follow different RTO policies depending on their role. A Mixed policy can entail various levels of stringency. For example, a policy that utilizes a 50/50 mix of fully remote and hybrid work is less stringent than a policy that entails a 50/50 mix of hybrid and fully in-person work. Because of this, we lump this category in with Hybrid and Flexible in the baseline multivariate analysis. Appendix A.2.1 provides examples of all five policy announcement types.

Many Russell 3000 firms make multiple announcements during the announcement collection period. However, firms often reiterate the same policy nearly verbatim several times. For example, a firm may initially announce a policy in its 2021 10-K and then use the same language in subsequent 2022 10-Qs to reiterate that policy. In order to capture new information that is being communicated about the firm's RTO policy, rather than information that is simply being reiterated, we define a "unique" RTO announcement. A unique announcement at time t is an announcement that announces a policy that is different from what was announced at $t-1$, or announces the same policy as $t-1$ but comes from a different source, or both. We group sources into four broad categories: "CEO Communications/Earnings Calls" (which includes CEO television interviews), "News Article," "Regulatory Filing/Annual Report," and "Other" (e.g., social media posts).

We construct our classification system solely based on the text of the Factiva announcements. In cases where a firm's announcement comes from the Flex Index, we map the Flex Index classification to ours and assign each firm from the Flex Index a category from our classification system. The Flex Index classifies RTO policies into 8 categories: Fully Remote, Employee's Choice, Minimum Days a week, Specific Days a week, Minimum & Specific Days a week, Minimum Percentage of Time, Full Time

in Office, and Flexible. The Fully Remote policy corresponds to companies that do not have any physical office space, and have all of their employees working remotely. Employee's Choice refers to policies where companies allow their employees to choose when or if they would like to work from a physical office. Companies that opt for a Minimum Days a week policy establish a specific number of days they require their employees to work from the office each week. Firms that mandate a Specific Days policy require their employees to come into the office on particular days of the week. A Minimum & Specific Days policy corresponds to a requirement for employees to work from a physical office on a minimum and specific number of days each week. Firms that opt for Minimum Percentage of Time set a percentage of time employees are required to work from the office. A Full Time in Office policy corresponds to companies that require their workers to work from the office full time. Finally, the Flex Index categorizes firms as having a Flexible RTO policy if they believe the company offers workplace flexibility based on their data input, however, they are still in the process of verifying the exact policy details.

We map these categories into our own as follows. Our Remote classification is equivalent to Flex Index Fully Remote and Flex Index Employee's Choice. Our In-person classification is equivalent to Flex Index Full time in office. Our Flexible classification is equivalent to Flex Index Flexible. Our Hybrid classification is equivalent to Flex Index Minimum Days a week, Flex Index Specific Days a week, Flex Index Minimum & Specific Days a week, and Flex Index Minimum Percentage of Time. Our Mixed classification does not map to any of the Flex Index categories.

Table 1 tabulates the sources for all unique announcements in our sample. Most announcements come from regulatory filings and annual reports, and about 11% of firms make multiple announcements during the sample period.

Table 1: RTO Policy Announcement Sources

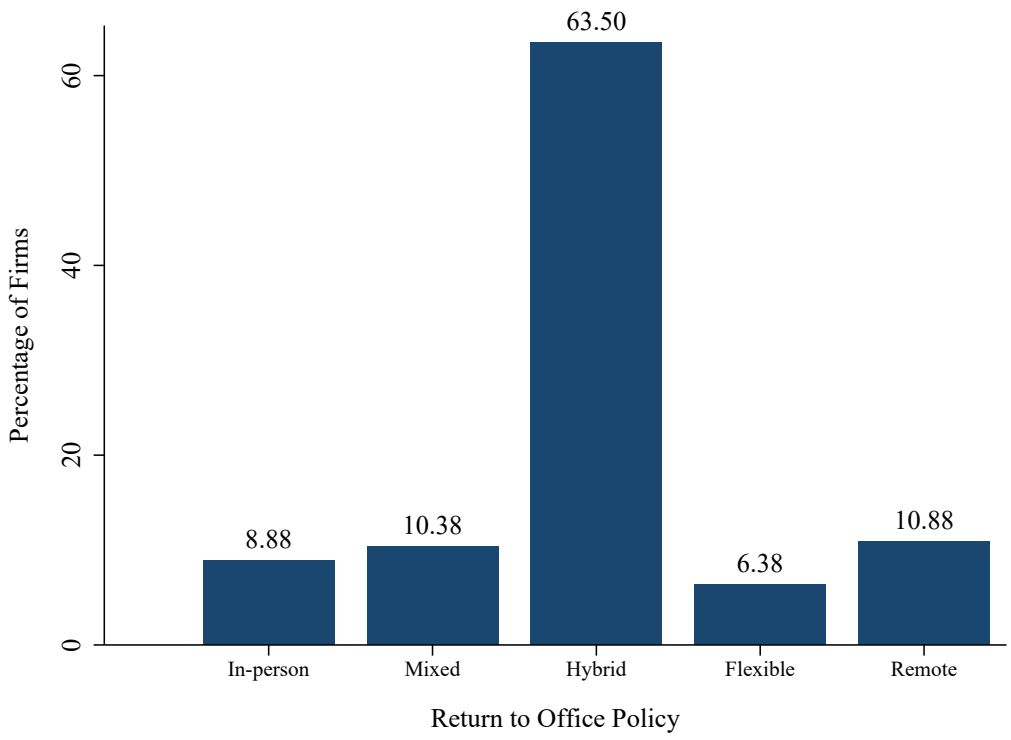
Source	Count	Percent
Ceo Comm/Earnings Call	181	9.8
News Article	341	18.4
Reg Filing/Annual Report	796	43.0
Other	180	9.7
Flex Index	353	19.1
Total	1,851	100.0

Notes: 1) This table tabulates announcement sources for firms that made RTO policy announcements between March 1, 2020, and June 1, 2023, obtained from Factiva or the Flex Index. The first four rows are based on our Factiva search and include multiple observations per firm for firms that make multiple announcements. The final row is based on the Flex Index and includes a single observation per firm. 2) Data is from Factiva and the Flex Index.

2.3 Distribution of Policy Announcements

Figure 1 summarizes the frequency distribution of the first RTO policy announced for the firms with announcements in Factiva. The majority of announcing firms initially adopted a Hybrid or Flexible policy that entails a mix of in-person and remote work. Notably, most firms do not opt for a policy at the extremes: fully In-person and fully Remote each comprise roughly 10% of the announced policies.

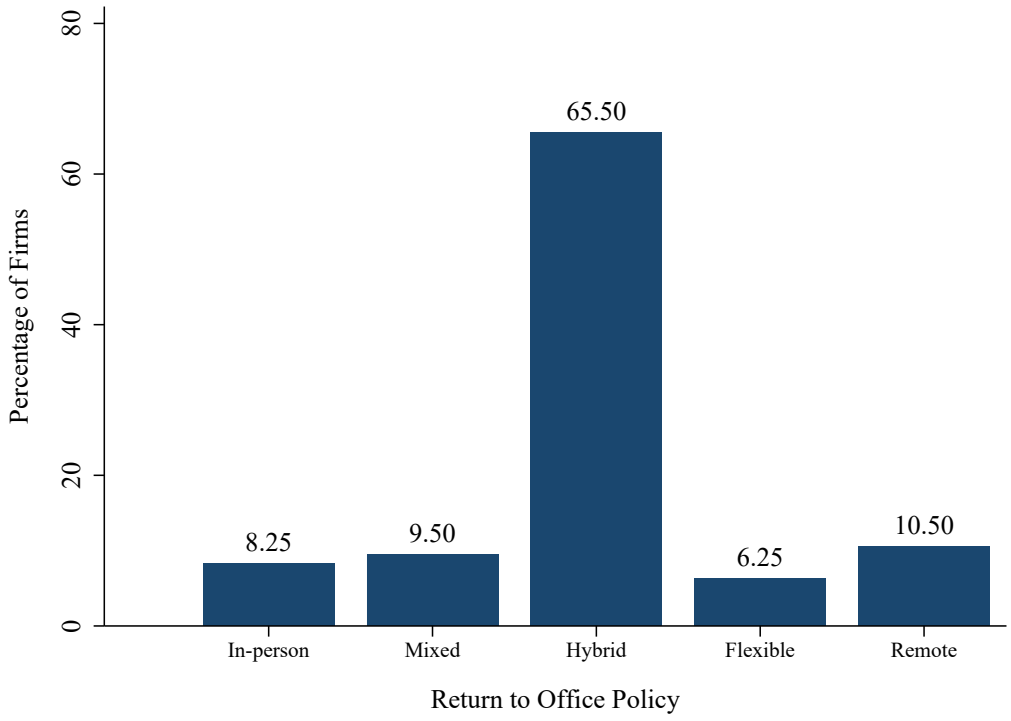
Figure 1: Initial RTO Policies for Russell 3000 Constituents with Factiva Announcements



Notes: 1) This figure plots the percentage of Russell 3000 firms with Factiva announcements by type of initial RTO policy from March 1, 2020, to June 1, 2023. 2) Authors' classification using Factiva.

Of the 800 firms with Factiva announcements, 622 only make a single unique announcement, 90 make two unique announcements, and 88 make three or more unique announcements. Figure 2 summarizes the distribution of final policy announcements. There is little notable difference between the initial round (Figure 1) and the final round (Figure 2). Therefore, for the remaining analysis in Section 2, we focus on the initial policy.

Figure 2: Final RTO Policies for Russell 3000 Constituents with Factiva Announcements



Notes: 1) This figure plots the percentage of Russell 3000 firms with Factiva announcements by type of final RTO policy from March 1, 2020, to June 1, 2023. 2) Authors' classification using Factiva.

As shown in Table 2, firms announcing an RTO policy are larger than those that did not make any policy announcements, and this difference is significant at the 1% level.

Table 2: Firm Size for Announcers vs. Non Announcers

	N	Mean	Median	SD	Min	Max
Announcer - Factiva sample	800	39.00	3.61	179.26	0.02	2,687.38
Announcer - Flex index	353	16.39	5.47	37.59	0.1	551.67
Non-announcer	1,561	5.88	1.53	21.24	0.01	525.06

Notes: 1) This table presents summary statistics of firm size, as measured by total assets reported in billions of dollars (from Compustat) for announcers and non-announcers. Announcers are firms that made RTO policy announcements between March 1, 2020 and June 1, 2023, obtained either via Factiva or from the Flex Index database. Non-announcers are firms for which we do not find any RTO policy announcements within our sample period either through Factiva or the Flex Index. Flex Index Announcers are firms whose RTO policies were retrieved from the Flex Index. For Factiva announcers we only include the first announcement. 2) Data is from Factiva, Compustat, and the Flex Index.

Figure 1 does not differentiate between firms which announce RTO policies early and firms which make announcements later. Announcement timing may be important because public health concerns were likely a greater determinant of firm policies in the early part of our sample period. In contrast, in the latter part of the sample period, vaccines had been widely rolled out and mitigated the impact of health concerns on firm policy.

