Monetary Policy and Investment Plans

Julia Selgrad and Kerry Siani*

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Abstract

We explore how monetary policy affects corporate investment decisions, and why there are long lags in transmission. To do so, we hand-collect a firm-level dataset of U.S. investment plans and link it to managers' cash-flow expectations. Plans strongly predict realized investment, and allow us to observe decision changes separately from implementation. Using high-frequency monetary policy surprises, we show that firms revise investment plans in response to monetary policy, but the response varies by horizon: long-horizon plans are much more sensitive to policy than near-term plans. Consistent with theories of capital production frictions, plans for new projects respond more to monetary policy than plans related to ongoing projects. These results help to explain the long lags in monetary policy transmission. Regarding transmission mechanisms, we document evidence of a cost of capital channel. Cash flow expectations respond to policy but explain a small fraction of investment-plan adjustments for firms in our sample.

*Julia Selgrad (julia.selgrad@chicagobooth.edu) is at Chicago Booth, Chicago, IL. Kerry Y. Siani (ksiani@mit.edu) is at MIT Sloan, Cambridge, MA. Julia gratefully acknowledges funding support from Chicago Booth, and Kerry gratefully acknowledges funding support from MIT Sloan. For helpful conversations we thank Ricardo Caballero, Thomas Drechsel, Ian D'Souza, Janice Eberly, Niels Gormsen, John Graham, Sam Hanson, Kilian Huber, Arvind Krishnamurthy (discussant), Bob Pindyck, Nemit Shroff, Richard Thakor (discussant), David Thesmar, Kaushik Vasudevan, Christian Wolf, Eric Zwick, seminar participants at Copenhagen Business School, the Federal Reserve Bank of Boston, the Federal Reserve Bank of Chicago, the Federal Reserve Bank of Minneapolis, the Federal Reserve Board, Harvard Business School, MIT Sloan, NYU Stern, Stanford GSB, and UC Berkeley Haas, and conference participants at NBER Monetary Economics, NBER Corporate Finance, Blue Collar Working Group at the University of Chicago, and the Minnesota Macro-Asset Pricing Conference. For excellent research assistance, we thank Ruiquan Chang, Carlo Geat, Ziqi Li, Shang Wang, Peize Zhang, and Xincheng Zhou. First version posted July 17, 2025. We are incredibly grateful to Owen Lamont and Xiaoxi Wu for sharing their data. All errors are our own.

How does monetary policy affect corporate investment decisions, and why does it do so with long lags [Friedman, 1968]? Classic explanations for lags include production frictions such as time-to-build and investment adjustment costs [Kydland and Prescott, 1982, Abel and Eberly, 1994], financial frictions [Bernanke and Gertler, 1995b], or information frictions that delay firms' updating of beliefs [Lucas, 1973, Mankiw and Reis, 2002, Coibion et al., 2018]. However, evidence to disentangle these narratives is limited. Without directly observing corporate expectations and decision making, the business investment response to monetary policy remains a black box.

In this paper, we construct a new firm-level panel of quarterly forward-looking investment plans and managerial earnings expectations for U.S. non-financial corporations to directly observe how firms adjust their investment decisions in response to monetary policy. Unlike data on realizations, plans data capture the decision margin separately from the potentially slow and noisy process of implementation. The data provides a unique perspective into the decision-making of corporate managers in real time. To establish that these plans are economically meaningful, we first document that plans predict actual investment, even up to five years in the future.

Using this new dataset and high-frequency monetary policy surprises around FOMC announcements, we establish two new facts about how monetary policy affects firms' investment decisions. First, investment plans exhibit a pronounced term structure of responsiveness: plans for investment several years ahead respond much more than plans for the near term. In other words, monetary policy primarily reshapes the future investment path by affecting long-horizon investment rather than immediately cutting next-year capital expenditure. These plan adjustments occur within one quarter of the policy shock. Second, we provide novel evidence of the irreversibility of investment once underway: plans for new projects are most responsive to monetary policy, but plans for ongoing projects are comparatively inert, even for distant-horizon spending. Overall, we interpret these results as novel evidence of adjustment costs that dampen and delay the transmission of monetary policy to real activity.

With our new data on plans and expectations, we can more precisely map decision changes to various shocks to study monetary policy transmission. We document three findings supportive of a cost of capital channel: first, firms adjust their investment plans in response to changes in both the risk-free rate and risk premia around monetary policy events, both of which directly affect their cost of capital. Second, firms with longer maturity assets and longer duration investments are more responsive, and third, long horizon plans are more responsive to changes in long-run risk-free rates than they are to short-run risk-free rates.

We also find suggestive evidence of a cash flow expectations channel, though this appears to be smaller in magnitude. For our sample of firms, financial constraints do not strengthen the transmission of monetary policy to investment, consistent with Ottonello and Winberry [2020].

One key contribution of our paper is our data collection effort, which aggregates hand-collected publicly available information from various company disclosures, including regulatory filings, earnings call presentations, and investor presentations, to create a novel panel dataset of firm investment plans for multiple plan horizons up to five years in the future. We hand-collect 46,871 firm-quarter-projection year observations covering 881 of the largest non-financial U.S. corporations. We merge this with company guidance data on investment and earnings from IBES and Refinitiv LSEG, yielding over 75,000 observations of management capital expenditure (capex) plans for over three thousand U.S. firms.

Our data on investment plans spans 1999-2024 and accounts for nearly 80% of the total capital expenditure and roughly 60% of total assets of all U.S. non-financial corporations reported in Compustat since 2008. The vast majority of firms update plans on a quarterly basis, providing a high-frequency view into decision making. To compare the effects of monetary policy on different types of investment, roughly half of our investment plans data include qualitative comments about the kind of investment, such as research and development, environmental projects, and maintenance, allowing us to measure how plans for these different kinds of investment respond to shocks. Importantly, investment plans predict actual investment with a predictability coefficient of around 0.8, confirming that plans are informative about a firm's intentions.

We use the plans data to understand firms' investment decisions in response to monetary policy. To investigate this, we use standard monetary policy shocks constructed using high-frequency changes in interest rate futures around FOMC announcements. Our main outcome variable is planned capital expenditure net of recent actual capex, normalized by lagged assets, capturing the forward-looking investment decision that firms report each quarter. We begin by providing a new estimate of the responsiveness of investment to monetary policy, and use this to back out a plans-based estimate of the elasticity of investment with respect to the user cost of capital. Given our data, we are able to provide precise estimates both for the near-term and longer-term response of investment. We find estimates for the elasticity of investment with respect to the user cost of capital that are in line with the upper end of prior estimates (around 2.5) for investment over the next two years. When turning to the response over longer horizons, the estimated elasticity is even larger (3–4). We document a term structure of planned investment responsiveness: plans about investment expected to take place three or more years into the future are more responsive than plans about investment expected to occur in the next year or two, suggestive of a long average time-to-build.

Next, we turn to investigating the reasons behind the previously documented lagged response of realized investment to monetary policy. Consistent with models of partial irreversibility and real options of investing [Arrow, 1968, Bernanke, 1983, Abel and Eberly, 1994, Dixit and Pindyck, 1994], plans regarding new investment projects are more responsive to monetary policy; plans regarding ongoing investment projects are less responsive. This is the case even when holding fixed the horizon of the plan. Further supporting this mechanism, we also find significant variation in policy responsiveness across types of investment: firms are most likely to adjust plans for investment that are potentially more flexible in their timing, such as investment related to expansion and environmental projects, and are less likely to adjust plans for investment related to R&D, acquisitions, and infrastructure.

Finally, we directly test mechanisms of monetary policy transmission, and how they vary across firms. Firms may adjust their investment plans downward in response to a contractionary monetary policy shock for many reasons, including a higher cost of capital, tighter financial constraints, or reduced cash flow expectations. We first investigate the financial constraints channel. We find that firms that are closer to their financial constraints are actually less responsive to monetary policy, consistent with Ottonello and Winberry [2020], suggesting that financial constraints dampen the transmission of monetary policy for the firms in our sample, which are the larger and more capital intensive firms in the economy.

Next, we investigate the cost of capital channel, where monetary policy may affect investment by changing the cost of capital that firms use to discount expected future cash flows of projects. Firms that have bond debt coming due in the next 1-2 years, and thus are likelier to pay attention to their cost of debt, are more sensitive to monetary policy-induced changes in interest rates. Consistent with a cost of debt channel, we show that firms adjust their net issuance downward after policy-driven increases in the yields and excess bond premiums. The evidence also points to duration matching along the term structure: long-term investment plans exhibit greater responsiveness to shocks to long-term yields than do short-term plans. Similarly, longer-horizon plans react more strongly to movements at the long end of the yield curve than to changes at the short end. In line with the duration effects, we find that firms with greater asset duration are more responsive to policy-driven changes in interest rates.

To investigate the cash flow expectations channel, we estimate the responsiveness of firms' expectations regarding net income to monetary policy shocks, and how changes in firms' forecasts regarding net income co-move with changes in firms' investment plans. Firms reduce their expectations of net income in response to contractionary monetary policy, and there is a positive correlation between reductions in net income expectations and reductions in investment expectations. However, the channel appears to be quantitatively small for firms in our sample.

The question of how monetary policy affects firms has been studied extensively [Keynes, 1937, Friedman, 1968, Bernanke and Blinder, 1992, Cochrane, 1998, Kashyap et al., 1993, Bernanke et al., 1999, Kashyap and Stein, 2000]. In neoclassical theory (Jorgenson and Stephenson [1967], Jorgenson [1963]), changes in the cost of capital should elicit immediate and large investment responses. This is generally not true in the data: firms' realized investment responses to monetary policy shocks are typically estimated to be quantitatively small on average, and moreover occur with significant delays [Bernanke and Gertler, 1995b, Christiano et al., 2005]. With data on planned investment, we can better pinpoint the economic decision around a monetary policy event, yielding a more precise estimate of investment decisions that is economically larger than when using realized investment. In that vein, our paper also contributes to the literature on measuring the elasticity of investment with respect to the user cost of capital [Schaller, 2006, Gilchrist and Zakrajšek, 2007, House and Shapiro, 2008, Zwick and Mahon, 2017, Chodorow-Reich, 2025].

Our results help explain the well-documented pattern that realized business investment lags monetary policy shocks [Bernanke and Gertler, 1995b, Christiano et al., 2005], contrary to predictions of immediate responses in neoclassical models. Explanations include nominal rigidities [Christiano et al., 2005], financial accelerator models [Bernanke and Gertler, 1995b, Bernanke et al., 1996], information rigidities [Lucas, 1973, Mankiw and Reis, 2002, Coibion and Gorodnichenko, 2015, Coibion et al., 2018], and production frictions such as time to build and partial irreversibility [Kydland and Prescott, 1982, Abel and Eberly, 1994]. For the firms in our sample, we do observe plan updating in response to shocks within one quarter, suggesting that slow updating alone is unlikely to be the sole driver of the long lags. Instead, we show that production frictions are an important channel that leads to lagged responsiveness.[1] Production frictions include partial irreversibility of investment [Abel and Eberly, 1994, Dixit and Pindyck, 1994], where low resale value of capital makes investment costly to reverse and creates an option value of waiting. Our findings that new investment plans are more responsive than ongoing plans are consistent with these models. While this paper focuses on the transmission of monetary shocks, similar frictions likely characterize firms' responses to tax changes, regulatory shifts, and other demand or supply shocks.

[1] In a similar vein, Siani and Zhang [2025] show that institutional frictions in state budgeting processes create long lags in spending responses to aggregate shocks.

Our paper takes a step towards opening the "black box of monetary policy transmission" via firms [Bernanke and Gertler, 1995b]. In doing so, we build on a large literature on investment determinants (Jorgenson and Stephenson [1967], Tobin [1969],Hayashi [1982] Keynes [1937], Fisher [1930], Kuh [1963], Greenwood and Hanson [2015] Lamont [2000], Fazzari et al. [1988], Barro [1990], Kaplan and Zingales [1997], Gennaioli et al. [2016], Cooper and Haltiwanger [2006]) and policy transmission to investment [Bernanke and Gertler, 1995b, Jeenas and Lagos, 2024, Fukui et al., 2024]. Neoclassical models predict a high investment responses to interest rates. Empirical results thus far are mixed.[2] Our data allows us to trace with more detail the effects of monetary policy, comparing across firms and adding to a papers that document heterogeneous effects of policy [Gertler and Gilchrist, 1994, Cloyne et al., 2023], and attributing changes in different horizons to shocks in different asset prices and building on recent literature that uses micro data to better understand the transmission channels (Selgrad [2023]). This line of work is particularly important as the largest firms rely less so on banks and more so on capital markets [Buchak et al., 2024].

Finally, we add to a growing set of papers on firm expectations and forecasting and their real effects. Manski [2004] makes the case for studying expectations of economic agents to better analyze decision-making, and many studies have since used surveys to understand firm expectations of macro and firm-level outcomes [Lamont, 2000, Guiso and Parigi, 1999, Gennaioli et al., 2016, Coibion et al., 2020, Barry et al., 2022, Graham, 2022]. More recent work by Gormsen and Huber [2022] and Gormsen and Huber [2024] use public disclosures to study firm decisions, which can be more informative than surveys if decision-makers are held accountable for their plans and expectations.[3] We contribute to this literature by being the first to collect and use firm-level, manager-disclosed planned investment data to map out economic responses to monetary policy.

The remainder of the paper is organized as follows. We first discuss the new data on investment plans in Section 1. We then investigate the responsiveness of investment with respect to monetary policy, and

[2] For example, Gilchrist and Zakrajšek [2012] show that higher credit spreads predict lower growth; meanwhile Kothari et al. [2014] show that while a decline in credit spreads predicts higher aggregate investment growth, the effects are weak and short-lived. Recent empirical work has addressed the problem of simultaneity by using monetary policy shocks to show that in aggregate, investment is affected by changes in interest rates [Gertler and Karadi, 2015, Nakamura and Steinsson, 2018, Bauer and Swanson, 2023]. However, micro data on firms suggest that managers are relatively insensitive to changes in their cost of capital when it comes to determining hurdle rates, which are used in firms' investment decisions (Graham [2022], Gormsen and Huber [2022]).

[3] A related strand of literature in macroeconomics studies the forecasts and forecast errors of professional forecasters [Farmer et al., 2024], and their responses to monetary policy [Campbell et al., 2012, Bauer and Swanson, 2023, Nakamura and Steinsson, 2018]. In addition, a large and growing literature in accounting studies the strategic considerations associated with managers disclosing guidance (see Call et al. [2024] and Roychowdhury et al. [2019] for surveys). We build on this literature by constructing and analyzing the most comprehensive micro-data on investment plans and cash flow expectations to date. While the focus in this paper is on monetary policy, our data open up a host of new opportunities for understanding corporate behavior by directly observing management decisions. We explore these questions further in our companion paper Selgrad and Siani [2025].

investigate heterogeneity in this relationship across different types of investment in Section 2. Section 3 explores the transmission mechanisms through which monetary policy can affect investment. Section 4 discusses implications and Section 5 concludes.

1 Measurement of Investment Plans

Our core dataset is compiled using novel, hand-collected data on investment plans and merging this with corporate expectations data from LSEG and IBES. First, we construct a new, manually collected dataset containing 46,871 company investment plans for 881 U.S. publicly traded non-financial companies. To do this, we sort U.S. non-financial firms in Compustat by total assets, and check 58,392 files including quarterly and annual reports, earnings reports, and other investor disclosures on company websites for the largest 1,387 U.S. non-financial firms. Because firms are not required to disclose their investment plans, there is significant heterogeneity in how these data are reported. In our final sample, 80.7% of the observations come from the footnotes of SEC filings, 18.3% from earnings call presentations, and the remainder come from other investor presentations.

As an example, Ford Motor Company reported in the footnotes of their 2023 Q4 10-K the following: "Capital spending was $8.2 billion in 2023, $1.6 billion higher than a year ago, and is expected to be in the range of $8 billion to $9.5 billion in 2024."[4] As another example, American Airlines wrote in its June 2024 10-Q "We estimate that, based on our commitments as of June 30, 2024, our planned aggregate expenditures for aircraft purchase commitments and certain engines on a consolidated basis for the remainder of 2024 through 2028 would be approximately $14.0 billion".[5] See Figure H.3 for further examples of how firms report their capital spending plans in earnings presentations. When the planned capital expenditure is reported as a range, as in the Ford example, we take the midpoint of the range. If the plans are spread out over many years, as in the American Airlines example, we assume the total amount is equally distributed across all years.

While artificial intelligence programs can help aggregate qualitative observations about company investment plans (Jha et al. [2024]), the heterogeneity in ways that companies report this information makes the task more suitable for manual entry. Thus, we train a team of research assistants to parse through SEC

[4] See the SEC filing at link `https://www.sec.gov/ix?doc=/Archives/edgar/data/0000037996/000003799624000009/f-20231231.htm`.

[5] See the SEC filing at link `https://americanairlines.gcs-web.com/static-files/ce8cb2f0-7c8f-4324-be01-b8e559b626e4`.

filings, earnings call reports, and investor day presentations to collect the data. Research assistants search for the terms “capital planning”, “planned capital expenditures”, “capital budgeting”, and variations, and collect the amounts, time horizon, and any qualitative information surrounding the forecast. We describe the data collection and cleaning process in Appendix A.

We supplement our manually collected company investment plans with additional investment projections obtained from IBES (company guidance) and LSEG Guidance Reports (see Mayew et al. [2024]). The combined dataset is at the firm, date of announcement, year of projection level, and covers between 70-80% of capital expenditures and 60% of total assets of the universe of non-financial U.S. firms in Compustat from 2008-2023 (see Figure 1 for the time series of data coverage). Table 1 reports the summary statistics of firms that are in our sample, compared to non-financial U.S. firms in Compustat. Most firm-level measures are from Compustat; we compute the distance to default using a Merton model as described in Gilchrist and Zakrajšek [2012]. Firms in our sample are significantly larger than the universe of Compustat firms, with a median firm of 2.4 billion in total assets versus the median Compustat firm of 370 million in assets. Across these three sources of investment plans, we observe forward-looking investment plans for 3,336 firms made in 1999-2024 for projected investment occurring in the years 2000-2033. Figure H.4 shows the distribution of projection years across the three sources; there is fairly even coverage over the years. We observe plans for firms across a variety of industries, as shown in Figure H.5.

The plan horizon varies significantly by industry, as summarized in Figure 2; firms in the utilities and transportation sectors tend to have much longer projection horizons on average, from 3-5 years on average, while construction and healthcare companies have on average 15-18 months between announcement and end of investment plan horizon. Firms frequently update their projected investment for a given fiscal year. Figure H.7a shows the modal number of revisions to a given investment plan is three. Further, Figure H.7b shows that these revisions are most often made quarterly, providing helpful high-frequency variation to study the investment decision responses to shocks.

Because we aggregate the stated investment plans from public disclosures, we consider them the managers’ carefully considered plans of future investment given available information. Regulation S-K Item 303 requires SEC-filing companies to disclose material cash requirements, including capital expenditure commitments. Accordingly, once a project is reasonably likely to require material cash outlays, it should be disclosed.[6] Managers are strongly incentivized to provide guidance honestly and avoid “cheap talk”. The

[6]See https://www.ecfr.gov/current/title-17/chapter-II/part-229/subpart-229.300/section-229.303.

1934 Securities Exchange Act, Section 10b-5 makes it unlawful for anyone to "make any untrue statement of a material fact or to omit to state a material fact... in connection with the purchase or sale of any security." (U.S. Congress [1934]). Managers are thus constantly under the threat of litigation when making public disclosures (Francis et al. [1994], Rogers et al. [2011]). Moreover, the passage of the Sarbanes-Oxley Act in 2002 following the Enron and Worldcom scandals put considerable pressure on executive officers to ensure the quality and veracity of disclosures. By contrast, survey-based measures of managerial expectations often used in the literature, while informative, typically rely on voluntary responses with fewer direct consequences for misstatement. As a result, our data offers a uniquely accountable and transparent lens on firms' forward investment intentions.

In Appendix C, we analyze our sample, discuss firm disclosure behavior (including the frequency and horizon of investment plans), and address potential selection bias. In summary, firms that report plans are larger and have more tangible assets and higher investment rates than those that do not disclose plans. Collectively, our firms make up nearly 80% of fixed business investment since 2008 in U.S. Compustat non-financial firms. We view our results as representative of the investment response of large firms, which are key for understanding the response of aggregate investment. Firms that do disclose planned investment tend to do so systematically, with most firms disclosing plans either quarterly or annually. We find no evidence that firms are significantly more or less likely to deviate from their pattern of disclosure in response to changes in their own fundamentals such as investment opportunities, leverage, or profitability. Importantly, we find no evidence that monetary policy surprises significantly affect firms' propensity to disclose investment plans.

Mapping our micro investment plans to aggregate investment requires distinguishing between creation and reallocation of capital. Under U.S. GAAP, capital expenditures incorporate outlays that add to property, plant, and equipment (PP&E) through purchases, construction, and improvements, while excluding acquisitions of business entities.[7] For example, purchases of used machinery are recorded as capex, and while these transactions can improve productivity [Schoar, 2002], they do not contribute to aggregate capital formation. In our sample, the reallocation margin is limited: the share of PP&E that is sold by the firms in our sample each year is under 0.4%, lower than but broadly in line with Eisfeldt and Rampini [2006].[8] This is likely an upper bound of used capital purchases for the firms in our sample, since young/small firms are more likely

[7]In our data, companies will sometimes describe planned capital expenditure in conjunction with acquisition activities, but our planned amounts do not reflect the value of the acquisitions themselves.

[8]We follow Eisfeldt and Rampini [2006] and compute the PP&E turnover as the average Sales of PP&E across firms divided by the lagged average PP&E.

to acquire used capital [Ma et al., 2022], and our sample is skewed larger. Property acquisitions, which also do not contribute to aggregate capital formation, do appear in plans but are infrequent; explicit references to land occur in under 1% of plan descriptions. We therefore interpret the capex plans we study as primarily reflecting new capital formation.

1.1 Plans are Informative about Actual Investment

First, we establish that the plans are informative about actual investment. In aggregate, planned capital expenditures closely track actual capital expenditures. In Figures 3a and 3b, we show the total planned 1-year (3-year) forward capital expenditure change, normalized by lagged assets, relative to the actual capital expenditure change for the subset of firms in our sample. Realized investment tends to be lumpier than planned investment (Doms and Dunne [1998], Caballero and Engel [1999]), particularly when considering longer horizons. For example, capital expenditures were planned to stay roughly constant as a share of assets in 2020 based on 1-year plans made in 2019; but instead dropped significantly, likely due to the COVID-19 pandemic.

We can further show that individual firm-level plans are informative about realized investment. To test this, we regress firm i's *actual* change in investment in year $t+h$ relative to year t on its *planned* change in investment over this horizon, planned as of the end of year t, including firm fixed effects:

$$\frac{I_{i,t+h} - I_{i,t}}{I_{i,t}} = \beta_h \frac{\mathrm{F}_{i,t}[I_{i,t+h}] - I_{i,t}}{I_{i,t}} + \alpha_i^h + \varepsilon_{i,t}^h, \tag{1}$$

where we use $\mathrm{F}_{i,t}[\cdot]$ to denote plans stated in period t for firm i.[9] We plot the estimated coefficients across all horizons $h \in [1,5]$ in Figure 4. We condition on plans that are announced at least three months prior to the end of the projection period; for example, we include AT&T's 2011 capital expenditure plan announced in September 2011, but not the one announced in October 2011. For all of the projection horizons, the coefficients are around 0.8 and statistically significant. This suggests that plans are significantly better than random noise, and are informative about actual investment. We report the regression results of predictiveness of one-year and longer-horizon plans in Table H.8, and find that medium and longer horizon plans (greater than one year) are slightly less predictive but still significantly predict actual investment, with a combined

[9] Note that this is a distinct object from the familiar expectations operator $\mathbb{E}_{i,t}$ which reflects expectations.

coefficient of over 0.6.[10] This finding gives us confidence that identifying changes in planned investment indeed captures meaningful economic decisions on future actual investment.

1.2 Other Data

Regarding cash flow expectations, we obtain firms' projections for net income from LSEG Guidance Reports (see Mayew et al. [2024]). LSEG sources these projections from public disclosures, such as conference calls, press releases, analyst days, and industry conferences. We focus on projections for net income as these are well populated. Firms provide projections for this cash flow variable in a similar way to their projections for investment, specifying a dollar amount expected for a given projection period. For an investment plan announced in a particular fiscal quarter and for a given future projection period, we also observe projected net income in 23,735 cases. There are 1,800 unique firms that provide projected net income alongside an investment plan. LSEG Guidance Reports provides projections for cash flow variables made between 2004-2021.

We use high-frequency changes in interest rate futures around FOMC announcements constructed by Bauer and Swanson [2023] as the main monetary policy shocks. For the front-end of the yield curve (short-term, or "ST Shock"), we use the first principal component of the changes in the current-quarter Eurodollar (ED) futures contract, next-quarter ED futures contract, and the two- and three-quarter-ahead ED futures contracts from 10 minutes before the announcement until 20 minutes after the announcement, scaled so that the impact on the latter contract is one. To measure changes to the longer-end in the yield curve, we use changes in the prices of the 2-year, 5-year, and 10-year Treasury bond futures, also in the 30-minute announcement window.

We further use macro variables including the Chicago Fed National Activity Index (CFNAI) for monthly economic activity from the Chicago Federal Reserve, and U.S. Treasury spot rates, GDP growth, inflation and unemployment rates from FRED. To adjust the investment plans in real terms, we obtain data on inflation expectations from the Cleveland Federal Reserve. We combine the data with realized capital expenditures and other firm characteristics in Compustat. We use Mergent FISD for data on corporate bond debt outstanding, employing the merge with Compustat as described in Mota and Siani [2023], and use Capital IQ to gather the share of bond debt for each firm. We obtain a measure of asset specificity from Kermani and Ma [2023].

