Corporate Flexibility in a Time of Crisis

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Abstract

We use a timely survey of US CFOs to explore the impact of three dimensions of corporate flexibility during the COVID-19 crisis. We find that *workplace flexibility*, namely the ability for employees to work remotely, plays a central role in firms' employment planning during the health crisis. In addition, *investment flexibility* allows firms to align capital spending plans with the extent to which they can operate during the crisis. Finally, *financial flexibility* contributes to stronger employment and investment plans for 2020. These corporate flexibility margins perform independent functions, yet complement each other. In contrast to the role played by workplace flexibility during the 2020 health crisis, we find no such effect during the 2008 financial crisis. Our results have a wide range of implications for the ongoing transformation of the workplace.

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1. Introduction

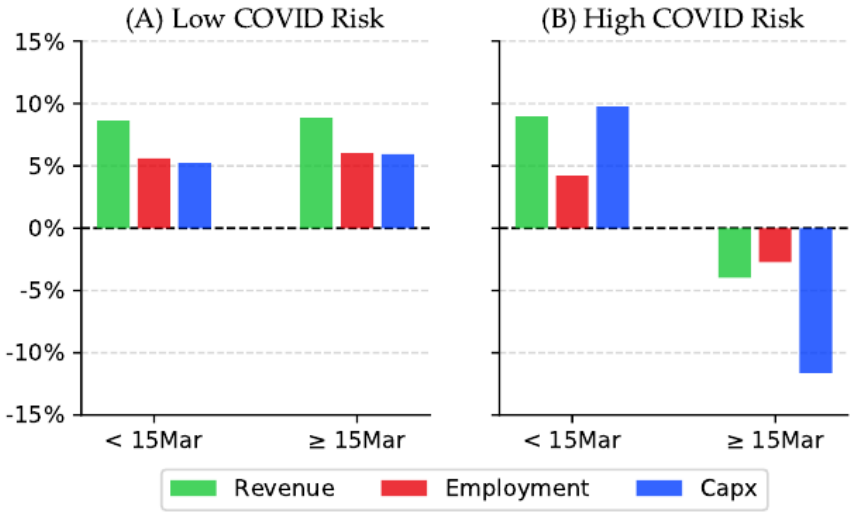
In a rapidly changing world, firms need to adapt constantly. The year 2020 brought unprecedented upheaval and challenges to the corporate sector stemming from the COVID-19 pandemic and its impact on human interactions. This unanticipated, global shock created a unique environment within which to study the ability of firms to adapt in times of crisis.

We use data from surveys of CFOs to study the role of corporate flexibility — the ability of firms to adjust and adapt — in the COVID-19 crisis. This analysis provides unique insights into how firms set plans and policies on various important fronts to deal with crises. We look at three dimensions of corporate flexibility: 1) financial flexibility, which represents the standard observation that financial resources are important for supporting adjustments in production activities; 2) workplace flexibility, which represents firms' ability to assign employees to work remotely; and 3) investment flexibility, which represents whether firms can modify the speed and magnitude of capital investment in response to changing conditions. We show how each of these dimensions plays an important role in shaping corporate planning. In the 2020 health crisis, we find that workplace flexibility plays a distinct role, which may lead to transformations of both the organizational structure of the workplace and the nature of investment.

Starting on February 11, 2020, we surveyed CFOs across the US asking them about the impact of COVD-19 on their revenues and financial well-being, and on their plans for hiring and investing. The survey continued until early April and contains a continuous set of managerial responses to the changing threat posed by COVID-19. CFOs in our sample represent small, medium, and large firms, public and private; they cover all sectors of the economy and all 50 states. Their responses allow us to gauge how various margins of corporate activity responded in real time to the 2020 virus outbreak.

Figure 1. Revenue, Employment, and Investment Plans by COVID Risk and Time

This figure displays average 12-month ahead growth rate forecasts of revenue, employment and capital spending. Panel A displays firms with low or no self-assessed COVID risk. The left three bars display forecasts from CFOs that responded to the survey before March 15, the right three for those that responded on or after March 15. Panel B displays forecasts for firms with medium or high COVID risk. Variables are defined in the Data Appendix.



On March 13, the COVID-19 outbreak was declared a "national emergency." Soon after, state and local authorities started restricting public mobility and regulating working environments.[1] Mid-March also marks a turning point for CFOs' assessments of the impact of COVID. When asked about the risk that COVID-19 posed on their firms' financial prospects (i.e., self-assessed COVID risk exposure), overall about half of the CFOs in our sample assessed that their firms have low risk exposure and the other half reported high risk exposure. Panel A of Figure 1 shows that firms in the "low COVID risk" group maintained similar expectations regarding future revenue, employment, or investment spending even after COVID-19 was declared a national emergency. The patterns are drastically different, however, for "high COVID risk" firms, as depicted in Panel B. Prior to March 15, high COVID risk firms' revenue, employment, and investment forecasts were on average indistinguishable from low COVID risk firms' forecasts. After

[1] Directives included limitations placed on the number of people allowed in buildings and facilities, caps on the number of hours of operation, all the way to mandatory lockdowns.

March 15, in sharp contrast, among high COVID risk firms the average forecasts of revenue, employment, and investment growth for 2020 all became markedly negative.

The patterns in Figure 1 motivate a series of questions that we address in this paper. First, what financial and operating characteristics expose a firm to the risks posed by a global health crisis? Second, what drives firms' planning for real decisions on employment and investment? Can crises-driven problems be attenuated through financial flexibility? Can these problems be mitigated via innovation in production logistics and workplace flexibility? How are these responses affected by a firm's flexibility in implementing investment plans? COVID-19 may not be the last health crisis that will hit the world economy going forward, and it may change the way firms operate even after the pandemic subsides. The answers to these questions may thus inform us about best corporate practices and policy responses in the long run.

Our empirical strategy is straightforward. We gauge a number of relevant dimensions of corporate flexibility as follows. For financial flexibility, we directly measure the CFO's own (survey-based) assessment, which encompasses the ability to access both internal funds and external financing. For workplace flexibility, we identify the extent to which firms have the ability to assign their employees into remote-work mode (cf. Papanikolaou and Schmidt (2020) and Dingel and Neiman (2020)). For investment flexibility, we obtain information from CFOs about their firm's ability to delay or scale back capital investment. We also account for a number of other relevant factors, including product demand (based on IBES forecasts), the intensity of contact between employees and consumers (cf. Leibovici et al. (2020)), as well as time fixed effects (calendar week) and geographic location fixed effects (headquarter state).

We first look at the determinants of CFOs' self-assessed COVID risk exposure. We find that financial flexibility is largely unrelated to that assessment. On the other hand, higher

workplace flexibility is associated with significantly lower COVID risk exposure. Higher investment flexibility is also associated with a somewhat lower COVID risk assessment. In addition, firms in more contact intensive industries and those facing lower expected demand perceive higher COVID risk exposure. The risks posed by COVID-19 affect not just customer demand, but also the ability of employees to perform key activities. In this vein, our findings make it clear that corporate managers view firms' exposure to the COVID-19 pandemic as a multi-dimensional issue.

Our main analyses focus on the determinants of corporate employment and investment planning during the current health crisis. Not surprisingly, we find that financial flexibility is an important driver of corporate planning: firms with high financial flexibility expect 7 to 9 percentage point higher employment and investment spending growth in 2020 relative to firms with low financial flexibility. This evidence is consistent with what has been reported in a number of recent papers on the COVID-19 crisis (see, e.g., Ramelli and Wagner (2020), Fahlenbrach et al. (2020) and Acharya and Steffen (2020)). Our study shows that a focus on financial flexibility alone may be incomplete, nonetheless. In particular, we find that workplace flexibility is a key determinant of planned employment growth. Interestingly, high workplace flexibility is not associated with high planned physical investment growth, which may reflect the fact that working remotely could make traditional capital investment (e.g., offices) less relevant. Finally, we find that firms use investment flexibility in an interesting way during this crisis. Companies with a flexible workplace expect to operate relatively smoothly and exploit higher investment flexibility to *increase* spending. In contrast, companies with low workplace flexibility face generally unfavorable conditions, and use higher investment flexibility to *reduce* (or possibly postpone) investment spending.

We perform further analyses to characterize the extent to which the above results are reflective of the modern American workplace and the unique challenges of the COVID-

19 health crisis. To accomplish this, we compare our findings during the COVID-19 health crisis to the economic forces at play during the Financial Crisis of 2008, which was previously studied using Duke CFO survey data by Campello et al. (2010). We find that financial flexibility appears to exert a similar impact on employment and investment plans in these two episodes. Notably, however, workplace flexibility played *no role* in firms' decision-making processes during the 2008 financial crisis, while it is central in the current 2020 health crisis. In other words, COVID-19 highlights the importance of a new dimension of corporate flexibility — the ability to set up alternative (remote) work environments. Likewise, our tests do not detect that firms used investment flexibility during the 2008 crisis. As the current health crisis seems to accelerate the transformation of Corporate America's organizational footprint, the workplace and investment flexibility effects that we document in this paper are likely to continue to play an important role even after COVID-19 subsides in coming years.

Our empirical findings provide insights into a number of potential developments shaping corporate management in years to come. For example, they highlight how the ongoing changes in the corporate workplace may affect employment outcomes, the nature of investment, and the mix of labor and capital. Firms for whom remote work is possible may be more willing to hire, and they may shift away from traditional capital expenditures in structures and more towards IT and software. On the other hand, firms in industries where onsite work is required (e.g., due to the necessity to access equipment or facilities, or the need to physically deliver goods and services) may accelerate a shift towards automation, becoming less labor intensive. As a result, a reduction in aggregate capital investment may not necessarily reflect financing constraints or the weakness of aggregate demand — it can also be driven by firms shifting towards non-traditional work arrangements and changing investment strategies. Meanwhile, a reduction in employment in certain sectors may also arise from acceleration in automation, not

necessarily financing constraints or lack of demand. Finally, the way firms exploit investment flexibility may also affect our interpretation of investment dynamics — a low level of current investment may reflect a shift in the timing of investment, while a high level of current investment may in part result from rigidities in investment timing.

Another implication is that while economic policies by monetary and fiscal authorities may help firms maintain financial flexibility, they could face limitations in boosting workplace flexibility, which is often driven by production features. Workers in industries with low workplace flexibility may face fewer employment opportunities both in the near and in the long term if firms shift towards automation. In this setting, unemployment insurance and skill transitioning could be important to help workers adjust to the transformation in the nature of work.