To investigate whether the RTO policy announcement depends on when the announcement is made, we split the sample into Early Announcers and Late Announcers. Early Announcers are firms which announced their first round RTO policies between March 1, 2020, and June 30, 2021. Late Announcers are firms that made their first round RTO policy announcements between July 1, 2021, and June 1, 2023.[8] We define Early and Late in this way in order to capture the fact that, by 2021Q3, COVID-19 vaccines were widely rolled out.[9] Therefore, announcements made during or after 2021Q3 are less likely to be driven primarily by health concerns and more by

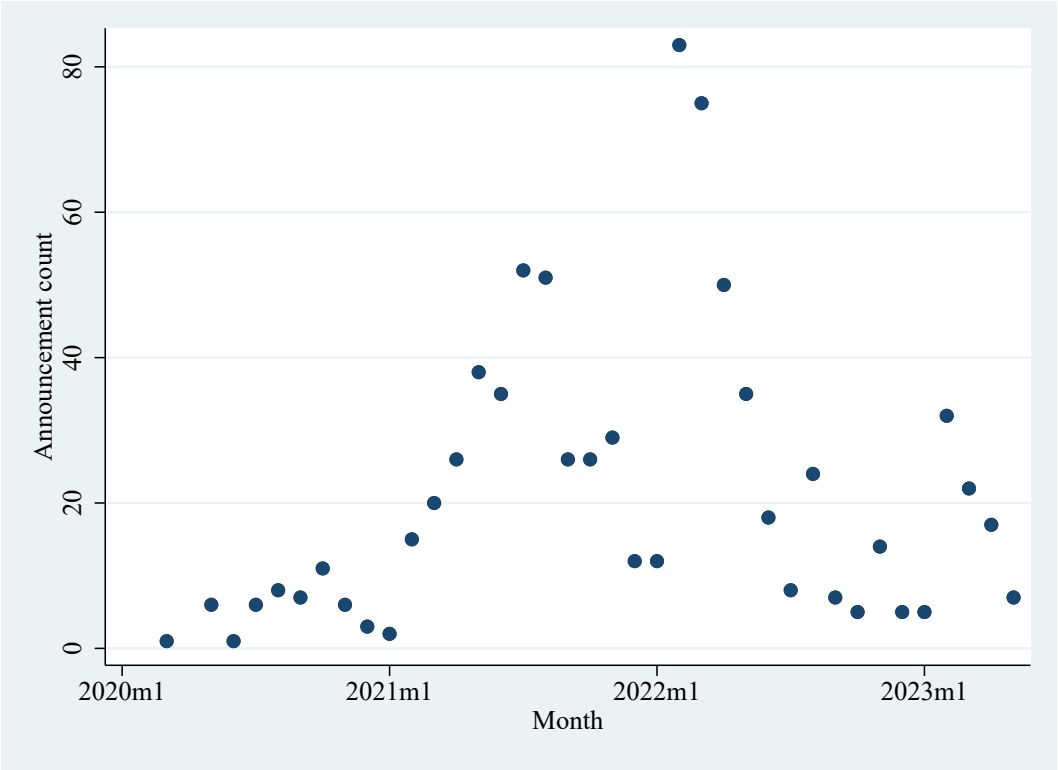
[8]Because we cannot observe announcement dates in the Flex Index data, we do not include those firms for which we only have RTO policy type from the Flex Index in this analysis.

[9]By July 2, 2021, roughly 67% of the U.S. adult population had received one vaccine dose and 47% had received two doses (https://www.cbsnews.com/news/biden-covid-19-vaccine-goal-missed/).

firms' long-run expectations about the post-COVID-19 environment.

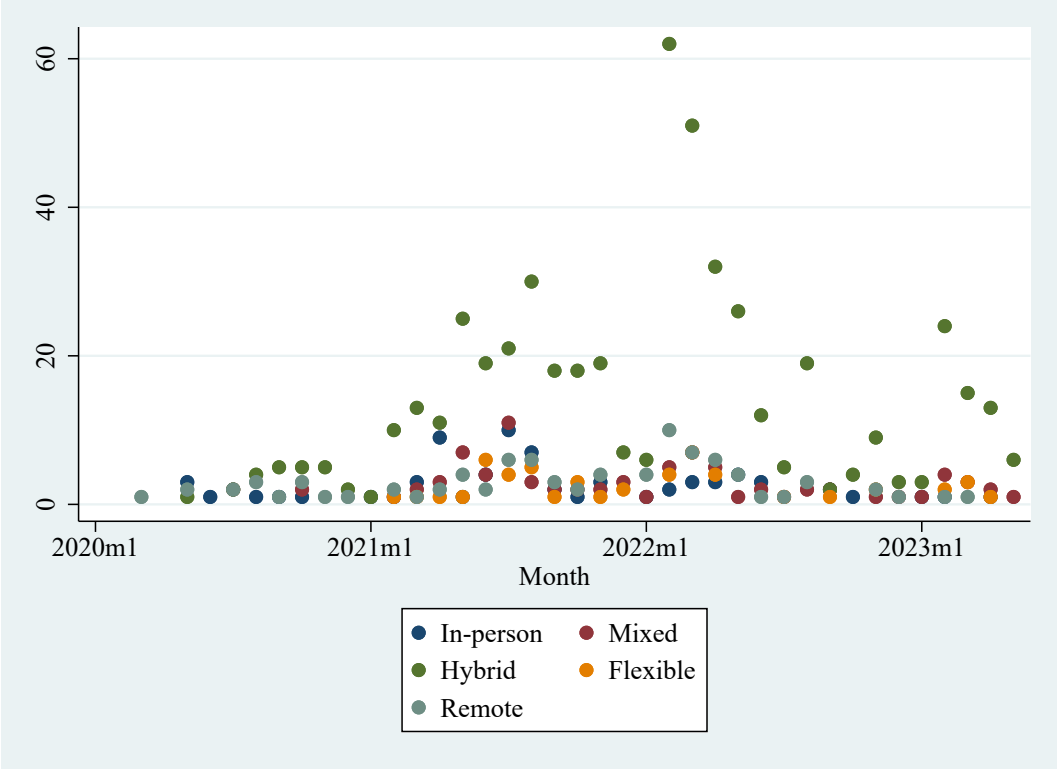
Figures 3 and 4 plot the raw count of initial RTO policy announcements over the announcement collection period for all announcements and each type of announcement.

Figure 3: RTO Policy Announcement Timing



Notes: 1) This figure plots the timing of the Russell 3000 RTO policy announcements. 2) Figure only includes the first announcement. 3) Data is from Factiva.

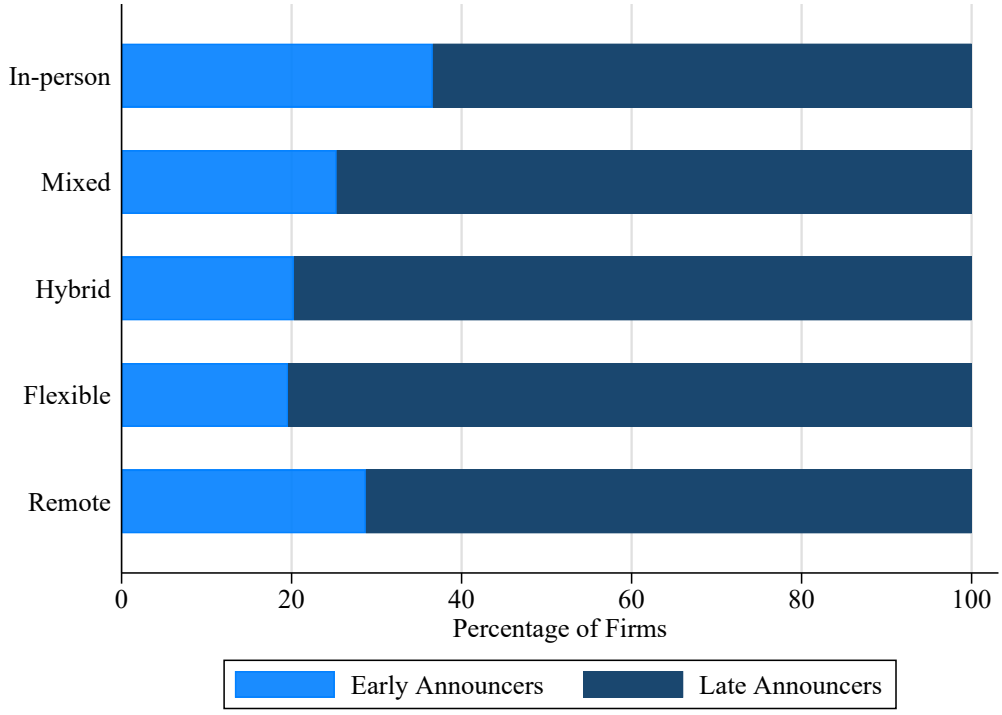
Figure 4: RTO Policy Announcement Timing: by Policy Type



Notes: 1) This figure plots the timing of the Russell 3000 RTO policy announcements by type of RTO policy. 2) Figure only includes the first announcement. 3) Data is from Factiva.

To summarize the overall distribution of RTO policy type by when announcements occur, Figure 5 compares Early vs Late Announcers in terms of the frequency of the policy types. A key difference between groups is that Early Announcers opted for more of the extremes relative to Late Announcers. Early Announcers announce more In-person policies and Remote policies, whereas Late Announcers announced more Hybrid and Flexible. An additional difference is in firm size. Table 3 shows that Early Announcers tend to be larger than Late Announcers. This suggests that Early Announcers may be industry leaders that other firms within the industry use as a gauge of how the market will react to their decisions. Therefore, in addition to Late Announcers' policies being less sensitive to public health concerns, their policies may also be a function of the observed reaction to Early Announcer policies.

Figure 5: RTO Policies for Early vs. Late Announcers



Notes: 1) This figure plots the percentage of Russell 3000 firms that announce early vs. late, from March 1, 2020, to June 1, 2023. Early Announcers made their first round RTO policy announcements between March 1, 2020, and June 30, 2021, and Late Announcers made their first round RTO policy announcements between July 1, 2021, and June 1, 2023. 2) Figure only includes the first announcement. 3) Data is from Factiva.

Table 3: Firm Size for Early vs. Late Announcers

	N	Mean	Median	SD	Min	Max
Early Announcer	185	80.94	5.16	278.06	0.04	2687.38
Late Announcer	615	26.38	3.42	134.01	0.02	2434.08

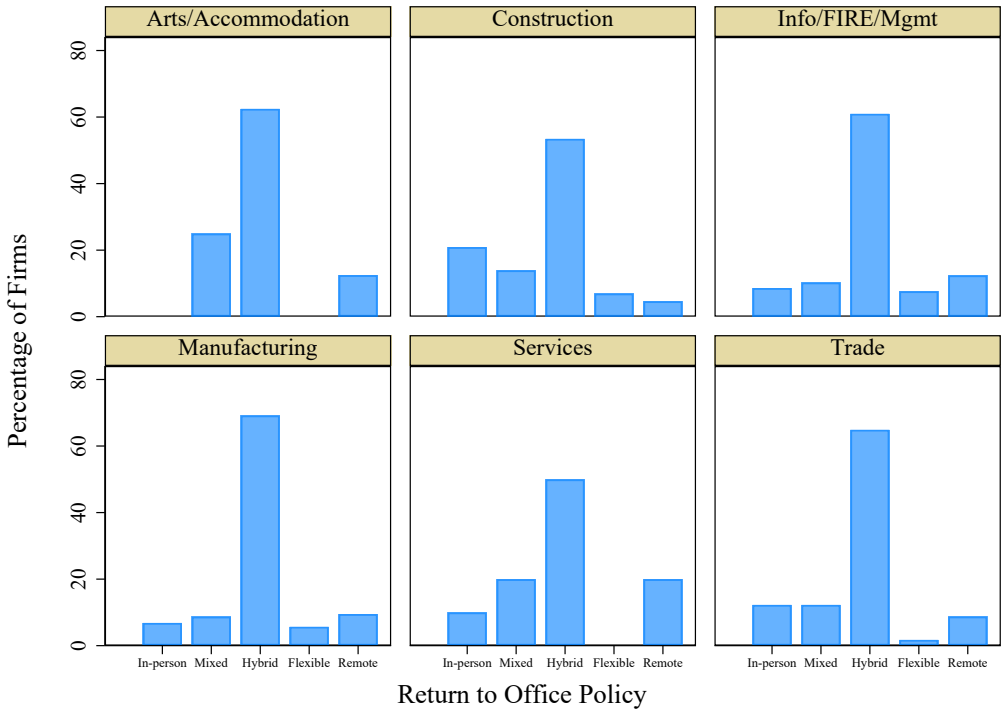
Notes: 1) This table presents summary statistics of firm size, as measured by total assets reported in billions of dollars (from Compustat) for different announcement groups as of December 2019. Early Announcers made their first round RTO policy announcements between March 1, 2020, and June 30, 2021, and Late Announcers made their first round RTO policy announcements between July 1, 2021, and June 1, 2023. 2) Figure only includes the first announcement. 3) Data is from Factiva and Compustat.