[10] Forecast errors are roughly mean zero and do not demonstrate a clear bias; see Figure H.6 for the distribution.

2 The Relationship between Firm Investment Decisions and Monetary Policy

In this section, we investigate the relationship between monetary policy and corporate investment decisions. The baseline hypothesis from neoclassical economic theory is that contractionary (expansionary) monetary policy shocks should reduce (increase) planned investment. We test this directly using standard monetary policy measures from the literature, and exploit our data on plans to estimate elasticities of planned investment over different horizons to interest rates. This leads to our first key finding: a term structure of investment plan responsiveness. Importantly, our findings are all based on immediate decision responses to shocks in a given quarter; thus, the long lags documented in realized investment responses to monetary policy cannot be driven solely by information rigidities in our context. In our second key finding, we document novel micro-evidence of frictions in the production of capital as a driver of long lags in responsiveness.

2.1 The Responsiveness of Investment with Respect to Monetary Policy

We first investigate the average responsiveness of investment plans to monetary policy, pooling across all firms and types of investment. A distinctive feature of our data is that we observe investment plans at various horizons and can track how planned investment at each horizon adjusts in response to monetary policy. Exploiting this feature, we test how plans for one to five years in the future respond to policy-driven changes in interest rates.

Let q denote the most recently closed fiscal quarter before the plan is disclosed, and y denote the fiscal year for the projected capex.[11] For each firm i, disclosure quarter q, and projected fiscal year y, define the horizon $h(i,q,y)$ as the number of months between the disclosure date and the fiscal-year-end date for y, based on the bins $\{9-12,\ 13-24,\ 25-36,\ 37-48,\ 49-71\}$, and label them horizon years 1 through 5.[12] We subtract trailing four-quarter realized capex to isolate changes in planned capital expenditures relative to the firm's recent investment baseline. Then the outcome variable is:

$$\text{Planned Investment}_{i,q,h} \equiv 100 \times \frac{\mathrm{F}_{i,q}[I_{i,y}] - \sum_{s=q-4}^{q-1} I_{i,s}}{Assets_{i,q-1}}, \tag{2}$$

where $\mathrm{F}_{i,q}[I_{i,y}]$ is the disclosed capex plan for fiscal year y, deflated to time q dollars using inflation

[11] Investment plan disclosures (announcements) can occur at any point within a quarter, so we assign a disclosed capex plan to the fiscal quarter q immediately preceding it. For example, for a firm with a fiscal year beginning in January, a plan announcement on January 15, 2010 will be assigned the fiscal quarter 2009 Q4 (i.e., the fiscal quarter ending December 31, 2009).

[12] Note that we label any projection horizon ending up to 71 months after the disclosure date as a five year horizon.

expectations, and $\sum_{s=q-4}^{q-1} I_{i,s}$ is the trailing four-quarter realized capex, converted to time q dollars using PPI.

Using this outcome variable improves upon the low signal-to-noise ratio that typically plagues empirical analyses of the investment response to monetary policy shocks (Nakamura and Steinsson [2018]) by isolating the investment decision immediately following a given policy shock. We discuss this econometric improvement in detail in Appendix B. In summary, plans data (1) alleviates noise and potential bias arising from intervening news between the surprise and the realized outlay, and (2) allows us to recover counterfactual plans that would remain unobservable in realized investment.

Our baseline specification regresses this outcome variable on quarterly changes in U.S. Treasury yields, instrumented by high-frequency monetary policy surprises around FOMC announcements. Within each fiscal quarter, we sum all 30-minute policy surprises for the instrument and map them to the investment plan disclosed right after the end of that quarter. We make two reasonable identifying assumptions: policy surprises in Treasury yields affect investment plans primarily via quarterly yield changes, and the surprises are otherwise exogenous to firm-level investment plans (conditional on lagged controls). This allows us to isolate the component of yield changes attributable to policy news.

Specifically, we run:

$$\text{Planned Investment}_{i,q,h} = \beta_h \ \widehat{\Delta y}_q + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h}, \tag{3}$$

where $\widehat{\Delta y}_q$ is the predicted quarterly change in a maturity-m U.S. Treasury yield, instrumented with the sum of 30-minute changes in the maturity-m U.S. Treasury futures around all FOMC announcements that occurred during quarter q. For example, we instrument quarterly changes in the 2-year yield with the sum of 30-minute changes in the 2-year Treasury futures price. Firm controls include pre-shock cash-to-assets, leverage, log assets, return on assets, tangibility and Tobin's Q. Macro controls include the lagged quarter change and level of the CFNAI index, the lagged 2-year U.S. Treasury yield and 2-10 year Treasury yield curve, and four lags of GDP growth, inflation rate, and unemployment rate. We include all plans ending at least nine months after announcement, and cluster standard errors by firm and calendar quarter.

Table 2 shows our baseline estimates using the five-year yield, which are stable across different sets of fixed effects and controls. Table H.10 shows the estimates for changes to other points of the yield curve. Short-horizon investment plans for the upcoming year seem relatively unresponsive to monetary policy shocks, while long-horizon investment plans for several years into the future are quite responsive. For example, columns (1)-(3) in Table 2 suggest that a one percentage point increase to the five-year yield leads to no reduction today in short-term planned investment ($h = 1$). However, it leads to a reduction of 0.9, 0.6, 1.3 and 0.8 pp of lagged assets today in planned investment that is to occur in two, three, four, and five years respectively. In general, it appears that the response of planned investment to risk-free interest rate shocks is increasing in the horizon of the plan, although the pattern is not strictly monotonic.

Figure 5 summarizes the effects on planned investment for different horizons, for monetary policy shocks to different points of the yield curve, corresponding to the specification in column (3) of Table 2. While these figures resemble local projections common in the monetary transmission literature, the key difference is that all coefficient estimates are capturing decisions made directly following the monetary surprise. Thus, we can interpret these results as the immediate response of the planned investment path up to five years in the future following a monetary policy event. In sum, monetary policy primarily shifts investment planned further into the future, while near-term plans are comparatively less responsive.

A common concern with using high-frequency shocks is relevance: the shocks are small, leading to potentially low-powered regressions. Thus, it is useful to compare the IV results with a "naive OLS" version where we regress planned investment directly on quarterly changes in U.S. Treasury yields. The results, reported in Figure H.9, similarly exhibit a term structure of responsiveness but with weaker magnitudes across the board.[13] The first-order concern for bias in regressing investment plans on interest rate changes is that an increase in nominal interest rates may reflect a growing economy, thus rates and plans may co-move positively, biasing the OLS coefficient towards zero. Indeed, the instrumented version shows a more negative impact of interest rate changes on long-term investment plans than the OLS estimates, confirming our prior of the direction of the bias.

There are two additional concerns when using these high-frequency surprises to infer policy responses. First, if shocks are predictable, as shown in Bauer and Swanson [2023], then the estimated effects are not truly capturing managers' responses to the policy. For this to meaningfully bias our results, however, corporate managers would need to anticipate Treasury yield movements around FOMC announcements more accurately than professional bond traders, which seems implausible.[14] Second, the shocks could also

[13] Table H.12 reports that the first stage of high-frequency MP-driven changes in U.S. Treasury futures is a relevant instrument for quarterly changes in interest rates, with F-statistics well above 10 for each maturity. This is consistent with findings that policy-window changes in yields impact lower-frequency yield movements [Hillenbrand, 2025].

[14] In Appendix G, we further show that all of our main results are robust to including 8 quarterly lags of one-year Treasury yield changes, addressing the concern raised by De Fraisse et al. [2026] that predictable variation in the interest rate path may confound

reflect the Fed "information effect" [Nakamura and Steinsson, 2018, Jarociński and Karadi, 2020], where markets learn from the FOMC announcement about the Fed's private information regarding future economic conditions. To the extent that contractionary surprises convey positive information about growth prospects, this channel would attenuate our estimates, making them conservative. Moreover, we later show that firms revise earnings expectations downward following contractionary shocks, suggesting that managers do not on net interpret these surprises as favorable news about the macroeconomic outlook.

For robustness, we also run a version of the specification where we have $\text{Revision}_{i,q,h} = \frac{\mathbf{F}_{i,q}[I_{i,y}]-\mathbf{F}_{i,q-1}[I_{i,y}]}{K_{i,q-1}}$ on the left-hand side instead. The results are shown in Figure H.11. In this specification, we lose observations where there are not consecutive updates to plans within a year, so the confidence intervals are wider. However, the coefficient estimates are similar in magnitude to our baseline in Figure 5.

We further show in Table H.13 that policy-driven changes in planned investment persist into long-horizon realized investment. Using the 5-year monetary policy shock as an instrument for planned investment, we find that the IV coefficient on instrumented planned investment is large and significant for long-horizon realized investment, confirming that policy-induced plan revisions translate into actual capex. For short-term plans, the first stage is weak, as documented above, thus the IV estimate is uninformative.

What would we have learned looking only at realized investment? We estimate the following analogous specification for realized investment, for horizons $h = 1, 2, 3, 4, 5$:

$$\text{Realized Investment}_{i,q,h} = \beta_h \ \widehat{\Delta y}_q + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h}, \tag{4}$$

where $\text{Realized Investment}_{i,q,h}$ is defined as $\frac{I_{i,q+h} - \sum_{s=q-4}^{q-1} I_{i,s}}{A_{i,q-1}}$. Figure H.10 compares estimates for this specification using realized investment to the specification using planned investment. The coefficients estimated using realized investment are relatively similar in magnitude to those estimated using planned investment, but are far noisier and statistically indistinguishable from zero.

This comparison highlights the low signal-to-noise ratio issue when using data on realized investment: these noisily estimated coefficients could reflect measurement error or weak policy transmission. This problem is exacerbated when zooming out to longer horizons following a shock, when additional events may further affect firm investment decisions. Analyzing our data on actual plans instead of relying solely on data on realizations allows us to see that the policy is indeed effective at adjusting economic agents' decisions.

estimates using high-frequency MPS.

2.2 Long Horizon Investment Plans are More Responsive to Monetary Policy

Next, we formally test the statistical significance of the result that long-horizon plans appear to respond more so than short-horizon plans. We again include all plans ending at least nine months after announcement. We estimate the following specification:

$$\text{Planned Investment}_{i,q,h} = \beta_1 \widehat{\Delta y}_q + \beta_2 \widehat{\Delta y}_q \times \mathbb{1}\{\text{LT Plan}_{i,q,h} = 1\} + \beta_3 \mathbb{1}\{\text{LT Plan}_{i,q,h} = 1\} + \alpha_i + \alpha_h + \gamma X_{i,q-1} + \varepsilon_{i,q,h}, \quad (5)$$

where $\widehat{\Delta y}_q$ is the change in yields over the quarter, instrumented with the sum of 30-minute event window shocks of the duration-matched U.S. Treasury future in each MP event as defined by Bauer and Swanson [2023] that occurred during the fiscal quarter q in which the investment plan was made. We define an investment plan as long-term ($\mathbb{1}\{\text{LT Plan}_{i,q,h} = 1\}$) if the plan is for a year that ends more than 24 months after the announcement of the plan. We include the same set of controls as before.

The results for this estimation are in Table 3. The omitted category is short-term (up to 24 months ahead) plans, so we interpret the first coefficient on the yield change as the impact on near-term plans. We find that a ten basis point 5-year U.S. Treasury contractionary shock lowers short-term planned capital expenditure (as a share of assets) by 0.016 percentage points while reducing long-term planned capital expenditures by around 0.1 percentage points of assets (the sum of the base and the interaction coefficients). Overall, the results suggest that long-term plans decline by relatively more following an increase in interest rates, and that this holds for increases in interest rates across the term structure.

One potential concern is that firms selectively disclose long-horizon plans in a way that is correlated with policy. To alleviate that concern, Table H.6 shows that disclosure of long-horizon plans are not sensitive to monetary policy, and Columns 2-3 in Table H.7 show that disclosing long-horizon plans does not load significantly on changes in firm fundamentals. We discuss potential selection bias in further detail in Appendix C.

To test how robust our result is, we again run a simple OLS regression of investment plans on quarterly changes in U.S. Treasury yields. Table H.11 reports the results, which are qualitatively very similar to our baseline results in Table 3, providing us confidence in our results despite the small magnitude of the measured MPS from Bauer and Swanson [2023]. As before, this comparison not only lends credibility to the overall effect, but also underscores the importance of using instrumented yield changes and shows that the bias is signed correctly.

Overall, these results underscore a clear relationship: the longer the planning horizon, the greater the sensitivity of investment plans to monetary policy shocks. We call this the "term structure of planned investment responsiveness". This helps explain why monetary policy takes time to impact realized investment: it impacts long-horizon plans the most, which are still often years away from realization.

The term structure pattern we document lines up naturally with a setting of multiple-year time-to-build [Kydland and Prescott, 1982]: if capital requires many periods to construct, then much of near-term investment is pre-committed, leaving investment outlays far in the future as the primary margin for adjustment.

2.2.1 Comparing to Prior Estimates

To compare our estimates to the prior literature, we compute the elasticity of investment with respect to the user cost of capital that is implied by our estimates. We compute this elasticity for different horizons. We weight industry-level estimates by their 2022 BEA CAPX shares. As shown in Table 5, the implied short-term elasticity (within two years) of investment with respect to the user cost of capital is 2.5, the medium-term elasticity (within three years) is 3.0, and the long-term elasticity (within five years) is 2.8 to 3.9 depending on the assumption made about the response of unobserved long-horizon plans.[15] Our elasticity estimates are similar to that of Zwick and Mahon [2017] for the largest decile of firms in their sample (which include typical Compustat firms). Given that we also observe longer-horizon investment plans, we are also able to provide estimates for the long-term elasticity of investment with respect to the user cost of capital. Our estimates suggest that the long-run elasticity is also large.

2.3 Plans for New Projects are More Responsive to Monetary Policy

Long time-to-build can help explain why short-horizon plans respond less than long-horizon plans, as short-horizon outlays may already be pre-committed. However, capital-production frictions do not necessarily operate solely through timing. Even within a given horizon, adjustment costs can differ across project types. Here, we explore a second capital-production friction: partial irreversibility of capital, which may vary across projects. When installed capital has a low resale value relative to its purchase cost, investment is costly to reverse [Abel and Eberly, 1994]. In this environment, initiating a project is similar to exercising a

[15] Section D details the industry aggregation, the bounding assumptions, and the parameter assumptions used to convert our estimates of the response of investment with respect to the risk-free rate into an elasticity with respect to the user cost of capital.

real option: the firm can wait, learn, and commit only when expected project value crosses an investment trigger [McDonald and Siegel, 1986, Dixit and Pindyck, 1994]. Tight monetary policy can increase discount rates and thus the value of the real option to invest, making exercising the option to invest less likely. A sharp implication of these models is that projects with more start-up cost, such as new projects, will be more responsive to monetary policy, while planned spending on projects already underway should be comparatively inelastic, because the option to wait has already been exercised (see Appendix E).

To test this prediction of partial irreversibility, we exploit the qualitative text that accompanies roughly half of the investment-plan observations. We implement a transparent keyword-based classification that labels a plan as new when the disclosure clearly indicates project initiation (e.g., "new [facility/store/plant]," "openings," "build," "establish"), and as ongoing when it describes continuation or completion of existing programs (e.g., "ongoing," "continue," "existing," "complete"). Table H.9 reports the full dictionary. We restrict the analysis to plans whose language maps cleanly into one category, so that the comparison isolates how monetary policy affects the decision to work on new versus ongoing projects. This distinction is hard to recover from realized investment alone, which mechanically aggregates pre-committed pipeline spending with discretionary new projects.

We then estimate the following specification for plans that are categorized as being exclusively about new or about ongoing projects:

$$\begin{aligned}\text{Planned Investment}_{i,q,h} = &\sum_j \sum_k \beta_{j,k} \widehat{\Delta y}_q \times \mathbb{1}\{LTPlan_{i,q,h} = j\} \times \mathbb{1}\{NewPlan_{i,q,h} = k\} \\ &+ \sum_j \sum_k \gamma_{j,k} \mathbb{1}\{LTPlan_{i,q,h} = j\} \times \mathbb{1}\{NewPlan_{i,q,h} = k\} \\ &+ X_{i,q-1} + \alpha_i + \alpha_h + \varepsilon_{i,q,h} \qquad (6)\end{aligned}$$

$\mathbb{1}\{NewPlan_{i,q,h} = 1\}$ if the investment plan is categorized as being exclusively about new projects, and $\mathbb{1}\{NewPlan_{i,q,h} = 0\}$ if the investment plan is categorized as being exclusively about ongoing projects. As before, $\mathbb{1}\{LTPlan_{i,q,h} = 1\}$ if the plan is for a year that ends more than 24 months after the announcement date of the plan. In this way, we compare differences between new and existing plans within a planning horizon, in order to separate out the differences in sensitivity of new and ongoing projects from the differences in sensitivity of plans of short and long horizons.

The results are shown in Figure 6. Long-term plans for new projects are significantly more responsive to monetary policy shocks than long-term plans for existing projects. This suggests that for new investment projects, firms have considerably more flexibility in adjusting the scale of the project. For ongoing investment projects, firms have less flexibility in terms of adjusting it in response to monetary policy, i.e., investments appear irreversible once underway. Consistent with this mechanism, we find that the coefficients on ongoing projects are close to zero.

2.4 What Types of Investment are Most Responsive?

We established in the previous section that new plans are more responsive to monetary policy than existing plans. In this section, we further exploit the textual data to investigate which types of investment decisions are particularly sensitive to monetary policy shocks, to try to identify more directly an extensive margin effect. We classify investments into the following, non-mutually exclusive categories: maintenance, acquisitions, physical infrastructure, environmental, expansion, and research and development. Table H.9 presents the primary keywords utilized in our classification process to systematically identify investment types.

As an example, consider the second quarter of 2022, when the Fed Funds rate increased by 100 basis points and more than two-thirds of firms scaled back their planned investments. One such firm is Ingles Markets, a grocery store chain with approximately \$1 billion in market capitalization as of March 2025. In its fiscal year 2021 10-K (ending September 25, 2021), Ingles planned capital expenditures ranging from \$120 to \$160 million for the fiscal year of 2022. This spending was initially designated for store openings in the fiscal year of 2023, technology enhancements, equipment upgrades and replacements for existing stores, warehouse and transportation improvements, and upgrades to its milk processing facility, alongside considerations for property acquisitions aimed at future store development. However, in its subsequent 2022 Q2 10-Q filing, following the rapid rise in interest rates, Ingles revised these plans downward to a range of \$100 to \$120 million, notably excluding property acquisitions intended for future store development from their planned expenditures.

To test which types of investment are most likely to be cut on average in response to contractionary monetary policy, we run the following regression on plans for projection horizons that end at least 9 months after announcement:

$$\mathbb{1}\{\text{Investment Type}\}_{i,q} = \beta \widehat{\Delta y}_q + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q}, \tag{7}$$

where the outcome variable is a dummy variable that equals one if the qualitative description of the investment plan mentions words in a given category of investment and zero otherwise. Note that one investment plan can mention multiple types of investment. Figure 7 shows the estimated coefficients with 90 percent confidence intervals, using three different tenors of yield changes on the right-hand-side: short-term, two-year, and five-year, which yield similar findings. The most robust finding is that environment-related investment plans are significantly responsive to monetary policy: a one percentage point increase in yields (driven by monetary policy) will reduce the likelihood of mentioning an investment plan about the environment by about one percentage point. Further, increases in the 5-year yield reduce the likelihood of mentioning investment plans about expansionary projects or maintenance capex: a one percentage point increase in yields reduces the likelihood of an expansionary plan by nearly two percentage points, and maintenance by about one percentage point. Physical infrastructure related investments respond negatively to positive (contractionary) yield shocks, but this is statistically insignificant.

These results underscore the heterogeneity of investment responses to monetary policy. Monetary policy appears to primarily affect investment categories where firms can adjust timing without immediate consequences - environmental projects that are often voluntary or anticipatory and expansionary plans that can wait for better conditions. By contrast, investments involving deeper strategic or institutional commitments - such as R&D programs tied to specialized teams and long-term research agendas, acquisitions driven by time-sensitive opportunities, and infrastructure governed by contractual obligations - appear less responsive.

3 Transmission Channels of Monetary Policy to Investment

Next, we explore the transmission channels of monetary policy to firm investment decisions. Monetary policy may affect firms' investment decisions via many channels, including through changes in financial constraints, the cost of capital or cash flow expectations.[16]

A key advantage of our approach is that by using investment plans and cash flow expectations data, we observe firms' decisions over different types and horizons of investment in real time. This allows us to tie discrete adjustments in plans directly to contemporaneous changes in firms' expectations about cash flows

[16]For example, shortly after liftoff from the ZLB, Williams and Williams Partners in January 2016 justify their reduced capital expenditure plans through lower expected net income and higher cost of capital: "Reduced growth in production areas, combined with lower commodity margins and a higher cost of capital, will drive both lower capital and lower ongoing expenses that we expect to be significant." Following further rate hikes in late 2018, Uniti Group, in its earnings call in early 2019, stated that the higher cost of capital lowered its planned capital expenditure: "With the cost of capital in the public markets being elevated right now, we've chosen to kind of go slow on larger transactions." Consol Energy, in its 10-K for 2009, describes how easy monetary policy raised its cash flow expectations: "Due to the relaxed monetary policy in the United States, a modest recovery appears likely to continue in the U.S. ... This should lead to an increase in demand for energy products."

and drivers of firms' discount rates and costs of capital. By doing so, we avoid the timing mismatches and noise inherent in realized data to better pinpoint the transmission mechanisms.

We discuss our methods and results below. In summary, our evidence is consistent with a cost of capital channel acting as a primary transmission channel for monetary policy, as well as a driver of the term structure of investment plans that we document. While cash flow expectations do adjust in response to monetary policy, they play a quantitatively smaller role in the overall transmission. Financial constraints dampen the transmission, consistent with Ottonello and Winberry [2020].

3.1 A Simple Theoretical Framework

To highlight the potential transmission mechanisms through which monetary policy may affect firms' investment decisions, we use a simple Q-theory model.

Consider a firm that produces output in period t by combining capital and labor using a constant returns to scale production function $A_t K_t^{\alpha} L_t^{1-\alpha}$. At the beginning of period t, the firm hires labor L_t at wage w and chooses investment I_t. The capital stock develops as follows: $K_{t+1} = (1-\delta)K_t + I_t$, where δ is the capital depreciation rate. Investment is subject to quadratic adjustment costs:

$$C(I_t, K_t) - I_t = \frac{b}{2}\left(\frac{I_t}{K_t} - a\right)^2 K_t, \tag{8}$$

where $b > 0$ governs the magnitude of adjustment costs and a is the frictionless investment rate. These costs display constant returns to scale. Define the firm's earnings in period s as $\Pi_s = A_s K_s^{\alpha} L_s^{1-\alpha} - wL_s - C(I_s, K_s)$. The firm chooses investment to maximize the net present value of current and future earnings, discounted at the firm's discount rate:

$$\max_{\{I_s, L_s\}_{s\geq t}} \Pi_t + \sum_{s\geq t+1} \frac{E_t[\Pi_s]}{\prod_{j=1}^{s-t}(1+\rho_{t,j})} \tag{9}$$

subject to $K_{s+1} = (1-\delta)K_s + I_s$, where $\rho_{t,j}$ is the firm's per-period discount rate at horizon j.

In Appendix F we derive that optimal investment takes the form:

$$\frac{I_{i,t}}{K_{i,t}} = \left(a - \frac{1}{b}\right) + \frac{1}{b} Q_{i,t} \tag{10}$$

where Q is the present value of expected future earnings per unit of installed capital, discounted at the firm's cost of capital:

$$Q_{i,t} = \frac{1}{K_{i,t+1}} \sum_{s=1}^{T_i} \frac{E_t\left[\Pi_{i,t+s}\right]}{\prod_{j=1}^{s}(1+\rho_{t,j})} \tag{11}$$

with $\rho_{t,j}$ the per-period discount rate at horizon j.

Investment thus depends on two channels operating through $Q_{i,t}$. The first is the cash-flow expectations channel: holding the discount rate fixed, an increase in $E_t\left[\Pi_{i,t+s}\right]$ raises $Q_{i,t}$ and increases investment. The second is the discount rate channel: holding expected cash flows fixed, a decrease in $\rho_{t,j}$ raises $Q_{i,t}$ and increases investment. If firms use their financial cost of capital to discount expected future earnings in the optimization problem above, then this can also be called a cost of capital channel. If monetary policy affects either cash-flow expectations or firms' cost of capital, then according to the simple framework outlined above it should affect firms' investment decisions.

3.2 Financial Constraints

While financial constraints are not present in the simple framework we outline above, they could dampen or amplify the transmission of monetary policy to investment. On one hand, frictions in the credit market could amplify the effects of monetary policy on the cost of financing investment, particularly for financially constrained firms [Bernanke and Gertler, 1995a, Jeenas, 2024]. On the other hand, financial frictions generate an upward-sloping marginal cost curve for investment, which may dampen the response of investment to monetary policy for firms that are more financially constrained [Ottonello and Winberry, 2020].

We investigate whether the financial constraints channel can explain the responsiveness of the firms we observe to monetary policy. If financial constraints act as an amplifying policy transmission mechanism, then we should expect that more financially constrained firms adjust plans more strongly to monetary policy. We test this directly by investigating heterogeneity in the responsiveness of firms to yield changes based on observable firm characteristics that could proxy for financial constraints. We estimate the following specification:

$$\text{Planned Investment}_{i,q,h} = \beta \cdot \widehat{\Delta y}_q + \theta \cdot \widehat{\Delta y}_q \times \mathbf{1}\{X_{i,q-1} \in \text{Top } 25\%\} + \gamma' X_{i,q-1} + \alpha_i + \alpha_h + \varepsilon_{i,q,h}, \tag{12}$$

where $\widehat{\Delta y}_q$ is the quarterly change in the Treasury yield, instrumented by the corresponding high-frequency monetary policy surprise as measured by the 30 minute window around monetary policy announcements.