Our paper contributes to research on how the COVID-19 crisis affects firms and the economy. A vast number of papers in the corporate finance literature have looked at the role of access to external credit or internal funds as drivers of firm outcomes in general and in a number of crises (examples include Peek and Rosengren (2000), Gan (2007), Campello et al. (2010), and Chodorow-Reich (2014)). In the context of a health crisis, our paper considers not only the financial dimension of corporate policymaking, but also an additional critical margin: workplace flexibility. We also show that firms exploit their investment flexibility in conjunction with their workplace flexibility to operate through difficult times. Our paper is unique in examining how firms operate across all such margins. In addition, while papers in the area commonly look at archival data, our work is based on managerial plans, which is more informative about corporate decision-makers' strategies in dealing with crises. In comparison, ex-post realized data on hiring and investment may confound managers' planning with other forces such as public policy and the subsequent developments of the epidemic (both of which lie outside of managers' response sets).

A growing number of studies have looked at the economic consequences of the COVID-19 pandemic, including its impact on households (Chetty et al. (2020), Bachas et al. (2020), among others) on macroeconomic dynamics (Eichenbaum et al. (2020), Guerrieri et al. (2020), among others). Closer to our analysis, a series of papers use stock returns to look at the impact of COVID-19 on firms.[2] We differ from these papers on many dimensions. In particular, while stock returns reflect investors' perceptions on firms' prospects confounded with investors' risk attitudes, we have access to data on firms' internal decision making. In related work, Hassan et al. (2020) use textual analysis of public firms' earnings announcements to determine how much firms are exposed to the COVID-19 crisis. Bartik et al. (2020a) use a survey instrument to understand the conditions of small businesses (such as closures, employee counts, and cash on hand), and Bartik et al. (2020b) survey firms to study the extent to which their employees perform remote work during COVID-19. Barrero et al. (2020) survey firms about their hiring plans and highlight the reallocation consequences of COVID-19. To the best of our knowledge, our paper is the only study using firm-level information encompassing multiple variables of interest, including revenue expectations and the planning of real business activities such as investing and hiring.[3]

Our study spotlights the multi-dimensional nature of corporate flexibility, and the way different dimensions of flexibility evolve and interact in shaping firms' real decisions. The heightened importance of workplace flexibility in light of COVID-19 may have long-term implications for firms' employment and investment decisions. Our work is novel in jointly studying a number of these implications.

[2] For instance, Alfaro et al. (2020), Ding et al. (2020), Fahlenbrach et al. (2020), Ramelli and Wagner (2020), and Papanikolaou and Schmidt (2020).

[3] Concurrent work by Cajner et al. (2020) show a decline in employment based on firm-anonymized payroll records. Campello et al. (2020) document a decline on corporate hiring based on job vacancy ads posted by firms in their websites.

2. Data and Summary Statistics

We detail our various data sources in this section and present relevant summary statistics.

2.1 CFO Survey Data

Our main data source is the Global Business Outlook survey of CFOs conducted by Duke University. The focal survey was primarily conducted in March 2020. We sent out e-mail invitations starting on February 11, 2020, before the escalation of the spread of the novel coronavirus across the US. The survey closed on April 10, 2020. We obtained survey responses from 520 CFOs.

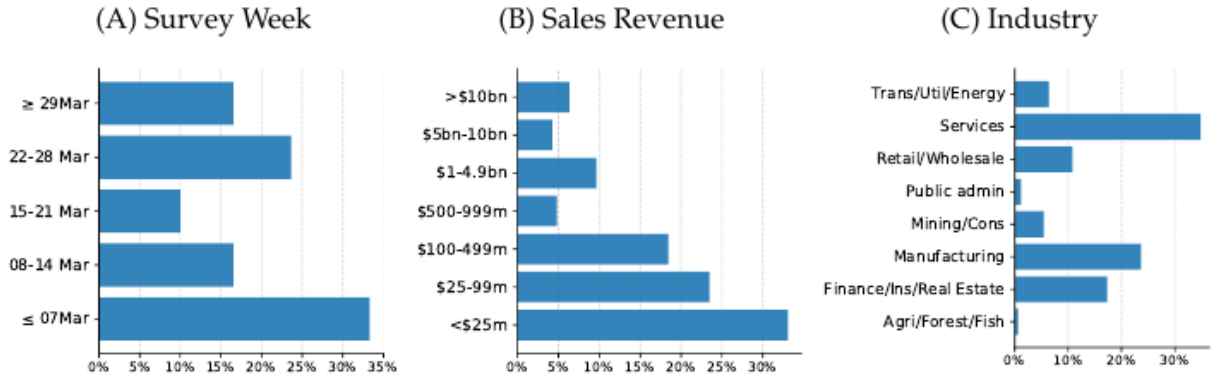
Figure 2 summarizes key characteristics of the respondent firms and demonstrates that the sample includes a wide variety of firm types. Panel A shows that about half of our responses were received before mid-March, when there were still few reported COVID-19 cases in the US. The other half of the responses were received after mid-March, following the national emergency COVID-19 declaration. Panel B shows that the sample includes both fairly large firms (revenue over $1 billion) as well as "middle market" firms (revenue between $10 million and $1 billion). Finally, Panel C shows that sample firms are spread across several industries, including both services and manufacturing.[4]

CFOs were asked about their projected growth in revenue, employment (domestic full-time employees), and investment (capital expenditures) in 2020. We also asked CFOs to assess their firms' exposure to COVID-19: "To what extent is your company's financial well-being exposed to Coronavirus-related risk? (response options: 0-No financial exposure to Coronavirus risk; 1-Small Coronavirus risk; 2-Medium Coronavirus risk; 3-Large Coronavirus risk; 4-Don't know or not applicable)."

[4] Appendix Figure A1 shows that the composition of firms is also similar among responses in different survey weeks.

Figure 2. Survey Demographics

This figure shows the composition of firms in the March 2020 survey by calendar week (Panel A), firm size (Panel B) and industry (Panel C). These industries are illustrative – the analysis of the paper uses NAICS industry classifications.



We refer to this measure as "COVID risk exposure." We create a dummy variable equal to one if the CFO selected the medium or large COVID risk, and zero otherwise.

To measure financial flexibility, we asked CFOs to assess the level of financial flexibility their firms have: "About how much financial flexibility would you say your company has right now? (0-None, 1-A little, 2-3-4-Moderate, 5-A lot)." We classify a firm as having financial flexibility if they answered 2 or greater. As we verify in Table A1 in the appendix, this measure of financial flexibility captures both the abundance of internal funds and the ability to access external financing.

To measure investment flexibility, we use information from the Duke Global Outlook survey conducted in March 2019 (pre-COVID-19 crisis). It is not an easy task to gauge the extent to which a firm's investment spending process is "flexible," but our survey instrument provides important insight into this issue. In particular, the March 2019 survey collected data on firms' flexibility in investment implementation. That survey asked: "How flexible is the speed at which you complete (your) largest capital investment project? (0-Very flexible; 1-Flexible; 2-Somewhat flexible; 3-Neutral; 4-Somewhat inflexible; 5-Inflexible; 6-Very inflexible)." We classify a March 2019 firm as having high

investment flexibility if the response is 0 or 1. We construct an industry-level measure of investment flexibility by calculating the percentage of firms with high investment flexibility at the four-digit NAICS level. This allows us to apply the 2019 measure of investment flexibility to the entire 2020 sample.[5] We verify that this attribute has an important industry component: the R^2 from four-digit NAICS fixed effects is 0.45.[6]

2.2 Other Data

We also collect data from other sources to enhance our analyses. The external datasets measure firm attributes at the industry level, and we match them with firms in our CFO survey sample based on their industries.[7]

For workplace flexibility, we collect data on employees' ability to work remotely by calculating the fraction of employees in each industry who can work from home, following Papanikolaou and Schmidt (2020) and Alon et al. (2020). This measure is available for each four-digit NAICS code. We also perform additional tests using the fraction of employees in each industry who can work from home constructed by Dingel and Neiman (2020), which is available for two-digit and three-digit NAICS codes.[8]

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[5] Using an industry measure allows us to include all March 2020 firms in this analysis. In unreported analysis, rather than using an industry measure of investment flexibility, we use firm-specific flexibility as declared on the March 2019 survey, to investigate 2020 investment plans (using a sample of firms that responded to both the 2019 and 2020 surveys). This robustness analysis confirms the results presented herein for the full March 2020 sample.

[6] Industries with the highest investment flexibility include beverage manufacturing, media, apparel stores, and banking, while industries with the lowest investment flexibility include farming, mining, transportation, health care, and wholesale.

[7] For public firms, we know their industry codes directly. For private firms, we use the company name provided by the firm to infer their industry directly using historical business data from services such as Dun & Bradstreet and Infogroup. In cases where we cannot directly infer a firm's industry, we use information from one of our survey questions that asks respondents to provide the ticker (or name) for one or two public companies that are most similar to their own firms.

[8] Both Papanikolaou and Schmidt (2020) and Alon et al. (2020) start with data at the worker level from the American Time Use Survey (ATUS) Leave and Job Flexibilities Module and classify each worker as able to work from home or not. They then construct industry-level work from home measures by calculating the percentage of work that can be done at home within each industry. Dingel and Neiman (2020) use the O*NET database to classify occupations as being able to be done at home or not. While using similar sources, these studies' approaches contain important differences. The ATUS measure captures whether workers can work from home (and if they have done so in the past). The O*NET

In addition, we collect proxies for the contact intensiveness of an industry, as constructed by Leibovici et al. (2020). This contact intensiveness measure is affected by the amount of social interactions workers have with both customers and other workers, as well as social interactions among customers. Finally, we collect weekly data on industry-level demand, proxied by the industry-level 2020 revenue growth forecast from Institutional Brokers' Estimate System (IBES) dataset.

2.3 Summary Statistics

Panel A of Table I reports basic summary statistics. We discuss projections of revenue, employment, and investment growth in more detail in Sections 3 and 4. For financial flexibility, about 20% of firms are classified as having low financial flexibility. For workplace flexibility, Table I presents statistics for both measures explained above. For the average firm, about 25% of employees in its industry can work from home (and have done so in the past) according to the ATUS data, which we use as our first measure (four-digit NAICS code level). At the same time, 45% of employees can (in principle) work from home based on the data of Dingel and Neiman (2020), our second measure (two-digit NAICS code level). For investment flexibility, on average about 25% of firms in a given industry think they can adjust the speed of investment implementation flexibly. In addition, about 15% of firms come from industries that are classified as contact intensive.