2.4 Variation Across Industries, Cities, and Firms

Consistent with certain industries having a greater share of occupations that can be done remotely, the number of firms that publicly announce a policy varies substantially across industries. For example, while nearly 40% of firms in the Finance, Real Estate, and Information 1-digit NAICS sectors had announced a policy by June 1, 2023, only about 20% of firms in the Construction and Mining/Oil&Gas 1-digit NAICS sector had announced a policy by the end of our sample period. For the firms that did announce, Figure 6 examines variation in RTO policies across 1-digit NAICS sectors. Construction firms announce relatively more in-person work, whereas firms belonging to the Services and Information/Finance/Real Estate sectors announce relatively more remote work.

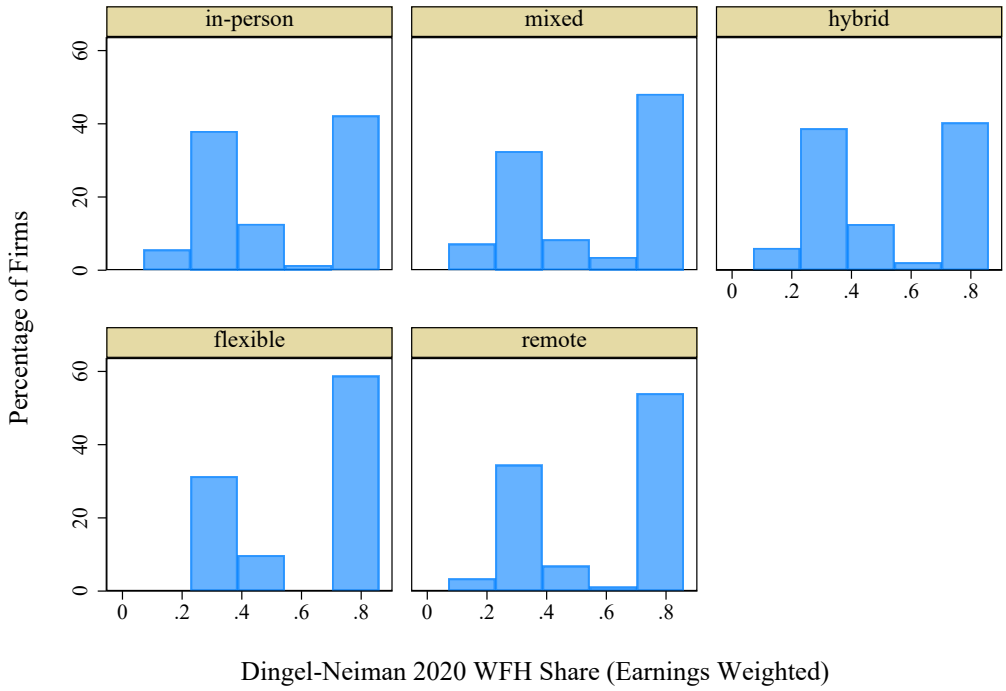
To provide an alternative view of how RTO policies vary across industries, we next examine how the pre-pandemic feasibility of remote work in an industry is related to the type of RTO policy that we see used most often in that industry. We use the share of jobs that can be done at home by 2-digit NAICS codes from Dingel and Neiman (2020) (see Table 3 of their paper) to measure remote work feasibility. We then plot the distribution of this remote work share weighted by wages which we call *DN2020 WFH Share (Wages Weighted)*, for each of the five RTO policies we observe. Figure 7 reports the results. Comparing the Remote and In-person panels shows that Remote announcers tend to be in industries with higher remote work feasibility shares compared to In-person announcers. This is consistent with more in-person work policies being announced in industries with a lower pre-pandemic share of jobs that can be done remotely.

Figure 6: RTO Policies by Industry



Notes: 1) This figure plots the percentage of Russell 3000 firms that announce by type of RTO policy, across 1-digit NAICS sectors by number of firms, from March 1, 2020, to June 1, 2023. There are no Factiva announcers in the Agriculture sector, and we exclude the "Other" sector. 2) Figure only includes the first announcement. 3) Data is from Factiva.

Figure 7: RTO Policies and Dingel-Neiman Remote Work Feasibility



Notes: 1) This figure plots the density of the Dingel and Neiman (2020) work-from-home feasibility measure (at the 2-digit NAICS level) by RTO policy, for all Russell 1000 firms that announce from March 1, 2020, to June 1, 2023. 2) Figure only includes the first announcement. 3) Data is from Factiva and Dingel and Neiman (2020).

We next examine variation in RTO policies by the location of firms' headquarters (HQ). As models of WFH such as Davis, Ghent, and Gregory (2024) illustrate, the benefits of more remote work depend on the length of workers' commutes, the steepness of the rent gradient, and the differences in amenities between suburban and central locations. Furthermore, firms in different cities likely have a different mix of occupations making remote work more feasible for a larger fraction of firms in some cities than in others. All of these factors vary by city such that firms' policies may differ by the city of their HQ.

We identify firms' HQ locations based on Metropolitan Statistical Area (MSA). We

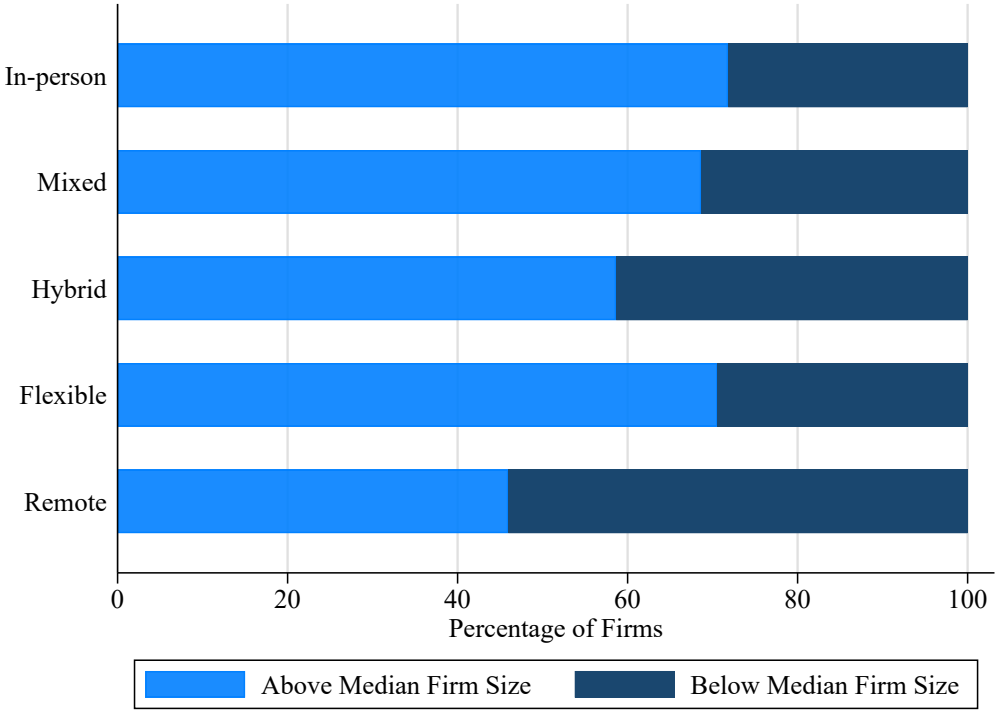
then examine the variation in initial RTO policies across the top 12 most common MSAs for the firms in our sample. As Figure 8 illustrates, firms headquartered in Houston and Chicago announce relatively more in-person work, whereas firms headquartered in San Francisco and San Jose are notable for having especially high shares of entirely Remote policies, likely due to the concentration of their workforces in information technology.

Figure 8: RTO Policies by HQ location

Notes: 1) This figure plots the percentage of Russell 3000 firms that announce by type of RTO policy, across the top 12 MSAs, from March 1, 2020, to June 1, 2023.2) Figure only includes the first announcement. 3) Data is from Factiva, Compustat, and the Department of Labor.

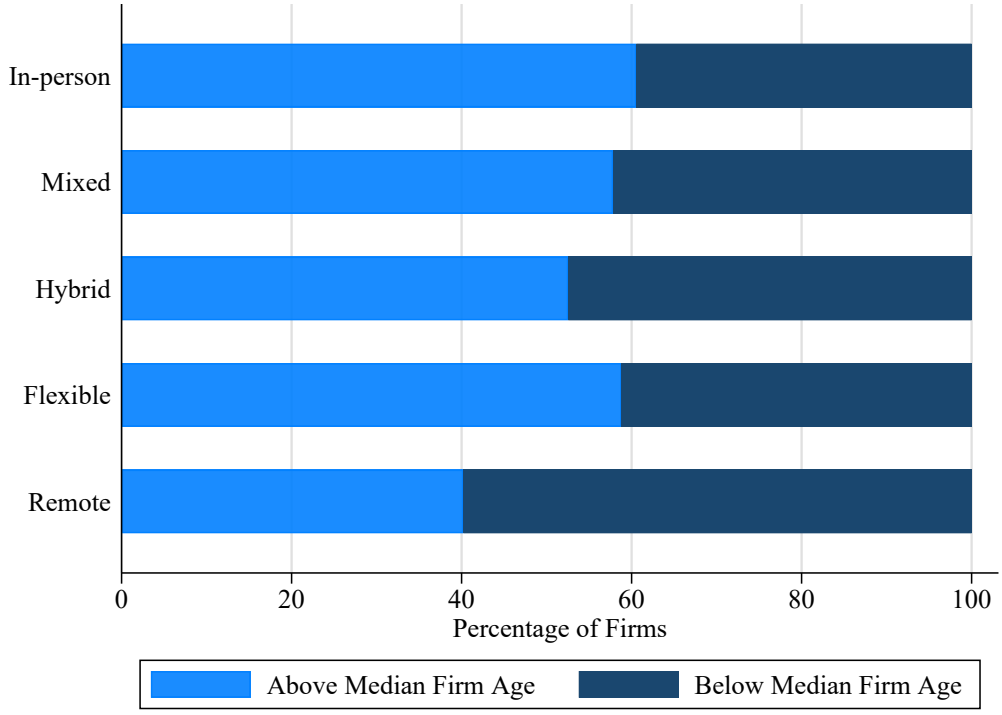
Firm-specific characteristics may also influence RTO policy choice. Figures 9 and 10 show the distribution of RTO policy for firms that lie above and below the median by size and age. Larger and older firms tend to choose fewer Remote policies.

Figure 9: RTO Policies by Firm Size



Notes: 1) This figure plots distribution of RTO policies for Russell 3000 firms by firm size, measured by total assets from Compustat. 2) Figure only includes the first announcement. 3) Data is from Factiva and Compustat.