The outcome variable Planned Investment$_{i,q,h}$ denotes the change in firm i's planned capital expenditures in quarter q, scaled by lagged assets, and the controls and fixed effects are the same as in the previous specifications. The coefficient of interest, θ, captures the differential response of firms in the top quartile of characteristic X (prior to the shock) relative to other firms.

Figure 8 plots the coefficient estimates across various dimensions of firm heterogeneity. Here, we discuss the results relating to heterogeneity in how far from financial constraints a firm is likely to be, as measured by firm size, leverage, interest expense relative to total debt, profitability, cash-to-assets, and distance to default as implied by the Merton model. We find that firms in the top quartile for interest expense to debt ratios are less responsive to risk-free rate changes (as shown by the positive coefficient on the interaction term, which dampens the baseline negative effect). We also find that firms in the top quartile for distance to default, and cash-to-assets are more responsive. Together, this suggests that firms that are less likely to face financial constraints are more responsive to changes in interest rates. This aligns with the findings of Ottonello and Winberry [2020], and suggests that monetary policy does not transmit through the tightening of financial constraints, at least for the firms in our sample.

3.3 Cost of Capital

One transmission mechanism outlined by the Q-theory framework above is the discount rate channel, or cost of capital channel. If firms discount expected future net income by their cost of capital, and monetary policy changes the cost of capital, then this should influence firms' investment decisions. Gormsen and Huber [2024] find that firms' perceived costs of capital differ from their hurdle rates. They find that while hurdle rates move slowly, firms' perceived costs of capital update relatively quickly in response to changes in their financial cost of capital. Therefore, even in the presence of sticky hurdle rates, if firms' perceived cost of capital updates in response to monetary policy, this can translate to changes in investment decisions if firms use both objects in their investment decision-making process. Tighter monetary policy may thus dampen investment plans by raising firms' cost of capital.[17] This mechanism also potentially helps to explain our term structure of planned responsiveness results.

[17] Table H.14 provides examples of firms discussing interest rates during the 2022-23 tightening cycle during earnings calls in quarters where they also revised their investment plans down.

3.3.1 Heterogeneity in Exposure to Updates in the Cost of Capital

Under a cost of capital channel, firms that are more attentive to and more likely to receive more timely information about their cost of capital will be more responsive to monetary policy. We argue that firms that have some bond debt coming due and are therefore due to refinance, or have a greater share of their total debt financed through the bond market, are more likely to regularly update their perceived cost of debt, which feeds directly into their perceived cost of capital. Following a monetary policy shock, such firms are likelier to adjust their perceived cost of capital and, in turn, their investment plans.

To investigate this, we run our baseline IV regression where we interact instrumented yield changes with measures of bond-market exposure: indicators for whether the firm has a high share of bond debt, or bond debt maturing in the near term (0-6 months, 0-12 months, or 0-24 months) before the shock, using data from Mergent FISD. We estimate:

$$\begin{aligned}\text{Planned Investment}_{i,q,h} = {} & \beta_1 \widehat{\Delta y}_q + \beta_2 \widehat{\Delta y}_q \times \mathbb{1}\{\text{Bond Mkt Exposure}_{i,q-1}\} \\ & + \beta_3 \mathbb{1}\{\text{Bond Mkt Exposure}_{i,q-1}\} + \gamma X_{i,q-1} + \alpha_i + \alpha_h + \varepsilon_{i,q,h},\end{aligned} \tag{13}$$

where $\widehat{\Delta y}_q$ is the quarterly change in the 5-Year Treasury yield, instrumented by the 5-Year monetary policy surprise; $\mathbb{1}\{\text{Bond Mkt Exposure}_{i,q-1}\}$ is an indicator for whether firm i has a high share of bond debt (top tercile in that quarter), or debt maturing within the specified window (0-6, 0-12, or 0-24 months); $X_{i,q-1}$ are lagged firm and macro controls; α_i are firm fixed effects; and α_h are horizon fixed effects. The coefficient β_1 captures the base effect of interest rate changes on planned investment, but the coefficient of interest is β_2, which captures the differential response for firms that are more likely to be attentive to and receive more timely information about their cost of capital.

Figure 9 plots the results of the estimation, showing both the base effect of interest rate changes on planned investment and the interaction effect for firms with debt coming due in the indicated window. We find a significant interaction coefficient on all debt coming due indicators, indicating that firms with near-term debt maturities and thus facing imminent refinancing needs respond more strongly to monetary policy. We also find a negative, albeit statistically weak, coefficient on the interaction term with a greater bond share. Because firms with more bonds outstanding likely receive more timely information on their market cost of debt from their underwriters, it is intuitive that they would be more responsive to monetary policy.

We also estimate an alternative specification that directly investigates the effects of monetary policy-induced changes in firms' cost of debt on investment. Again, firms that are more attentive to changes in their cost of debt and thus their cost of capital should be more responsive. We estimate the following specification:

$$\text{Planned Investment}_{i,q,h} = \beta_1 \widehat{\Delta y}_{i,q} + \beta_2 \widehat{\Delta y}_{i,q} \times \mathbb{1}\{\text{Bond Mkt Exposure}_{i,q-1}\} \tag{14}$$

$$+ \beta_3 \mathbb{1}\{\text{Bond Mkt Exposure}_{i,q-1}\} + \gamma X_{i,q-1} + \alpha_i + \alpha_h + \varepsilon_{i,q,h}, \tag{15}$$

where $\widehat{\Delta y}_{i,q}$ is now the quarterly change in firm i's cost of bond debt, measured using bond yields, instrumented using the 5-year U.S. Treasury yield high-frequency monetary policy shock. The results are shown in Figure 10. We find evidence that firms are responsive to monetary-policy-induced changes in their cost of debt, particularly those that are likely more attentive to such changes. The results provide further evidence in support of the cost of capital channel. Firms are responsive to changes in the cost of debt component of their cost of capital, and those most likely to update their perceived cost of capital quickly are the most responsive.

3.3.2 Heterogeneity in the Duration of Investment

When valuing investment projects, the discount rate used should match the riskiness and duration of the project when evaluating whether to invest. Because long-term projects should be discounted using long-term yields, and short-term projects should be discounted using short-term yields, one testable prediction of the cost of capital mechanism is if long-term projects are more responsive to shocks to long-term risk-free rates than short-term projects.

We test this directly by estimating the following specification, where we compare how planned investment for different horizons responds to shocks in different parts of the yield curve. As before, we instrument each U.S. Treasury yield change with the sum of high-frequency shocks for the maturity-matched Treasury future as per Bauer and Swanson [2023].

$$\text{Planned Investment}_{i,q,h} = \beta_1 \widehat{\Delta y}_q + \sum_{x=2}^{5} \beta_h \widehat{\Delta y}_q \times \mathbb{1}\{h = x\} + \alpha_i + \alpha_h + X_{i,q-1} + \varepsilon_{i,q,h} \tag{16}$$

Table 4 reports the results. Importantly for the cost of capital channel, the responsiveness of investment plans appears aligned with the maturity of the interest rate shocks: 10-year yield shocks affect the longest-horizon five year plans the most, while shorter maturity shocks do not seem to significantly affect these plans. De Fraisse [2023] documents that secular changes in the slope of the yield curve impact the duration of corporate investment; in a similar vein, our results provide suggestive micro-evidence that longer term investment plans are more responsive to shocks to the long end of the yield curve.

Cross-firm variation in responsiveness is also informative about the cost of capital channel. If monetary policy operates through this channel, then we should see that firms with greater duration investment projects are more responsive. To this end, we run the heterogeneity analysis described in Equation 12 on measures of duration: asset maturity (following De Fraisse [2023]) and investment duration (dollar-weighted average horizon of investment plans). Figure 8 shows that firms with greater asset maturity and investment duration are more responsive to risk-free rate changes. This provides further evidence supporting the cost of capital channel.

3.3.3 Do Firms Change their Borrowing in Response to Monetary Policy?

If firms reduce planned investment in response to higher cost of capital, we may expect this to be reflected in their borrowing behavior. We next test whether firms adjust their borrowing in response to monetary policy shocks. We estimate how a one-period policy shock alters firms' debt-issuing behavior over multiple horizons. Concretely, for each month horizon $h = 0, 1, \dots, 12$, we run regressions of the form:

$$\frac{\sum_{\tau=0}^{h} \text{NetIss}_{i,q+\tau}}{A_{i,q-1}} = \beta_h \widehat{\Delta y}_q + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h}, \tag{17}$$

where $\text{NetIss}_{i,q+\tau}$ is firm i's net debt issuance in quarter $q+\tau$ deflated to time q dollars using PPI, and we include the same controls and fixed effects as before. Figure 11 shows the average results across all firms, using different monetary policy shocks. There is a statistically significant decline in net issuance in response to policy-driven increases in the EBP, and a short-lived and weaker effect for policy-driven increases in the short rate. The cumulative response pattern implies that tighter policy raises firms' cost of debt, leading them to cut back planned borrowing over time as their cost of capital increases. In turn, this reduction in credit supply could dampen their willingness to execute longer-horizon investment projects.

The coefficient plots in Figure 11 indicate notably shorter response lags for borrowing compared to realized investment. Borrowing responses peak around 4-5 months following a policy-driven change in the EBP, and about 2-3 months following a policy-driven change in the short rate. In contrast, realized investment responses typically peak between 2 to 3 years, as documented in existing literature (Cloyne et al.

[2023]). Supporting evidence from recent studies also suggests near-immediate borrowing responses to shifts in issuance costs (Boyarchenko et al. [2022], Darmouni and Siani [2022], Mota and Siani [2023], Selgrad [2023], Siani [2021]), likely facilitated by frequent issuers and firms holding shelf registrations. Thus, bond market borrowing responds quickly to monetary policy shocks.

Collectively, these results indicate that firms adjust their debt issuance behavior significantly in response to monetary policy-induced shifts in borrowing costs. The joint response of investment plans and borrowing behavior suggests that monetary policy operates through the cost of capital channel in a manner consistent with firms both re-evaluating the attractiveness of investment projects and adjusting their financing accordingly.

3.4 Cash Flow Expectations Channel

Because we observe managers' expectations in the same quarter as investment plans, we can study whether monetary-policy-driven investment plans adjustments reflect primarily cost of capital-news or cash-flow news. In this section, we study and try to quantify bounds on a potential cash-flow expectations margin. Gennaioli et al. [2016] use CFO survey data to document that higher earnings expectations in the next twelve months corresponds to increased planned investment over the same period. Changes in firms' cash flow expectations can affect planned investment in various ways. First, in the presence of capital market frictions that make internal funds less costly than external funds, a decrease in a firm's cash flows will result in an decrease in that firm's investment (Fazzari et al. [1988]). Second, in the presence of cash-flow based lending (Lian and Ma [2021]), a decrease in a firm's cash flows may cause financial constraints to become more binding, which may lead to a decrease in that firm's investment. Third, as outlined in the simple Q-theory framework above, a decrease in firm's cash flow expectations, for example due to lower anticipated aggregate demand, may decrease the expected future payoff of investment projects, which may also lead to a decrease in investment. It follows that if an increase in interest rates dampens a firm's expectations of future cash flows, via an aggregate demand channel, then the firm may reduce its planned investment.

While we do not directly observe firms' cash-flow expectations, we do observe their net income expectations. We treat net income expectations as a reasonable proxy for cash flow expectations. First, we study the relationship between a firm's expected future net income and monetary policy. We estimate the following specification:

$$\text{E[Net Income]}_{i,q,h} = \beta\widehat{\Delta y}_q + \gamma X_{i,q-1} + \alpha_i + \alpha_h + \varepsilon_{i,q,h}. \tag{18}$$

where β represents the effect of a change in the yield induced by monetary policy events on earnings projections. Controls $X_{i,q-1}$ are as above, and α_i and α_h are firm and projection horizon fixed effects. Standard errors are clustered at the firm and calendar quarter level.

The results of these estimations are shown in Table 6, for net income expectations for the next year ($h = 1$) in columns (1) - (3), and for expectations for longer horizons ($h > 1$) in columns (4) - (6). The results suggest that short-term net income expectations respond to monetary policy, with a negative significant coefficient on the instrumented yield change. In terms of magnitudes, a one percentage point increase in the 5-year yield induced by monetary policy leads to a 0.8 percentage point decline in net income expectations, expressed as a percentage of lagged assets. From Table 1, this translates to a 0.12 standard deviation change in net income expectations for a one percentage point increase in the 5-year yield. Longer-term net income expectations do not seem responsive, although we observe far fewer observations for long-term earnings expectations.

Next, to study the relationship between a firm's investment plans and projected cash flows, we estimate the following specification:

$$\text{Planned Investment}_{i,q,h} = \beta \text{E[Net Income]}_{i,q,1} + \gamma X_{i,q-1} + \alpha_i + \alpha_q + \varepsilon_{i,q,h}, \tag{19}$$

where $\text{E[Net Income]}_{i,q,1}$ is firm i's projected real net income for the next year ($h = 1$), projected in quarter q, compared to actual net income in quarter $q-1$, scaled by the firms' assets as of quarter $q-1$. $\text{Planned Investment}_{i,q,h}$ is the analogous term for projected investment for projection year y. Controls $X_{i,q-1}$ include the same firm controls and macro controls as before. α_i and α_q are firm and quarter fixed effects, respectively. Standard errors are clustered at the firm and calendar quarter level.

In our context, in order for the expected cash flow mechanism to align with our term structure findings, changes in cash flow expectations should affect longer-term investment plans. Table 7 reports the regressions of planned investment on expected net income with two different timing structures. Columns (1) - (4) investigate the relationship between one-year-ahead investment plans and one-year-ahead net income expectations, made contemporaneously. Columns (5) - (8) investigate whether near-term earnings expectations predict longer-horizon investment plans, and displays the relationship between longer-term investment plans more than one year ahead on one-year-ahead net income expectations, made contemporaneously.

The first four columns show that the coefficient on expected net income change is positive and highly significant across all specifications, ranging from 0.013 to 0.020. This implies that a 1 percentage point increase in expected net income (as a share of assets) is associated with approximately a 0.02 percentage point increase in planned investment (as a share of assets). The coefficient is robust to the inclusion of firm controls, macro controls, and firm and time fixed effects. The next four columns show that longer-horizon investment plans for two to five years into the future are not statistically significantly related to contemporaneous first-year cash flow expectations. These results suggest that changes in near-term earnings expectations do not strongly translate into changes in long-horizon investment plans for our firms.

Overall, while present, the cash flow expectations channel appears to be quantitatively very small for the firms in our sample. This could partially be explained by our firms being far from their financial constraints (Table 1 shows the typical firm in our sample has a distance to default of about 7 standard deviations), given that one way in which cash flow expectations may affect investment is through changing financial constraints. This suggests that for our firms, the cost of capital channel dominates in the transmission of monetary policy to investment.

4 Discussion

Our results indicate that new and longer-term investment plans are comparatively more sensitive than existing investment plans. These patterns suggest that firms differ significantly in their flexibility to adjust investment decisions across different kinds of projects, thus affecting the overall transmission of monetary policy. We interpret this as evidence of adjustment costs that affect firms' ability to flexibly alter ongoing projects. Consistent with this idea, ongoing projects are far less responsive to monetary policy than new, longer-term investment projects.

In our data, the decision stage responds quickly: managers incorporate policy news into stated plans essentially on impact. While we do not claim that managers process all available information completely, both planned investment and expected income respond within one quarter of shocks. This suggests that much of the long lags in realized investment for the firms in our sample arise after the decision is made, during implementation.

A second candidate explanation for lags is an amplification mechanism operating through endogenous financing constraints, as in financial-accelerator models [Bernanke et al., 1996, Gilchrist and Zakrajšek, 2012]. In those frameworks, tighter policy depresses borrower net worth and gradually raises the external finance premium, delaying peak real effects. Our evidence points in a different direction for the firms we observe. Firms that are more financially constrained actually respond less so to monetary policy, consistent instead with the idea that constrained firms face an upward sloping cost curve for investment and thus are less responsive to policy shocks [Ottonello and Winberry, 2020]. This suggests that tightening in financing constraints is unlikely to be the main mechanism for policy transmission, at least among our sample of firms. This is plausible, given publicly traded U.S. firms are generally considered less financially constrained; in our sample, the inter-quartile range of the distance to default is 3.7 to 10 standard deviations. (see Table 1).

Instead, our evidence is consistent with theories of capital production frictions. The term structure of investment plan responsiveness illustrates that capital outlays planned for the near future are harder to adjust. This is in line with time-to-build models (such as Kydland and Prescott [1982]) with adjustment costs, which would suggest that investment plans for long-term horizons respond more than investment plans for short-term horizons in response to monetary policy shocks. This result also suggests limited support for convex adjustment costs, as in such a world one would expect firms to smooth their investment plans across all horizons evenly. Moreover, our results on new projects responding more so than ongoing projects is consistent with models of partial irreversibility.

In terms of mechanisms, we find strong evidence of a cost of debt channel. While monetary policy transmission through firms has been shown to work robustly via a bank lending channel [Kashyap et al., 1996, Kashyap and Stein, 2000], other channels may also affect larger firms that are less bank-dependent. Indeed, our sample of publicly-traded U.S. firms tends to borrow more from bond markets: the median firm in our sample has 46% of its debt in bonds and 37% in bank debt, while the median Compustat firm has 12% in bonds and 41% in bank debt. We find evidence that the cost of debt channel operates more strongly through firms that have bond debt coming due, likely because market rates are more salient for them. On the other hand, firms that are more financially constrained by traditional measures respond less so to policy. A potential cash flow expectations channel is quantitatively small, so in the lens of the standard Q-theory model, the discount rate channel seems to matter more for our set of firms.

Overall, our findings reveal a new picture of monetary policy transmission to the real economy. Monetary policy affects corporate investment primarily by shifting the discounting and financing conditions applied to long-duration projects, while the pace at which those decision changes translate into realized investment depends on the composition of firms' project pipelines. Because the most policy-sensitive margin is new long-horizon investment, the macro response is delayed in large part because a substantial fraction of near-term spending is already in motion and costly to reverse.

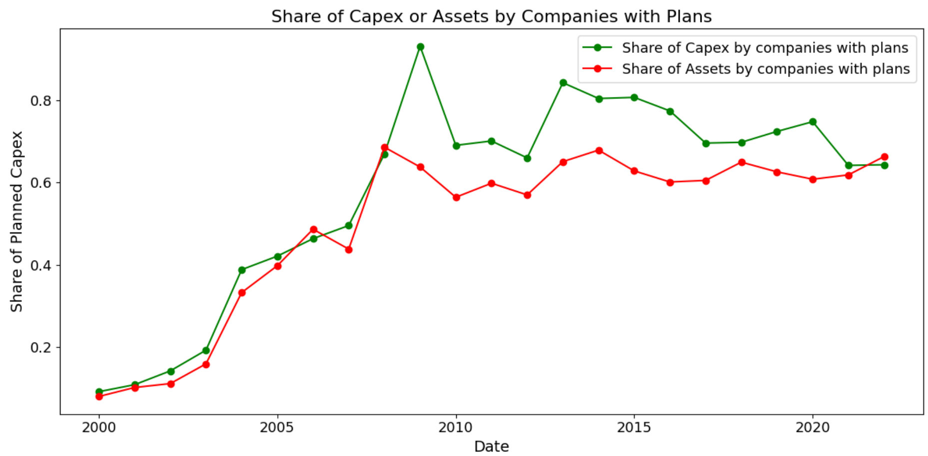
5 Conclusion

We hand-collect and construct a novel dataset on company investment plans and expectations that provides a unique window into corporate decision-making and how it relates to monetary policy transmission. We document that investment responses differ by horizon: short-term plans react less strongly overall compared to long-term plans, consistent with production frictions such as time-to-build and adjustment costs. Relatedly, the stage of the project matters – new investments are more responsive to contractionary monetary policy shocks, whereas ongoing projects are largely insulated – further evidence of the variation in flexibility across investment projects within a firm's portfolio. Our results are broadly consistent with a view of investment implementation with partial irreversibility and real options [Abel and Eberly, 1994, Dixit and Pindyck, 1994].

Our results provide new evidence explaining the well-documented empirical lag between monetary policy changes and realized output. We find that monetary policy immediately impacts the formation of new investment plans, with actual investment spending adjustments materializing only when projects begin execution with lags, given time to build and partial irreversibility of existing projects. We also find new evidence on the transmission mechanisms through which monetary policy affects investment. The cost of capital channel appears to be the dominant mechanism for our subsample of firms, with the cash flow expectations channel also playing a role albeit more quantitatively muted.

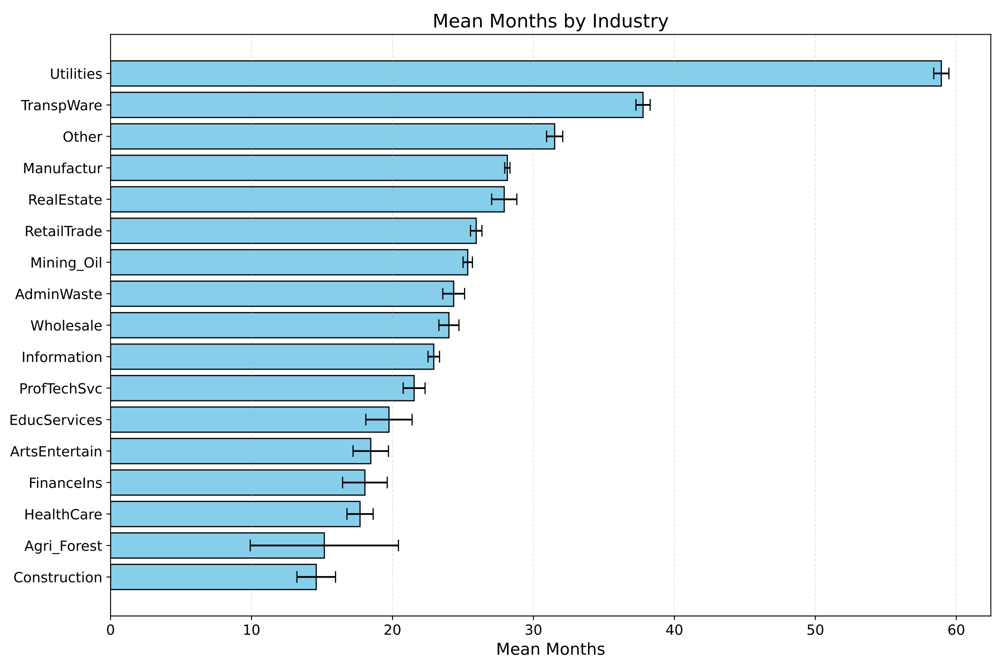
Overall, our evidence shows that analyzing corporate decision making is crucial for understanding the transmission of policy to the aggregate economy. Our findings imply that the composition of planned investment projects can affect how quickly and flexibly the corporate sector can respond to monetary policy through actual investment spending. While the focus of our paper is on monetary policy, our results may extend to firm responses to other shocks and policies, and our new data provides many opportunities to better understand corporate decision-making.

Figure 1: Share of Capex and Assets by Companies with Plans



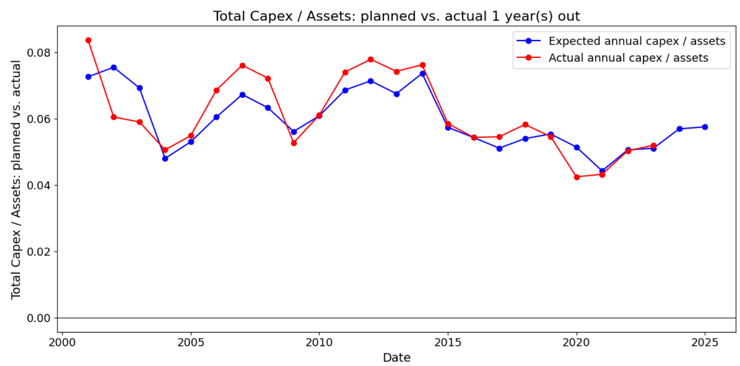
Notes: This figure plots the share of total assets in red and total capex in green across all U.S. Compustat non-financial companies that are covered by firms with investment plans in our sample.

Figure 2: Industry-level mean months to end of plan

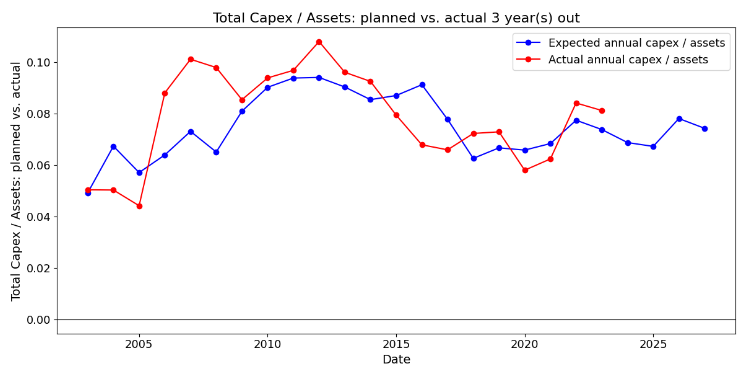


Notes: This figure summarizes the average projection period by industry across all firm quarters, conditional on the firm-quarter having an investment projection. Standard error bars are reported in black.