[TABLE I ABOUT HERE]

Panel B resents pairwise correlations among the main variables. A number of variables are correlated with firms' COVID-19 exposure assessment, which we discuss in more detail in Section 3. Workplace flexibility and financial flexibility are relatively distinct aspects and are not highly correlated. Workplace flexibility and investment flexibility are

survey captures the nature of work employees perform at the occupation level. The Data Appendix discusses these measures in detail.

weakly positively correlated. Workplace flexibility is somewhat correlated with contact intensiveness.

3. Understanding CFO Expectations and COVID Risk Exposures

Chief Financial Officers play an important role in forming the strategies of their firms and overseeing the detailed real and financial plans that implement those strategies. As such, CFO expectations for their companies provide valuable information to help us understand the evolution of business activity and economic performance. In this section, we explore overall CFO expectations for their firms and their assessment of COVID risk exposure.

We start with CFOs' expectations of revenue growth in 2020. The average expectation is 4.8%. Notably, these expectations changed substantially from early March through early April, as the severity of COVID-19 in the US escalated. Figure 3 shows that the average expected revenue growth is between 5% to 10% in early March and fell to approximately 0% by late March and early April.[9]

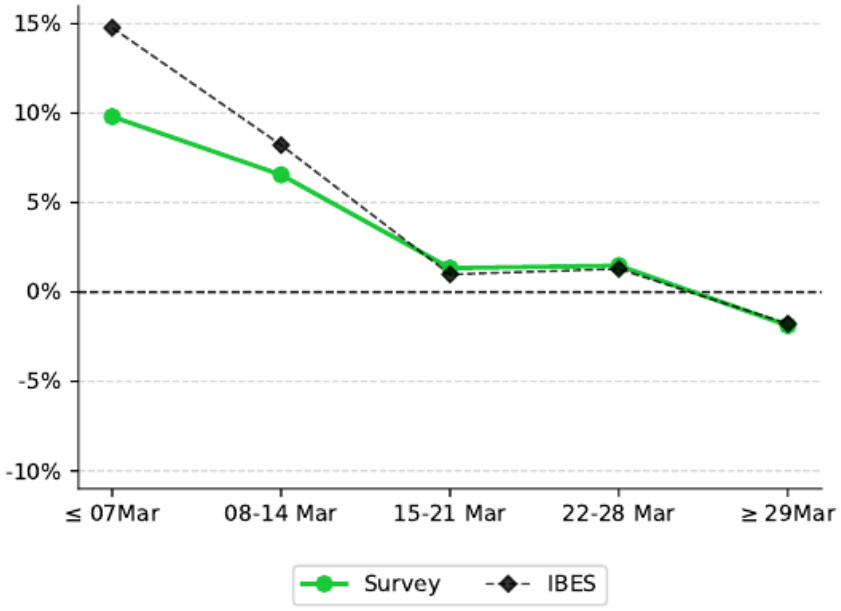
We also compare the expectations of CFOs and stock market analysts. This comparison allows us to see if stock market (analyst) expectations of economic fundamentals are consistent with the views of the CFOs in our sample. This is an interesting question since many have argued that the stock market has been over-optimistic about firms' prospects, or has been overvalued.[10]

[9] We conducted a follow-up survey in June 2020 that largely affirms these expectations. In June 2020, CFOs on average expect revenue growth to fall by 2% in 2020. In addition, in June CFOs reported that on average COVID-19 was on average responsible for about a 10-percentage point reduction in revenues.

[10] See for example Even Corporate America Thinks the Stock Market is Overvalued, U.S. Stock Market Hits Record 77% Overvalued, Stanley Druckenmiller Says the Stock Market is in an 'Absolute Raging Mania', Why the Stock Market is Divorced from the Pain of a Pandemic Economy, Carlyle's David Rubenstein: 'Still a Little Nervous' but Market Rally has 'Somewhere More to Go'.

Figure 3. CFO and IBES Forecasts of 2020 Revenue Growth

The solid line shows the average CFO forecast of revenue growth in 2020 by survey week. The dashed line shows the contemporaneous average analyst forecast of revenue growth in 2020 from IBES.



The dashed line in Figure 3 shows the average analyst forecast of revenue growth in 2020 for all firms in the IBES dataset. The result shows that the overall revenue growth expectations of CFOs and stock analysts are quite similar. This consistency also indicates that firms in our CFO survey sample are representative. Correspondingly, the seemingly high prices in the stock market do not seem to come from investors (as represented by equity analysts) being far more optimistic about economic prospects than firms. One possible "justification" for high stock prices could be that the financial impact of COVID-19 on firms' revenues is expected to be relatively transitory (see Landier and Thesmar (2020)).[11] As we discuss below, however, our work points to long-term implications of the current crisis that can affect the very organizational structure of firms. These effects may

[11] We also find evidence of a transitory expected impact of COVID-19. In our follow-on June 2020 survey, CFOs indicate that they expect 2021 revenue to grow by 7%. In their survey of small businesses, Bartik et al. (2020a) find that almost all firms expect the COVID-19 crisis to end by late 2020.

persist even after revenues recover and are arguably difficult for capital investors to gauge at the start of a health crisis.

We next explore the differential impact of COVID-19 on firms in the cross-section. As explained in Section 2, our survey asked CFOs to assess the impact of COVID-19 on their firms' well-being. Figure 4 shows the revenue growth expectations of firms with high versus low COVID risk exposure. Before mid-March, revenue growth expectations of firms in these two groups are similar. After mid-March, however, a significant gap appears between the two groups, with a difference in revenue growth expectations of about 10 to 15 percentage points. In particular, the revenue growth expectations of low-COVID-risk firms do not change much from early to late March. Firms in the high exposure group, in contrast, anticipate substantially lower revenue growth expectations starting in late March. The expected differences in growth are significant, as shown in Panel B.

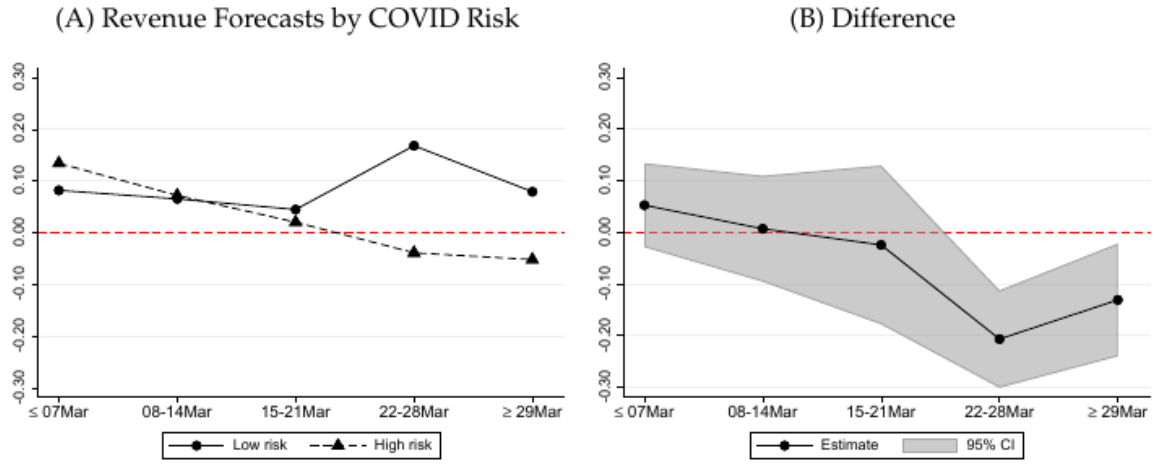
Given the large effect of COVID risk on expected revenue, we investigate the economic drivers of firms' COVID risk exposure. The results in Table II suggest that financial flexibility seems distinct from firms' COVID risk perceptions. Meanwhile, lower workplace flexibility and lower investment flexibility are associated with a higher perceived COVID risk exposure. Firms in more contact intensive industries perceive significantly higher COVID risk exposure. Firms in industries with weaker customer demand also have somewhat higher COVID risk exposure, but the result has low statistical significance in specifications like these that include time dummies (the demand proxy plunged for most industries in late March, which is picked up by the time dummies). Finally, the average level of perceived COVID-19 exposure increased after mid-March, as the virus' spread escalated in the US.

Figure 4. COVID-19 Exposure and Revenue Forecasts

This figure displays estimated CFO revenue forecasts from column (2) in Table A2. The estimation model is

$$Revenue\ Forecast_{it} = \alpha + \gamma COVID\ Risk_{it} + \sum_{t=2}^{5}(\delta_t Week_t + \beta_t Week_t \times COVID\ Risk_{it}) + \lambda \cdot X_{it} + \epsilon_{it}$$

Controls include our demand proxy and an indicator if the firm is in a contact intensive industry. In Panel A, the solid (dashed) line displays estimated revenue forecasts for low (high) COVID risk firms. Panel B displays the estimated difference between low and high firms, with 95% confidence intervals.



[TABLE II ABOUT HERE]

The results in Table II make it clear that firms' exposure to the 2020 pandemic is a multi-dimensional issue. CFOs' responses indicate that the health risks associated with COVID-19 affect not only customer demand, but also employees' ability to perform key activities. In the next section, we analyze companies' real decisions related to employment and investment in the COVID-19 crisis. We investigate in detail the role of financial flexibility, workplace flexibility, and investment flexibility in modulating these real effects.

4. Corporate Plans to Hire and Invest through a Pandemic

Investing in fixed capital and hiring employees are perhaps the most significant margins of corporate decision-making. Our main analysis in this section shows how several forms of corporate flexibility affect managers decisions related to these real policy choices during the crisis. What makes this investigation unique is our ability to observe how the evolving flexibility of the workplace environment in the US represents an important

margin of adjustment in the midst of a health crisis. Through our survey instrument, we are able to measure CFO's *plans* to invest and hire. In other words, we are uniquely able to gauge companies' *marginal decisions* on those two dimensions amid a pandemic.

4.1 Conceptual Framework: The Role of Flexibility in Managing a Crisis

As results in Section 3 point out, the challenges brought about by the COVID-19 crisis are multi-faceted. This section discusses a framework to consider how different dimensions of corporate flexibility may affect firms' real decisions.