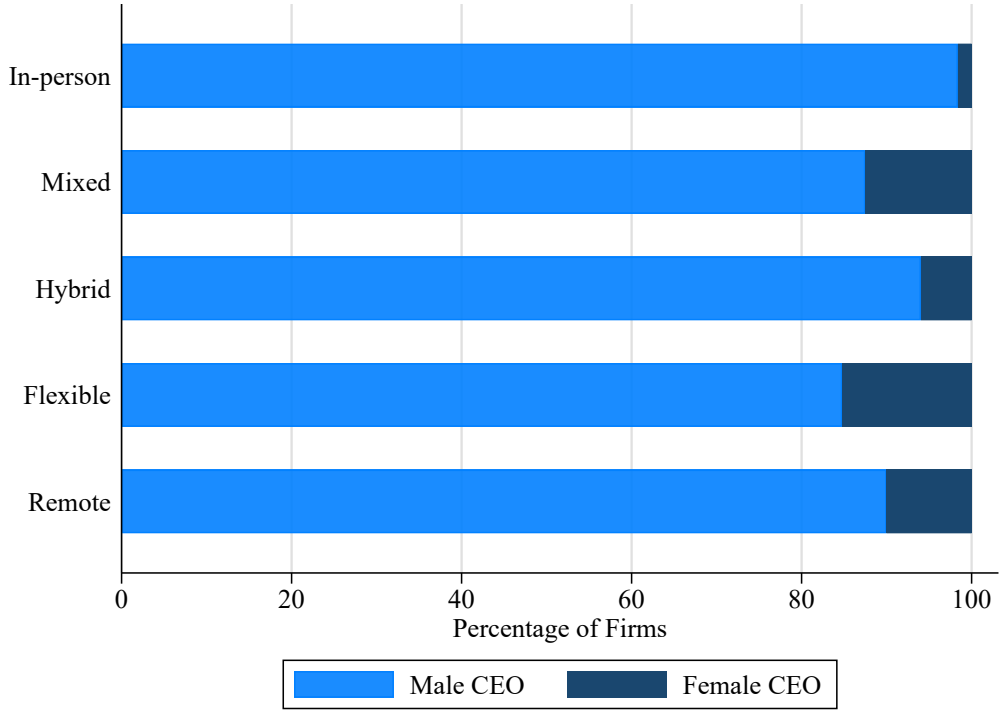
Figure 10: RTO Policies by Firm Age



Notes: 1) This figure plots distribution of RTO policies Russell 3000 firms by firm age, measured as the number of years between the firm's IPO date and 2019. 2) Figure only includes the first announcement. 3) Data is from Factiva and Compustat.

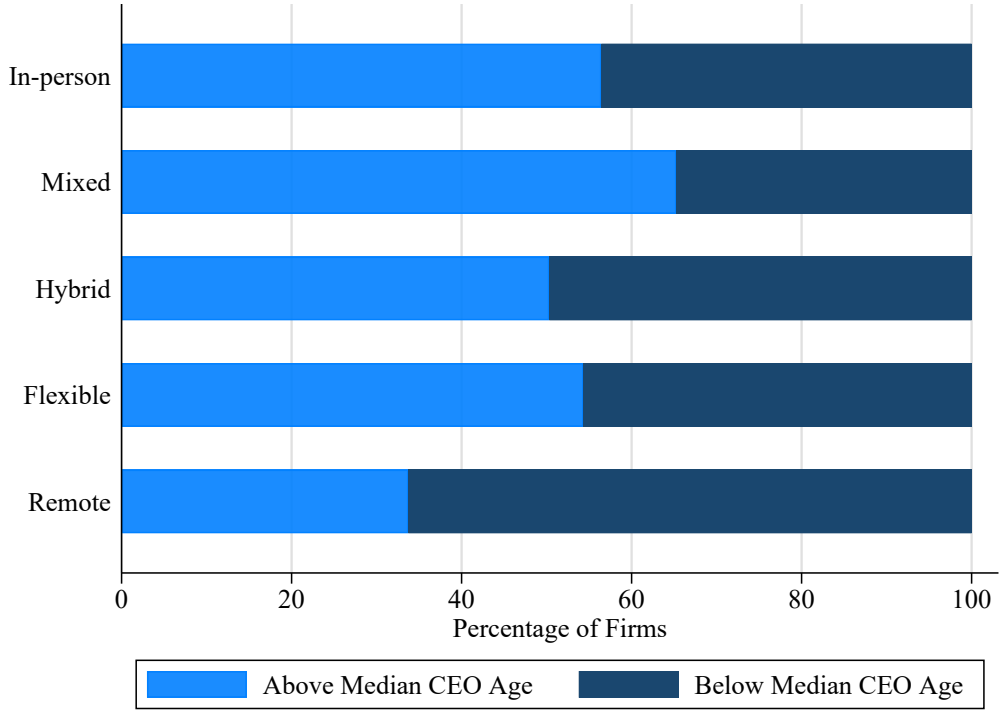
Finally, we examine variation across RTO policies based on CEO characteristics. We focus on the RTO policy type across two CEO attributes: age and gender. All CEO data comes from BoardEx. Figures 11 and 12 show the results by CEO gender and for CEOs below and above the median CEO age. While both male and female CEOs most frequently choose a Hybrid RTO, a higher proportion of female CEOs choose fully Remote working arrangements. CEOs below the median age favor more Remote and fewer In-person policies compared to CEOs above the median age.

Figure 11: RTO Policies by CEO Gender



Notes: 1) This figure plots distribution of RTO policies by the gender of the CEO of firms in our sample. 2) Figure only includes the first announcement. 3) Data is from Factiva and BoardEx.

Figure 12: RTO Policies by CEO Age



Notes: 1) This figure plots distribution of RTO policies by CEO age. 2) Figure only includes the first announcement. 3) Data is from Factiva and BoardEx.

3 Conceptual Framework

Motivated by the differences in RTO policies across industries and cities that we document in the previous section, in this section we provide a simple conceptual framework that formalizes the determinants of the choice of RTO policy. We consider a simple production economy similar to Jermann (1998) with a firm operating in industry j in city c. The model is partial equilibrium and is intended to capture the main tensions employers face when choosing on a RTO policy denoted by $P_{j,c,t} \in [0, 1]$. The firm's choice of $P_{j,c,t}$ influences its total factor productivity (TFP), how much rent they pay for office space, and their wage bill. To focus on the implications of RTO policies,

we treat the discount factor as fixed, investors as risk-neutral, and abstract from frictions to capital adjustment. We also simplify the model by assuming that reductions in productivity from greater remote work occur contemporaneously rather than in the future.

Firms are 100% equity financed and the stock price $S_{j,c,t}$ is the expected present value of profits to owners, i.e.,

$$S_{j,c,t} = E_t \sum_{k=0}^{\infty} \beta^k \Pi_{j,c,t+k}. \tag{1}$$

Profits in period t are given by

$$\Pi_{j,c,t} = A_{j,c}(P_{j,c,t})F(K_{j,c,t}, N_{j,c,t}) - \alpha_1 r^o_{c,t} N_{j,c,t} g(P_{j,c,t}) - \hat{w}_j(P_{j,c,t})N_{j,c,t} \tag{2}$$

where $A_{j,c}(P_{j,c,t})$ is total factor productivity, which depends on the firm's RTO policy, $P_{j,c,t}$, $K_{j,c,t}$ is the non-real estate capital the firm owns, $\alpha_1 r^o_{c,t} g(P_{j,c,t})$ is the total amount the firm pays to rent office space (which it rents in proportion to the amount of labor it hires), and $N_{j,c,t}$ is labor hired at rate $\hat{w}(P_{j,c,t})$. A higher value of P corresponds to a firm policy requiring that a larger fraction of work be done in-person at a centralized location, or what we refer to as a more stringent RTO policy. We normalize a 100% remote RTO policy as $P = 0$ and a five days a week in-person RTO policy to $P = 1$.

We anticipate that $A'_{j,c}(\cdot) > 0$ such that a more stringent RTO policy increases TFP. We allow the function mapping policy to TFP to depend on the firm's industry because remote work may have more deleterious impacts on productivity in some industries than others. We also allow the productivity benefits of more time in-person to depend on the city given the evidence that agglomeration benefits are significantly higher in larger cities (see, e.g., De La Roca and Puga, 2017).

More in person work requires more office space such that $g'(\cdot) > 0$. The firm

rents only the office space that employees use when they are working at the office. Although employees may also use space at home, we assume that firms indirectly compensate employees for home office space via wages. Office space does not directly enter the production function; any difference between the productivity of space used in the office and at home is subsumed into $A_{j,c}(\cdot)$. Office rents differ only across cities, whereas wages differ across both industries and cities to capture that employees in different markets may face different residential rents and commute times.

The nominal wage $\hat{w}(P_{j,c,t})$ compensates employees for the disutility of working, which depends directly on (1) the firm's RTO policy (because employees prefer more work from home to less), (2) the length of their commute, τ_c, and (3) the cost of space they rent at home, $r^h_{c,t}$. We specify

$$\hat{w_j}(P_{j,c,t}) = w_j + (\alpha_2 + \alpha_3\tau_c - \alpha_4 r^h_{c,t})g(P_{j,c,t}). \tag{3}$$

In equation 3, w_j represents the fixed wage paid in industry j for a worker that is 100% remote. α_2 captures the change in the wage required for a policy requiring more time in person. The experimental evidence in Mas and Pallais (2017), He et al. (2021), and Moens et al. (2024) indicates that $\alpha_2 > 0$. $\alpha_3\tau_c$ captures the change in wage required for more in-person work if labor supply depends on commuting costs. As the evidence in Ready, Roussanov, and Zurowska (2019) indicates, labor supply decreases with commuting costs, which suggests $\alpha_3 > 0$. Finally, because employees that work more at home require more residential space (see Stanton and Tiwari, 2021), we anticipate $\alpha_4 > 0$ to reflect firms indirectly paying employees to rent their own space and business equipment at home.

The firm chooses $P_{j,c,t}$ to maximize equation (2) taking the wage function in equa-

tion (3) as given. This leads to the following optimization condition:

$$A'_{j,c}(P_{j,c,t})F(K_{j,c,t}, N_{j,c,t}) - (\alpha_1 r^o_{c,t} + \alpha_2 + \alpha_3 \tau_c - \alpha_4 r^h_{c,t}) g'(P_{j,c,t}) N_{j,c,t} = 0. \tag{4}$$

Equation 4 indicates that firms will increase the amount of in-person work they require until the productivity benefit is equal to the cost associated with office space and the in-person wage premium. It provides the following predictions about how firms choose their RTO policies:

1. Firms in industries with more productivity loss from remote work, as captured by the derivative of TFP with respect to RTO policy, will choose higher P,
2. Firms renting space in locations with higher office rents will choose lower P,
3. Firms with workers in cities with longer commutes will choose lower P, and
4. Firms with workers in cities with more expensive residential space will choose higher P.
5. Firms located in larger cities will choose higher P, due to higher agglomeration benefits in larger cities.

4 Determinants of RTO Policies

In this section, we examine factors that impact a firm's choice of RTO policy in a multivariate setting.

Our model and other existing spatial models of remote work (Davis et al., 2024; Behrens et al., 2024) identify key factors that should affect firms' choice of an RTO

policy. First, the benefits to remote work are greater when it is relatively more productive. In the simple model of Section 3, $A_{j,c}(P_{j,c,t})$captures the productivity of remote work and the function depends on the occupational composition of the workers in the firm. We proxy for the relative productivity of remote work using the Dingel and Neiman (2020) measure of the feasibility of remote work, which is based on pre-pandemic data. This industry-level measure is computed using (1) the share of occupations in each industry (where occupations are defined using the BLS Standard Occupation Classification system) and (2) occupation-level survey responses that indicate the extent to which different occupations can be performed at home (survey data comes from the Department of Labor's O*NET program). A higher fraction of work from home feasibility indicates that an industry contains a larger share of occupations that can be done partially, or fully, from home. We therefore define industries with higher work from home feasibility as industries in which the ex-ante relative productivity of remote work is higher.[10] Alternatively, in some specifications we include industry fixed effects to reflect the dependence of $A_{j,c}(\cdot)$ on j.