Figure 3: Comparing Planned vs. Actual Investment



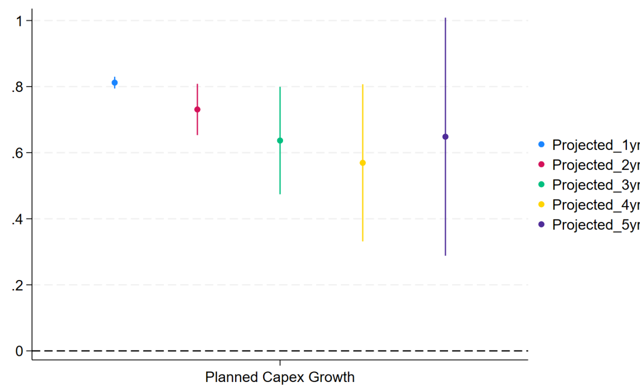
(a) Planned vs. Actual Capex / Assets: 1 Year Out



(b) Planned vs. Actual Capex / Assets: 3 Years Out

Notes: This figure compares total realized and planned capex as a share of lagged total assets. In Panel (a), the blue line shows the change in aggregate planned capex relative to one year earlier, while the red line shows the realized capex change over the same period. In Panel (b), the blue line plots planned capex / assets relative to three years prior, and the red line plots capex / assets relative to three years prior.

Figure 4: Predictiveness of Investment Plans at Different Projection Horizons

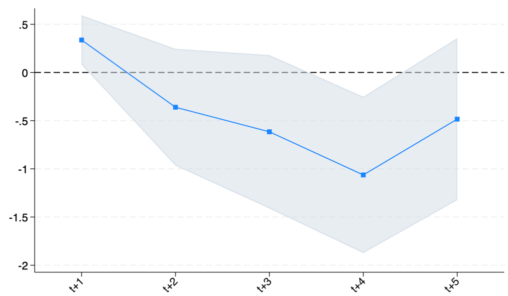


Notes: This figure plots the estimated coefficient β_h and 95% confidence intervals from horizon-specific regressions of realized nominal capital expenditure growth on planned nominal capital expenditure growth:

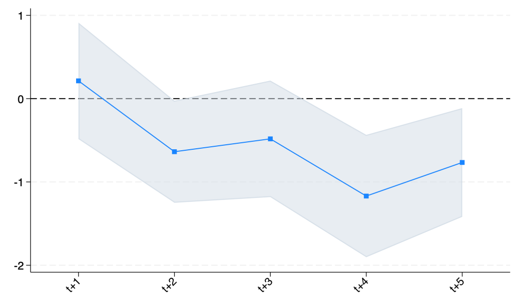
$$\frac{I_{i,t+h} - I_{i,t}}{I_{i,t}} = \beta_h \frac{\mathrm{F}_{i,t}[I_{i,t+h}] - I_{i,t}}{I_{i,t}} + \alpha_i^h + \varepsilon_{i,t}^h,$$

where $I_{i,t+h}$ is firm i's realized nominal capital expenditures in projection year $t+h$, $I_{i,t}$ is sum of last four quarters' realized nominal capital expenditures, and $\mathrm{F}_{i,t}[I_{i,t+h}]$ is the planned nominal capital expenditure for year $t+h$ disclosed in period t. The regression is estimated separately for each horizon $h \in \{1,2,3,4,5\}$, where $h = 1$ corresponds to projection horizons ending 3–12 months after the announcement, $h = 2$ to 13–24 months, $h = 3$ to 25–36 months, $h = 4$ to 37–48 months, and $h = 5$ to 49–71 months. The sample is restricted to annual (12-month) projection periods ending at least 3 months after the announcement date. Both planned and realized nominal capital expenditure growth are trimmed at the 2nd and 98th percentiles. Firm fixed effects are included and standard errors are clustered at the firm level.

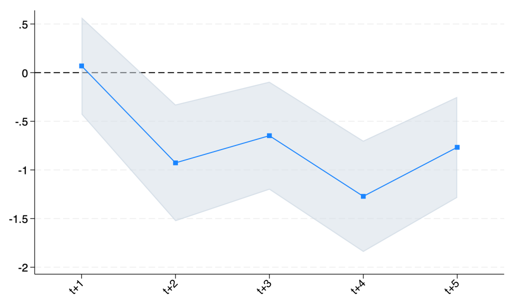
Figure 5: Impact of Monetary Policy on Investment Across Horizons



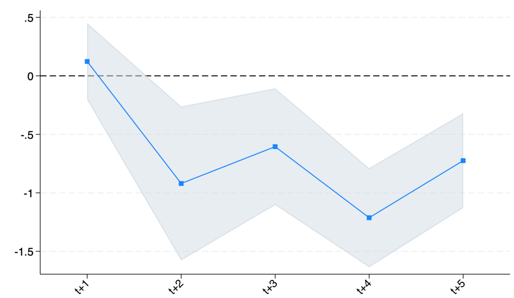
(a) ST Shock



(b) 2y Shock



(c) 5y Shock



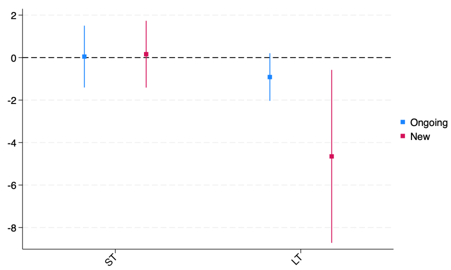
(d) 10y Shock

Notes: This figure depicts β_h and 90% confidence intervals for the following specification, for $h = 1,2,3,4,5$:

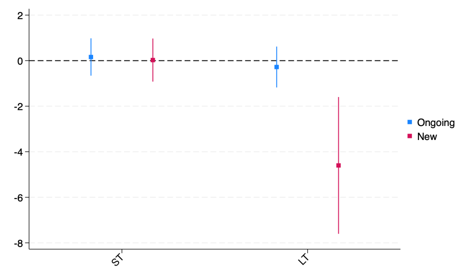
$$\text{Planned Investment}_{i,q,h} = \beta_h \ \widehat{\Delta y}_q + X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h}$$

Planned Investment$_{i,q,h}$ is planned real investment for firm i in projection year y relative to the rolling sum of the real investment over the prior 4 quarters ($q-4$ to $q-1$), divided by quarter $q-1$ assets. h denotes the years from today that the plan is for. Here, $h = 1$ if the difference between the projection date and the end of the projection horizon is between 9-12 months, $h = 2$ if the difference is between 13-24 months, $h = 3$ if the difference is between 25-36 months, $h = 4$ if the difference is between 37-48 months, and $h = 5$ if the difference is between 49-71 months. $\widehat{\Delta y}_q$ is the three month change in the Treasury yield, instrumented using the maturity-matched monetary policy shock that occur during quarter q, during which the investment plan is made and at the end of which the plan is announced. Panel (a) instruments the 1-year UST yield with the Bauer and Swanson [2023] unorthogonalized shock, Panel (b) instruments the 2-year UST yield with the high frequency change in the 2-year UST yield, Panel (c) instruments the 5-year UST yield with the high frequency change in the 5-year UST yield, and Panel (d) instruments the 10-year UST yield with the 10-year UST yield. The regression controls $X_{i,q-1}$ include firm-level characteristics (cash-to-assets, leverage, log assets, return on assets, tangibility, and Tobin's Q), the quarter change in the CFNAI index, the level of the CFNAI index, the 2-, 5-, and 10-year U.S. Treasury yields, all as of quarter $q-1$, as well as four lags of GDP growth, the inflation rate and the unemployment rate. The outcome variable is trimmed at the 2nd and 98th percentiles. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level.

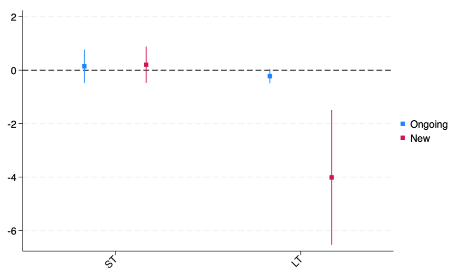
Figure 6: Effect of Monetary Policy on New versus Ongoing Investment Projects



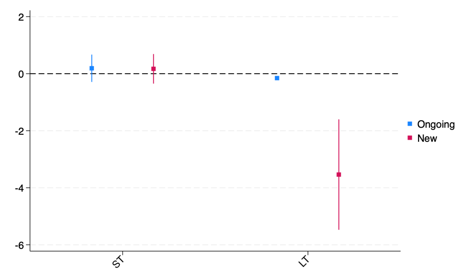
(a) ST Shock



(b) 2y Shock



(c) 5y Shock



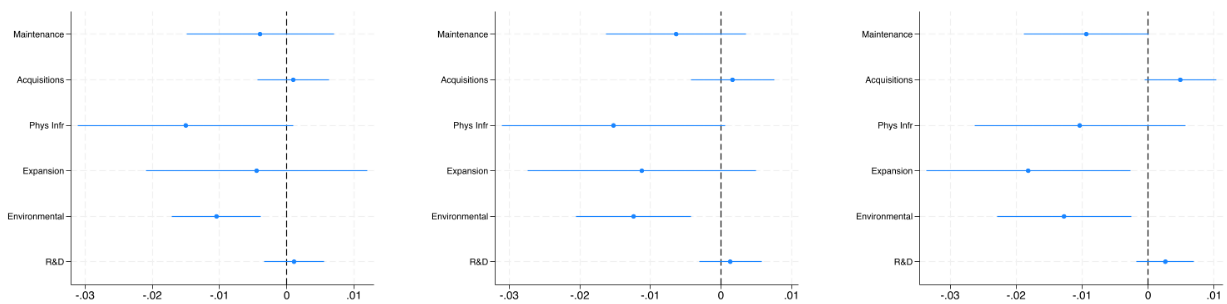
(d) 10y Shock

Notes: This figure depicts $\beta_{j,k}$, for $j = 0, 1$ and $k = 0, 1$, and 90% confidence intervals for the following specification:

$$\begin{aligned}\text{Planned Investment}_{i,q,h} = & \sum_j \sum_k \beta_{j,k} \widehat{\Delta y}_q \times \mathbb{1}\{LTPlan_{i,q,h} = j\} \times \mathbb{1}\{NewPlan_{i,q,h} = k\} \\ & + \sum_j \sum_k \gamma_{j,k} \mathbb{1}\{LTPlan_{i,q,h} = j\} \times \mathbb{1}\{NewPlan_{i,q,h} = k\} \\ & + X_{i,q-1} + \alpha_i + \alpha_h + \varepsilon_{i,q,h}\end{aligned}$$

Planned Investment$_{i,q,h}$ is planned real investment for firm i in projection year y relative to the rolling sum of the real investment over the prior 4 quarters ($q-4$ to $q-1$), divided by quarter $q-1$ assets. $\mathbb{1}\{NewPlan_{i,q}\} = 1$ if the investment plan exclusively concerns a new project, and $= 0$ if the investment plan exclusively concerns an ongoing project. $\mathbb{1}\{LTPlan_{i,q}\} = 0$ if the difference between the projection date and the end of the projection year is between 9-24 months, and equals one otherwise. The regression controls $X_{i,q-1}$ include firm-level characteristics except the one used to construct the tercile (cash-to-assets, leverage, log assets, return on assets, tangibility, and Tobin's Q), the quarter change in the CFNAI index, the level of the CFNAI index, the 2-, 5-, and 10-year U.S. Treasury yields, all as of quarter $q-1$, as well as four lags of GDP growth, the inflation rate and the unemployment rate. The outcome variable is trimmed at the 2nd and 98th percentiles. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level.

Figure 7: Heterogeneity in Responsiveness to Monetary Policy Across Investment Types



(a) ST Shock

(b) 2y Shock

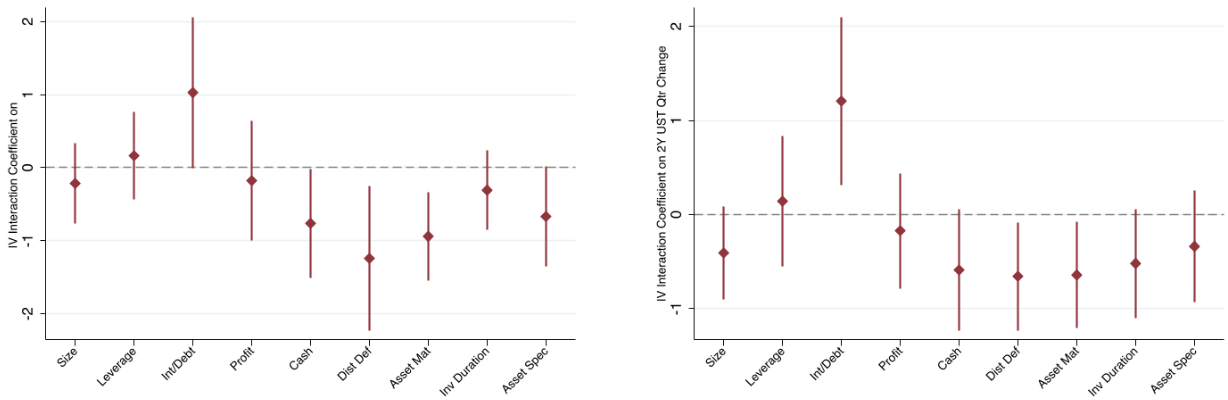
(c) 5y Shock

Notes: These figures report the estimated coefficients and 90% confidence intervals from the IV regression:

$$\mathbb{1}\{\text{Investment Type}\}_{i,q} = \beta \widehat{\Delta y}_q + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q}$$

where Δy_q is the quarterly change in the 1-year (panel a), 2-year (panel b), or 5-year (panel c) U.S. Treasury yield, instrumented using the maturity-matched high-frequency monetary policy shock. $\mathbb{1}\{\text{Investment Type}\}_{i,q}$ equals 1 if an investment plan discusses a project of the type considered, and 0 otherwise. The sample is restricted to plans with projection horizons ending at least 9 months after announcement. The regressions control for quarterly firm-level characteristics, including lagged size (ln(Assets)), leverage (Total Debt/Assets), return on assets (NI/Assets), tangibility (PPE/Assets), cash-to-assets, and Tobin's Q. Macro controls include the lagged 2-year U.S. Treasury yield, the 2-10 year Treasury yield curve slope, the lagged quarter change and level of the CFNAI index, four lags of GDP growth, the inflation rate, and the unemployment rate. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level.

Figure 8: Heterogeneity in Responsiveness to Monetary Policy Across Firms



(a) ST Shock

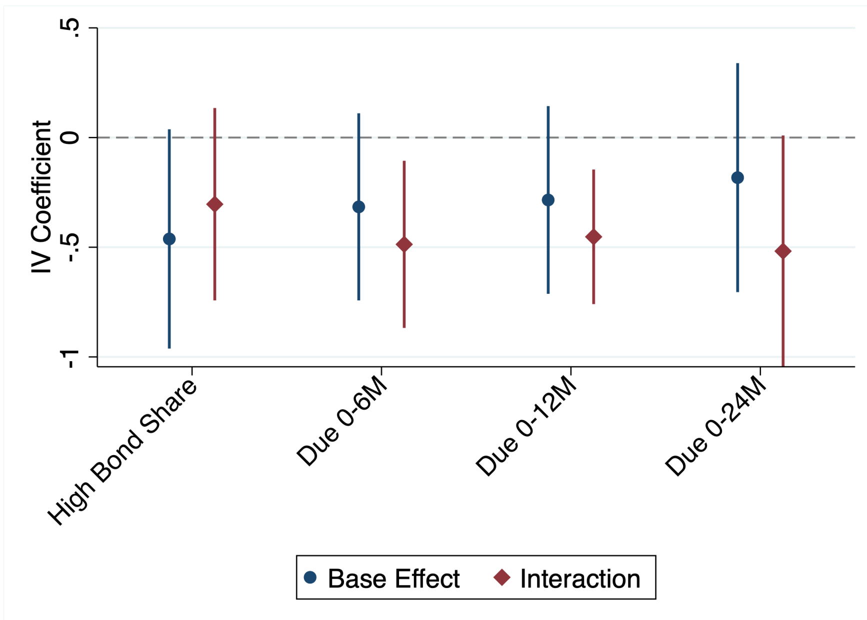
(b) 2y Shock

Notes: These figures report the estimated interaction coefficients θ and 90% confidence intervals from the IV regression:

$$\text{Planned Investment}_{i,q,h} = \beta \cdot \widehat{\Delta y}_q + \theta \cdot \widehat{\Delta y}_q \times \mathbf{1}\{X_{i,q} \in \text{Top } 25\%\} + \gamma' X_{i,q-1} + \alpha_i + \alpha_h + \varepsilon_{i,q,h}$$

where $\widehat{\Delta y}_q$ is the quarterly change in the 1-year (panel a) or 2-year (panel b) U.S. Treasury yield, instrumented using the maturity-matched high-frequency monetary policy shock. $\mathbf{1}\{X_{i,q} \in \text{Top } 25\%\}$ is an indicator for whether firm i is in the top quartile of characteristic X in quarter q. Each coefficient represents the differential response θ for top-quartile firms relative to other firms. The characteristics examined are size, leverage, interest expense to debt, profitability, cash-to-assets, distance to default, asset maturity, investment duration, and asset specificity. The sample is restricted to plans with projection horizons ending at least 9 months after announcement. The regressions control for quarterly firm-level characteristics, including lagged size (ln(Assets)), leverage (Total Debt/Assets), return on assets (NI/Assets), tangibility (PPE/Assets), cash-to-assets, and Tobin's Q. Macro controls include the lagged 2-year U.S. Treasury yield, the 2-10 year Treasury yield curve slope, the lagged quarter change and level of the CFNAI index, four lags of GDP growth, the inflation rate, and the unemployment rate. Firm and projection horizon fixed effects are included, and standard errors are clustered at the firm and calendar quarter level.

Figure 9: Heterogeneity in Responsiveness to Monetary Policy due to Bond Market Exposure



Notes: This figure plots coefficients from the following regression:

$$\text{Planned Investment}_{i,q,h} = \beta_1 \widehat{\Delta y}_q + \beta_2 \widehat{\Delta y}_q \times \mathbb{1}\{\text{Bond Mkt Exposure}_{i,q-1}\} \tag{20}$$

$$+ \beta_3 \mathbb{1}\{\text{Bond Mkt Exposure}_{i,q-1}\} + \gamma X_{i,q-1} + \alpha_i + \alpha_h + \varepsilon_{i,q,h} \tag{21}$$

where $\widehat{\Delta y}_q$ is the quarterly change in the 5-year U.S. Treasury yield, instrumented using the maturity-matched high-frequency monetary policy shock. The base effect on planned investment and the interaction effect are shown. Four measures of bond market exposure are tested: whether a firm is in the top tercile for bond share, and whether the firm has any debt maturing in the indicated windows (0-6 months, 0-12 months, or 0-24 months), measured in the quarter prior to the shock. The regressions control for quarterly firm-level characteristics, including lagged size (ln(Assets)), leverage (Total Debt/Assets), return on assets (NI/Assets), tangibility (PPE/Assets), cash-to-assets, and Tobin's Q. Macro controls include the lagged 2-year U.S. Treasury yield, the 2-10 year Treasury yield curve slope, the lagged quarter change and level of the CFNAI index, four lags of GDP growth, the inflation rate, and the unemployment rate Standard errors are clustered by firm and year-quarter; 90% confidence intervals shown.

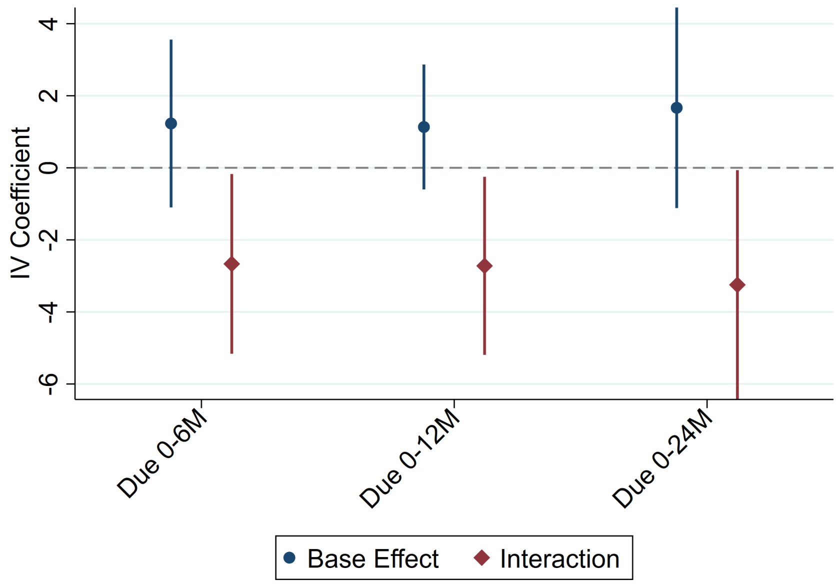


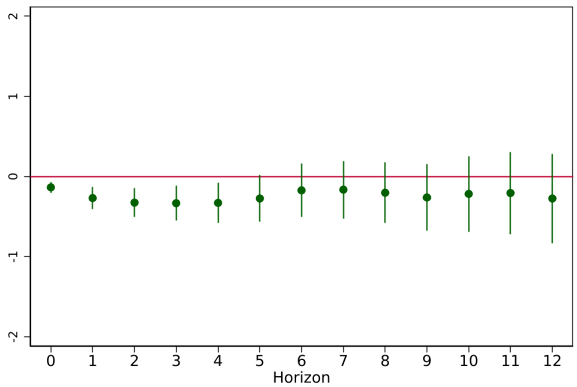
Figure 10: Heterogeneity in Responsiveness to Monetary Policy-Induced Changes in Cost of Debt

Notes: This figure plots coefficients from the following regression:

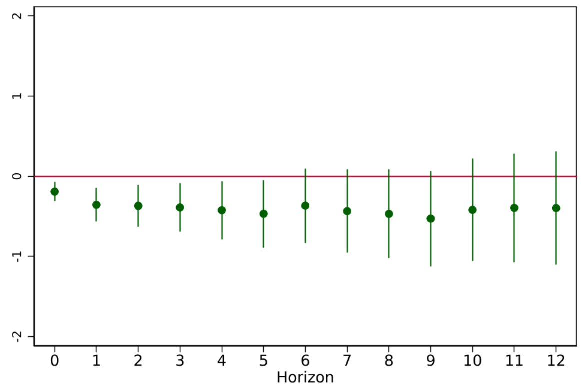
$$\begin{aligned}\text{Planned Investment}_{i,q,h} = \beta_1 \widehat{\Delta y}_{i,q} + \beta_2 \widehat{\Delta y}_{i,q} \times \mathbb{1}\{\text{Bond Mkt Exposure}_{i,q-1}\} \\ + \beta_3 \mathbb{1}\{\text{Bond Mkt Exposure}_{i,q-1}\} + \gamma X_{i,q-1} + \alpha_i + \alpha_h + \varepsilon_{i,q,h}\end{aligned} \tag{22}$$

where $\widehat{\Delta y}_{i,q}$ is the quarterly change in firm i's cost of bond debt, instrumented using the 5-year U.S. Treasury yield high-frequency monetary policy shock. The base effect on planned investment, and the interaction effect are shown. Four measures of bond market exposure are tested: whether a firm is in the top tercile for bond share, and whether the firm has any debt maturing in the indicated windows (0-6 months, 0-12 months, or 0-24 months), measured in the quarter prior to the shock. The regressions control for quarterly firm-level characteristics, including lagged size (ln(Assets)), leverage (Total Debt/Assets), return on assets (NI/Assets), tangibility (PPE/Assets), cash-to-assets, and Tobin's Q. Macro controls include the lagged 2-year U.S. Treasury yield, the 2-10 year Treasury yield curve slope, the lagged quarter change and level of the CFNAI index, four lags of GDP growth, the inflation rate, and the unemployment rate Standard errors are clustered by firm and year-quarter; 90% confidence intervals shown.

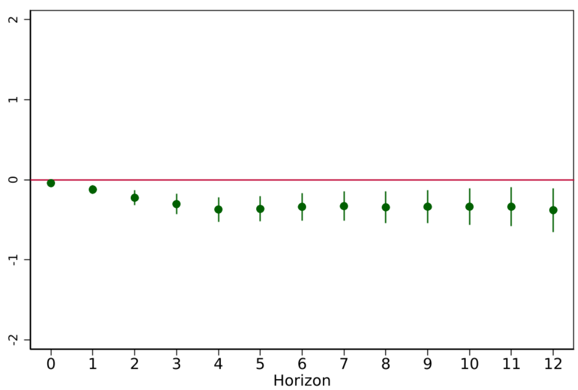
Figure 11: Cumulative Net Issuance Response to Monetary Policy



(a) UST 1y yield change (IV: short rate shock)



(b) UST 5y yield change (IV: 5y shock)



(c) EBP change (IV: 2-day EBP change)

Notes: These figures plot the IV coefficients β_h and 90% confidence intervals from regressions of cumulative real net debt issuance on monetary policy shocks - driven changes in the EBP and the 1-year UST yield. Panel (a) instruments the 1-year UST yield using the short-term Bauer–Swanson monetary policy shock. Panel (b) instruments the 1-year UST yield using the 5-year monetary policy shock. Panel (c) instruments the quarterly change in the EBP using the 2-day change in the excess bond premium (EBP) of Gilchrist and Zakrajšek (2012) around FOMC announcements. Firm controls include lagged cash-to-assets, leverage, size, return on assets, tangibility, and Tobin's Q. Macro controls include the lagged 2-year U.S. Treasury yield, the 2–10 year yield curve slope, the lagged change and level of the CFNAI index, and four lags of GDP growth, the inflation rate, and the unemployment rate. Cumulative real net issuance is winsorized at the 1st and 99th percentiles. Firm fixed effects are included and standard errors are clustered by firm and month.