First, standard concerns about financing constraints are likely to be relevant during the COVID-19 crisis — firms rely on financial resources to support their operations, respond to challenges in a crisis, and avoid financial distress. Indeed, these issues have been the focus of several studies (e.g., Ramelli and Wagner (2020), Fahlenbrach et al. (2020) and Acharya and Steffen (2020)). We refer to this margin as "financial flexibility." In particular, our measure summarizes firms' ability to excess *both* internal and external funding as explained in Section 2.1 (see Table A1 in the Appendix).

Second, as many corporate executives highlight, workplace flexibility — the ability for company employees to work from home — is a key feature during the COVID-19 crisis. This became critical as the effects of the virus spread, given that workplace flexibility allows for better social distancing practices, and it allows workers to continue working as they balance caring for family members or children who are precluded from attending school. It also helps employees avoid infection risks from commuting. Firms whose employees cannot easily work from home may need to adopt several new procedures and protocols to control infection risk among employees (which effectively increases the cost of production), or to limit production capacity altogether to maintain social distancing at work. Accordingly, low workplace flexibility — the inability to work from home — could negatively affect firms during the pandemic.

Third, when firms experience adverse conditions, those with investment flexibility may adjust the timing or magnitude of their investment projects — firms' real decisions can be affected by the flexibility of their corporate investment plans. The manner in which firms utilize investment flexibility, however, is conditional on the circumstances they face. Firms experiencing favorable conditions can utilize higher investment flexibility to front-load investment. On the other hand, firms experiencing unfavorable conditions or general uncertainty — phenomena brought about by the COVID-19 crisis — may utilize higher investment flexibility to delay or reduce investment. As a result, we expect investment flexibility to interact with the key factors that determine whether firms face favorable or unfavorable conditions. As we demonstrate below, in the COVID-19 crisis, workplace flexibility is an important factor for firms' operations, and the degree of workplace flexibility modulates how firms use their investment flexibility.

Finally, in addition to analyzing the corporate flexibility dimensions just discussed, we also control for consumer demand (using both the IBES demand proxy and the contact intensiveness indicator as customers' willingness to purchase goods and services can be lower if they need to do so in a contact intensive environment, such as traveling).[12]

4.2 Empirical Evidence on the Effects of Corporate Flexibility

We study the effects of financial flexibility, workplace flexibility, and investment flexibility on firms' plans for 2020 employment and investment in Table III. Panel A presents the results from our main tests using the Papanikolaou and Schmidt (2020)

[12] Since the contact intensive measure does not differentiate whether the contact is primarily among customers (e.g., airlines), between employees and customers (e.g., barber shops), or among employees (e.g., meat packing facilities), this control may also pick up some low workplace flexibility industries. However, there are many industries with low workplace flexibility that are not contact intensive (e.g., energy, trucking). As such, contact intensity and the workplace flexibility are conceptually different.

work-from-home measure at the four-digit NAICS level. Panel B does the same using the Dingel and Neiman (2020) measure.

[TABLE III ABOUT HERE]

Results in Table III show that higher financial flexibility is associated with higher projections of employment and investment growth in 2020. This is consistent with the well-established finding on the impact of financial flexibility on corporate plans (Campello et al. (2010)). All else equal, firms with low financial flexibility expect 7 to 9 percentage point lower employment and investment growth in 2020.

Critically, higher workplace flexibility is also associated with significantly higher projections of employment growth during the 2020 pandemic. This result holds for both measures of workplace flexibility. Firms in the top quartile in terms of the fraction of employees who can work from home expect 3 to 4 percentage point higher employment growth than those in the bottom quartile.[13] Interestingly, this effect is domain-specific: higher workplace flexibility does not directly translate into higher projections of investment growth. This result suggests that firms where employees can work from home may lean more heavily towards labor instead of capital and may shift away from traditional capital spending.

In other words, we might expect to see lackluster capital spending in these industries following COVD-19 if these firms shift away from the traditional way of work and associated capital expenditures. Figure 5 depicts these results in binscatter plots, displaying projected employment and investment plotted against workplace flexibility.

[13] As shown in Table I, the interquartile range of workplace flexibility is about 0.3 for the ATUS measure and 0.5 for the Dingel and Neiman measure. The regression coefficients in Table III are between 0.08 and 0.1 for both measures. The difference between firms in the top and bottom quartile of workplace flexibility is roughly between 0.3×0.1 = 0.03 and 0.5×0.08=0.04.

Figure 5. Impact of Workplace Flexibility on Employment and Investment Plans

Panel A displays a binned scatter plot of employment forecasts on workplace flexibility, corresponding to column (3) of Table III, Panel A. Panel B displays the analogous figure for capital spending forecasts, corresponding to Column (6) of Table III, Panel A.

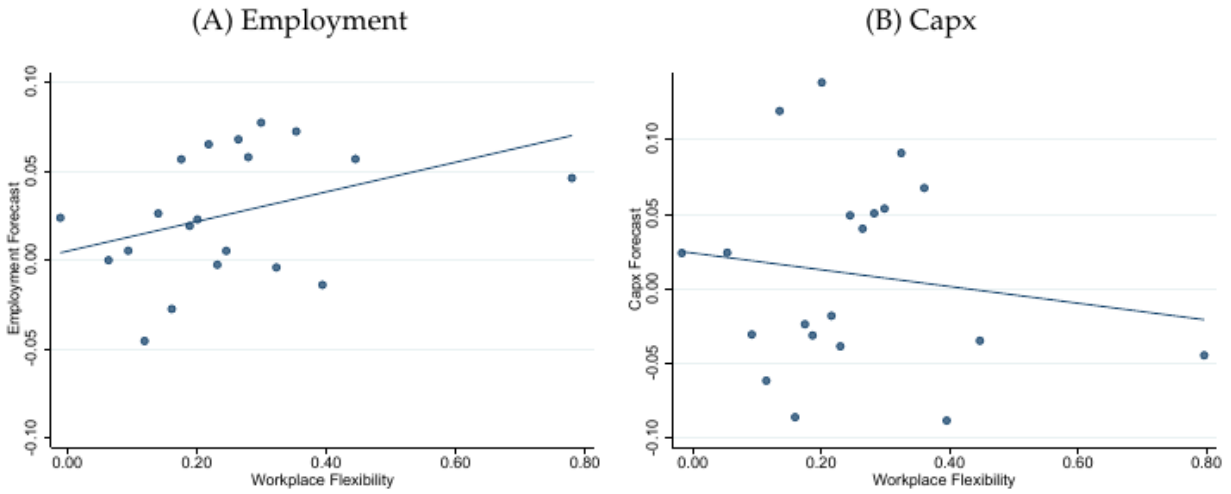


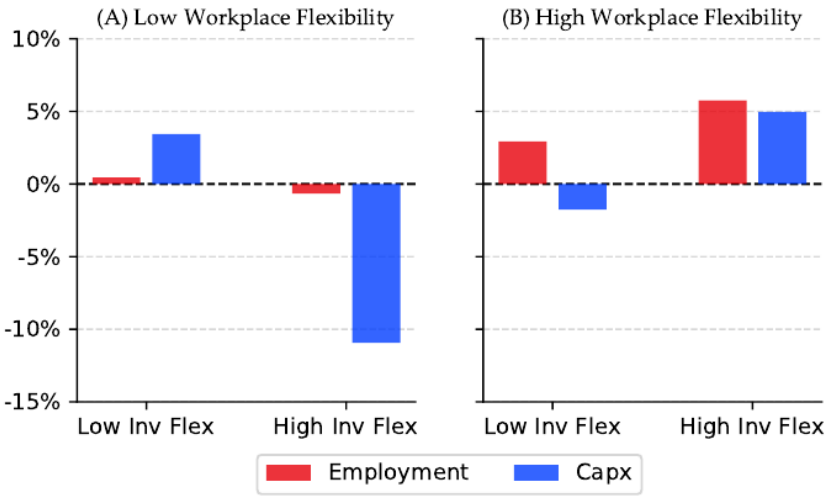
Table III also shows that investment flexibility does not have a clear unconditional impact on real decisions. As we demonstrate shortly, firms use investment flexibility differently depending on whether they face favorable or unfavorable conditions.

Finally, we find a positive impact of the industry-level demand proxy, especially for investment plans. The indicator for contact intensive industries is not significant, however. Our results are robust to the inclusion of state fixed effects and time (calendar week) fixed effects. They are also robust to the inclusion of broad industry fixed effects (two-digit NAICS), which indicate that there are key variations at the finer industry level.

We unpack the conditional nature of investment flexibility in Table IV and Figure 6. As explained in Section 4.1, we expect firms experiencing favorable versus unfavorable conditions to use their investment flexibility differently. Indeed, we find an interesting interaction between investment flexibility and workplace flexibility. When workplace flexibility is low, firms may experience challenges with their operations, so those with higher investment flexibility invest less (possibly delaying investment).

Figure 6. Impact of Investment Flexibility Conditional on Employment Flexibility

Panel A displays average employment and capital spending forecasts for firms with low workplace flexibility (less than or equal to 0.2). Within the panel, average forecasts are shown for firms with investment flexibility below 0.2 (Low Inv Flex) and above 0.2 (High Inv Flex). Panel B displays the analogous figure for firms with High Workplace Flexibility (above 0.2).



Panel A of Figure 6 shows that among low workplace flexibility firms, those with high investment flexibility on average expect investment growth to fall by approximately 10% (indicating substantial reductions or deferrals among firms that have the investment flexibility to do so), while those with low investment flexibility (cannot adjust investment easily) still expect nearly 4% investment growth in 2020. In contrast, firms with high workplace flexibility generally face good operational conditions; among these firms, those with higher investment flexibility invest more during the pandemic, as can be seen in Panel B of Figure 6. These patterns suggest that investment flexibility plays an important role in which firms reduce versus accelerate investment, and that this effect is conditional on workplace flexibility in economically sensible ways: low workplace flexibility firms appear to view the current situation as particularly unfavorable, while firms with high workplace flexibility appear to view the current situation as somewhat favorable.

Table IV more fully characterizes these patterns via regression analysis. The regression results also show that when workplace flexibility is low (close to zero), higher investment

flexibility is associated with less planned investment. On the other hand, when workplace flexibility is high (close to one), higher investment flex`ibility is associated with more planned investment. In terms of magnitude, the results in Table IV columns (4) to (6) indicate that for firms with no workplace flexibility, a one standard deviation increase in investment flexibility (about 0.3) would reduce planned 2020 investment growth by around 6 percentage points (= –0.2 × 0.3).

For firms with full workplace flexibility, on the other hand, a one standard deviation increase in investment flexibility would boost planned 2020 investment growth by around 13.5 percentage points (= 0.45 × 0.3).