The second key factor that determines RTO policy is employee commute time. Because longer commutes impose higher costs on employees (both directly and due to loss of leisure), the benefits of remote work for the employee increase with commute time. Therefore, employees will accept lower wages to work remotely when the disutility of commuting is high. To measure commute time at the MSA level, we use survey responses on mean commute times from the 2019 Census Bureau American Community Survey (ACS).

Third, the benefit of more remote work increases with the price of commercial office space, but decreases with the price of residential real estate. In particular, in cities where office space is expensive to rent, we expect firms to choose more remote work. Conversely, when housing is expensive, we expect firms to choose more in-

[10]We use shares at the 2-digit NAICS level taken directly from Table 3 of Dingel and Neiman (2020).

person work, given they must compensate employees for home office space through higher wages. We measure office rent at the MSA level using Compstak. Specifically, we estimate the monthly median net effective rent per square foot for all office leases signed during 2019 in each MSA. Then, we calculate the mean of this variable across all months by MSA. We measure home prices by first collecting data on the median monthly listing price per square foot for each MSA in 2019 reported by Realtor.com. We then calculate the mean of this variable across all months in 2019 by MSA.

Finally, the benefit of in-person work should increase with the extent of agglomeration externalities. We proxy for agglomeration externalities using headquarter city population. Firms in cities with larger populations should experience greater benefits to agglomeration compared with firms in smaller cities.

In addition to the economic determinants of RTO policies, we examine several firm-specific, non-economic determinants, including firm size, age, and CEO characteristics. We gather firm size, age, and headquarter location data from Compustat. We use BoardEx to obtain data on CEO gender and age.

4.1 Main Results

Table 4 summarizes the data used in our multivariate analysis. Because Figures 1 and 2 suggest very few firms switch policy types, we limit our primary analysis to the initial policy announcement.[11] We measure all right-hand side variables at the end of 2019. The average firm is in an industry where roughly half of workers are in a telecommutable occupation as defined by Dingel and Neiman (2020). The average one-way commute time in the headquarters location is approximately 28 minutes, the average median rent per square foot for office property is approximately $31, and the

[11] In Section A.3 we reproduce our baseline regression results using the final policy announcement for each firm. The results are qualitatively unchanged.

average median price per square foot for residential property is roughly $253. The average CEO is approximately 55 years old and 7% of CEOs are female.

Table 4: Summary Statistics

	N	Mean	p50	SD	Min	Max
Total assets ($bn)	800	39.00	3.61	179.26	0.02	2687.38
Firm age	800	24.32	20.00	20.25	0 .00	73.00
WFH share	800	0.58	0.54	0.24	0.07	0.86
Average commute (minutes)	751	28.00	27.96	4.11	18.19	35.00
Average median office rent/sf	771	31.35	26.97	13.25	11.57	56.18
Average median residential price/sf	741	253.04	205.58	152.03	66.00	682.33
City Size (millions)	751	3.11	2.35	2.85	0.05	9.42
CEO age	713	55.31	56	7.29	33.00	87.00
I(female CEO)	713	0.07	0.00	0.26	0.00	1.00
RTO policy	800	1.98	2.00	0.44	1.00	3.00

Notes: 1) Summary statistics at the firm level for Russell 3000 firms with RTO policy announcements in Factiva from March 1, 2020, to June 1, 2023. 2) Data is from Factiva, Compustat, Dingel and Neiman (2020), Census ACS of 2019, Compstak, Realtor.com, and BoardEx. All variables are measured as of the end of 2019. 3) RTO Policy = 3 for a fully In-person policy, 2 for a Hybrid, Flexible, or Mixed Policy, and 1 for a fully Remote policy. We only include the first announcement. 4) Table A.1 provides details on variable definitions.

We study the relation between the type of RTO policy for announcers and the determinants described in the previous section. In our baseline specification, we estimate an ordered probit regression in which the dependent variable is equal to 3 if the firm announces an In-person policy, 2 if the firm chooses a Hybrid or Flexible or Mixed policy, and 1 if the firm opts for a fully Remote policy. We combine Hybrid, Flexible, and Mixed because all three constitute interior solutions relative to the extremes of fully In-person or fully Remote.[12] Our regression equation is:

$$P_{i,c,j,t} = \beta_1 WFHShare_j + \beta_2 CommuteTime_c + \beta_3 OfficeRent_c + \beta_4 HomePrice_c + \beta_5 CitySize_c + \beta_x X_{i,t} + \epsilon_{i,t} \quad (5)$$

[12]In robustness analysis in Section 4.2, we estimate equations in which Flexible and Hybrid are included separately alongside In-person and Remote.

where $P_{i,c,j,t}$ is the RTO policy announced at time t by firm i, where i is headquartered in city c and industry j. We include the wage-weighted Dingel and Neiman (2020) shares ($WFHShare$), one-way commute time (τ_c), average 2019 median monthly office rent, average 2019 median monthly residential price, and city size in the regressions. $X_{i,t}$ includes firm size and age, as well as CEO age and CEO gender.

Table 5 presents pairwise correlation coefficients for the four economic variables we include in equation 5.

Table 5: Correlations between Economic Variables

	WFH share	Office rent	Residential price	Commute time	City size
WFH share	1.00				
Office rent	0.10	1.00			
Residential price	0.00	0.79	1.00		
Commute time	0.15	0.76	0.38	1.00	
City size	0.14	0.54	0.10	0.83	1.00

Notes: 1) Pairwise correlation coefficients for economic variables for Russell 3000 firms with announcements from March 1, 2020, and June 1, 2023. 2) Data is from Dingel and Neiman (2020), Census ACS of 2019, Compstak, and Realtor.com. All variables are measured as of the end of 2019. 3) All variables defined in Table A.1.

Table 6 reports the results of estimating equation (5). Columns 1 and 2 include the industry-specific WFH feasibility share, city-specific real estate prices, city-specific commute times, and city population. In columns 3 through 5 we add firm and CEO characteristics. We include industry fixed effects in columns 3 and 5.

The results show that the price of office space is an important determinant of RTO policy. The negative coefficients for office rent indicate that firms headquartered in cities with more expensive office space tend to choose less in-person work. Additionally, firm size and CEO characteristics play a role in the choice of RTO policy. In particular, large firms tend to choose more in-person work compared to smaller firms. Moreover, firms led by female CEOs and younger CEOs tend to require less in-person work. Focusing on column 8, the marginal effect on office rent with respect to an

In-person policy is -0.004, which means that, at the mean value of office rent, a $10 increase in rent per square foot reduces the likelihood of announcing an In-person policy by 4 percentage points. Similarly, a $10 increase in rent per square foot increases the likelihood of announcing an Remote policy by about 5 percentage points. Moving to firm and CEO characteristics, an increase in $100 billion of total assets makes a firm about 1 percentage point more likely to announce In-person, whereas having a female CEO makes a firm about 5 percentage points less likely to announce In-person.

Table 6: RTO Policy Choice: Baseline Results

	(1)	(2)	(3)	(4)	(5)
WFH share	-0.17	-0.23		-0.29	
	(0.20)	(0.21)		(0.22)	
Office rent	-0.026**	-0.026**	-0.024**	-0.032***	-0.029***
	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)
Residential price	0.00047	0.00049	0.00044	0.00094	0.00088
	(0.00073)	(0.00073)	(0.00074)	(0.00077)	(0.00079)
Commute time	0.022	0.028	0.027	0.036	0.035
	(0.026)	(0.026)	(0.027)	(0.027)	(0.028)
City size	0.057*	0.040	0.038	0.033	0.027
	(0.033)	(0.034)	(0.034)	(0.035)	(0.036)
Firm size		0.00091***	0.00092***	0.0012***	0.0012***
		(0.00026)	(0.00026)	(0.00031)	(0.00031)
Firm age		0.0032	0.0025	0.00098	0.000090
		(0.0025)	(0.0026)	(0.0026)	(0.0027)
CEO age				0.021***	0.022***
				(0.0075)	(0.0078)
Female CEO				-0.42***	-0.43***
				(0.15)	(0.15)
Industry FE			✓		✓
Observations	716	716	716	661	661
Pseudo-R^2	0.022	0.040	0.045	0.062	0.071

Notes: 1) Results of estimating ordered probit regressions of announcement likelihood on controls. The dependent variable takes a value of 3 for In-person, a value of 2 for Hybrid or Flexible or Mixed, and a value of 1 for Remote. Sample consists of Russell 3000 firms that announce a RTO policy from March 1, 2020, to June 1, 2023. We only include the first announcement. 2) Data is from Factiva, Compustat, Dingel and Neiman (2020), Census ACS of 2019, Compstak, Realtor.com, and BoardEx. All right-hand side variables are measured as of the end of 2019. 3) All variables defined in Table A.1. 4) t-statistics are calculated based on robust standard errors and are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

Table 6 indicates that firm size, CEO characteristics, and office rent play important roles in determining the amount of in-person work firms require. However, it may be the case that firms' choice of RTO policies conditional on these economic characteristics changes over the sample period. This could occur for two reasons. First, firms that announce early in the sample period, prior to the widespread roll-out of vaccines, may have based their decisions in part on uncertainty about health risks, whereas later announcers did not. Second, later announcers may have conditioned their RTO choice in part on the choices of early announcers.

To investigate the extent to which announcement timing matters, we conduct two analyses. First, we reproduce the most saturated columns of Table 6 with only the initial announcements made during or after 2021Q3. We call this the "late announcement" period as it constitutes the part of our sample period in which vaccines had been widely rolled out. Second, we reproduce the most saturated columns of of Table 6 with the full sample and the inclusion of an indicator equal to 1 for announcements made during or after 2021Q3, and 0 for announcements made prior, which we call "Late Announcement." Because the Flex Index does not contain the announcement date, all firms for which we gather data from the Flex Index are excluded from the estimation sample.

Table 7 reports the results. The results for commercial rent, firm size, and CEO characteristics remain qualitatively unchanged regardless of whether we restrict the sample to the post-vaccination roll-out period (columns 1, 3, and 5), or whether we include a control for the post-vaccination roll-out period and estimate on the full sample (columns 2, 4, and 6).

Table 7: RTO Policy Choice: Role of Announcement Timing

	(1)	(2)	(3)	(4)	(5)	(6)
WFH share	-0.040	-0.23	-0.16	-0.29		
	(0.25)	(0.21)	(0.26)	(0.22)		
Office rent	-0.018	-0.026**	-0.025**	-0.032***	-0.022*	-0.029***
	(0.012)	(0.010)	(0.013)	(0.011)	(0.013)	(0.011)
Residential price	-0.000045	0.00048	0.00061	0.00094	0.00053	0.00088
	(0.00091)	(0.00073)	(0.00095)	(0.00077)	(0.00097)	(0.00079)
Commute time	0.036	0.028	0.037	0.036	0.035	0.035
	(0.031)	(0.026)	(0.033)	(0.027)	(0.033)	(0.028)
City size	0.024	0.040	0.027	0.033	0.020	0.027
	(0.039)	(0.034)	(0.039)	(0.035)	(0.040)	(0.036)
Firm size	0.00080**	0.00090***	0.00079**	0.0012***	0.00079**	0.0012***
	(0.00033)	(0.00026)	(0.00031)	(0.00031)	(0.00031)	(0.00031)
Firm age	0.0032	0.0032	0.0022	0.00098	0.00092	0.000080
	(0.0029)	(0.0025)	(0.0031)	(0.0026)	(0.0031)	(0.0027)
CEO age			0.023***	0.021***	0.025***	0.022***
			(0.0086)	(0.0075)	(0.0091)	(0.0078)
Female CEO			-0.40**	-0.42***	-0.40**	-0.43***
			(0.17)	(0.15)	(0.18)	(0.15)
Late announcer		-0.045		-0.0018		-0.0076
		(0.12)		(0.13)		(0.13)
Industry FE					✓	✓
Sample	Late Announcers	Full	Late Announcers	Full	Late Announcers	Full
Observations	543	716	509	661	509	661
Pseudo-R^2	0.028	0.040	0.047	0.062	0.061	0.071

Notes: 1) Results of estimating ordered probit regressions of announcement likelihood on controls. The dependent variable takes a value of 3 for In-person, a value of 2 for Hybrid or Flexible or Mixed, and a value of 1 for Remote. Sample consists of Russell 3000 firms that announce a RTO policy from March 1, 2020, to June 1, 2023. We only include the first announcement. 2) Data is from Factiva, Compustat, Dingel and Neiman (2020), Census ACS of 2019, Compstak, Realtor.com, and BoardEx. All right-hand side variables are measured as of the end of 2019. 3) All variables defined in Table A.1. 4) t-statistics are calculated based on robust standard errors and are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

4.2 Alternative Specifications

In this section, we report the results of several alternative specifications for the baseline results in Table 6. First, we reproduce Table 6 using both our hand-collected Factiva data and data from the Flex index. The results, reported in Table8, are broadly consistent with those in Table 6: firm size and CEO characteristics are strongly related to the choice of initial RTO policy. Although commercial rent is less significant, it is still negatively related to the amount of in-person work required. Additionally,

the WFH feasibility share is negative and significant, consistent with firms in industries with a higher pre-COVID share of telecommutable occupations requiring less in-person work.