Table 1: Summary Statistics for Firm Characteristics: All Plans vs Compustat

	Plans Sample					Compustat				
	Mean	Std	25th	Median	75th	Mean	Std	25th	Median	75th
Number of Quarters	50.44	24.77	30.00	53.00	70.00	61.88	32.21	34.00	61.00	98.00
Assets ($M)	9,488	22,463	853	2,401	7,522	4,566	15,261	41	370	2,036
Return on Equity	0.03	0.10	0.01	0.03	0.05	-0.06	0.35	-0.03	0.02	0.04
Return on Assets	0.01	0.03	0.00	0.01	0.02	-0.22	1.24	-0.04	0.00	0.01
Log Tobin's Q	0.54	0.49	0.18	0.44	0.81	0.69	1.03	0.04	0.37	0.98
Investment Rate	-0.01	0.07	-0.02	-0.00	0.02	-0.05	0.25	-0.05	-0.01	0.01
Asset Tangibility	0.32	0.25	0.11	0.24	0.49	0.21	0.25	0.02	0.11	0.32
Leverage	0.29	0.21	0.13	0.28	0.41	0.54	1.92	0.03	0.20	0.41
Cash/Assets	0.12	0.14	0.02	0.07	0.17	0.20	0.26	0.03	0.08	0.28
Bond Share	0.44	0.36	0.00	0.46	0.76	0.34	0.38	0.00	0.12	0.71
Bank Debt Share	0.43	0.37	0.06	0.37	0.79	0.46	0.40	0.00	0.41	0.92
Distance to Default	7.37	5.13	3.67	6.56	10.14					
Planned ΔCapex/Assets	0.18	3.02	-0.82	0.18	1.22					
Expected ΔNI/Assets	2.35	6.91	-0.35	0.74	2.77					

Notes: This table presents summary statistics comparing firms in our investment plans sample to the broader Compustat universe from 2000–2024. The plans sample includes all firms with at least one investment plan announcement. Assets are quarterly Compustat total assets in millions of dollars. Return on Equity is quarterly net income divided by book common equity. Return on Assets is quarterly net income divided by total assets. Log Tobin's Q is $\ln(1+(ME-CE)/AT)$, where ME is market equity (stock price $\times$ shares outstanding), CE is book common equity, and AT is total assets. Investment Rate is capex net of depreciation, normalized by lagged PP&E. Tangibility is net PP&E divided by total assets. Leverage is total debt (long-term plus current) divided by total assets. Cash/Assets is cash and short-term investments divided by total assets. All firm characteristics are winsorized at the 1st and 99th percentiles. Bond Share and Bank Debt Share are constructed from Capital IQ capital structure data as the share of total debt outstanding in bonds and bank loans, respectively. The bottom panel reports plan-specific variables available only for the plans sample. Distance to Default is computed from the Merton model. Planned ΔCapEx/Assets is the real change in planned capital expenditures as a percentage of assets. Expected ΔNI/Assets is the real change in expected net income as a percentage of assets. ΔCapEx/Assets and ΔNI/Assets are trimmed at the 2nd and 98th percentiles.

Table 2: Response of Investment Plans to Monetary Policy

	Year 1			Year 2			Year 3			Year 4			Year 5		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Δy	0.422	0.015	0.069	-0.465	-0.850***	-0.927**	-0.281	-0.492	-0.648*	-0.602	-1.024***	-1.271***	-0.457	-0.651**	-0.767**
	(0.340)	(0.280)	(0.304)	(0.382)	(0.323)	(0.365)	(0.320)	(0.352)	(0.337)	(0.368)	(0.311)	(0.348)	(0.334)	(0.289)	(0.315)
Observations	21,347	21,339	19,614	7,563	7,545	6,799	2,669	2,665	2,209	1,346	1,342	1,200	977	973	868
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Macro controls		✓	✓		✓	✓		✓	✓		✓	✓		✓	✓
Firm controls			✓			✓			✓			✓			✓
Treasury yield	5-Year	5-Year	5-Year	5-Year	5-Year	5-Year	5-Year	5-Year	5-Year	5-Year	5-Year	5-Year	5-Year	5-Year	5-Year

Note: This table reports the results for the following regression specification:

$$\text{Planned Investment}_{i,q,h} = \beta_h \ \widehat{\Delta y_q} + X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h}$$

Planned Investment$_{i,q,h}$ is planned real investment for firm i in projection year y relative to the rolling sum of the real investment over the prior 4 quarters ($q-4$ to $q-1$), divided by quarter $q-1$ assets. h denotes the years from today that the plan is for. Here, $h = 1$ if the difference between the projection date and the end of the projection horizon is between 9-12 months, $h = 2$ if the difference is between 13-24 months, $h = 3$ if the difference is between 25-36 months, $h = 4$ if the difference is between 37-48 months, and $h = 5$ if the difference is between 49-71 months. $\widehat{\Delta y_q}$ is the three month change in the Treasury yield, instrumented using the maturity-matched monetary policy shock that occur during quarter q, during which the investment plan is made and at the end of which the plan is announced. The 5-year UST yield is instrumented with the high frequency change in the 5-year UST yield. The regression controls $X_{i,q-1}$ include firm controls (cash-to-assets, leverage, log assets, return on assets, tangibility, and Tobin's Q) and macro controls (the quarter change in the CFNAI index, the level of the CFNAI index, the 2-, 5-, and 10-year U.S. Treasury yields, all as of quarter $q-1$, as well as four lags of GDP growth, the inflation rate and the unemployment rate). The outcome variable is trimmed at the 2nd and 98th percentiles. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level.

Table 3: Response of Long-Term vs Short-Term Investment Plans

	LHS: Normalized Planned Capex			
	(1)	(2)	(3)	(4)
	IV RHS: $\Delta UST2y$	IV RHS: $\Delta UST5y$	IV RHS: $\Delta UST10y$	IV RHS: $\Delta UST2-10y$
Δ UST	-0.0511	-0.156	-0.0229	0.0266
	(0.298)	(0.249)	(0.207)	(0.560)
LT Plan = 1 ×Δ UST	-0.679*	-0.747**	-0.858***	0.390
	(0.380)	(0.360)	(0.319)	(1.490)
Firm Controls	Yes	Yes	Yes	Yes
Macro Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Projection horizon FE	Yes	Yes	Yes	Yes
Observations	32490	32490	32490	32490
R-squared	0.0650	0.0642	0.0654	0.0653

Note: This table reports IV regressions of real planned capital expenditure growth on changes in U.S. Treasury yields over the prior fiscal quarter, where yields are instrumented using high-frequency MP-driven shocks to a duration-matched U.S. Treasury future. We include dummy variables for investment plans that extend more than 24 months ahead; the excluded category consists of plans for the subsequent fiscal year, conditional on the projected year ending at least 9 months after the plan announcement. Planned capital expenditure growth is computed relative to the realized capital expenditure of four quarters ending one (two) fiscal quarter before the announcement, normalized for inflation. The regressions also control for quarterly firm-level characteristics, including lagged size (ln(Assets)), leverage (Total Debt/Assets), return on assets (NI/Assets), tangibility (PPE/Assets), cash-to-assets, and Tobin's Q. Macro controls include the prior-quarter change in the CFNAI index, the prior-quarter level of the CFNAI index, as well as the prior-quarter-end two-year yield level $2y_{q-1}$ and the prior-quarter-end yield curve slope $2-10y_{q-1}$, both measured on the day of the announcement. Four lags of GDP growth, the inflation rate, and the unemployment rate are also included. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level. The outcome variable is trimmed at the 2nd and 98th percentiles.

Table 4: Response of Different Horizon Investment Plans to Monetary Policy

	LHS: Normalized Planned Capex				
	(1) RHS: ST MPS	(2) RHS: 2y UST Shocks	(3) RHS: 5y UST Shocks	(4) RHS: 10y UST Shocks	(5) RHS: 2-10y UST Shocks
MPS	0.156	0.103	0.00209	0.111	0.117
	(0.525)	(0.302)	(0.253)	(0.193)	(0.536)
Projection horizon (yrs)=2×MPS	-0.389	-0.397	-0.545**	-0.602**	-0.614
	(0.346)	(0.336)	(0.256)	(0.297)	(0.869)
Projection horizon (yrs)=3×MPS	-0.597	-0.651	-0.725**	-0.785***	-0.0261
	(0.402)	(0.394)	(0.335)	(0.285)	(1.172)
Projection horizon (yrs)=4×MPS	-0.698	-1.041**	-1.116**	-1.196**	0.914
	(0.425)	(0.509)	(0.515)	(0.498)	(2.139)
Projection horizon (yrs)=5×MPS	-0.290	-0.584	-0.905*	-1.189**	-1.724
	(0.555)	(0.542)	(0.485)	(0.488)	(2.463)
Firm Controls	Yes	Yes	Yes	Yes	Yes
Macro Controls	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Projection horizon FE	Yes	Yes	Yes	Yes	Yes
Observations	33495	33495	33495	33495	33495
R-squared	0.0701	0.0693	0.0683	0.0695	0.0693

Note: This table reports the results of the following specification (see Figure H.14 for a graphical summary):

$$\text{Planned Investment}_{i,q,h} = \beta_1 \widehat{\Delta y}_q + \sum_{x=2}^{5} \beta_h \widehat{\Delta y}_q \times \mathbb{1}\{h = x\} + \alpha_i + \alpha_h + X_{i,q-1} + \varepsilon_{i,q,h}$$

We include dummy variables for investment plans extending 2, 3, 4, and ≥ 5 years ahead; the excluded category consists of plans for the subsequent fiscal year, conditional on the projected year ending at least 9 months after the plan announcement. Planned Investment$_{i,q,h}$ is planned real investment for firm i in projection year y relative to the rolling sum of the real investment over the prior 4 quarters ($q-4$ to $q-1$), divided by quarter $q-1$ assets. Column (1) uses the short-term shock. Columns (2)-(5) use the high-frequency change in the 2-, 5-, and 10-year UST yield. The regressions also control for quarterly firm-level characteristics, including lagged size (ln(Assets)), leverage (Total Debt/Assets), return on assets (NI/Assets), tangibility (PPE/Assets), cash-to-assets, and Tobin's Q. Macro controls include the lagged quarter change and level of the CFNAI index, the lagged 2-year U.S. Treasury yield and 2-10 year Treasury yield curve, four lags of GDP growth, the inflation rate, and the unemployment rate. Firm fixed effects and projection horizon fixed effects are included, and standard errors are clustered at the firm and calendar quarter level. The outcome variable is trimmed at the 2nd and 98th percentiles.

Table 5: Implied Elasticity of Investment to the User Cost of Capital

Extrapolation assumption	$\varepsilon_{H=1}$	$\varepsilon_{H=2}$	$\varepsilon_{H=3}$	$\varepsilon_{H=4}$	$\varepsilon_{H=5}$
Zero: $\widehat{\beta}_{h>\overline{h}} = 0$	−0.97	−2.48	−2.98	−2.94	−2.80
Persistent: $\widehat{\beta}_{h>\overline{h}} = \widehat{\beta}_{\overline{h}}$	−0.97	−2.47	−2.95	−3.49	−3.86

Note: This table reports the implied macro elasticity of investment with respect to the user cost of capital at horizons $H = 1, \ldots, 5$ years. To obtain these, first Equation 3 is estimated separately for firm-quarters with a maximum reported plan horizon of $\overline{h}$=1, $\overline{h} \in \{2,3\}$, and $\overline{h} \in \{4,5\}$. Each industry is then assigned to a set of estimates based on the industry average of firms' maximum plan horizons as shown in Figure 2, and the macro coefficient is constructed as the CAPX-weighted average across industries. Conversion to the user-cost elasticity follows equation (32) with $I/A = 0.0604$, $\delta = 0.10$, $\omega = 0.30$, $\tau = 0.30$, $r = 0.07$, and $\phi_{debt} = \phi_{equity} = 1.5$. The first row sets $\widehat{\beta}_h = 0$ for horizons h exceeding the sub-sample's longest horizon available, i.e., industries reporting only short-horizon plans are assumed not to revise long-horizon plans. The second row holds $\widehat{\beta}_h$ constant at $\widehat{\beta}_{\overline{h}}$ for $h > \overline{h}$, i.e., industries reporting only short-horizon plans are assumed to revise their long-horizon plans in the same way.

Table 6: Response of Net Income Expectations to Changes in Treasury Yields

	Expected NI (Y1)			Expected NI (Y2+)		
	(1)	(2)	(3)	(4)	(5)	(6)
Δy (5-year)	0.353	-1.160**	-0.822*	-1.133	-0.264	0.596
	(0.354)	(0.512)	(0.491)	(1.799)	(1.395)	(1.966)
Observations	7,850	7,846	7,278	680	680	637
Firm FE	✓	✓	✓	✓	✓	✓
Macro controls		✓	✓		✓	✓
Firm controls			✓			✓
Horizon FE				✓	✓	✓
Treasury yield	5-Year	5-Year	5-Year	5-Year	5-Year	5-Year

Note: This table reports the results for the following regression specification:

$$\text{E[Net Income]}_{i,q,h} = \beta_h \ \widehat{\Delta y}_q + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h}$$

$\text{E[Net Income]}_{i,q,h}$ is expected net income for firm i in projection year y relative to the rolling sum of the net income over the prior 4 quarters ($q-4$ to $q-1$), divided by quarter $q-1$ assets. h denotes the years from today that the plan is for. The first three columns show the results for $h = 1$, where the difference between the projection date and the end of the projection horizon is between 9-12 months. The next three columns show the results for horizons longer than one year, i.e. $h = 2+$ where the difference is more than 12 months. In the latter three columns we also include horizon fixed effects. $\widehat{\Delta y}_q$ is the three month change in the 5y Treasury yield, instrumented using the maturity-matched monetary policy shock that occur during quarter q, during which the investment plan is made and at the end of which the plan is announced. The regression controls $X_{i,q-1}$ include firm controls (cash-to-assets, leverage, log assets, return on assets, tangibility, and Tobin's Q) and macro controls (the quarter change in the CFNAI index, the level of the CFNAI index, the 2-, 5-, and 10-year U.S. Treasury yields, all as of quarter $q-1$, as well as four lags of GDP growth, the inflation rate and the unemployment rate). The outcome variable is trimmed at the 2nd and 98th percentiles. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level.

Table 7: Relationship between Net Income Expectations and Investment Plans

	Normalized Planned Capex (Y1)				Normalized Planned Capex (Y2+)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Expected NI (Y1)	0.0178***	0.0132*	0.0184***	0.0176***	-0.0674	-0.0545	0.00805	0.00540
	(0.00515)	(0.00687)	(0.00560)	(0.00557)	(0.0418)	(0.0641)	(0.0366)	(0.0659)
Firm Controls			✓	✓			✓	✓
Macro Controls				✓				✓
Firm FE		✓	✓	✓		✓	✓	✓
Horizon FE						✓	✓	✓
Calendar quarter FE			✓	✓			✓	✓
Observations	8,317	7,950	7,704	7,698	1,587	1,453	1,430	1,430
R-squared	0.002	0.256	0.334	0.336	0.005	0.317	0.480	0.494

Notes: This table reports regressions of planned investment on expected net income with two timing structures. The dependent variable is planned capital expenditure change scaled by lagged assets. The first four columns show first-year investment plans regressed on contemporaneous first-year net income expectations. The next four columns show longer-horizon investment plans (projection horizon ending more than 24 months after announcement) regressed on first-year net income expectations from the same firm-quarter. Firm controls include lagged size (ln(Assets)), leverage (Total Debt/Assets), return on assets (NI/Assets), tangibility (PPE/Assets), cash-to-assets, and Tobin's Q. Macro controls include the lagged 2-year U.S. Treasury yield, the 2-10 year Treasury yield curve slope, the lagged quarter change and level of the CFNAI index, four lags of GDP growth, the inflation rate, and the unemployment rate. All variables are scaled by lagged assets and winsorized. Standard errors are clustered by firm and calendar quarter. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

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A Data Collection and Cleaning

We provide standardized instructions for our research assistants on how to collect the data. We created a protocol by first asking two MIT undergraduates to look through the websites and filings of publicly traded companies to identify the location of the data. Through this experience, we created a video and document with step-by-step instructions on how to collect this data that we shared with all subsequent research assistants. The instructions are below.

Goal

We are interested in every plan the company has published in its entire history, and every year that they project capital expenditures (also known as "investment plans", "capital spending", "capital investment plan", "capital program"). The goal is to collect for every company, every quarter, what it plans for investing every year. So each line in the spreadsheet should be a unique company, quarter, and projected plan year.

Instructions

We collect the data from two potential sources: (1) the company's Earnings Call Presentations (available on the Investor Relations portion of their website), and (2) their 10-K or 10-Q filing at the sec.gov.

1. Check if there is anything in their 10-K or 10-Q on the capital expenditure plans. This may be available by searching "Capital plan", "Capital expenditure", "Capital spending plan", etc.
   (a) If so, then enter in the numbers and surrounding text into the file provided.
   (b) If not, then search their earnings call presentations (also called "investor day presentations", "earnings presentations", "earnings announcements", etc).
      i. Google "[Company] Investor Relations"
      ii. Find "Earnings Call Presentations" or “Investor Day Presentations”, click
      iii. Click on the presentation PDF
      iv. Search for the term "Capital expenditure" or "capital spending plan" or "Capital plan"
      v. Record the amount (in US billions) and any notes in the spreadsheet
      vi. Repeat for every Earnings Call Presentation that is listed in the company's website.
2. The columns are as follows:
   (a) **Date of transcript**: the date in which the document was published on the website. If there is no date, then put the last date in the quarter that the document refers.
   (b) **Year of projection**: this is the year that the investment plan is for.
   (c) **Source of information**: Include the year, quarter, and name of document. For example, "Q4 2018 News Release", "Q3 2022 Earnings Conference Call Presentation"
   (d) **Investment Plans**: copy and paste the text associated with the investment plan: for example, "Estimates Capex for FY22 will be between $5.5 billion and 6 billion."

(e) **Estimated Yearly Investment Amount**: Total amount for the year (or remainder of year), in billions of dollars. If the estimated Capex is a range of numbers (eg, 1.1-1.3bn), please report the midpoint (i.e., average). For example, for 1.1-1.3bn, you should report 1.2.

(f) **Years**: indicates for how many years does the projection include. For example, if the earnings presentation says "3 billion dollars over the next 4 years", then the "years" variable is 4.

(g) **Total investment amount**: the total amount that is projected. So the columns "Estimated yearly amount" x "Years" should equal "Total Investment Amount". If they publish a range of years, please use the midpoint of the range.

(h) **Lowpoint of Range**: If the estimated Capex is a range of numbers (eg, 1.1-1.3bn), please report the low point, i.e., 1.1. If there is no range, then set this equal to Estimated Yearly Investment Amount.

(i) **Highpoint of Range**: If the estimated Capex is a range of numbers (eg, 1.1-1.3bn), please report the high point, i.e., 1.3. If there is no range, then set this equal to Estimated Yearly Investment Amount.

(j) **Do They Mention an Investment / Capital Expenditure Plan**: this equals 1 if there is a plan, 0 if not.

(k) **Rest of year projection? 1 if yes, 0 if this is for a full year**: if the plan is for the remainder of the year, then set to 1; if it is for a full year, then set to 0.

(l) **If available on the 10K or 10Q, what text should we search for to find**: please make sure to add detail if possible so that I do not have to search so many times to find it.

(m) **If available on the 10K or 10Q, what text should we search for to find**: please make sure to add detail if possible so that I do not have to search so many times to find it.

(n) **Notes**: If anything was unclear, please mark it here

We have included two examples in the spreadsheet. The highlighted fields are the ones that need to be filled in for each quarter (or year, if the company only reports the data every year). Please let me know if anything is unclear.

A.1 Data Cleaning

One shortcoming of the exercise is that companies that no longer exist due to acquisition or bankruptcy no longer have company earnings call transcripts, investor day presentations available on their websites. As such, our data is a snapshot of all companies that still exist as of the collection of our data, which begins in March 2024 and ends in February 2025.

To determine the period for which the company is intending to project a plan, we use the date of announcement and the company's fiscal year end. We set the projection period end date to be the fiscal year end of the year of the announcement. If the fiscal year ended before the announcement, then we set the projection period end date to the following fiscal year end.[18] For 0.4% of observations, the projection period

[18] For example, Albertson's Companies Inc has a fiscal year that ends in February, and on April 28, 2021 it announced that it estimates Capex to be 1.9–2 billion for fiscal year 2021, so we set the projection end period to be February 2022.

is only for one quarter, so we fix the projection period end date to the next fiscal quarter end following the date of announcement. Then, we compute the start of the projection period. For those projections that are either for one quarter or the remainder of the fiscal year, we set the start of the projection period to be the start of the fiscal quarter in which the announcement occurs.[19] For all others, we have the project start date as one year prior to the projection end date. We the compute the projection period in months by subtracting the project start date from the project end date.

For all of our regressions except for the projection horizon analyses, we exclude those plans that are clearly not for the full capital expenditure for the year. For example, U-Haul Holding Co stated in their 2008Q3 Form 10-Q that "The company has allocated $70.0 million to new acquisitions." Because this is likely a subset of company capex, we exclude this datapoint and the other similar datapoints in analyses that has total planned capital expenditure growth as an outcome variable; this accounts for 2.8% of the total data. We further exclude the 12.9% of observations where the projection horizon is less than one year, for example if a firm projects its next quarter capex.

B Why Use Data on Plans?

Estimating the causal effects of monetary policy on firm-level investment poses significant econometric challenges. In this section, we show that using company investment plans, rather than data on ex-post realized investment, greatly mitigates these concerns. Consider the following reduced-form regression equation to estimate β_h^R, the impact of monetary policy on horizon h realized investment:

$$Investment_{i,q+h} = \beta_h^R \text{MPS}_q + \gamma X_{i,q-1} + \nu_{i,q+h}^R \tag{23}$$

A substantial literature has worked on overcoming the potential omitted variable bias in the estimator $\hat{\beta}_h^R$ by improving the exogeneity of the monetary policy shocks on the right-hand side of the equation. For example, positive demand shocks may simultaneously raise investment and prompt the central bank to tighten monetary policy, biasing the coefficient towards zero and understating the contractionary effect of tighter monetary conditions. These potential biases put significant pressure on the exogeneity of the monetary policy shocks, and recent papers have made substantial progress on this front (see, e.g., Romer and Romer [2004], Gurkaynak et al. [2005], Kuttner [2001], Nakamura and Steinsson [2018], Jarociński and Karadi

[19] Across all observations, 0.7% are for remainder of the year.

[2020], Bauer and Swanson [2023]).

Even with truly exogenous monetary policy shocks, two important issues remain, as illustrated in the following equation:

$$Investment_{i,q+h} = \beta_h^R \, \mathrm{MPS}_q + \gamma X_{i,q-1} + \sum_{s=1}^{h} \psi_{h,s} \, u_{q+s} + \sum_{s=1}^{\tau_{i,q}} \phi_{h,s} v_{q-s} + \eta_{i,q+h}^R \tag{24}$$

First, realized investment observed at quarter $q+h$ may respond not only to the original monetary shock in quarter q, but also to additional shocks occurring between q and $q+h$, where u_{q+s} represent any intervening demand shocks, cost shocks, or additional policy shocks. If $Cov(u_{q+s}, \mathrm{MPS}_q) = 0 \; \forall s$, the cumulative variance of u_{q+s} increases the residual of the regression and thus the noise of the estimator.

Second, unknown planning and time-to-build lags $\tau_{i,q}$ imply that even a purely exogenous monetary shock in quarter q generates systematically attenuated responses at shorter horizons. Thus, investment in quarter $q+h$ could reflect shocks v that occurred in quarter $q-s$, via long time-to-build lags. Consider a firm that in quarter $q-1$ began building a nuclear plant which has 10 years' time to build, and has plans to begin building a solar energy farm in quarter $q+1$. Given a large contractionary shock in quarter q, it is unlikely to change course and stop building the first plant; however, it may scale down plans for the solar project it had intended to begin building in quarter $q+1$. Using only realized data, the econometrician would miss the reduction in investment in the solar plant, thus underestimate the impact of the shock.

Using forward-looking investment plans alleviates these problems. We define revisions as changes in a given firm's investment plan about a specific projection year:[20]

$$Revision_{i,q,h} = \frac{\mathrm{F}_{i,q}[I_{i,y}] - \mathrm{F}_{i,q-1}[I_{i,y}]}{K_{i,q-1}}. \tag{25}$$

This explicitly isolates firms' contemporaneous responses to new information in quarter q. By construction, revisions to investment plans are unaffected by previously known demand shocks or trends in quarter $q-1$, since firms already incorporate these into prior expectations; this substantially reduces omitted variable bias arising from an imperfectly exogenous monetary policy shock, leaving only a minor residual bias from other variables evolving within the quarter from $q-1$ to q. Secondly, intervening shocks that occur between

[20]This normalized forecast difference, $\frac{\Delta \mathrm{F}_{i,q}[I_{i,y}]}{K_{i,q-1}}$, maps (up to the first order) to the log-change in capital $\Delta \ln K_{i,q}$ used as the left-hand-side variable in standard empirical tests of investment response to monetary policy in the literature (e.g. Ottonello and Winberry [2020], Crouzet [2021]).

quarter q and projection year y are by construction excluded from the measure, reducing the noise of the estimator. Finally, since plan revisions are measured precisely when firms adjust their expectations rather than when investment is physically realized, they do not suffer from the mechanical attenuation caused by unknown construction lags.

We can use the plans data to estimate:

$$Revision_{i,q,h} = \beta_h^P \widehat{\Delta y}_q + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h}, \tag{26}$$

where $\widehat{\Delta y}_q$ is the change in yields instrumented by a monetary policy shock, $X_{i,q-1}$ are lagged firm- and macro-level controls, and α_i are firm fixed effects. The coefficient β_h^P measures the change in planned investment per dollar of capital in response to monetary policy shock-driven changes in yields.