[TABLE IV ABOUT HERE]

Table IV column (6) also suggests that financial flexibility has a similar interaction with investment flexibility. Firms with low financial flexibility appear to use higher investment flexibility to reduce (possibility delaying) investment. This effect is weaker for firms with high financial flexibility. Nonetheless, even for firms with high financial flexibility, column (6) shows that they still use higher investment flexibility to reduce investment on average if their workplace flexibility is low. This result indicates that having high financial flexibility does not solve all the problems in the COVID-19 crisis. For instance, having low workplace flexibility seems to be a key constraining factor.

Finally, our results imply that the interaction between investment flexibility and workplace flexibility also has some impact on planned employment growth (economically smaller and statistically less significant in this case). Although the question about investment flexibility focuses on capital expenditures, if capital and labor have some complementarity, the mechanism may also have spillover effects on employment.

Figure 7: Effect of Investment Flexibility on Capital Spending Forecasts for Different Levels of Workplace Flexibility

Estimated using column (5) of Table IV. The estimating equation is

$$Capx\ Forecast_{it} = \alpha + \beta_1 Investment\ Flex_{it} + \beta_2 Workplace\ Flex_{it} + \beta_3 (Investment\ Flex \times Workplace\ Flex) + \lambda \cdot X_{it} + \epsilon_{it}$$

Each point on the black line displays the average marginal effect of investment flexibility on capital spending forecasts, for a given value of workplace flexibility,

$$\mathbf{E}[\, Marginal\ Effect \mid Workplace\ Flex = w\,] = \beta_1 + \beta_3 \cdot w$$

The shaded area displays 95% confidence intervals. See Table AII for the estimated coefficients and standard errors.

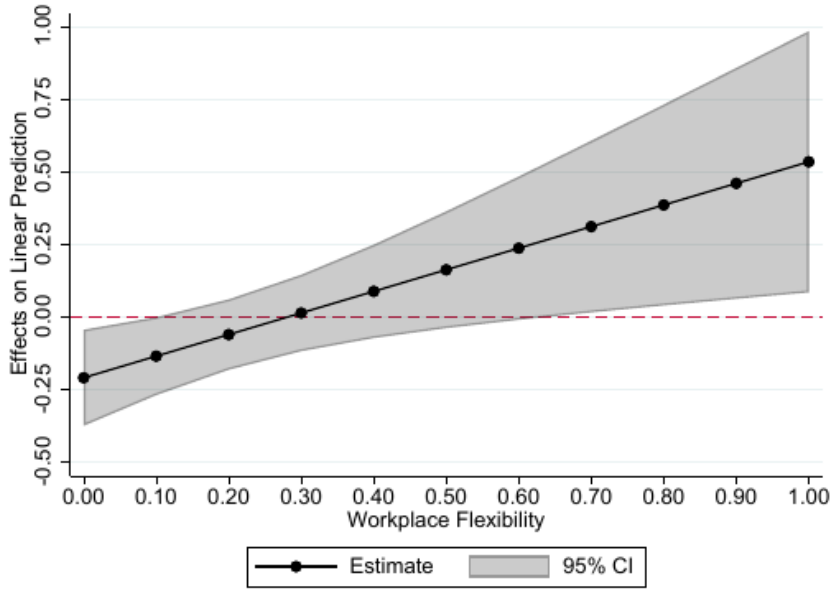


Figure 7 provides further visualization of the marginal effects of investment flexibility on planned capital spending growth, based on the results in Table IV column (5). The figure displays the response of planned capital spending growth to investment flexibility implied by the regression coefficients, for the full spectrum of workplace flexibility. As explained above, higher investment flexibility is associated with lower planned investment growth when workplace flexibility is low, but higher planned investment growth when workplace flexibility is high.

In all, our results show that in a health crisis like COVID-19, the traditional focus of financial flexibility is not the only issue that firms face. Importantly, we find evidence that workplace flexibility is a key factor in shaping firms' real decisions, one that has not been the focus in previous work looking at how firms respond to crisis.

4.3 A Tale of Two Crises: 2020 vs. 2008

To provide context for our 2020 pandemic analysis, it is important that we characterize and differentiate the nature of the impact of a health crisis on companies' decisions from that of other crises, such as crises associated with the supply of capital. We do so by presenting a comparison of corporate decision making in the COVID-19 crisis and in the 2008 Global Financial Crisis. Campello et al. (2010) analyze CFOs' plans for employment and investment at the end of 2008 and document the importance of financial flexibility in shaping corporate decisions in the financial crisis. We use the same 2008 data to conduct the corporate flexibility analyses, which allows us to compare the effects of flexibility in 2008 vs. in 2020.

For financial flexibility, we rely on the question in the December 2008 survey, which asks firms if their operations are affected by difficulties in accessing the credit market. Firms responding "not affected" are classified as having high financial flexibility, while those responding "somewhat affected" and "very affected" are classified as having low financial flexibility.[14] This question focuses primarily on access to credit markets, while the main financial flexibility question in the March 2020 survey captures the ability of firms to access both internal and external funding as explained in Section 2. As a result, the financial flexibility variable in the 2020 survey is broader and likely to show stronger results for financial flexibility compared to the variable in the 2008 survey. For workplace flexibility, we use the same industry-level measure as before. For investment flexibility, we also use the same industry-level measure explained in Section 2.

Panel A of Table V parallels the regression specifications in Table III. Columns (1) and (4) show the results using the 2008 data, columns (2) and (5) show the results using the 2020

[14] Accordingly, the group labelled "low financial flexibility" ("high financial flexibility") corresponds to the "constrained" ("unconstrained") group in Campello et al. (2010).

data; columns (3) and (6) use the combined sample where we interact workplace flexibility — the distinct central feature for the COVID-19 health crisis — with a dummy for the 2020 survey (we omit the control variables on the demand proxy and the contact intensive industry indicator since they are not relevant in the 2008 data). We find that during both the COVID-19 pandemic and the Financial Crisis, financial flexibility plays a similarly important role in shaping firms' employment and investment plans. However, workplace flexibility is uniquely important for employment plans in the 2020 pandemic, while its coefficient in the 2008 data is nearly zero.

[TABLE V ABOUT HERE]

In an analogous fashion, Panel B of Table V follows the regression specifications in Table IV to test and verify that firms exploiting their investment flexibility (conditional on their workplace flexibility) is also unique to the 2020 pandemic. Here, too, we find no evidence to suggest that workplace flexibility matters for how firms utilize their investment flexibility in the 2008 financial crisis.

Overall, the comparisons in Table V highlight that the impact of workplace flexibility is absent in the financial crisis, but central in the health crisis. Just as the Global Financial Crisis gave rise to a large body of work on financial constraints, the COVID-19 health crisis may spur research on the transformation of the workplace.

5. Implications

Our results are novel in identifying the role played by workplace flexibility in shaping corporate responses to a health crisis. Our study brings to bear several implications for both corporate and economic policy-making in the aftermath of the 2020 pandemic, as discussed in this section.

First, our analysis reveals that firms in industries with high workplace flexibility plan higher employment growth during the ongoing health crisis, but not necessarily higher capital spending growth. This may point to a post-COVID-19 recovery in which such firms favor labor instead of standard physical capital investment. Indeed, there have been several business press accounts that firms in which working from home is possible plan to spend less on office space.[15] There is also an indication that firms with high workplace flexibility expect remote work to remain common in the long-term, even after the pandemic ends (Bartik et al. (2020b)). Accordingly, traditional capital expenditures in these sectors could stay low following the 2020 pandemic. This phenomenon may not necessarily reflect weakness of the firms (e.g., tight financial constraints or insufficient aggregate demand) but rather a shift in the nature of work and the nature of investment.[16] These firms may invest more in software to facilitate flexible workplace arrangements and in human capital, instead of investing in traditional fixed assets.

Second, firms in industries with low workplace flexibility may be prompted to change their work logistics and the profile of their workforce as well. The inability to work from home often derives from the need to use certain facilities or equipment or the need to physically deliver goods and services to customers. While a number of production rigidities exist, the higher costs associated with health risks afflicting human capital may prompt firms in low work-from-home sectors to replace human labor with automation. Research has shown an increasing adoption of automation in the US in the past two decades (Acemoglu and Restrepo (2020)), and COVID-19 could accelerate this trend

[15] See for example Work-From-Anywhere Future Exposes Holes in Operational Strategy, What If Working From Home Goes on … Forever?, Future of Work, Zoom, the office and the future: What will work look like after coronavirus?, Why the future of work might be 'hybrid'.

[16] Campello et al. (2020) show that firms have disproportionately cut back on their hiring of high-skill workers ("downskilling") since the COVID-19 crisis. Firms have skewed their new job opening postings towards operationally core, part-time, and flexible positions, pointing to fundamental changes in the nature of the workplace environment.

given the inconvenience of onsite work. This could, in turn, contribute to the post-COVID-19 period being a "robot-led recovery" or "jobless recovery" for these sectors.

Third, our results suggest that firms have been using their investment flexibility to adapt. Firms currently facing unfavorable conditions appear to use higher investment flexibility to postpone investment. As these industries recover post-COVID-19, there could be some pent-up spending demand.

Finally, firms' access to financing has been a central focus of the economic stabilization policies by the Federal Reserve and by Congress (e.g., Primary Market Corporate Credit Facility, Secondary Market Corporate Credit Facility, Main Street Lending Program, and Paycheck Protection Program). While monetary policies and fiscal policies may affect a firm's financial flexibility, and the swift implementation of government assistance programs in the COVID-19 crisis could have helped along this dimension, it is more difficult for government actions to influence workplace flexibility. Accordingly, there may be limits to the effectiveness of traditional economic policies to stimulate employment and investment in this health crisis. For workers in industries with low workplace flexibility, who may face fewer job opportunities in the near term as well as increasing automation in the long term, unemployment insurance and training to acquire new skills could be important.

6. Concluding Remarks

In early 2020, the US witnessed its largest economic dislocation in a decade, if not the largest in the postwar era. The ongoing crisis was triggered by an unprecedented emergency of global proportions: the rapid spread of the novel coronavirus (COVID-19). Thus far, most research investigating the effects of COVID on the corporate sector has used stock price responses to infer how the ongoing pandemic has affected firms – an

approach confounded by investors' subjective perceptions, and the effect of discount rates and portfolio constraints on asset prices. We rely on internal corporate plans to investigate the transmission mechanism of COVID-19 from the CFO's perspective. We focus on three dimensions of corporate flexibility: financial, workplace, and investment flexibility. We show that for the ongoing crisis, financial flexibility continues to be an important determinant of firm planning; and, workplace flexibility emerges as an additional critical margin that has both direct effects on employment and interactive effects (via investment flexibility) on investment.