Table 8: Alternative Specification 1: Results with Flex Index data

	(1)	(2)	(3)	(4)
WFH share	-0.37**		-0.38**	
	(0.17)		(0.18)	
Office rent	-0.0098	-0.0085	-0.014*	-0.013
	(0.0081)	(0.0082)	(0.0086)	(0.0087)
Residential price	-0.00016	-0.00020	0.000088	0.000064
	(0.00058)	(0.00059)	(0.00062)	(0.00063)
Commute time	-0.0054	-0.0070	0.0035	0.0018
	(0.021)	(0.020)	(0.022)	(0.021)
City size	0.031	0.028	0.026	0.023
	(0.026)	(0.026)	(0.028)	(0.028)
Firm size	0.00096***	0.00093***	0.0012***	0.0012***
	(0.00026)	(0.00026)	(0.00032)	(0.00032)
Firm age	0.0020	0.0018	-0.00050	-0.00090
	(0.0020)	(0.0020)	(0.0020)	(0.0021)
CEO age			0.021***	0.022***
			(0.0063)	(0.0064)
Female CEO			-0.31**	-0.30**
			(0.14)	(0.14)
Industry FE		✓		✓
Observations	1,023	1,023	942	942
Pseudo-R^2	0.026	0.027	0.044	0.046

Notes: 1) Results of estimating ordered probit regressions of announcement likelihood on controls. The dependent variable takes a value of 3 for In-person, a value of 2 for Hybrid or Flexible or Mixed, and a value of 1 for Remote. Sample consists of Russell 3000 firms that announce a RTO policy from March 1, 2020, to June 1, 2023. We only include the first announcement. 2) Data is from Factiva, Compustat, Dingel and Neiman (2020), Census ACS of 2019, Compstak, Realtor.com, and BoardEx. All right-hand side variables are measured as of the end of 2019. 3) All variables defined in Table A.1. 4) t-statistics are calculated based on robust standard errors and are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

In Table 9, we redefine the dependent variable using four categories ordered from most to least stringent: In-person, Hybrid, Flexible, and Remote. We drop observations that have Mixed policies in these specifications given that it is unclear where on the stringency spectrum Mixed policies should lie relative to Hybrid and Flexible. We then re-estimate equation 5 using this new definition of the dependent variable.

As in Table 6, office rents, firm size, and CEO characteristics are important drivers of RTO policy, as is the WFH feasibility share.

Table 9: Alternative Specification 2: Four Category Dependent Variable

	(1)	(2)	(3)	(4)
WFH share	-0.41**		-0.50**	
	(0.20)		(0.22)	
Office rent	-0.021**	-0.020**	-0.028***	-0.026**
	(0.0097)	(0.0098)	(0.010)	(0.010)
Residential price	0.00032	0.00030	0.00080	0.00080
	(0.00070)	(0.00071)	(0.00073)	(0.00075)
Commute time	0.024	0.022	0.036	0.033
	(0.025)	(0.026)	(0.026)	(0.027)
City size	0.044	0.043	0.036	0.035
	(0.033)	(0.033)	(0.034)	(0.034)
Firm size	0.0010***	0.0010***	0.0017***	0.0017***
	(0.00032)	(0.00031)	(0.00050)	(0.00048)
Firm age	0.00076	0.00041	-0.00073	-0.0012
	(0.0024)	(0.0025)	(0.0025)	(0.0025)
CEO age			0.016**	0.017**
			(0.0071)	(0.0074)
Female CEO			-0.59***	-0.60***
			(0.15)	(0.15)
Industry FE		✓		✓
Observations	643	643	596	596
Pseudo-R^2	0.028	0.031	0.051	0.056

Notes: 1) Results of estimating ordered probit regressions of announcement likelihood on controls. The dependent variable takes a value of 4 for In-person, a value of 3 for Hybrid, a value of 2 for Flexible, and a value of 1 for Remote. Observations with Mixed policies are not included. Sample consists of Russell 3000 firms that announce a RTO policy from March 1, 2020, to June 1, 2023. We only include the first announcement. 2) Data is from Factiva, Compustat, Dingel and Neiman (2020), Census ACS of 2019, Compstak, Realtor.com, and BoardEx. All variables are measured as of the end of 2019. 3) All right-hand side variables defined in Table A.1. 4) t-statistics are calculated based on robust standard errors and are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

Although RTO policies are announced by the firm headquarters, Flynn and Ghent (2024) show that, for all publicly-traded firms, many workers work in cities or states that are outside the headquarters city. To account for the possibility that this affects our results, we define alternative versions of location-specific variables by first identifying the locations of firms' employees using establishment-level data from Data Axle. We then compute employee-location-weighted average location variables (commercial

rent, residential prices, commute time, and city size). Table 10 reports the results which are consistent with those in our benchmark specification.

Table 10: Alternative Specification 3: Employee-Weighted Measures

	(1)	(2)	(3)	(4)
WFH share	-0.26		-0.34	
	(0.21)		(0.23)	
Emp-weighted commercial rent	-0.022**	-0.022*	-0.029**	-0.028**
	(0.011)	(0.011)	(0.012)	(0.012)
Emp-weighted residential price	0.00047	0.00055	0.00094	0.0011
	(0.00068)	(0.00069)	(0.00073)	(0.00073)
Emp-weighted commute time	0.0095	0.0081	0.019	0.016
	(0.012)	(0.012)	(0.013)	(0.013)
Emp-weighed city size	5.2e-08	5.1e-08	4.0e-08	4.0e-08
	(3.6e-08)	(3.7e-08)	(3.9e-08)	(4.0e-08)
Firm size	0.00088***	0.00088***	0.0012***	0.0012***
	(0.00027)	(0.00027)	(0.00033)	(0.00033)
Firm age	0.0033	0.0027	0.00085	0.000083
	(0.0025)	(0.0026)	(0.0026)	(0.0027)
CEO age			0.024***	0.025***
			(0.0076)	(0.0078)
Female CEO			-0.44***	-0.47***
			(0.16)	(0.16)
Industry FE		✓		✓
Observations	752	752	679	679
Pseudo-R^2	0.032	0.037	0.057	0.067

Notes: 1) Results of estimating ordered probit regressions of announcement likelihood on controls. The dependent variable takes a value of 3 for In-person, a value of 2 for Hybrid or Flexible or Mixed, and a value of 1 for Remote. Mixed is excluded. Sample consists of Russell 3000 firms that announce an RTO policy from March 1, 2020, to June 1, 2023. We only include the first announcement. 2) Data is from Factiva, Compustat, Dingel and Neiman (2020), Census ACS of 2019, Compstak, Realtor.com, BoardEx, and Data Axle. All right-hand side variables are measured as of the end of 2019. 3) All variables defined in Table A.1. 4) t-statistics are calculated based on robust standard errors and are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

5 Consequences

In this section, we examine the financial and real outcomes of RTO policies. We first focus on the reaction of stock returns and trading volume to three distinct rounds of RTO announcements: the first announcement, the second announcement, and the final announcement. We also examine how a firm's office leasing relates to its RTO

policy.

5.1 Stock Returns

5.1.1 Daily returns

We first study daily announcement returns using two standard definitions of abnormal stock returns. First, we construct $LogRet\_Rm$, the log of the excess daily return of stock i over the market rate of return, Rm, cumulated over a 0, 1 or 2-day window surrounding RTO policy announcements. Second, we construct $LogRet\_CAPM$, the CAPM-adjusted logged cumulative abnormal returns of stock i over a 0, 1, or 2-day window surrounding the RTO policy announcements. The 0-day event window measures the abnormal return on the day of the announcement, i.e., from market open the day of the announcement to market close the day of the announcement. The 1-day event window measures abnormal returns cumulated over a three-day period starting from market open on the day before the RTO announcement to market close the day immediately following the announcement. Similarly, the 2-day event window measures abnormal returns cumulated over a five-day period starting from market open two days before the RTO announcement to market close the second day immediately following the announcement. For the purpose of the stock return analysis, we restrict our focus to firms that announced their policies during or after the third quarter of 2021.

To proxy for whether the RTO policy surprised the market, we first redefine our RTO policy variable using four of our five categories in a way that is identical to how it is defined in Table 9. Specifically, we redefine the RTO variable from most to least stringent: RTO=4 if In-person, RTO=3 if Hybrid, RTO=2 if Flexible, and RTO=1 if Remote. We then sort firms within 1-digit NAICS industries and compute the rolling

average policy stringency score within industry. We restrict the sample to those with at least 5 announcing firms within the industry to ensure a sufficient number observations within each industry. We then compute, for each firm i, the difference between i's stringency score and the average industry stringency score for i's industry up to the time when i announces. This difference, which we call i's deviation score, is positive when i's policy is more stringent than its industry peers who have already announced. For example, consider a firm i, which is the sixth firm in its NAICS industry group j to announce an RTO policy and selects a fully In-person arrangement. Suppose that among the five other firms in industry j, three announced a Hybrid policy and two announced a fully Remote RTO. Then, we calculate the degree of deviation for firm i as

$$deviationscore_i = 4 - \frac{3+3+3+1+1}{5} = 2.2. \tag{6}$$

To study the market's reaction to the relative stringency of the RTO policies chosen by firms, we estimate

$$Y_{i,[-t,t]} = \beta_1 \times deviation_i + \epsilon_{i,t} \tag{7}$$

where $Y_{i,[-t,t]}$ is either $LogRet\_CAPM$ or $LogRet\_Rm$ depending on the specification.

Our key independent variable of interest, $deviation_i$, is an indicator that can take one of two forms. 1) *Large positive deviation*, which is an indicator variable equal to one when *deviationscore* is greater than 1, and 0 otherwise, and 2) *Large negative deviation*, which is equal to one when *deviationscore* less than -1, and 0 otherwise.

Table 11 reports the results using each firm's initial policy announcement. We control for firm size using log of total assets in all specifications and exclude the first three announcers in each industry because our deviation measures are based on prior

announcements. In Panel A we measure abnormal returns using the CAPM model, and in Panel B returns are measured using the market model. In columns 1 and 2 we use the announcement day only, in columns 3 and 4 we use a 1-day window surrounding the announcement, and in columns 5 and 6 we use a 2-day window surrounding the announcement. Regardless of the window we use or how returns are measured, we find no consistent evidence of significant announcement returns for more v.s. less stringent policies. This may indicate that firms, on average, are choosing RTO policies that are consistent with the market's prior expectations, or that the market does not know more than the firm about its optimal RTO policy.