In practice, some firms do not issue updated forecasts in consecutive periods. For those observations, we replace the missing prior forecast $\mathrm{F}_{i,q-1}[I_{i,y}]/K_{i,q-1}$ with the firm's annualized realized investment over the prior four quarters, $\sum_{s=q-4}^{q-1} I_{i,s}/K_{i,q-1}$ — i.e., its recent investment run-rate, scaled by lagged capital. This substitution rests on a simple assumption: in the absence of a new plan, the firm's own most recent investment run-rate serves as the best unbiased predictor of its planned future investment over the projection year. Crucially, the key advantages of using investment plans–explicitly isolating responses to monetary policy shocks in quarter q, unaffected by future intervening shocks occurring between q and the projection year, and addressing potential time-to-build concerns–remain fully preserved under this substitution. To empirically evaluate this assumption, we perform a series of tests on projected and realized investment, discussed in Appendix B.3.

B.1 Plans, realizations, and forecast errors

We can directly test if plans data improves upon realized data primarily by reducing noise or bias. Specifically, we can write realized investment as planned investment plus the forecast error:

$$I_{i,q+h} = F_q[I_{i,q+h}] + FE_{i,q+h}. \tag{27}$$

Because this is an identity, the coefficients from regressing each component on the monetary policy shock must satisfy:

$$\beta_h^R = \beta_h^P + \beta_h^{FE}, \tag{28}$$

where β_h^R is the coefficient from the realized-investment regression, β_h^P is the coefficient from the plans regression, and β_h^{FE} is the coefficient from regressing the forecast error on the same instrumented yield change. This decomposition provides a direct test of what plans data buys relative to realized data. If $\beta_h^{FE} = 0$ but is noisy, then $\beta_h^R = \beta_h^P$ in population: plans and realizations estimate the same monetary policy elasticity, and the gain from plans is a reduction in residual variance that allows for a more precise estimate. If $\beta_h^{FE} \neq 0$, then systematic forces between the planning date and realization that are correlated with the original shock drive a wedge between what firms plan and what they ultimately do.

We test this directly by regressing forecast errors on the instrumented yield change, both on its own and interacted with an indicator for long-term plans, with the same controls as the baseline specification. Results in Table H.1 show in the first row that the coefficient on short-horizon plans is not statisically different from zero, and is weakly positive for instrumented short rate changes while negative for instrumented long rate changes, reflecting noise. The second row shows that the coefficient on long-horizon plans is positive but mostly insignificant, suggesting that some part of the negative effect of monetary policy on long-horizon plans is undone prior to the realization date. This could be due to mean reversion in interest rates or other intervening shocks that systematically undo the initial effect of monetary policy on long-horizon plans. However, the effect is statistically weak and noisy. Overall, these results are consistent with a signal-to-noise story: the forecast error is uncorrelated with monetary policy shocks, and the plans data allows us to estimate the coefficient on monetary policy shocks with greater precision.

B.2 MSE decomposition

Despite the benefits of the plans data, we still face a tradeoff: only a subset of firms for which we observe realized investment disclose planned investment. How many plans observations do we need to make the plans estimator more informative than the realized estimator? If the total number of firms in the realized investment dataset is N_R, and only $N_P = rN_R$ firms report plans, the empirical variance terms of the coefficient from

Equations 24 and 26 can be written, respectively:

$$\text{var}(\widehat{\beta}_h^R \mid X) = \frac{\sigma_R^2}{N_R\, V\,(1-R^2)}, \qquad \text{var}(\widehat{\beta}_h^P \mid X) = \frac{\sigma_P^2}{N_P\, V\,(1-R^2)}. \tag{29}$$

where $V = \text{var}(\text{MPS}_q), R^2 = R^2_{\text{MPS}|X}$, and $\sigma_R^2 \equiv \text{var}(\eta^R) = \sum_{s=1}^{h} \psi_{h,s}^2\, \sigma_u^2 + \sigma_\nu^2$ is the variance of aggregate shocks between q and $q+h$. As the projection horizon h lengthens, the variance from intervening shocks accumulates, worsening the signal-to-noise ratio of the estimate. To evaluate clearly whether forward-looking plans improve the empirical IRF estimation, we compare the mean-squared errors (MSE) of the two estimators. Denote the bias in the realizations regression 24 as $\text{Bias}_R = \mathbb{E}[\widehat{\beta}_h^R] - \beta_h^R$, and similarly for bias in the plans regression. Then we can define:

$$\text{MSE}_R = \text{B}ias_R^2 + \text{var}\big(\widehat{\beta}_h^R\big), \qquad \text{MSE}_P = \text{Bias}_P^2 + \text{var}\big(\widehat{\beta}_h^P\big). \tag{30}$$

The plans-based estimator dominates if and only if:

$$\text{MSE}_P < \text{MSE}_R \quad \Longleftrightarrow \quad r > \frac{\sigma_P^2}{\sigma_R^2 + N_R\, V\,(1-R^2)\,(\text{Bias}_R^2 - \text{Bias}_P^2)}. \tag{31}$$

This defines the minimum ratio of observations in the plans data to the realizations data that makes the plans estimator more informative. In practice, we observe N_R and can estimate the variances $\sigma_P^2, \sigma_R^2, V$. We set $R^2 = 0$ to reflect exogenous monetary policy shocks. We use all planned investment for 12-month periods that end at least 3 months in the future, and we construct realized investment as a four-quarter rolling sum of quarterly capex over the projection period, subtract the trailing four quarters of realized capex (both expressed in time q dollars), and divide by lagged assets, exactly mirroring the plans-side normalization. We do not have a way of estimating the Bias term directly; instead, we plot the threshold for absolute bias values $b \in [0,3]$ in the same units as the coefficient. The existing monetary policy literature provides some reasonable bounds on the bias: Bauer and Swanson [2023] find that their improved identified MPS increases the magnitude of the industrial production response to MPS by a factor of four, from a biased estimate of -0.35% to an improved estimate of -1.4%; the methods in Romer and Romer [2004] change the same responsiveness from a biased estimate of -2.4% to -4.3% in response to 100 basis increase in the Fed Funds Rate.

While plans data likely substantially reduces the bias present in the realized investment regression, Bias_P

may still be nonzero. Firms that report plans may differ systematically in their responsiveness to monetary policy; we address this concern in the main paper's selection-bias robustness tests, and find that within firm, the decision to disclose is not significantly correlated with investment opportunities. Finally, the residual variation in $\Delta \mathrm{F}_{i,q,h}$ unexplained by lagged investment behaves as a clean news term: column (3) of Table H.2 shows it is uncorrelated with monetary policy surprises.

We then plot the minimum r, or ratio of plans data to realizations data, required for the plans-revision estimator (Eq. 25) to be more useful than the realizations estimator. Figure H.12 plots, for two horizons $h = 1$ and $h = 5$, the minimum fraction of firms $r = \frac{N_P}{N_R}$ required for the plans-based estimator to dominate the realized-data estimator as a function of an assumed upper bound on the bias. The plans-revision estimator dominates the realized-investment estimator on MSE at both horizons even when the realized estimator is assumed to be unbiased: the variance reduction from isolating the news component alone is enough to overcome the smaller plans sample.

In practice, we cluster standard errors by firm and fiscal quarter to account for within-cluster correlation. This means the effective number of independent observations is smaller than N_R and N_P. However, this affects both estimators similarly: both the numerator and denominator of the r threshold in Equation (31) scale by the same effective sample size adjustment, so the qualitative conclusion of the comparison is unchanged. Any advantage of the plans estimator coming from the bias reduction ($\mathrm{Bias}_R^2 - \mathrm{Bias}_P^2$) is unaffected by clustering corrections.

In summary, we find that for reasonable levels of bias, we have more than sufficient plans data in the universe of U.S. non-financial corporations in Compustat for the plans-based estimator to perform better than the realizations-based estimator.

B.3 Is Lagged Investment a Reasonable Proxy for Prior Planned Investment?

We perform a series of tests to verify the assumption that in the absence of a new plan, the firm's own most recent investment serves as the best unbiased predictor of its planned future investment, and report results in Table H.2. Columns (1) and (2) confirm that this strong correlation is robust to firm fixed effects. Column (3) shows that the residual "news" component of the plan (the residual from regressing the plan on lagged investment and controls) is uncorrelated with monetary policy surprises, so the substitution does not absorb the variation that we want the plans-based estimator to identify. Columns (4) and (5) show that lagged investment alone explains nearly 90 percent of the variation in future investment, and that the predictive power of the actual plan is similar. Columns (6) and (7) confirm that disclosure decisions are not differentially correlated with lagged investment: we regress future actual investment on lagged investment interacted with a dummy for whether a plan is available, and find no significance in the interacted term.

C Discussion of Potential Selection Bias

We explore the representativeness of the sample by conducting several tests. Not all firms disclose investment plans. Table H.3 documents the number of unique firms in our dataset, as well as the attrition process from the universe of Compustat data. Of the firms in the Compustat universe, 31% are non-financial U.S. firms with data after 2000 and at least 2 quarters of data and non-missing characteristics. Of these, 23% disclose investment plans for projection periods ending at least three months from the announcement date and are thus included in our analysis. We further restrict our baseline analyses to the 3,075 firms that report plans that are at least 9 months forward.

To understand what kinds of firms report planned investment, we regress an indicator variable for whether the firm disclosed at least one investment plan in our sample on firm-level characteristics. Larger firms with higher investment rates, higher Tobin's Q, more tangible assets, and lower profitability and cash balances are more likely to disclose investment plans, as reported in column 1 of Table H.4. We consider this a feature of the data, not a bug; collectively, our firms make up the majority of fixed business investment in the U.S. economy, as reported in Figure 1. Larger firms with higher investment rates and Tobin's Q, and less leverage, tangible assets, cash balances and profitability are more likely to report net income expectations, as reported in column 3 of Table H.4.

For our analysis, the ideal scenario would be that firms that disclose plans do so regularly and systematically, and that disclosure itself is not sensitive to monetary policy surprises. To test how systematically firms disclose plans, we compute the mode of the number of quarters between investment plan announcements for each firm. In Figure H.1, we show that nearly all firms have a modal interval between announcements of one quarter, indicating they follow a regular pattern of disclosure.

Importantly, we test whether disclosure is sensitive to monetary policy surprises by regressing indicator variables for whether the firm disclosed plans on monetary policy surprises, with the same controls and fixed effects as our baseline regressions. Table H.5 shows that the unconditional probability of disclosure of 3+ month (and 9+ month) investment plans is insensitive to a litany of monetary policy surprises. Further, Table

H.6 show that disclosure of long-term plans (> 24 months) is not sensitive to monetary policy surprises conditional on the firm having a plan that quarter. In terms of magnitudes, a one standard deviation contractionary shock in the short rate reduces the unconditional probability of disclosing 9+ month capex plans by at most 0.6 percentage points at the 90% confidence level. [21] In addition, conditional on having a plan, the probability of including long-term projections changes by at most 0.02 percentage points per one standard deviation shock.[22] This result reduces concerns that our findings of the differential response of long-term versus short-term plans to monetary policy are confounded by firms strategically timing their disclosures of long-term plans.

Finally, we test if firms deviate from their pattern of disclosure when their fundamentals change. To do this, we regress an investment plan disclosure dummy on changes in firm-level characteristics, including firm by fiscal quarter fixed effects to capture firm-specific patterns of disclosure. Table H.7 shows that across the full sample of firms, disclosure of investment plans does not load significantly on changes in any firm-level characteristics, including investment opportunities (as proxied by Tobin's Q) or leverage. Disclosure of long-term plans across all firms (columns 2) or firms that disclose plans in that quarter (column 3) are similarly insensitive to changes in firm-level characteristics. Earnings expectation announcements are also generally insensitive to changes in firm-level characteristics, except for a small positive effect of leverage and a negative effect of cash balances.

D Computing the Implied Elasticity of Investment to User Cost of Capital

In the neoclassical framework, risk-free rates can affect investment decision through two main channels: cash flow expectations and the user cost of capital. While our estimates suggest cash-flow expectations are responsive to changes in the risk-free rate, for firms in our sample, the relationship between cash flow expectations and investment plans is small in magnitude. The average firm in our sample does not seem to face binding financial constraints, which may explain this small pass-through. The results suggest that for the large firms we observe, changes to the risk-free rate pass through to investment decisions mainly through changes to the user cost of capital.

[21] The point estimate on the short rate shock is 0.05 and the standard error is 0.07, see Table H.5, Column (6). This implies a 90% confidence interval of [-0.067, 0.167] percentage points. One standard deviation of the short rate shock is 0.08, so the bounds on one standard deviation of the short rate is [-0.067 * 0.08, 0.167 * 0.08] = [-0.0054, 0.0134] percentage points. Thus, the reduction in the probability of disclosure in response to a one standard deviation positive shock in the short rate is at most 0.5 percentage points, which is quite small economically, and is in any case statistically insignificant.

[22] The point estimate is 0.0000586 (standard error: 0.0113); see Table H.6, Column (1).

We use our baseline estimates of the responsiveness of investment with respect to risk-free rates to calculate an implied elasticity with respect to the user cost of capital, which we denote by c here. The average ratio of I/A in our sample is 0.0604, so to convert our estimates into a semi-elasticity of investment with respect to the risk-free rate, we first divide our coefficients by this number. We then cumulate as before.

In the neoclassical framework, the user cost of capital is $c = \frac{1-\tau z}{1-\tau} \cdot (r+\delta) \cdot p$, where τ is the firm's tax rate, z is the present discounted value of depreciation deductions, r is the firm's cost of funds, δ is the economic depreciation rate, and p is the relative price of capital goods. The WACC r can be written as $r = \omega \times (1-\tau) \times r^{debt} + (1-\omega) \times r^{equity}$, where r^{debt} is the cost of debt, r^{equity} is the cost of equity and ω is the leverage ratio. We denote dr^{debt}/dr_f by ϕ_{debt}, and dr^{equity}/dr_f by ϕ_{equity}. Then the semi-elasticity of the user cost of capital with respect to the risk-free rate is $dlog(c)/dr_f = \frac{\omega(1-\tau)\phi_{debt}+(1-\omega)\phi_{equity}}{r+\delta}$. In sample, the average leverage ratio is 30%. We assume an average cost of funds of 7%, corporate tax rate of 30%, and annual depreciation rate of 10%. We assume that $\phi_{equity} = \phi_{debt} = \phi = 1.5$[23]. To compute the elasticity of investment with respect to the user cost of capital, we next divide our cumulated coefficients by the implied $dlog(c)/dr_f$ from these assumptions. To summarize, our elasticities of investment at horizon H with respect to the user cost of capital are computed as follows:

$$\frac{d\log I_H}{d\log c} = \frac{\frac{1}{I/A}\sum_{h=1}^{H}(1-\delta)^{H-h}\widehat{\beta}_h}{\frac{\omega(1-\tau)\phi_{debt}+(1-\omega)\phi_{equity}}{r+\delta}} \tag{32}$$

The horizon-specific coefficient $\widehat{\beta}_h$ is constructed by aggregating sub-sample IV local projection estimates across industries. Specifically, we split firm-quarters into three sub-samples based on the firm's maximum reported plan horizon (h=1; $h \in \{2,3\}$; $h \in \{4,5\}$) and estimate Equation 3 separately within each group at every horizon $h \leq \overline{h}_j$, where $\overline{h}_j$ is the largest horizon observed in sub-sample j. We then make one of two assumptions about the response of investment plans at unobserved horizons in each sub-sample:, we either set $\widehat{\beta}_{j,h} = 0$ for $h > \overline{h}_j$ ("zero extrapolation") or hold it constant at $\widehat{\beta}_{j,\overline{h}_j}$ ("persistent extrapolation"). We then assign each industry to a sub-sample based on the industry average of firms' maximum reported plan horizons as displayed in Figure 2, and compute $\widehat{\beta}_h$ as the CAPX-share-weighted average of industry-level

[23]The assumption that $\phi = 1.5$ reflects evidence that monetary policy shocks move risk premia in addition to risk-free rates, so that the cost of equity and cost of debt respond more than one-for-one to changes in Treasury yields. Bernanke and Kuttner [2005] find that approximately half of the stock market's response to monetary surprises operates through revisions in the equity risk premium. Gertler and Karadi [2015] find that a monetary policy surprise raising the risk-free rate by 25bps also raises the excess bond premium by 10 basis points, implying $\phi^{debt} = 1.4$.

$\widehat{\beta}_{j,h}$ vectors, using 2022 BEA Table 4a industry capital expenditures as weights. Estimates using both extrapolation assumptions are reported in Table 5.

Using our baseline estimates of the responsiveness of investment with respect to the five-year yield, aggregated across industries by capital-expenditure share, we obtain a short-term elasticity of investment with respect to the user cost of capital of 2.5 (Table 5). This captures the investment response that occurs within two years, and is in line with the elasticity implied by Zwick and Mahon [2017].[24] Our medium-term elasticity of investment with respect to the user cost of capital, capturing the response within three years, is 3.0. Our long-term elasticity of investment with respect to the user cost of capital, capturing the response within five years, is 2.8 under the zero extrapolation assumption and 3.9 under persistent extrapolation.

E Monetary Policy in a Real Options Framework

Considering the standard investment under uncertainty model in Dixit and Pindyck [1994], we can see how interest rates should impact new versus ongoing projects differentially. The basic set up has the value of an investment opportunity, $F(V)$, as a function of the value at the time of exercising the option to invest T, the discount rate ρ, and the initial cost of investment I:

$$F(V) = \max \mathbb{E}[(V_T - I)e^{-\rho T}] \tag{33}$$

The value of the project follows a geometric Brownian motion process:

$$dV = (\rho - \delta)V dt + \sigma V dz, \tag{34}$$

where dz is the increment of a Wiener process, so the future value of the project is always uncertain. Using dynamic programming and boundary conditions, we can write the following solution for the value of the investment opportunity:

$$F(V) = AV^{\beta}. \tag{35}$$

[24] In Table B.2, they find a coefficient of 1.34 for large firms, which implies an elasticity of 2.65.

The firm will invest if $V > V^*$, where the threshold value V^* is defined:

$$V^* = \frac{\beta}{\beta - 1} I \tag{36}$$

and the constant A is:

$$A = \frac{V^* - I}{(V^*)^\beta} \tag{37}$$

From this, Dixit and Pindyck [1994] derives an expression that pins down β:

$$\frac{1}{2}\sigma^2 \beta(\beta - 1) + (\rho - \delta)\beta - \rho = 0 \tag{38}$$

Using implicit differentiation, and keeping the positive root of β, we can show that (holding δ fixed) $\frac{\partial \beta}{\partial \rho} < 0$, and thus $\frac{\partial V^*}{\partial \rho} = -\frac{I}{(\beta-1)^2} \frac{\partial \beta}{\partial \rho} > 0$. The intuition is that an increase in interest rates reduces the present value cost of the investment I but not the expected discounted value of V. The value of the firm's investment option thus increases, which makes waiting more attractive and means the option to invest is less likely to be exercised.

On the other hand, if the option to invest has already been exercised, then the value of the project is $H(V) = V - I$, with I sunk. Interest rates only matter to the extent that they affect the future path of V, but there is no option-value wedge left that affects the decision; thus, ongoing plans will be less sensitive to ρ than new plans for which there is still option value.

An alternative case is if ongoing plans still require some irreversible outlay $J < I$ and thus still have some option value for continuation. In this case the continuation threshold is $V^*(J) = \frac{\beta}{\beta-1} J$, with a corresponding interest rate sensitivity of $\frac{\partial V^*(J)}{\partial \rho} = \frac{J}{I} \frac{\partial V^*(I)}{\partial \rho}$. Since the irreversible outlay J for an ongoing project is likely significantly less than I, the interest rate sensitivity of ongoing projects is also less than that of new projects.

F A Simple Q-Theory Framework

Consider a firm that produces output in period t by combining capital and labor using a constant returns to scale production function $A_t K_t^\alpha L_t^{1-\alpha}$. At the beginning of period t, the firm hires labor L_t at wage w and chooses investment I_t. Investment takes one period to implement:

$$K_{t+1} = (1-\delta)K_t + I_t, \tag{39}$$

where δ is the capital depreciation rate.

Investment is subject to quadratic adjustment costs:

$$C(I_t, K_t) - I_t = \frac{b}{2}\left(\frac{I_t}{K_t} - a\right)^2 K_t, \tag{40}$$

where $b > 0$ governs the magnitude of adjustment costs and a is the frictionless investment rate. These costs display constant returns to scale.

Define the firm's earnings in period s as:

$$\Pi_s = A_s K_s^{\alpha} L_s^{1-\alpha} - wL_s - C(I_s, K_s). \tag{41}$$

The firm chooses investment to maximize the net present value of current and future earnings, discounted at the firm's cost of capital:

$$\max_{\{I_s, L_s\}_{s\geq t}} \Pi_t + \sum_{s\geq t+1} \frac{E_t[\Pi_s]}{\prod_{j=1}^{s-t}(1+\rho_{t,j})} \tag{42}$$

subject to $K_{s+1} = (1-\delta)K_s + I_s$, where $\rho_{t,j}$ is the firm's per-period discount rate at horizon j.

F.1 Deriving Optimal Investment

Let Λ_t denote the shadow value of an additional unit of capital at time t. The first-order conditions are:

$$\frac{\partial C}{\partial I_t} = \frac{E_t[\Lambda_{t+1}]}{1+\rho_{t,1}}. \tag{A.1}$$

$$\alpha A_t K_t^{\alpha-1} L_t^{1-\alpha} - \frac{\partial C}{\partial K_t} - \Lambda_t + \frac{(1-\delta)\, E_t[\Lambda_{t+1}]}{1+\rho_{t,1}} = 0. \tag{A.2}$$

Under the quadratic adjustment cost specification, the marginal cost of investment is:

$$\frac{\partial C}{\partial I_t} = 1 + b\left(\frac{I_t}{K_t} - a\right). \tag{43}$$

Substituting into (A.1) and rearranging:

$$\frac{I_t}{K_t} = \left(a - \frac{1}{b}\right) + \frac{1}{b} \cdot \frac{E_t[\Lambda_{t+1}]}{1+\rho_{t,1}}. \tag{44}$$

Note that multiplying both sides of (A.2) by K_t and exploiting the constant returns to scale of both the production function and the adjustment cost function yields:

$$\Lambda_t K_t = \Pi_t + \frac{E_t[\Lambda_{t+1}K_{t+1}]}{1+\rho_{t,1}}. \tag{45}$$

Iterating forward and imposing the transversality condition:

$$\Lambda_{t+1}K_{t+1} = \sum_{s \geq t+1} \frac{E_{t+1}[\Pi_s]}{\prod_{j=1}^{s-(t+1)}(1+\rho_{t+1,j})}. \tag{46}$$

Discounting back one period and using the law of iterated expectations:

$$\frac{E_t[\Lambda_{t+1}]}{1+\rho_{t,1}} = \frac{1}{K_{t+1}} \sum_{s \geq t+1} \frac{E_t[\Pi_s]}{\prod_{j=1}^{s-t}(1+\rho_{t,j})}, \tag{47}$$

Substituting back into (43):

$$\frac{I_{i,t}}{K_{i,t}} = \left(a - \frac{1}{b}\right) + \frac{1}{b} Q_{i,t} \tag{48}$$

where Q is the present value of expected future earnings per unit of installed capital, discounted at the firm's cost of capital:

$$Q_{i,t} = \frac{1}{K_{i,t+1}} \sum_{s=1}^{T_i} \frac{E_t[\Pi_{i,t+s}]}{\prod_{j=1}^{s}(1+\rho_{t,j})} \tag{49}$$

with $\rho_{t,j}$ the per-period discount rate at horizon j.

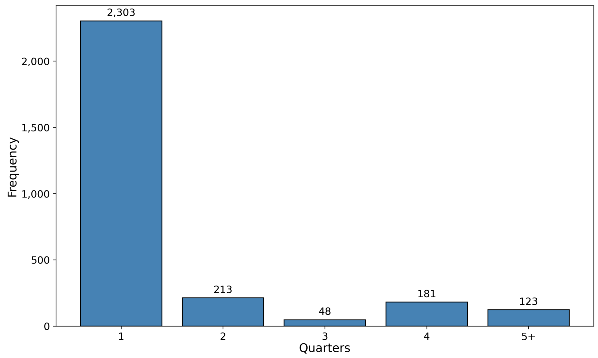
F.2 Transmission Mechanisms

Investment thus depends on two channels operating through $Q_{i,t}$. The first is the cash-flow expectations channel: holding the discount rate fixed, an increase in $E_t[\Pi_{i,t+s}]$ raises $Q_{i,t}$ and increases investment. The second is the discount rate channel: holding expected cash flows fixed, a decrease in $\rho_{t,j}$ raises $Q_{i,t}$ and increases investment. If firms use their financial cost of capital to discount expected future earnings in the optimization problem above, then this can also be called a cost of capital channel.

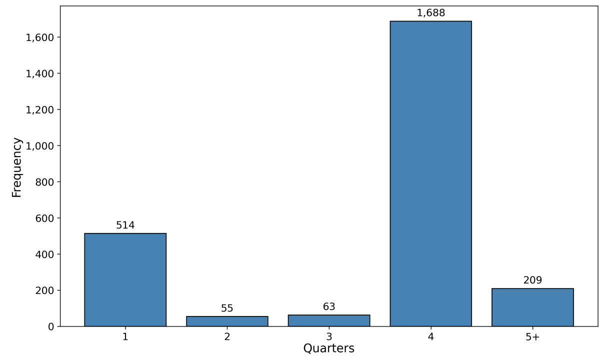
G Further Robustness

De Fraisse et al. [2026] show that regressions of real outcomes on interest rate changes instrumented by high-frequency monetary policy shocks can be confounded by predictable variation in the interest rate path. To address this concern, we test whether our baseline facts survive the inclusion of 8 quarterly lags of one-year Treasury yield changes. Including these lags is a stringent way to absorb predictable components of yield movements in the quarter of interest. Our results, shown in Figure H.2, demonstrate that the baseline facts are robust to this specification and are therefore unlikely to be driven by predictable interest rate dynamics. Panel (a) shows that the local projection specification remains robust with 8 yield lags. Panel (b) shows that the same robustness holds for the new versus ongoing project decomposition. Panel (c) shows that the term structure of planned investment responses—where longer-horizon plans respond more strongly to yield changes—also remains robust with 8 yield lags. Across all specifications, the point estimates and confidence intervals remain close to the baseline. If anything, the results are even stronger. These tests indicate that the investment plan responses we document reflect the causal effect of unanticipated monetary policy-induced yield movements rather than predictable interest rate dynamics.