While our analyses provide timely insights into the initial impact of the COVID-19 pandemic, conditions continue to evolve. Uncertainty has been and remains large over the disease's spread and its impact on the economy. Our findings hint at the possibility of permanent changes in the way firms will hire and invest in the years to come, prompted by COVID-19 and the prominence of workplace flexibility. We aim to continue to track the effects of the COVID-19 pandemic on corporate investing and hiring, with the goal of assessing current policy interventions and measuring signs of a recovery.

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Table I. Descriptive Statistics

Panel A presents summary statistics of the main variables. The number of observations, means, standard deviations, and quartiles are displayed. Panel B shows the correlations among the main variables. Dark blue indicates strong positive correlations, and dark red indicates strong negative correlations. Detailed variable definitions are given in the Data Appendix.

Panel A. Summary Statistics

	N	Mean	Std dev	25%	Median	75%
Revenue Forecast	501	0.046	-0.800	-0.050	0.030	0.100
Employment Forecast	461	0.027	-0.650	0	0	0.050
Capx Forecast	453	0.007	-1	-0.050	0	0.050
COVID Risk	520	0.477				
Financial Flexibility	520	0.806				
Workplace Flexibility (ATUS)	451	0.252	0	0.064	0.243	0.349
Workplace Flexibility (DN)	454	0.445	0.035	0.225	0.311	0.762
Investment Flexibility	451	0.258	0	0	0.200	0.500
Demand Proxy	454	0.046	-0.450	-0.010	0.035	0.102
Contact Intensive	454	0.154				

Panel B. Cross-Correlations

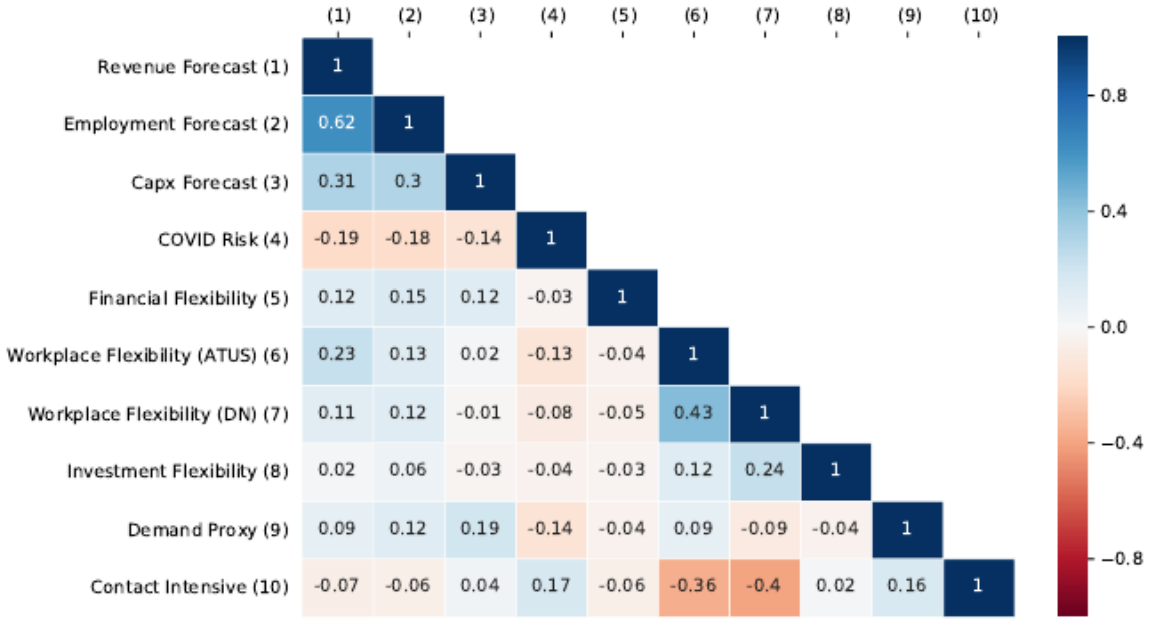


Table II. Determinants of COVID Risk Exposure

This table examines the determinants of firms' self-assessed exposure to COVID risk. In all specifications, the dependent variable is an indicator variable taking a value of one if firms in the March 2020 survey stated they faced medium or high coronavirus risk. Columns 1-3 present results from Linear Probability Models (OLS), column 4 presents results from a Probit specification. Financial Flexibility is an indicator taking a value of one if the firm stated they had more financial flexibility than "None" or "A little." Workplace Flexibility comes from ATUS and is a four-digit NAICS level measure for the percentage of work that can be done from home. Investment Flexibility is a four-digit NAICS level measure for a firm's investment flexibility (with respect to speed of completion). Demand Proxy is three-digit NAICS × survey week average revenue growth rate forecasts from IBES. Contact Intensive is a four-digit NAICS level indicator taking a value of one if the firm is in a contact-intensive industry (Leibovici et al., 2020). Detailed variable definitions are available in the Data Appendix. The R-squared in column 3 is the pseudo R-squared from the Probit regression. Standard errors are clustered at the two-digit NAICS level and displayed in parentheses below the coefficient. ***, **, * denote significance at 1%, 5%, 10%.

	(1)	(2)	(3)	(4)
	Linear Probability Model			Probit
Financial Flexibility	-0.017	-0.027	-0.026	-0.019
	(0.069)	(0.061)	(0.057)	(0.059)
Workplace Flexibility	-0.183**	-0.161*	-0.172*	-0.181***
	(0.071)	(0.088)	(0.089)	(0.063)
Investment Flexibility	-0.082*	-0.110*	-0.099	-0.082**
	(0.044)	(0.058)	(0.060)	(0.039)
Demand Proxy	-0.081	-0.161	-0.181	-0.085
	(0.152)	(0.158)	(0.137)	(0.129)
Contact Intensive	0.204***	0.150*	0.140*	0.197***
	(0.063)	(0.075)	(0.075)	(0.052)
Post March 15	0.353***	0.362***		0.352***
	(0.058)	(0.061)		(0.049)
Observations	451	445	445	451
R-squared	0.167	0.262	0.282	0.128
State FE		Yes	Yes	
Week FE			Yes	

Table III. Determinants of Employment and Investment Plans

This table examines the determinants of firms' employment and capital spending plans. The dependent variable is the firm's growth rate forecast of Employment (columns 1-3), or capital spending (columns 4-6). In Panel A, Workplace Flexibility comes from ATUS, and is a four-digit NAICS level measure for the percentage of work that can be done from home. In Panel B, Workplace Flexibility (DN) is the work-from-home variable from Dingel and Neiman (2020), measured at the two-digit NAICS level. Financial Flexibility is an indicator taking a value of one if the firm stated they had more financial flexibility than "None" or "A little." Investment Flexibility is a four-digit NAICS level measure for a firm's investment flexibility (with respect to speed of completion). Demand Proxy is three-digit NAICS × survey week average revenue growth rate forecasts from IBES. Contact Intensive is a four-digit NAICS level indicator taking a value of one if the firm is in a contact-intensive industry (Leibovici et al., 2020). Detailed variable definitions are in the Data Appendix. Standard errors are clustered at the two-digit NAICS level and displayed in parentheses below the coefficient. ***, **, * denote significance at 1%, 5%, 10%.

Panel A. Main Specification

	(1)	(2)	(3)	(4)	(5)	(6)
	Employment forecast			Capx Forecast		
Financial Flexibility	0.068***	0.069***	0.071***	0.077***	0.084***	0.089***
	(0.017)	(0.018)	(0.020)	(0.027)	(0.023)	(0.024)
Workplace Flexibility	0.100***	0.084***	0.081***	0.032	0.017	-0.045
	(0.029)	(0.028)	(0.025)	(0.043)	(0.047)	(0.052)
Investment Flexibility	0.030	0.036*	0.033	-0.030	-0.018	-0.062
	(0.018)	(0.017)	(0.023)	(0.072)	(0.070)	(0.072)
Demand Proxy		0.141***	0.072		0.467***	0.484*
		(0.040)	(0.074)		(0.162)	(0.239)
Contact Intensive		-0.013	-0.025		0.024	0.146
		(0.014)	(0.040)		(0.050)	(0.110)
Constant	-0.062***	-0.065***		-0.052	-0.084**	
	(0.016)	(0.020)		(0.037)	(0.031)	
Observations	405	405	400	397	397	391
R-squared	0.045	0.060	0.220	0.009	0.051	0.185
Week FE			Yes			Yes
State FE			Yes			Yes
NAICS-2 FE			Yes			Yes

Panel B. Alternative Work from Home Measure (Dingel and Neiman, 2020)

	(1)	(2)	(3)	(4)	(5)	(6)
	Employment forecast			Capx Forecast		
Financial Flexibility	0.069***	0.070***	0.072***	0.077***	0.085***	0.095***
	(0.018)	(0.019)	(0.019)	(0.026)	(0.023)	(0.027)
Workplace Flexibility (DN)	0.080***	0.083***	0.103***	-0.006	0.035	0.028
	(0.019)	(0.029)	(0.031)	(0.047)	(0.049)	(0.059)
Investment Flexibility	0.023	0.027	0.038	-0.026	-0.023	-0.003
	(0.024)	(0.023)	(0.025)	(0.078)	(0.076)	(0.082)
Demand Proxy		0.163***	0.082		0.472***	0.452**
		(0.047)	(0.066)		(0.160)	(0.186)
Contact Intensive		-0.008	-0.000		0.030	0.013
		(0.013)	(0.015)		(0.049)	(0.048)
Constant	-0.071***	-0.081***		-0.042	-0.096***	
	(0.016)	(0.022)		(0.035)	(0.030)	
Observations	405	405	400	397	397	391
R-squared	0.042	0.062	0.189	0.009	0.051	0.152
Week FE			Yes			Yes
State FE			Yes			Yes

Table IV. Conditional Impact of Investment Flexibility on Employment and Investment

This table examines the interactive effects of Workplace and Investment Flexibility on firms' employment and capital spending plans. The dependent variable is the firm's growth rate forecast for employment (columns 1-3) or capital spending (columns 4-6). Workplace Flexibility comes from ATUS and is a four-digit NAICS level measure for the percentage of work that can be done from home. Investment Flexibility is a four-digit NAICS level proxy for a firm's investment flexibility (with respect to speed of completion). Financial Flexibility is an indicator taking a value of one if the firm stated they had more financial flexibility than "None" or "A little." Controls are Demand Proxy and Contact Intensive. Detailed variable definitions are available in the Data Appendix. Standard errors are clustered at the two-digit NAICS level and displayed in parentheses below the coefficient. ***, **, * denote significance at 1%, 5%, 10%.