Table 11: Market Reaction to Initial Policy Announcement

	(1)	(2)	(3)	(4)	(5)	(6)
	Announcement day		3-day window		5-day window	
	Panel A: $LogRet\_CAPM$					
Large positive deviation	0.0018		-0.0033		0.00063	
	(0.0039)		(0.0077)		(0.0088)	
Large negative deviation		0.0026		0.012		0.017*
		(0.0042)		(0.0074)		(0.0091)
Log firm size	0.00031	0.00070	-0.0081	-0.0071	0.0071	0.0088
	(0.0056)	(0.0055)	(0.0100)	(0.0100)	(0.012)	(0.012)
Observations	578	578	578	578	578	578
R^2	0.000	0.001	0.002	0.007	0.001	0.008
	Panel B: $LogRet\_Rm$					
Large positive deviation	0.0020		0.00093		0.0033	
	(0.0041)		(0.0081)		(0.0093)	
Large negative deviation		0.0031		0.011		0.015
		(0.0042)		(0.0075)		(0.0091)
Log firm size	-0.00014	0.00032	-0.011	-0.0094	0.0036	0.0053
	(0.0055)	(0.0054)	(0.010)	(0.010)	(0.012)	(0.012)
Observations	578	578	578	578	578	578
R^2	0.000	0.001	0.003	0.007	0.000	0.005

Notes: 1) This table reports results of linear regressions of abnormal stock returns (in Panel A CAPM-adjusted returns $LogRet\_CAPM$ and in Panel B market model returns $LogRet\_Rm$) on announcement deviation measures. We only include industries with at least five announcing firms and exclude the first three announcing firms in each 1-digit NAICS industry. 2) Data is from Factiva, CRSP, Kenneth French's data library, and Compustat. 3) All variables defined in Table A.1. 4) t-statistics are calculated based on robust standard errors and are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

In addition to examining reactions to the initial announcement, we also analyze returns to the second round announcement as well as the final round announcement. As with the initial announcement, we find no significant stock market reactions to either of these subsequent announcement rounds.[13]

5.1.2 Intraday returns

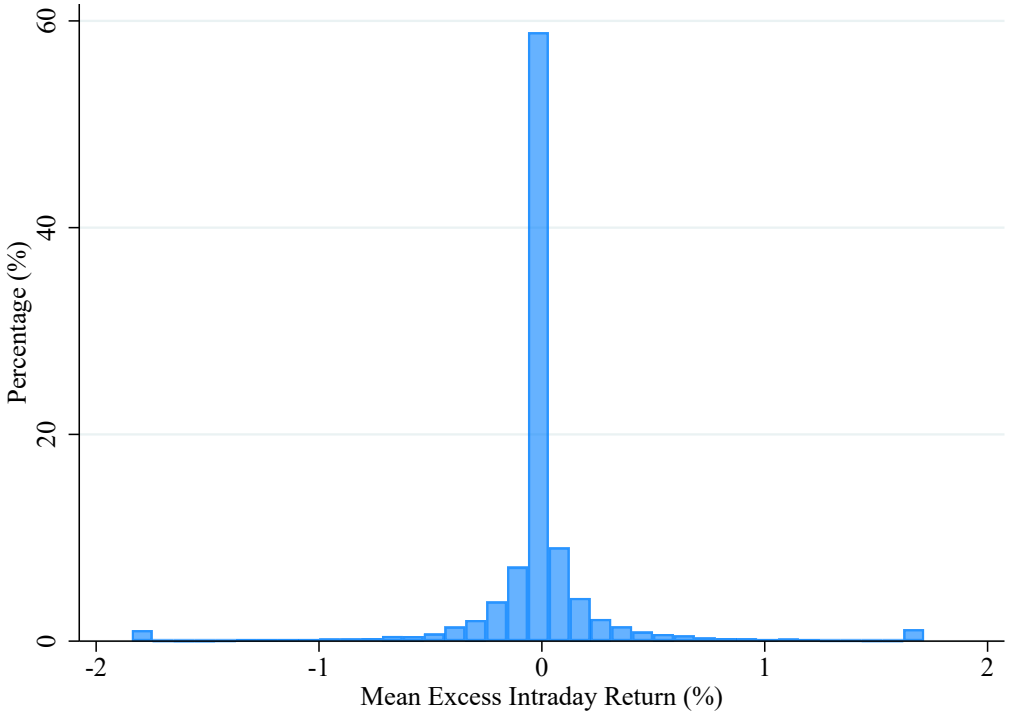
We next analyze intraday returns. Focusing on the 1-hour window around each announcement (1 hour before and 1 hour after), we calculate minute-level excess returns by subtracting the SPY (SPDR S&P 500 ETF) return from each stock's return, i.e.,

$$\text{Excess Return}_{i,t} = \text{Return}_{i,t} - \text{SPY Return}_{t}, \tag{8}$$

where $\text{Return}_{i,t}$ represents the 1-minute return for stock i at minute t, and SPY Return_{t} is the corresponding return on SPY. Using SPY as a benchmark allows us to account for overall market movements, isolating stock-specific reactions.

[13]The results are available from the authors on request.

Figure 13: Distribution of Excess Intraday Returns



Notes: 1) This histogram shows the distribution of minute-level excess intraday returns (stock return minus SPY return) across all firms and time points within the 1-hour event window surrounding RTO announcements. 2) Data is from NYSE Trade and Quote (TAQ) database.

Figure 13 presents a histogram of mean excess intraday returns (calculated using equation 8) over the 1-hour window surrounding RTO announcements, showing the percentage distribution across all announcements and stocks. The distribution is highly concentrated around zero, indicating that most stocks did not experience significant excess returns around announcements. This is consistent with the results of the daily returns analysis in Table 11 and suggests that firms' RTO policies were largely in line with market expectations, or that the market does not know more than the firm about its optimal RTO policy.

5.2 Trading Volume

Using the measure of Barber and Odean (2008) to define abnormal stock trading volume, we estimate a regression of the form of equation 7 in which abnormal trading volume on the announcement day is the dependent variable. The results are reported in Table 12. As with stock returns, there is no significant abnormal trading volume related to RTO policy choice.

Table 12: Abnormal Trading Volume on Announcement Day

	(1)	(2)
Large positive deviation	0.017	
	(0.20)	
Large negative deviation		0.17
		(0.32)
Log firm size	-0.23	-0.21
	(0.21)	(0.19)
Observations	578	578
R^2	0.002	0.004

Notes: 1) This table reports results of linear regressions of abnormal trading volume on announcement day on announcement deviation measures. We only include industries with at least five announcing firms and we exclude the first three announcing firms in each 1-digit NAICS industry. Abnormal volume is defined based on Barber and Odean (2008). 2) Data is from Factiva, CRSP, Kenneth French's data library, and Compustat. 3) All variables defined in Table A.1. 4) t-statistics are calculated based on robust standard errors and are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

5.3 Office Leases

Section 4 shows that office rent plays an important role in determining the stringency of a firm's RTO policy. To investigate whether firms that allow relatively more remote work reduce office space, we collect data from Compstak on office leases signed in the headquarters location for the Factiva announcers in our sample. In particular we collect the rent per square foot, the lease term, and the number of square feet for leases signed between January 1, 2015, (after which Compstak data is relatively comprehen-

sive) and June 1, 2023 (the end of our announcement sample period). Compstak identifies whether the transaction is a new lease signing, an expansion or extension of an existing lease, or a renewal of an existing lease. To capture variation in new lease activity, we limit our sample of leases to new lease signings and expansions/extensions of existing leases.

Compstak reports lease activity when it occurs, so to capture changes in lease characteristics that result from the choice of RTO policy, we take yearly averages of the number of square feet, the lease term in years, and the rent per square foot for all leases signed during the year. We also sum the number of leases signed during the year to measure the total number of new signings and renewals. [14] We then define a variable called *RTWPolicy3* that is equal to 3 if the firm's policy is In-person, 2 if the policy is Hybrid, Flexible, or Mixed, and 1 if the policy is Remote. We also define an indicator variable equal to 1 for leases signed on or after January, 1, 2020, and 0 otherwise. This variable captures the pre- and post-COVID time periods and lines up with when our sample period begins. We begin in January, rather than March, because our dependent variables are averages or sums over the entire year. We then estimate

$$Y_{i,c,j,t} = \beta_1 Inperson_i + \beta_2 Hy/Flex/Mix_i + \beta_3 Inperson \times Post + \beta_4 Hy/Flex/Mix \times Post + \beta_5 Post + \beta_x X_{i,t} + \epsilon_{i,t} \quad (9)$$

where $Y_{i,c,j,t}$ is either the log of the number of square feet, the log of the lease term in years, the log of the rent per square foot, or the number of leases in year t for firm i, where c is the headquarter city and j is the industry. Controls in $X_{i,t}$ include one-year lags of firm size, firm age, CEO age, and an indicator for whether the CEO is female, as well as 1-digit NAICS fixed effects and year fixed effects. We exclude the Remote

[14] The average firm in our sample signs more than 2 new leases or lease expansions/extensions in its headquarter city per year, and the 90th percentile firm signs 5.

category such that the coefficients of interest, β_3 and β_4, capture the difference in average annual lease characteristics for In-person and Hybrid/Flexible/Mixed firms, respectively, relative to Remote firms from pre- to post-COVID time periods.

Table 13 reports the results of estimating equation 9 using the initial policy announcement. We do not observe a significant change in lease characteristics from pre- to post-COVID time periods conditional on initial RTO policy choice.[15]

[15]We repeated our analysis using the final round announcements and still found no significant relation between the interaction terms of interest and lease characteristics. The results of this analysis are available from the authors on request.

Table 13: Office Leasing

	(1)	(2)	(3)	(4)
	Log(Sq Ft)	Log(Term)	Log(Rent/Sq Ft)	N leases
Hy/Flex/Mix x Post	-0.20	-0.34*	-0.061	-0.28
	(0.49)	(0.18)	(0.14)	(0.23)
In-person x Post	-0.35	-0.42*	-0.21	-0.16
	(0.56)	(0.23)	(0.17)	(0.46)
Hy/Flex/Mix	-0.018	0.072	-0.10	0.50***
	(0.19)	(0.097)	(0.080)	(0.13)
In-person	0.37	0.12	-0.075	0.21
	(0.26)	(0.14)	(0.11)	(0.33)
Post	-0.75	0.45	0.15	-0.87**
	(0.61)	(0.40)	(0.16)	(0.41)
Firm+CEO controls	✓	✓	✓	✓
Industry FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Observations	364	364	363	364
R^2	0.096	0.094	0.179	
Pseudo-R^2				0.23

Notes: 1) This table reports results of regressions of lease characteristics on an ordered variable for whether the firm announced In-Person, Hybrid/Flexible/Mixed, or Remote, an indicator for Post-2020, and their interactions. The excluded category is Remote. The dependent variable in column 4 is the average number of leases in a year. Columns 1 through 3 use a linear regression and column 4 uses a Poisson regression. Firm and CEO controls (firm size, firm age, CEO age, and an indicator for whether the CEO is female) are lagged one year. 2) Data is from Factiva, Compustat, BoardEx, and Compstak. 3) All variables defined in Table A.1. 4) t-statistics are calculated based on robust standard errors and are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

6 Conclusion

We analyze the RTO policies of Russell 3000 firms by hand-collecting a dataset from their announcements. We categorize RTO strategies into five groups ranging from fully In-person to entirely Remote. Most firms choose a hybrid model that blends remote and in-office work. There is significant industry and geographic variation, as well as variation across firm characteristics. Consistent with a simple tradeoff model, we show that office rents, firm size, and CEO characteristics determine the level of in-person work that firms require. Finally, we find no evidence of significant announcement returns for more vs. less stringent policies suggesting that the policies announced by firms are consistent with market expectations about optimal RTO policy.