H Additional Tables and Figures



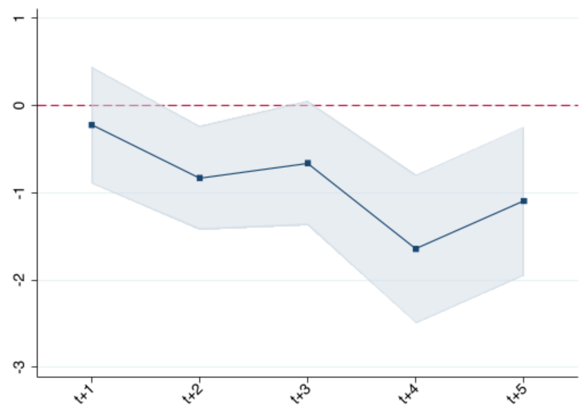
(a) Firm-level mode: 3+ month investment plans



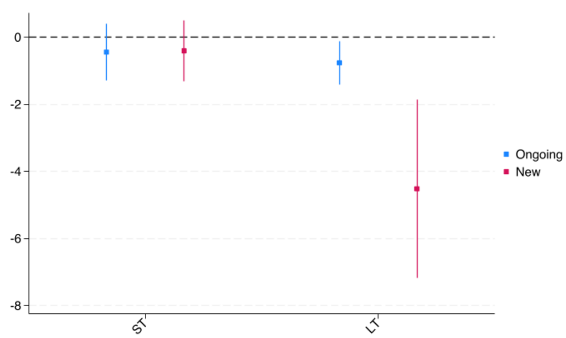
(b) Firm-level mode: 9+ month investment plans

Figure H.1: Firm-Level Mode: Quarters Between Investment Plans Announcements

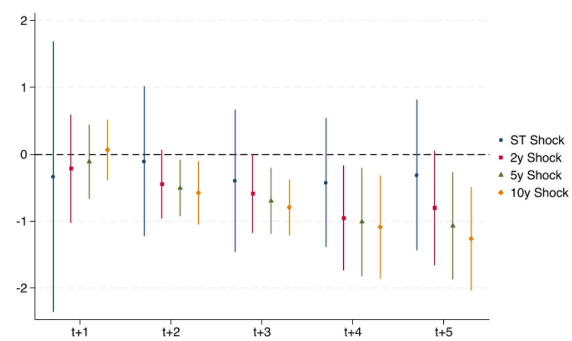
Notes: The left panel plots the distribution of the mode of quarters between investment plans announcements for each firm, where the projection period ends at least 3 months from the announcement date. The right panel plots the distribution of the mode of quarters between investment plans announcements for each firm, where the projection period ends at least 9 months from the announcement date.



(a) Local Projection IV: 8 Yield Lags



(b) New vs. Ongoing IV: 8 Yield Lags

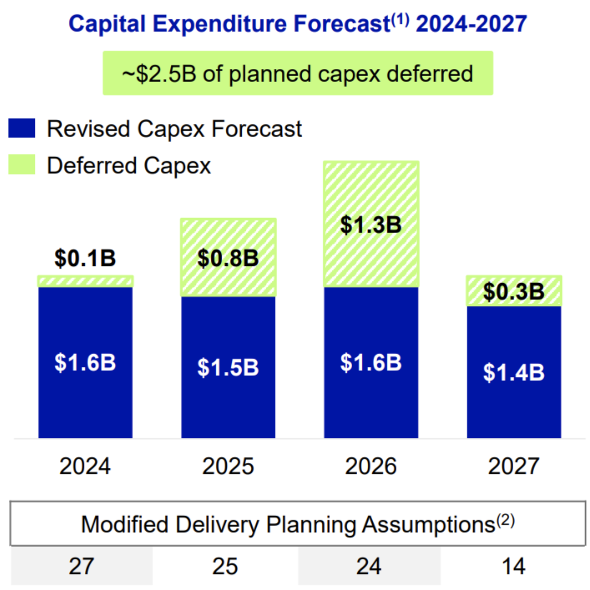


(c) Term Structure IV Coefplot: 8 Yield Lags

Figure H.2: Robustness of Main Results to Yield Lag Controls

Notes: This figure presents robustness checks following De Fraisse et al. [2026], who show that instrumenting real outcomes with high-frequency monetary policy shocks can produce spurious results if lagged yield changes predict future yield movements. All panels include 8 quarterly lags of one-year Treasury yield changes. Panel (a) reports the local projection IV impulse response of planned investment at horizons $h = 1, \ldots, 5$ to the instrumented 5-year yield change. Panel (b) shows the new versus ongoing project IV specification, where the 5-year yield change (instrumented by the 5-year Gertler–Karadi shock) is interacted with a 2×2 grid of short-term versus long-term and new versus ongoing plan indicators (ST $\leq$ 23 months). Panel (c) reports the IV term-structure coefplot, where each point corresponds to a projection horizon h and plots $\hat{\beta}_h$ from regressing planned investment growth on the instrumented 5-year yield change interacted with horizon dummies. All specifications include firm fixed effects and lagged firm and macro controls. Standard errors are clustered by firm and calendar quarter; 90% confidence intervals are shown.

Figure H.3: Examples of Investment Plan Disclosures



(a) Jetblue 2023 Q4 Earnings presentation

$48 Billion in Projected Capital Investment Through 2028: Functional View

Excluding Plant Vogtle Unit 4 Construction

(in $ billions)	2024	2025	2026	2027	2028	Total '24-'28
New Generation	0.9	0.9	0.4	0.0	0.0	2.2
Generation Maintenance	1.3	1.1	1.0	1.1	0.9	5.4
Environmental Compliance	0.1	0.1	0.1	0.1	0.0	0.5
Pond Closures	0.7	0.8	0.7	0.7	0.6	3.5
Transmission	1.7	1.7	1.7	2.3	2.7	10.1
Distribution	1.7	1.7	1.8	1.9	1.9	9.0
Nuclear Fuel	0.3	0.3	0.4	0.3	0.4	1.8
General	1.6	1.5	1.1	1.0	0.8	6.1
State-Regulated Electrics (excl Plant Vogtle Unit 4)	8.3	8.1	7.3	7.4	7.5	38.7
State-Regulated Gas LDCs	1.7	1.8	1.7	1.7	1.7	8.5
Total State-Regulated Utilities	10.1	9.9	9.0	9.1	9.2	47.2
Southern Power	0.3	0.2	0.1	0.1	0.1	0.8
GAS Pipelines & Other	0.1	0.0	0.0	0.0	0.0	0.2
PowerSecure	0.1	0.0	0.0	0.0	0.0	0.1
Other	0.1	0.0	0.0	0.0	0.0	0.1
Total Consolidated	10.5	10.1	9.2	9.3	9.4	48.5

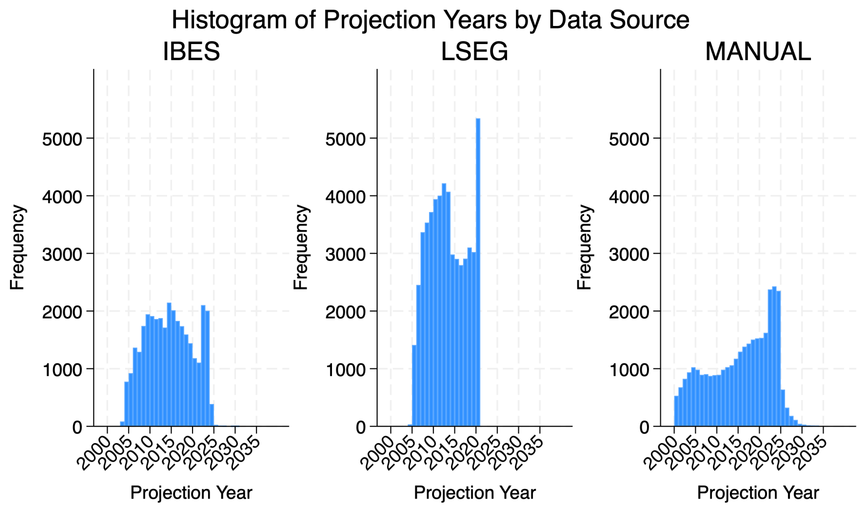
Due to rounding, totals may not foot

20

(b) Southern Company's 2023Q4 Earnings Call

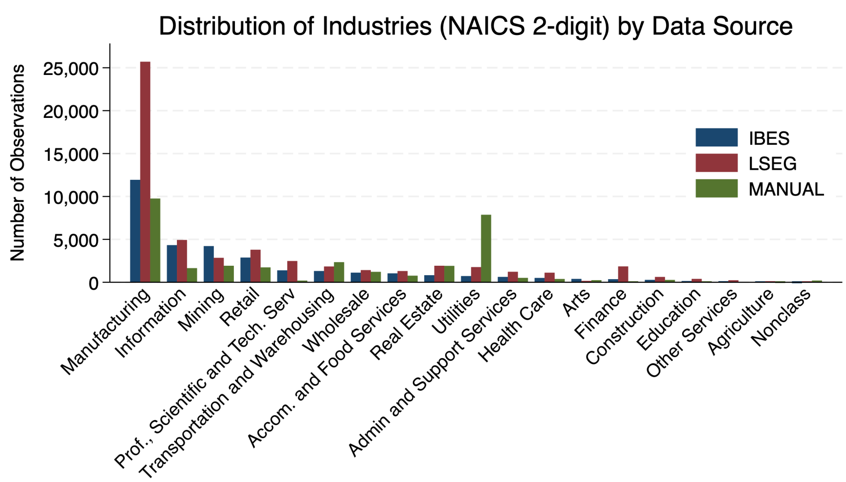
Source: The top image is from page 9 of the Jetblue 2023 Q4 Earnings presentation. The bottom image is from page 20 of Southern Company's 2023Q4 Earnings Call.

Figure H.4: Coverage of Projected Years Across Sources



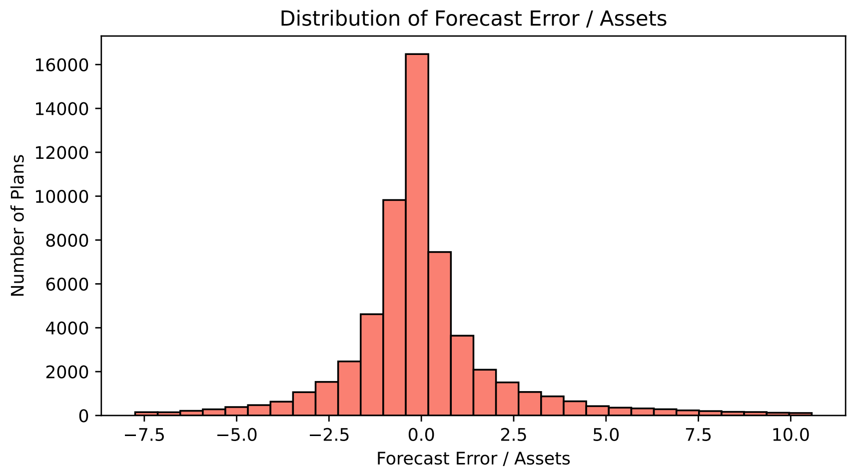
Notes: These three histograms each show the distribution of firm-announcement date observations for a given source.

Figure H.5: Coverage of Industries Across Sources



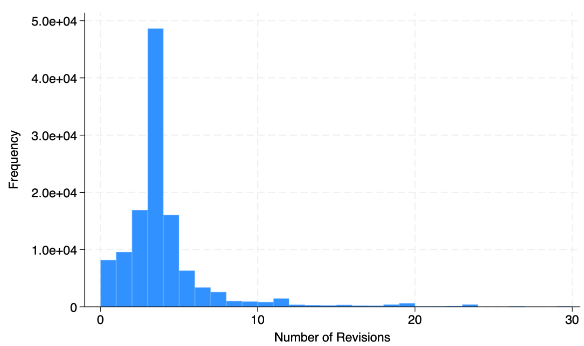
Notes: This histogram shows the distribution of investment plans (firm-announcement date-projection year observations) present for across industries in the dataset, indicating the source of the data.

Figure H.6: Histogram: 1-year Projection Period Investment Forecast Errors

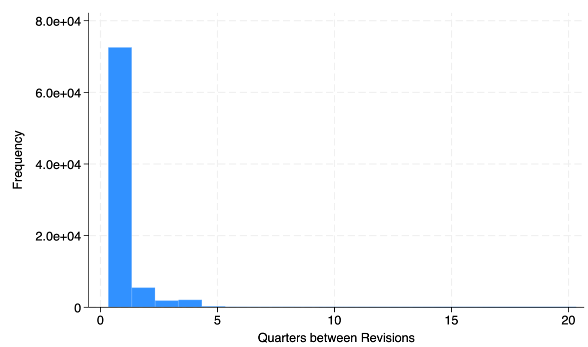


Notes: This figure plots the distribution of 1-year projection period capex forecast errors. Capex forecast errors in year t are computed as the difference between realized capex in fiscal year t and capex plans for year t announced within 3 to 12 months of the end of the year, normalized by lagged total assets. Forecast errors are trimmed at the 2nd and 98th percentiles.

Figure H.7: Revisions to Investment Plans



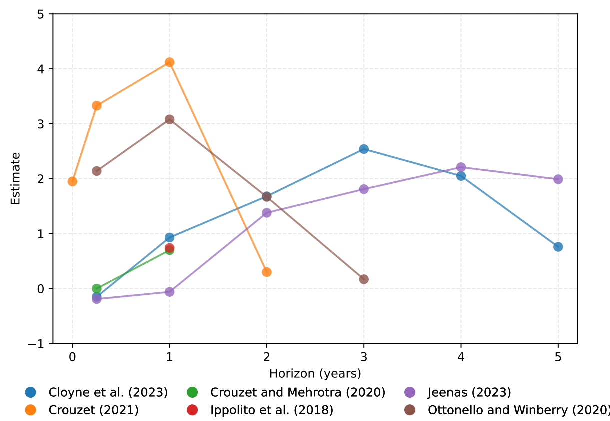
(a) Number of Revisions to a Given Plan



(b) Quarters between Revisions

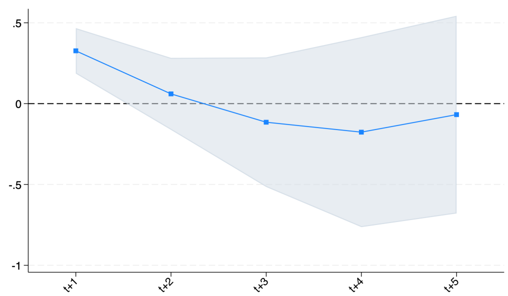
Notes: Panel (a) shows the distribution of the number of revisions to a given plan (for a given firm and projection period). Panel (b) shows the distribution of the number of quarters between consecutive revisions to a given plan. Both panels include IBES, LSEG, and manually collected data.

Figure H.8: Summary of Estimates of the Responsiveness of Capital Expenditures to Interest Rates

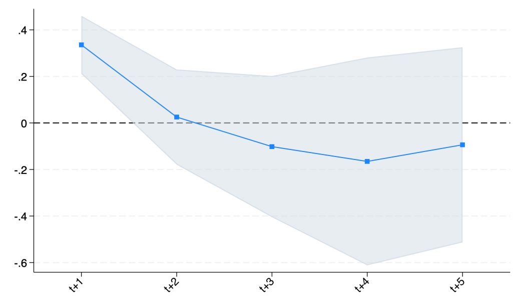


Notes: This figure plots existing estimates from the literature of the cumulative effect of a monetary policy shock on capital expenditures over different horizons. The figure is scaled to show the effect of a 1pp monetary policy shock on the change in capital stock, as a percentage of prior capital stock.

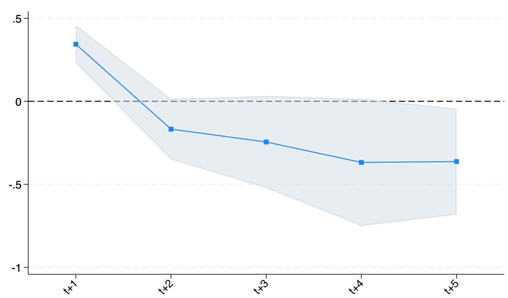
Figure H.9: OLS: Impact of Monetary Policy on Investment Across Horizons



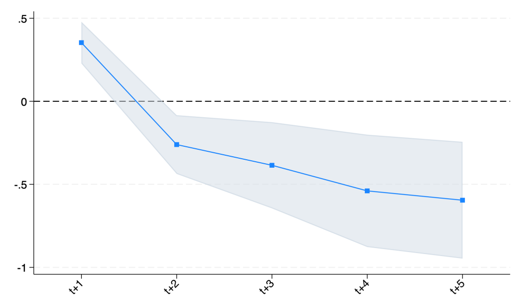
(a) 1-year yield



(b) 2-year yield



(c) 5-year yield



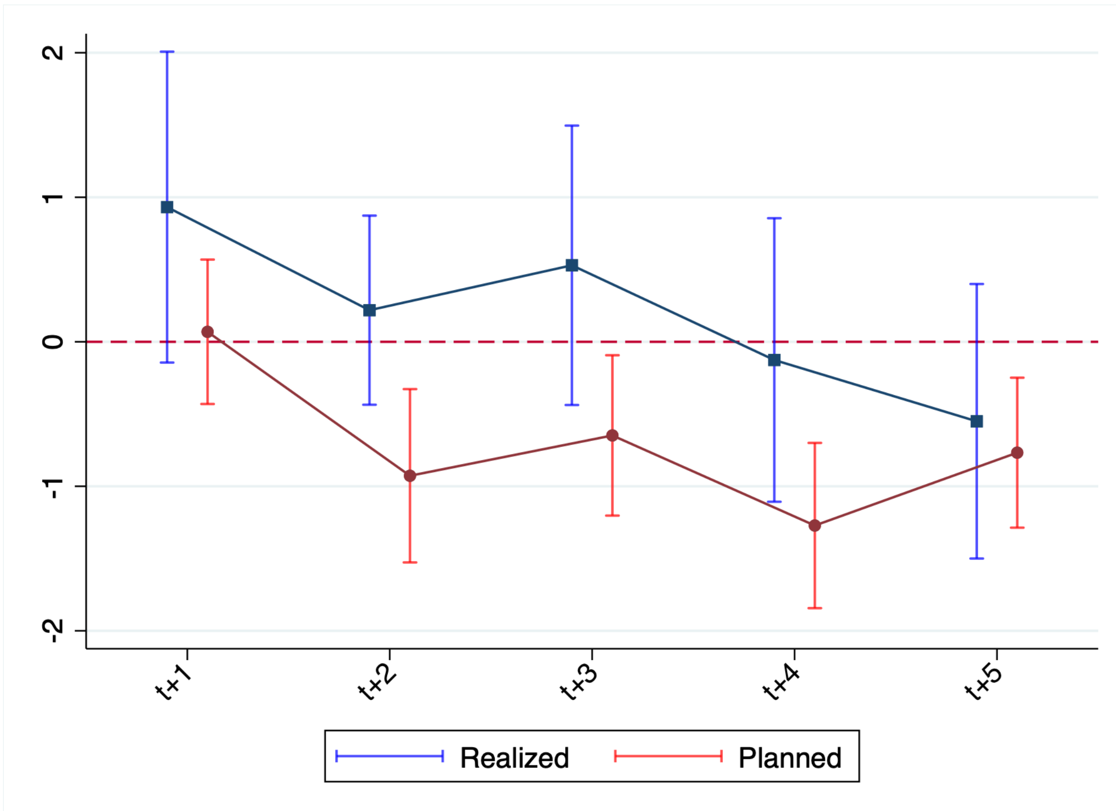
(d) 10-year yield

Notes: This figure depicts β_h and 90% confidence intervals for the following specification, for $h = 1, 2, 3, 4, 5$:

$$\text{Planned Investment}_{i,q,h} = \beta_h \ \Delta y_q + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h}$$

Planned Investment$_{i,q,h}$ is planned real investment for firm i in projection year y relative to the rolling sum of the real investment over the prior 4 quarters ($q-4$ to $q-1$), divided by quarter $q-1$ assets. h denotes the years from today that the plan is for. Here, $h = 1$ if the difference between the projection date and the end of the projection horizon is between 9-12 months, $h = 2$ if the difference is between 13-24 months, $h = 3$ if the difference is between 25-36 months, $h = 4$ if the difference is between 37-48 months, and $h = 5$ if the difference is between 49-71 months. Δy_q is the three month change in the Treasury yield, for the 1, 2, 5, and 10 year yield. The regression controls $X_{i,q-1}$ include firm-level characteristics (cash-to-assets, leverage, log assets, return on assets, tangibility, and Tobin's Q), the quarter change in the CFNAI index, the level of the CFNAI index, the 2-, 5-, and 10-year U.S. Treasury yields, all as of quarter $q-1$, as well as four lags of GDP growth, the inflation rate and the unemployment rate. The outcome variable is trimmed at the 2nd and 98th percentiles. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level.

Figure H.10: Comparing Estimates of Investment's Sensitivity to Monetary Policy using Realized vs Planned Investment

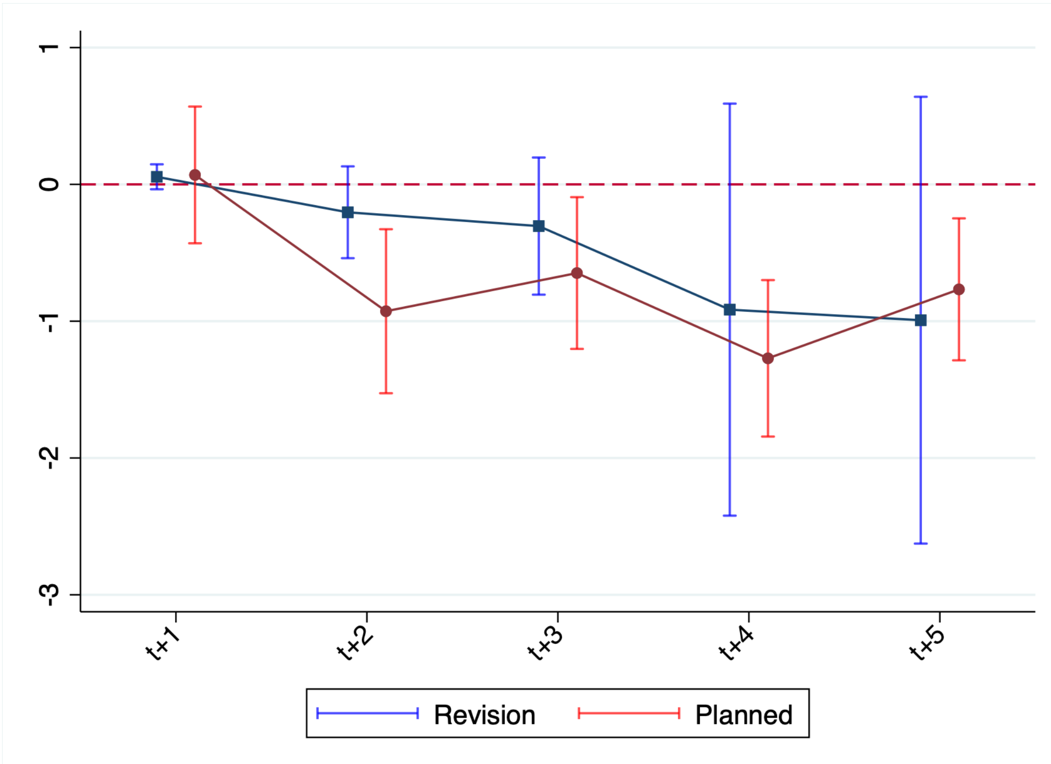


Notes: This figure depicts β_h and 90% confidence intervals for the following specification, for $h = 1,2,3,4,5$:

$$\text{Investment}_{i,q,h} = \beta_h \widehat{\Delta y_q} + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h}$$

The red lines represent results where the left-hand side variable is Planned Investment$_{i,q,h}$, which is planned real investment for firm i in projection year y relative to the rolling sum of the real investment over the prior 4 quarters ($q-4$ to $q-1$), divided by quarter $q-1$ assets. The blue lines represent results where the left-hand side variable is Realized Investment$_{i,q,h}$, which is actual real investment for firm i in projection year y relative to the rolling sum of the real investment over the prior 4 quarters ($q-4$ to $q-1$), divided by quarter $q-1$ assets. $\widehat{\Delta y_q}$ is the three month change in the five year Treasury yield, instrumented using the maturity-matched monetary policy shock that occur during quarter q, during which the investment plan is made and at the end of which the plan is announced. The regression controls $X_{i,q-1}$ include firm-level characteristics (cash-to-assets, leverage, log assets, return on assets, tangibility, and Tobin's Q), the quarter change in the CFNAI index, the level of the CFNAI index, the 2-, 5-, and 10-year U.S. Treasury yields, all as of quarter $q-1$, as well as four lags of GDP growth, the inflation rate and the unemployment rate. The outcome variable is trimmed at the 2nd and 98th percentiles. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level.