	(1)	(2)	(3)	(4)	(5)	(6)
	Employment forecast			Capx Forecast		
Investment Flexibility	-0.035	-0.006	-0.100	-0.197**	-0.209**	-0.309***
	(0.022)	(0.029)	(0.058)	(0.075)	(0.084)	(0.093)
Workplace Flexibility	0.040**	0.056***	0.054***	-0.123	-0.140*	-0.143**
	(0.018)	(0.017)	(0.017)	(0.074)	(0.068)	(0.068)
Investment Flex × Workplace Flex	0.280**	0.199	0.220	0.736***	0.744**	0.765**
	(0.104)	(0.153)	(0.152)	(0.183)	(0.278)	(0.278)
Financial Flexibility		0.072***	0.042		0.091***	0.059***
		(0.020)	(0.035)		(0.025)	(0.020)
Financial Flex × Investment Flex			0.107**			0.116
			(0.049)			(0.094)
Observations	405	400	400	397	391	391
R-squared	0.031	0.224	0.228	0.020	0.197	0.198
Controls		Yes	Yes		Yes	Yes
Week FE		Yes	Yes		Yes	Yes
State FE		Yes	Yes		Yes	Yes
NAICS-2 FE		Yes	Yes		Yes	Yes

Table V. Comparison of 2008 Financial Crisis to 2020 COVID Crisis

This table examines how different forms of flexibility affect employment and capital spending plans differently in the 2008 and 2020 crises. In Panel A, we run similar tests to Table III, Panel A, comparing the determinants of employment and capital spending across surveys. The dependent variable is the firm's growth rate forecast of employment (columns 1-3), or capital spending (columns 4-6). In column 1, the sample is the December 2008 CFO survey sample. In column 2, the sample is the March 2020 sample. In column 3, we combine both surveys and interact our flexibility measures with an indicator variable taking a value of one if the firm is in the March 2020 sample. In column 3, the March 2020 dummy is omitted from the regression as it is collinear with the State × Survey fixed effects. Columns 4-6 display similar specifications to columns 1-3, with the firm's capital spending forecast as the dependent variable. In Panel B, we run similar tests to Table IV, comparing the effect of the interaction of workplace and investment flexibility on employment and capital spending across surveys. The dependent variable is the firm's growth rate forecast of employment (columns 1-3), or capital spending (columns 4-6). In column 1, the sample is the December 2008 CFO survey sample. In column 2, the sample is the March 2020 sample. In column 3, we combine both surveys and interact workplace and investment flexibility with an indicator variable taking a value of one if the firm is in the March 2020 sample. Columns 4-6 display similar specifications to columns 1-3, with the firm's capital spending forecast as the dependent variable. Detailed variable definitions are given in the Data Appendix. Standard errors are clustered at the two-digit NAICS level and displayed in parentheses below the coefficient. ***, **, * denote significance at 1%, 5%, 10%.

Panel A. Determinants of Employment and Investment Plans

	(1)	(2)	(3)	(4)	(5)	(6)
	Employment forecast			Capx Forecast		
Financial Flexibility	0.042**	0.066***	0.043**	0.081**	0.086***	0.080**
	(0.017)	(0.022)	(0.017)	(0.036)	(0.023)	(0.036)
Workplace Flexibility	-0.007	0.092***	-0.027	0.147	0.016	0.146
	(0.041)	(0.022)	(0.036)	(0.100)	(0.057)	(0.101)
Investment Flexibility	0.052	0.024	0.029	0.085*	-0.079	0.065
	(0.030)	(0.023)	(0.025)	(0.045)	(0.076)	(0.050)
March 2020 × Financial Flex			0.029			0.010
			(0.027)			(0.044)
March 2020 × Workplace Flex			0.129***			-0.134
			(0.044)			(0.109)
March 2020 × Investment Flex			0.012			-0.133
			(0.031)			(0.082)
Observations	335	400	735	322	391	713
R-squared	0.167	0.188	0.208	0.136	0.124	0.139
Sample	Dec '08	Mar '20	Full	Dec '08	Mar '20	Full
NAICS-2 FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes		Yes	Yes	
State × Survey FE			Yes			Yes

Panel B. Conditional Impact of Investment Flexibility During 2008 and 2020

	(1)	(2)	(3)	(4)	(5)	(6)
	Employment forecast			Capx Forecast		
Financial Flexibility	0.042**	0.067***	0.056***	0.081**	0.089***	0.084***
	(0.017)	(0.022)	(0.014)	(0.036)	(0.024)	(0.021)
Workplace Flexibility	-0.006	0.069***	-0.007	0.169*	-0.096	0.201**
	(0.044)	(0.014)	(0.051)	(0.093)	(0.063)	(0.093)
Investment Flexibility	0.053**	-0.011	0.039*	0.109	-0.243***	0.076
	(0.021)	(0.028)	(0.020)	(0.073)	(0.083)	(0.078)
Workplace Flex × Investment Flex	-0.004	0.174	-0.041	-0.115	0.826**	-0.022
	(0.177)	(0.154)	(0.145)	(0.190)	(0.302)	(0.226)
March 2020 × Workplace Flex			0.085			-0.302***
			(0.058)			(0.106)
March 2020 × Investment Flex			-0.029			-0.290**
			(0.036)			(0.107)
March 2020 × Workplace Flex × Investment Flex			0.187			0.725**
			(0.195)			(0.335)
Observations	335	400	735	322	391	713
R-squared	0.167	0.191	0.208	0.136	0.139	0.145
Sample	Dec '08	Mar '20	Full	Dec '08	Mar '20	Full
NAICS-2 FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes		Yes	Yes	
State × Survey FE			Yes			Yes

Appendix

Figure A1. Sample Composition by Survey Completion Date

This figure displays the composition of firms in the March 2020 survey split by pre/post March 15, by firm size (Panel A) and industry (Panel B).

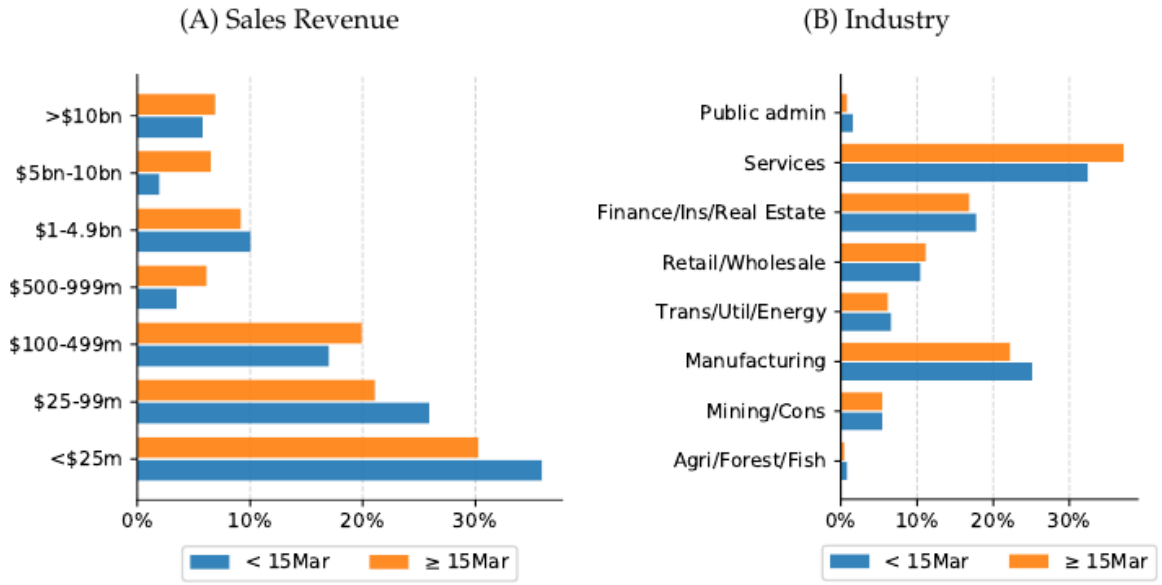


Table AI. Determinants of Financial Flexibility

This table examines the determinants of firms' self-assessed financial flexibility. In all specifications, the dependent variable is an indicator variable taking a value of one if the firm stated they had more financial flexibility than "None" or "A little." Columns 1-2 present results from Linear Probability Models (OLS), column 3 presents results from a Probit specification. Cash/Assets is the firm's stated cash to total assets ratio from year-end 2019. Limited Access to External Capital is an indicator taking a value of one if the firm stated that their ability to access external capital limited their ability to pursue attractive investment projects. Detailed variable definitions are available in the Data Appendix. The R-squared in column 3 is the pseudo R-squared from the Probit. Standard errors are clustered at the two-digit NAICS level and displayed in parentheses below the coefficient. ***, **, * denote significance at 1%, 5%, 10%.

	(1)	(2)	(3)
	Linear Probability Model		Probit
Cash/Assets	0.285***	0.512***	0.319***
	(0.066)	(0.089)	(0.089)
Limited Access to External Capital	-0.169***	-0.163***	-0.166***
	(0.034)	(0.025)	(0.039)
Observations	454	448	454
R-squared	0.060	0.212	0.062
Week FE		Yes	
State FE		Yes	
NAICS-2 FE		Yes	

Table AII. Estimated Average Marginal Effects from Figure 7

This table displays the coefficients used to produce Figure 7. The average marginal effects are produced using column (5) of Table IV. The estimating equation is

$$Capx\ Forecast_{it} = \alpha + \beta_1 Investment\ Flex_{it} + \beta_2 Workplace\ Flex_{it} + \beta_3 (Investment\ Flex \times Workplace\ Flex) + \lambda \cdot X_{it} + \epsilon_{it}$$

The average marginal effect, conditional on a value of Workplace Flexibility is

$$\mathbf{E}[\, Marginal\ Effect \mid Workplace\ Flex = w \,] = \beta_1 + \beta_3 \cdot w$$

The estimated coefficients are displayed in the table below. Standard errors, displays in parentheses below the coefficient, are estimated via the Delta method (Williams, 2012). ***, **, * denote significance at 1%, 5%, 10%.