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A Appendix

A.1 Variable Definitions

Table A.1: Variable definitions

Variable	Definition
Firm size	Firm total assets in billions of dollars
Firm age	Firm age in years as of the end of 2019
WFH share	Pre-pandemic estimate of telecommutable share at the 2-digit NAICS level from Dingel and Neiman (2020), weighted by wages
Commute time	Average one-way commute time in minutes in the headquarter location
City size	The total population of firms' headquarter MSAs, calculated as the sum of household weights in 2019 5-year ACS
Office rent	Average of the 2019 median monthly net effective rent per square foot in headquarter MSA in dollars
Residential price	Average of the 2019 median monthly list price per square foot in headquarter MSA in dollars
CEO age	CEO age in years as of the end of 2019
Female CEO	Indicator equal to 1 if the CEO is female
Large positive deviation	Indicator equal to 1 for firms that announce RTO policies which are more stringent than the average policy adopted by industry peers by at least one category, and 0 otherwise
Large negative deviation	Indicator equal to 1 for firms that announce RTO policies that are less stringent than the average policy adopted by industry peers by at least one category, and 0 otherwise
Emp-weighted office rent	Employee location-weighted average of the 2019 median monthly net effective rent per square foot across all MSAs where a firm has an office
Emp-weighted residential price	Employee location-weighted average of the 2019 median monthly list price per square foot in dollars across all MSAs where a firm has an office
Emp-weighted commute time	Employee location-weighted average one-way commute time in minutes across all MSAs where a firm has an office
Emp-weighted city size	The total population across all MSAs where a firm has an office, weighted by the number of employees at each location

Variable	**Definition**
Late announcer	Indicator equal to 1 for firms that announced RTO policies during or after the third quarter of 2021, 0 for firms that made announcements before 2021Q3
$LogRet\_CAPM$	Cumulative log abnormal return (based on CAPM model) of stock i over a 0, 1, or 2-day window surrounding the RTO announcement
$LogRet\_Rm$	Cumulative log excess return (over the market) of stock i over a 0, 1, or 2-day window surrounding the RTO announcement
Log firm size	Natural log of firm size

A.2 Examples of classifications

A.2.1 Announcement categories

As an example of a firm that announces an In-person policy, take Ally Financial, which announced on September 3, 2022, the following:

> *Ally Financial encouraged employees to return to its offices in recent months.* Like many companies, it found that some employees stayed home anyway, said Kathie Patterson, the financial-services company's HR chief. Ally has hired close to 2,000 people during the pandemic, Ms. Patterson said, and new employees need to learn alongside company veterans. *The company sent a message to staff in recent weeks to remind employees that office attendance is expected, and leaders are telling staff to reiterate that point.* "There is a real strong push now, after Labor Day, for all employees to come back into the workplace," she said. "We want a more consistent schedule." For those workers who have spent little to no time in the office, managers are reaching out to have individual conversations, Ms. Patterson said, and may give staffers a deadline to make personal arrangements to return. Further action could take place in the year ahead. "We're prepared to have a very clear conversation that this position is in-office," she said. *"If they're not in the office, it could be seen as a form of insubordination*, but we have not gotten to that point yet."

As an example of a firm that announces a Hybrid policy, take Wells Fargo, which announced on July 16, 2021, the following:

> Wells Fargo has laid out a return-to-work strategy that includes a first wave of remote employees coming into the office after Labor Day and oth-

> ers heading back sometime in October...In the banking industry, where most non-branch employees shifted to remote work in March 2020, return-to-work strategies are creating a divide, as some companies demand that their employees come back on a full-time basis while others take a less strict approach. Now, Wells Fargo's back-to-office plans will be organized by job function and location, and flexibility will vary, the company said. But the details on such flexibility are still fuzzy. *Technology, corporate and back-office employees of the $1.9 trillion-asset bank will return in October, according to the memo. They will be offered at least some degree of flexibility in terms of how many days they spend in the office and how many days they work from home. For technology teams, Wells "will allow more flexibility to work remotely," while corporate and back-office staffers may have the option of splitting their weeks between office and home, spending at least three days a week in the office, the company said. What flexibility looks like for call center teams is not yet clear. Wells said management is trying to figure out "how to best offer flexibility for contact center and operations roles going forward" and that the ability to work remotely will depend on factors such as the type of job and individual employees' experience.*

As the article indicates, most workers will split time between in-person and remote work.

As an example of a firm that announces a Flexible policy, take Charles Schwab Corp, which announced on August 19, 2021, the following:

> The firm also announced additional steps it is taking to address pandemic concerns and provide workplace flexibility for its employees going forward. In light of current circumstances, the firm has delayed a full Return to Office until January 2022, at the earliest. In the meantime, employees can

> continue to work from home, or return to the office on a voluntary basis. Once back in the office, Schwab employees will enjoy additional workplace flexibility, based on a hybrid work schedule. *Employees will also have the ability to work with their manager to determine an approach that works for their individual situation, should they need additional flexibility.*

The key distinguishing factor between Charles Schwab and Wells Fargo is that Schwab will give employees the ability work with their manager to determine the appropriate RTO policy, which implies that the RTO arrangement is not a blanket, company-wide policy. In contrast, Wells Fargo's announcement implies that all employees across the company will work in-person part of the time and remote part of the time, which implies a firm-wide Hybrid policy. This example illustrates the key difference between a Flexible and Hybrid policy. A Hybrid policy applies at the firm-wide level and the choice of RTO policy is not at the discretion of lower-level managers or supervisors. In contrast, under a Flexible policy, the choice of policy *is* at the discretion of team or group managers.

As an example of a firm that announces a Remote policy, take Brighthouse Financial, which announced on January 10, 2022, the following:

Throughout the COVID-19 pandemic, the health and safety of our employees and their families has been a top priority. At the end of 2021, all Brighthouse Financial offices remained closed as we closely monitored the current environment. *This spring, we plan to begin transitioning to a flexible, hybrid work model that allows our employees to choose whether they want to work fully remotely or use our offices.* While we hope that the worst of the pandemic is behind all of us, other headwinds, including geopolitical and macroeconomic ones, have emerged more recently. In this challenging environment, Brighthouse Financial remains dedicated to our mission to help people achieve financial security. Uncertain times further underscore the impor-

tance of protecting individuals' and families' financial futures, and we at Brighthouse Financial are proud to be one of the largest providers of annuities and life insurance in the U.S. 1 It is that sense of pride and purpose that drives us every day to deliver on our mission while living our company's core values of collaboration, adaptability and passion.

Although the text of the announcement mentions a "flexible, hybrid model," because employees are allowed to "choose whether they want to work fully remotely or use our offices," all employees can work fully remotely if they choose. Therefore, this qualifies as a Remote policy.

Finally, as an example of a firm that announces a Mixed policy, take KeyCorp, which announced on July 20, 2021, the following:

> At Key, the resurgence of the coronavirus hasn't impacted our back-to-the-office strategies, but it could if it continues. *By the end of September, we expect to have our whole team back in the office. We have 17,000 teammates nationwide. Half will work four to five days in the office. Another 30% will work three days in the office on a "reservations" basis, and 20% will work remotely from home.* In the Cleveland market, that means about 1,000 of our associates in our downtown Cleveland headquarters and other Northeast Ohio offices will continue to work remotely.

This example illustrates the key distinguishing factor between Mixed and Hybrid or Flexible: that different policies apply to different groups of employees. Unlike Flexible, a Mixed policy is determined at the company level and the policy decision is not made by lower-level managers or team supervisors. However, a Mixed policy does not imply that all employees work part-time in office and part-time remotely. Rather, it implies that certain types of employee will be subject to certain RTO policies, whereas

other types of employees are subject to different policies.

A.2.2 Non-announcer

As an example of a non-announcer, take the firm ResMed Inc, which manufactures medical devices. On August 12, 2022, the following article about ResMed was published:

> As the COVID-19 pandemic spread, we implemented and maintained significant changes that we determined were in the best interest of our employees. These included work from home flexibility, adjusted attendance policies and additional safety measures for our on-site workforce. We have since re-opened our offices, consistent with local public health guidance and protocols, and continue to support flexible working globally.

Although this article contains the phrases "flexible working" and "flexibility," it is not classified as Flexible because it does not specify that employees and managers have discretion to negotiate individual RTO policies. Additionally, it does not indicate any type of firm-wide or Mixed policy. Therefore, we classify it as a non-announcement.

A.2.3 Multiple announcements

As an example of a multiple announcer, take the firm Hewlett-Packard Company. The first announcement we observe is on August 26, 2021, in which they announce a Hybrid policy:

> Let me now turn to our transformation efforts and our cost savings initiatives. In the second year of our program, we continue to look at new cost savings opportunities and remain ahead of our $1.2 billion gross run

> rate structural cost reduction plan. Our hybrid work strategy is one example. It has enabled us to accelerate our location strategy while providing a more flexible workspace. Going forward, we are enabling HP's hybrid work strategy by monetizing our sites to be critical hubs for collaboration and innovation. This will also deliver savings in our real estate portfolio.

HP then made a subsequent announcement on December 9, 2021, which was consistent with the Hybrid policy announced initially.

> We are embracing hybrid ways of working across HP and introduced new flexible working guidelines in July 2021. Hybrid Work at HP balances more workplace flexibility with structured time together to collaborate and connect in person at our HP sites. Our goal is to provide the ability to work seamlessly across a diverse ecosystem of workplaces, enabled by enhanced tools and technology designed to optimize productivity and collaboration.

A.3 Robustness: Final Announcements

Table A.2 reproduces the results of Table 6 using the final announcement made by each firm during the sample period.

Table A.2: RTO Policy Choice: Determinants of Final Announcement

	(1)	(2)	(3)	(4)	(5)
WFH share	-0.25	-0.23		-0.23	
	(0.20)	(0.21)		(0.22)	
Office rent	-0.026**	-0.024**	-0.023**	-0.030***	-0.027**
	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)
Residential price	0.00067	0.00069	0.00063	0.00098	0.00092
	(0.00068)	(0.00069)	(0.00070)	(0.00073)	(0.00075)
Commute time	0.019	0.021	0.022	0.034	0.034
	(0.027)	(0.027)	(0.027)	(0.028)	(0.028)
City size	0.051	0.040	0.037	0.029	0.022
	(0.034)	(0.035)	(0.035)	(0.036)	(0.037)
Firm size		0.00032*	0.00034*	0.00044*	0.00046**
		(0.00019)	(0.00019)	(0.00023)	(0.00023)
Firm age		0.0040	0.0032	0.0019	0.00085
		(0.0025)	(0.0026)	(0.0026)	(0.0026)
CEO age				0.016**	0.018**
				(0.0078)	(0.0081)
Female CEO				-0.39***	-0.41***
				(0.15)	(0.15)
Industry FE			✓		✓
Observations	716	716	716	661	661
Pseudo R2	0.019	0.024	0.032	0.038	0.051

Notes: 1) Results of estimating ordered probit regressions of announcement likelihood on controls. The dependent variable takes a value of 3 for In-person, a value of 2 for Hybrid or Flexible or Mixed, and a value of 1 for Remote. Sample consists of Russell 3000 firms that announce a RTO policy from March 1, 2020, to June 1, 2023. We only include the final announcement. 2) Data is from Factiva, Compustat, Dingel and Neiman (2020), Census ACS of 2019, Compstak, Realtor.com, and BoardEx. All variables are measured as of the end of 2019. 3) All variables defined in Table A.1. 4) t-statistics are calculated based on robust standard errors and are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.