Workplace Flexibility =	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Average Marginal Effect	-0.21**	-0.14**	-0.06	0.01	0.09	0.16	0.24*	0.31**	0.39**	0.46**	0.53**
	(0.08)	(0.07)	(0.06)	(0.07)	(0.08)	(0.1)	(0.13)	(0.15)	(0.18)	(0.2)	(0.23)

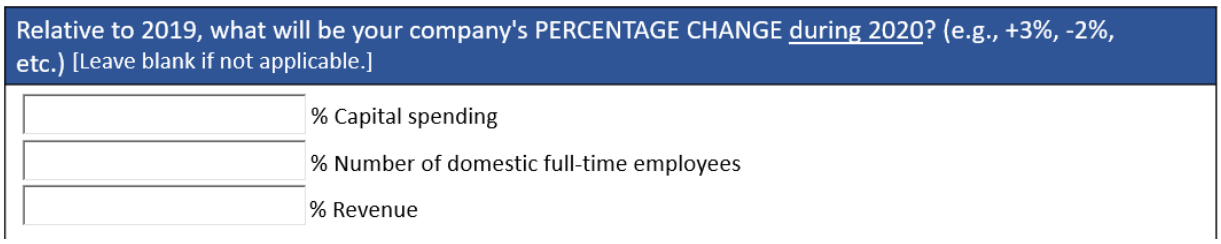
Data Appendix

D.1 Duke CFO Survey Variables

Revenue/Employment/Capital Spending Forecasts

CFO's forecast of the 12-month ahead percentage change in revenue, employment and capital spending, see Figure D1.

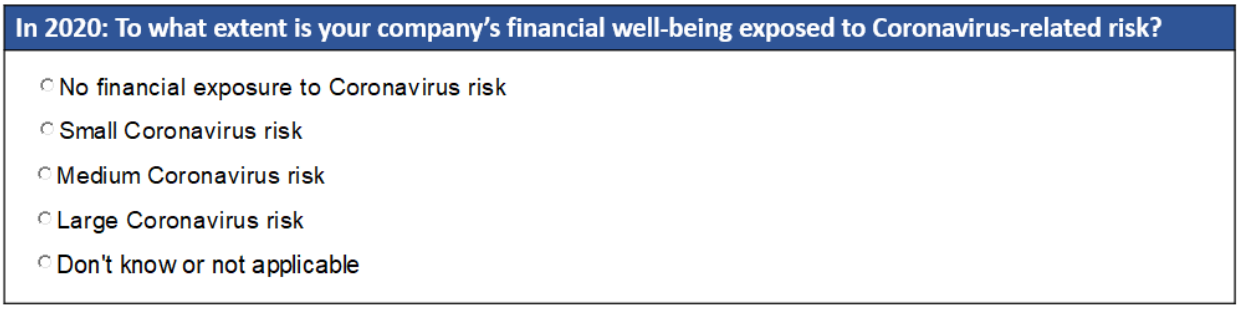
Figure D1: Revenue/Employment/Capital Spending Forecasts



COVID Risk

COVID Risk is an indicator variable taking a value of one if the CFO answered with "Medium Coronavirus Risk" or "Large Coronavirus Risk" to the question in Figure D2.

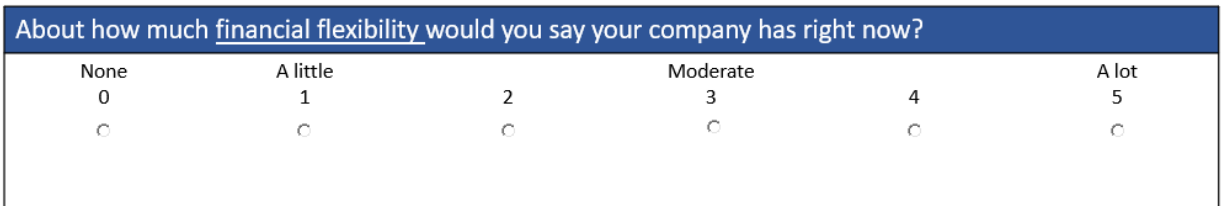
Figure D2: COVID Risk



Financial Flexibility

Financial Flexibility is an indicator taking a value of one if the CFO answered 2 or above to the question in Figure D3.

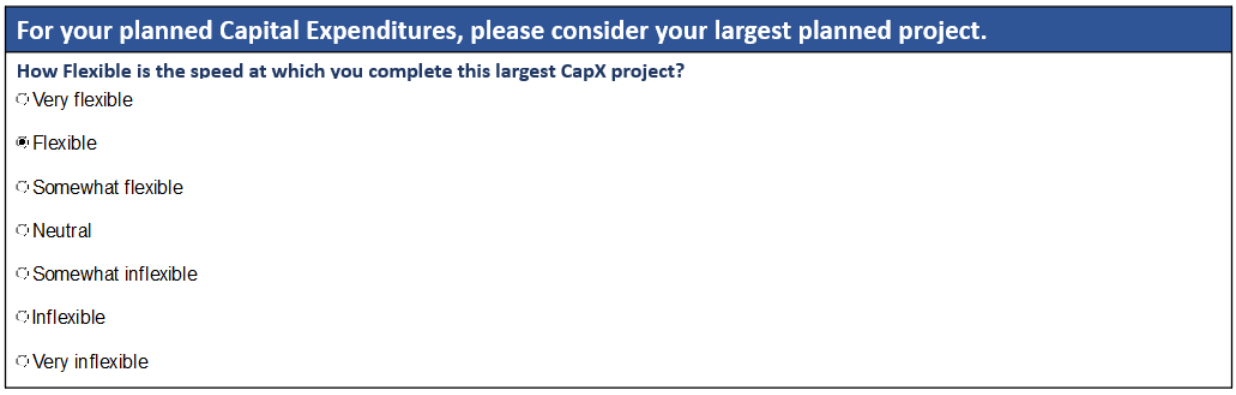
Figure D3: Financial Flexibility



Investment Flexibility

Four-digit NAICS-level proxy for a firm's investment flexibility with respect to speed of project completion. We use data from the March 2019 Duke CFO survey to construct a four-digit NAICS code measure of Investment Flexibility. Specifically, we define a firm as having flexible investment if they answered "Flexible" or "Very Flexible" to the question in Figure D4. We then calculate the percentage of firms with investment flexibility at the four-digit NAICS level.

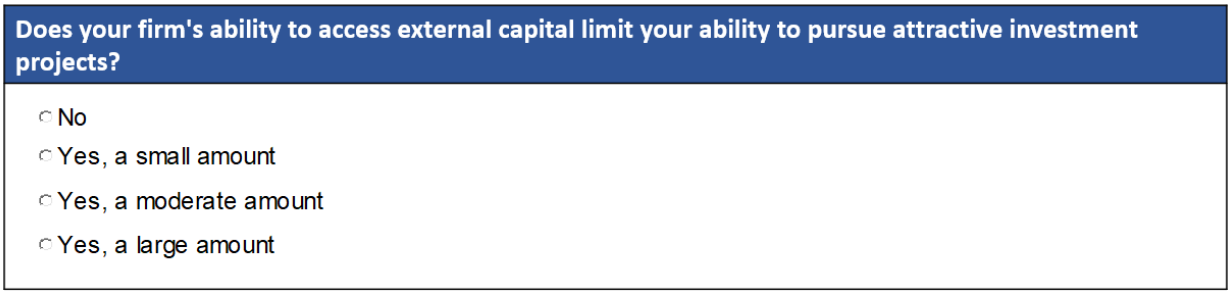
Figure D4: Investment Flexibility



Limited Access to External Capital

Limited Access to External Capital is an indicator variable taking a value of one if the CFO answer with "Yes, a small amount," "Yes, a moderate amount," or "Yes, a large amount" to the question in Figure D5

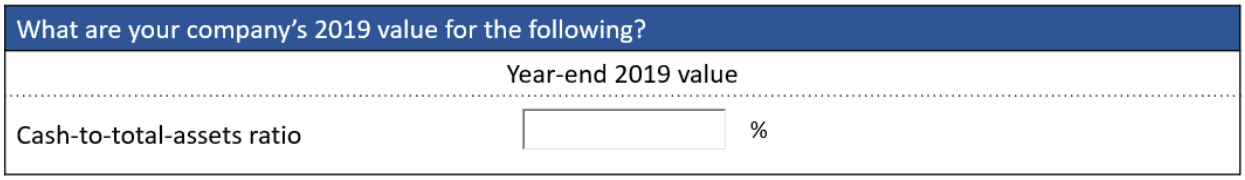
Figure D5: Limited Access to External Capital



Cash/Assets

Firm's year-end cash to total assets ratio from the March 2020 survey. See Figure D6.

Figure D6: Cash/Assets



D.2 External Variables

Workplace Flexibility measure from the American Time Use Survey (ATUS)

Four-digit NAICS-level proxy for a firm's ability to do work from home. We use data from the 2017-2018 American Time Use Survey Leave and Job Flexibilities module (n = 10,040), which asks questions related to workers' ability to perform their job from home. Following Papanikolaou and Schmidt (2020) and Alon et al. (2020), we classify a worker as being able to work from home if they answer yes to these two questions:

- "As part of your (main) job, can you work at home?"
- "Are there days when you work only at home?"

Using the Leave Module weights and Evan Soltas' crosswalk, we aggregate the number of workers that are able to work from home to the four-digit NAICS level.[17]

Workplace Flexibility measure from Dingel and Neiman (2020)

Two or three-digit NAICS-level proxy for a firm's ability to do work from home. This variable is constructed from the O*NET survey and is aggregated from the occupation level to the industry level. Details are available in Dingel and Neiman (2020) and data are available at https://github.com/jdingel/DingelNeiman-workathome.

Demand Proxy

A three-digit NAICS × survey week level proxy for changes in a firm's demand conditions.[18] Specifically, for all end-of-2020 analyst revenue forecasts that occur in the

[17] See https://www.atusdata.org/atus-action/faq and https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/O7JLIC.
[18] Survey weeks are 1-7 March, 8-14 March, 15-21 March, 22-28 March, 29 March-5 April.

survey period, we calculate the industry-by-week expected percentage change in revenue from the end of 2019 to the end of 2020.[19]

Contact Intensive

Contact Intensive is an indicator variable taking a value of one if the firm's industry is classified as contact intensive, based on the amount of social interaction expected within the workplace. See Leibovici et al. (2020) for further details.

[19] We have also constructed this measure at the two and four-digit NAICS level and results are similar.