Figure H.11: Impact of Monetary Policy on Investment Across Horizons: Robustness with Revisions

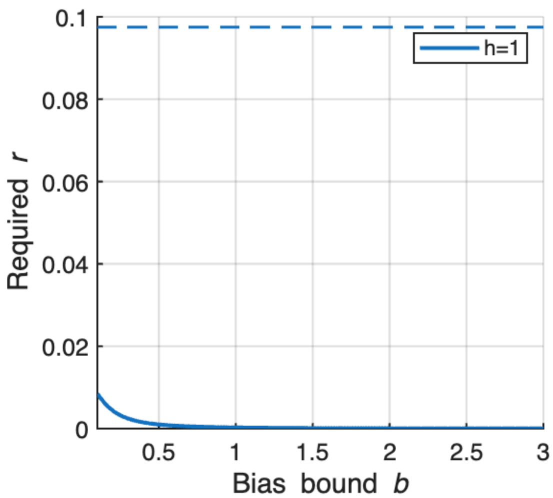


Notes: This figure depicts β_h and 90% confidence intervals for the following specification, for $h = 1,2,3,4,5$:

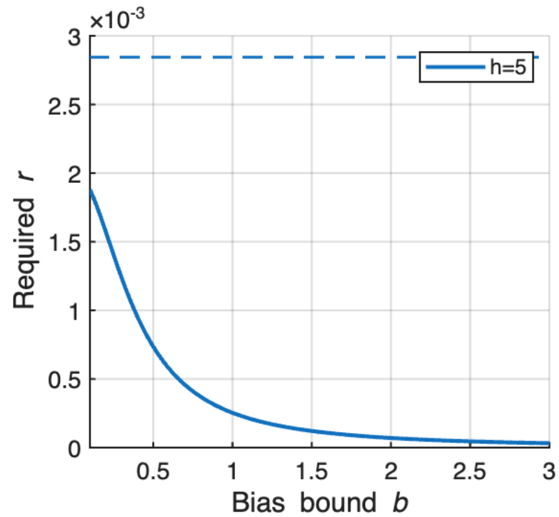
$$\text{Revision}_{i,q,h} = \beta_h \ \widehat{\Delta y}_q + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h}$$

$\text{Revision}_{i,q,h}$ is planned real investment for firm i in projection year y relative to the previous planned real investment for the same firm and projection year, divided by quarter $q-1$ assets, where plans can be made up to one year apart. h denotes the years from today that the plan is for. Here, $h = 1$ if the difference between the projection date and the end of the projection horizon is between 9-12 months, $h = 2$ if the difference is between 13-24 months, $h = 3$ if the difference is between 25-36 months, $h = 4$ if the difference is between 37-48 months, and $h = 5$ if the difference is between 49-71 months. $\widehat{\Delta y}_q$ is the three month change in the 5 year Treasury yield, instrumented using the maturity-matched monetary policy shock that occur during quarter q, during which the investment plan is made and at the end of which the plan is announced. The regression controls $X_{i,q-1}$ include firm-level characteristics (cash-to-assets, leverage, log assets, return on assets, tangibility, and Tobin's Q), the quarter change in the CFNAI index, the level of the CFNAI index, the 2-, 5-, and 10-year U.S. Treasury yields, all as of quarter $q-1$, as well as four lags of GDP growth, the inflation rate and the unemployment rate. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level.

Figure H.12: Required r Across Bias Levels



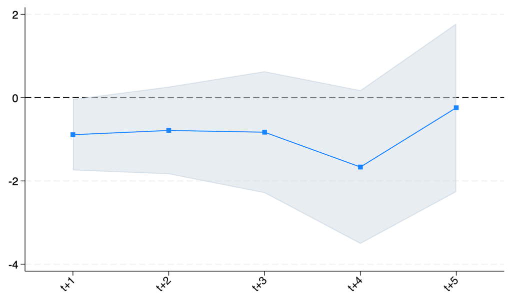
(a) Plan horizon: 1 Year



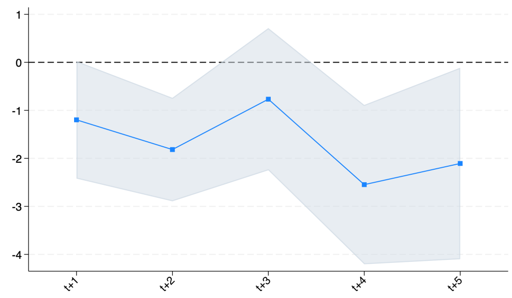
(b) Plan horizon: 5 Years

Notes: This figure plots, as a function of the assumed upper bound on bias b (x-axis), the minimum sample ratio $r = N_P/N_R$ (y-axis) required for the plans-revision estimator (Eq. 26 with outcome $\text{Revision}_{i,q,h}$ from Eq. 25) to deliver lower MSE than the realized-investment estimator (Eq. 24) at horizon h, per Eq. 31. The dashed horizontal line is the actual sample ratio r for that horizon — plans dominate wherever the dashed line sits above the curve.

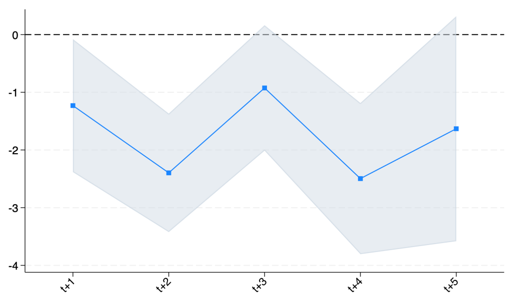
Figure H.13: Impact of Monetary Policy Shocks on Investment - Other MPS



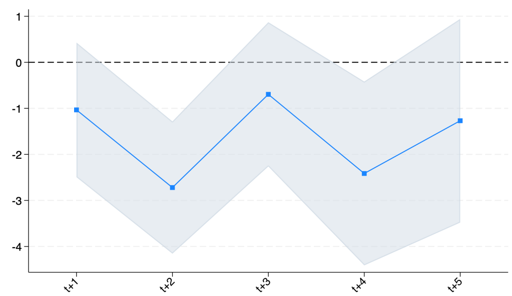
(a) BS Shock



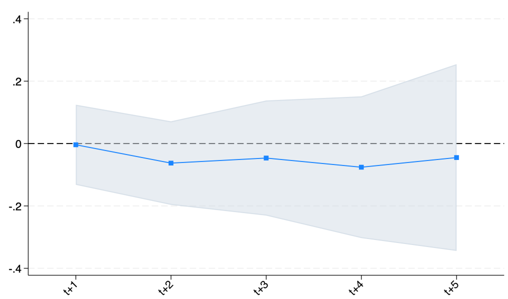
(b) Residualized Shock 2y



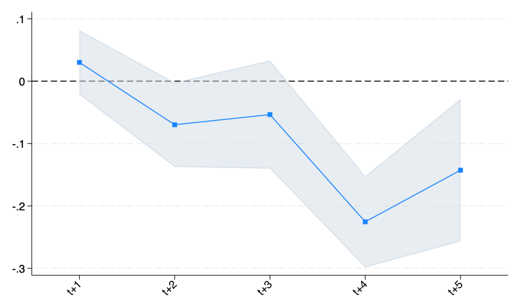
(c) Residualized Shock 5y



(d) Residualized Shock 10y



(e) FFR Shock



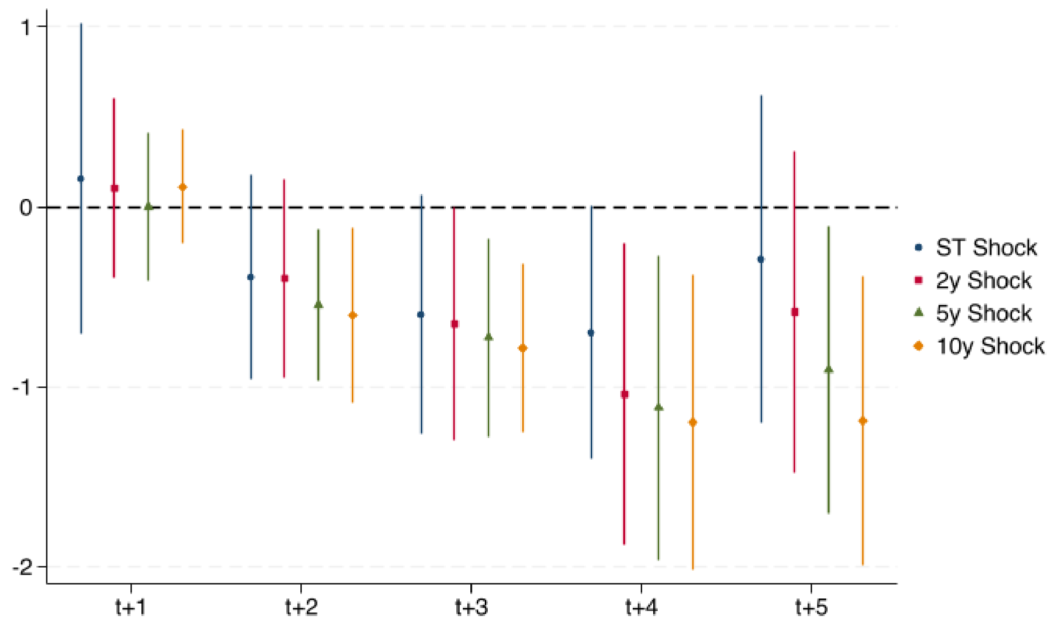
(f) Forward Guidance Shock

Notes: This figure depicts β_h for the following specification, for $h = 1, 2, 3, 4, 5$:

$$\text{Planned Investment}_{i,q,h} = \beta_h \, \text{MPS}_q + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h},$$

Planned Investment$_{i,q,h}$ is planned real investment for firm i in projection year y relative to the rolling sum of the real investment over the prior 4 quarters ($q-4$ to $q-1$), divided by quarter $q-1$ assets. h denotes the years from today that the plan is for. Here, $h = 1$ if the difference between the projection date and the end of the projection horizon is between 9-12 months, $h = 2$ if the difference is between 13-24 months, $h = 3$ if the difference is between 25-36 months, $h = 4$ if the difference is between 37-48 months, and $h = 5$ if the difference is between 49-71 months. Panel (a) uses the residualized ST shock from Bauer and Swanson [2023]. Panels (b)-(d) use shocks constructed from 30-minute high frequency changes in the 2-, 5-year, and 10-year UST yield futures, residualized with controls using the same method as in Bauer and Swanson [2023]. Panels (e) and (f) use the Fed Funds Rate shocks and Forward Guidance shocks extracted from using a principal components analysis from Swanson [2021]. The regression controls $X_{i,q-1}$ include firm-level characteristics (cash-to-assets, leverage, log assets, return on assets, tangibility, and Tobin's Q), the quarter change in the CFNAI index, the level of the CFNAI index, the 2-, 5-, and 10-year U.S. Treasury yields, all as of quarter $q-1$, as well as four lags of GDP growth, the inflation rate and the unemployment rate. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level. The shaded area represents 90% confidence intervals.

Figure H.14: Planned Investment Response to Monetary Policy by Horizon



Note: This figure plots the coefficients and 95% confidence intervals from the IV regressions reported in Table 4. Quarterly changes in U.S. Treasury yields are instrumented using high-frequency MP-driven shocks to a duration-matched U.S. Treasury future. The horizons are shown as $q+1$ to $q+5$ on the x-axis. Planned capital expenditure change is computed relative to the realized capital expenditure of four quarters ending one (two) fiscal quarter before the announcement, normalized for inflation and divided by the rolling sum of the real assets over the prior 4 quarters ($q-4$ to $q-1$). The regressions also control for quarterly firm-level characteristics, including lagged size (ln(Assets)), leverage (Total Debt/Assets), return on assets (NI/Assets), tangibility (PPE/Assets), cash-to-assets, and Tobin's Q. Macro controls include the lagged quarter change and level of the CFNAI index, the lagged 2-year U.S. Treasury yield and 2-10 year Treasury yield curve, four lags of GDP growth, the inflation rate, and the unemployment rate. Firm fixed effects and projection horizon fixed effects are included, and standard errors are clustered at both the firm and calendar quarter levels. The outcome variable is trimmed at the 2nd and 98th percentiles.

Table H.1: Forecast-Error Response to Monetary Policy: LT vs ST Plans

	LHS: Forecast Error (Realized − Planned)			
	(1)	(2)	(3)	(4)
	IV RHS: Δ UST 1y	IV RHS: Δ UST 2y	IV RHS: Δ UST 5y	IV RHS: Δ UST 10y
Δ UST	0.488	0.205	-0.0468	-0.134
	(0.616)	(0.262)	(0.183)	(0.154)
Over 2yr plan×Δ UST	0.601	0.770	0.678*	0.626
	(0.590)	(0.484)	(0.397)	(0.423)
Firm Controls	Yes	Yes	Yes	Yes
Macro Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Projection horizon FE	Yes	Yes	Yes	Yes
Observations	31,168	31,168	31,168	31,168
R-squared	0.024	0.022	0.020	0.019

Notes: IV regression of the forecast error $FE_{i,q+h} = I_{i,q+h} - F_q[I_{i,q+h}]$ (realized minus planned real capex change, percent of lagged assets) on the quarterly U.S. Treasury yield change at the indicated maturity, instrumented by the maturity-matched Bauer–Swanson (2023) high-frequency monetary policy surprise. The regression also includes an interaction with an indicator for plans extending more than 24 months ahead. Realized capex is winsorized at 1–99%, planned capex at 2–98%; the forecast error itself is not trimmed. Sample restricted to 12-month projection periods with at least 9 months remaining to projection end. The regression controls include firm-level characteristics (cash-to-assets, leverage, log assets, return on assets, tangibility, and Tobin's Q), the quarter change in the CFNAI index, the level of the CFNAI index, the 2-, 5-, and 10-year U.S. Treasury yields, all as of quarter $q-1$, as well as four lags of GDP growth, the inflation rate and the unemployment rate. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level.

Table H.2: Testing if Lagged Investment is a Reasonable Proxy for Prior Plan

	Correlation		Residual and MPS	Predictive Power for I_i,t+1		Selection	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Lagged capex plan	Lagged capex plan	Residuals	Future capex	Future capex	Future capex	Future capex
Lagged capex	0.920***	0.472***			0.949***	0.950***	0.350***
	(0.00808)	(0.0522)			(0.00637)	(0.00306)	(0.0191)
Lagged capex plan				0.830***			
				(0.0133)			
MPS			-0.398				
			(0.258)				
Plan available=1 × Lagged capex						-0.00168	-0.000643
						(0.00695)	(0.00549)
Plan available						0.0153	0.00649
						(0.0402)	(0.0332)
Macro Controls		✓	✓				✓
Firm Controls		✓	✓				✓
Firm FE		✓	✓				✓
Observations	3624	2789	2789	3558	3535	22134	19589
R-squared	0.757	0.905	0.00129	0.763	0.888	0.894	0.945

Notes: Sample restricted to annual plans for projection periods ending 9-12 months from announcement. Cols (1)-(5) require a non-missing lagged plan (one quarter prior, same projection year); cols (6)-(7) include all firm-quarters in the sample. Cols (1)-(2): regress lagged investment plan on lagged realized investment; col (1) is raw OLS, col (2) adds firm FE plus firm- and macro-level controls. Col (3): regress the residual "plan news" from col (2) on the short-term 1-year high-frequency MPS, with the same controls and FE. Cols (4)-(5): predictive regressions of realized future capex on lagged plan and on lagged actual investment respectively. Cols (6)-(7): regress realized future capex on lagged investment, the plan-availability dummy, and their interaction; col (7) adds firm FE plus firm- and macro-level controls. Standard errors clustered by firm and calendar year-quarter.

Table H.3: Sample Construction

Description	Number of unique gvkeys
Start with Compustat universe	45360
Drops missing industry codes	33670
Exclude financial firms (NAICS2 != 52)	27875
Keep observations with fiscal year beginning in 2000	19792
Keep firms with at least 2 quarters of data	19792
Keep firms incorporated in USA (fic = USA)	14263
Has non-missing characteristics	11102
Inclusion in plans	3336
Has at least 9 months of plans	3051

Notes: This table documents sample construction from the Compustat universe. We require non-financial U.S. firms with at least 2 quarters of data after 2000 and non-missing characteristics (size, investment rate, leverage, Tobin's Q, ROA, cash/assets, tangibility). The final sample includes 3,075 firms with investment plans at 9+ month horizons.

Table H.4: Which Firms Disclose Investment Plans?

	Has Capex Plans	Has LT Capex Plans	Has NI Expectations
	(1)	(2)	(3)
Log assets	0.105***	0.0192***	0.0670***
	(0.00147)	(0.00105)	(0.00151)
Net investment rate	0.0754***	-0.0159***	0.0745***
	(0.00967)	(0.00280)	(0.00700)
Leverage	0.000226	0.00128***	-0.00257***
	(0.00132)	(0.000359)	(0.000947)
Log Tobin's Q	0.0857***	0.0145***	0.0749***
	(0.00346)	(0.00133)	(0.00294)
Return on assets	-0.0351***	-0.00982***	-0.0206***
	(0.00214)	(0.000803)	(0.00167)
Tangibility	0.0676***	0.106***	-0.191***
	(0.0180)	(0.0103)	(0.0145)
Cash / assets	-0.264***	-0.0162***	-0.245***
	(0.0120)	(0.00387)	(0.00964)
Sample	Full Sample	Full Sample	Full Sample
Observations	11663	11663	11663
R^2	0.365	0.0960	0.230

Notes: This table reports cross-sectional regressions of firm-level disclosure indicators on average firm characteristics (2000–2024). The dependent variable is an indicator for whether a firm ever discloses: (1) investment plans at 9+ months horizon, (2) net income expectations, or (3) has bond yield data. "Full sample" includes all non-financial U.S. firms in Compustat. Standard errors are heteroskedasticity-robust.

Table H.5: Selection Bias Check: Disclosure Dummy on MPS

	Capex plans disclosed (3+ months)					Capex plans disclosed (9+ months)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ST Shock (Raw)	0.0187					0.0522				
	(0.0694)					(0.0734)				
MPS 2y		0.0626					0.0185			
		(0.0624)					(0.0629)			
MPS 5y			0.0852					-0.0193		
			(0.0763)					(0.0733)		
MPS 10y				0.131					0.0183	
				(0.103)					(0.0959)	
EBP change					0.00249					-0.0178
					(0.0304)					(0.0342)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macro Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	369875	369875	369875	369875	369875	369875	369875	369875	369875	369875
R-squared	0.403	0.403	0.403	0.403	0.403	0.231	0.231	0.231	0.231	0.231

Notes: This table reports linear probability models examining whether monetary policy surprises (MPS) predict disclosure of investment plans. The dependent variable is a binary indicator for whether a firm discloses plans in a given quarter. The independent variables include various MPS measures: high-frequency UST 2-year and 10-year surprises, and the San Francisco Fed policy news shock. All specifications include firm fixed effects, calendar quarter fixed effects, and lagged firm-level controls (size, Tobin's Q, leverage, cash/assets, ROA, tangibility). Standard errors are clustered by firm and calendar quarter.

Table H.6: Selection Bias Check: Disclosure Dummy on MPS (Conditional on Having a Plan)

	Capex plans disclosed (long-term)				
	(1)	(2)	(3)	(4)	(5)
ST Shock (Raw)	0.0000586				
	(0.0113)				
MPS 2y		-0.00164			
		(0.0153)			
MPS 5y			-0.00963		
			(0.0163)		
MPS 10y				-0.00966	
				(0.0210)	
EBP change					-0.00596
					(0.00425)
Firm Controls	Yes	Yes	Yes	Yes	Yes
Macro Controls	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Observations	53884	53884	53884	53884	53884
R-squared	0.553	0.553	0.553	0.553	0.553

Notes: This table reports linear probability models examining whether MPS predict disclosure of long-term plans, conditional on the firm having any plan that quarter. The dependent variable is a binary indicator for whether a firm discloses long-term investment plans (horizon >24 months). The sample is restricted to firm-quarters where the firm discloses at least one plan ending 9+ months after announcement. All specifications include firm fixed effects, calendar quarter fixed effects, and lagged firm-level controls. Standard errors are clustered by firm and calendar quarter.

Table H.7: When Do Firms Disclose Investment Plans?

	Investment plans disclosed	Has long-term plans		E[Net income] disclosed
	(1)	(2)	(3)	(4)
Δ Size	-0.000197	0.0000291	0.0135	0.000825
	(0.00182)	(0.000329)	(0.0103)	(0.00109)
Δ Investment rate	0.000818	0.000172	0.00195	-0.000292
	(0.000890)	(0.000113)	(0.0117)	(0.000617)
Δ Leverage	0.000199	0.0000133	-0.0201	0.000217*
	(0.000196)	(0.0000390)	(0.0219)	(0.000128)
Δ Log Tobin's Q	-0.00188	0.00000315	0.00638	0.000137
	(0.00185)	(0.000278)	(0.00807)	(0.00119)
Δ ROA	-0.0000498	-0.0000261	0.0170	0.0000300
	(0.000140)	(0.0000271)	(0.0221)	(0.000103)
Δ Tangibility	0.00673	-0.00190	-0.0141	0.000433
	(0.00536)	(0.00183)	(0.0558)	(0.00257)
Δ Cash/Assets	-0.00354	-0.000110	0.0174	-0.00465**
	(0.00280)	(0.000836)	(0.0285)	(0.00210)
Calendar Quarter FE	✓	✓	✓	✓
Firm x Fqtr FE	✓	✓	✓	✓
Sample	Full sample	Full sample	Curr. has plan = 1	Full sample
Observations	342653	342653	23810	342653
R-squared	0.521	0.443	0.731	0.448

Notes: This table reports linear probability models for when firms disclose plans. The dependent variable is a binary indicator for whether a firm discloses investment plans (col. 1), long-term investment plans (cols. 2–3), or net income expectations (col. 4) in quarter t. Independent variables are changes in firm characteristics: size, log Tobin's Q, investment rate, leverage, ROA, tangibility, and cash/assets. Columns 1, 2, and 4 use the full sample of non-financial U.S. firms in Compustat. Column 3 is restricted to firms that currently have a plan. All specifications include calendar quarter fixed effects and firm × fiscal quarter fixed effects. Standard errors are clustered by firm and calendar quarter.

Table H.8: Predictiveness of Investment Plans

	Capex Growth Rate			Capex Growth/ Assets		Capex (log)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Planned Capex Growth	0.812***	0.783***	0.773***				
	(65.10)	(65.43)	(63.59)				
Over 1yr plan=1 × Planned Capex Growth			-0.125***				
			(-4.00)				
Over 1yr plan			15.55***		0.823***		
			(7.75)		(7.35)		
Planned Capex / Assets				0.804***	0.786***		
				(70.44)	(67.04)		
Over 1yr plan=1 × Planned Capex / Assets					-0.158***		
					(-4.91)		
Log(Planned Capex)						0.919***	0.488***
						(170.55)	(24.25)
Year FE		✓	✓	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓	✓		✓
Observations	18537	18533	24048	18786	24414	20551	19940
Rsquared	0.626	0.639	0.581	0.645	0.570	0.858	0.944

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: This table presents OLS estimates relating planned to realized capital expenditure outcomes. Columns labeled "Capex growth rate" report coefficients from regressions of realized capital expenditure growth on planned capital expenditure growth; columns labeled "Capex / Assets" report coefficients from regressions of realized capital expenditure growth on planned capital expenditure growth scaled by lagged total assets; columns labeled "Capex (log)" report coefficients from regressions of log actual capital expenditure on log planned capex. Regressions 1, 2, 4, 6, and 7 focus on the one-year projection horizon, while Regressions 3 and 5 include all plans. We winsorize realized growth at the 1st and 99th percentiles. We include firm and year fixed effects, and cluster standard errors at the firm and quarter level.

Table H.9: Classification of Investment Plan Types

Category	Words
Environmental	environmental, environment, clean, emissions, renewable, solar, wind, green, carbon, sustainability, sustainable
Research_Development	research, new product, innovation, innovative, ai, machine learning, research and development, artificial intelligence, R&D (abbrev.), product development, software development, development of new..., developing new..., technology development, new [...] development, exploration (non-E&P only)
Expansion_Growth	expansion, expand, grow, growth, new stores, new, expanding
Acquisitions	acquisitions, redevelopment, acquisition
Physical_Infrastructure	property, equipment, manufacturing, nuclear, aircraft, ppe, infrastructure, operating assets, drilling, oil, coal, refining, mining
Maintenance	maintenance, maintain, repair, renovations, renovation, upgrades, reliability, cost reduction, modernize, routine

Category	Words
New	establish, establishing, greenfield, open, new, expanding, openings, growth opportunities, brand-new, construct, acquisition of sites, expand, acquire, build, growth, buy, purchase, additional, addition, acquisition, buying
Ongoing	maintain, continue, upgrade, maintenance, renovation, remodel, redevelopment, improvement, renovate, existing, completion, continue to, redevelop, drilling & completion, improve, rehab, restructuring, continuing, complete, ongoing, capacity expansion, enhance, pipeline upgrades, increase, recurring, replace, modernize, improving

Note: These tables list the categories of investment plan types and the corresponding words within investment plans that map to each category. Categories are not mutually exclusive.

Table H.10: Response of Investment Plans to Changes in Yields due to Monetary Policy

	Year 1			Year 2			Year 3			Year 4			Year 5		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Δy	1.186***	-0.669	-0.183	0.118	-0.698	-0.361	-0.214	-0.914	-0.615	-0.392	-1.460*	-1.063**	-0.240	-0.743	-0.484
	(0.428)	(5.058)	(4.041)	(0.363)	(0.421)	(0.368)	(0.349)	(0.637)	(0.484)	(0.470)	(0.768)	(0.493)	(0.482)	(0.648)	(0.511)
Observations	21,347	21,339	19,614	7,563	7,545	6,799	2,669	2,665	2,209	1,346	1,342	1,200	977	973	868
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Macro controls		✓	✓		✓	✓		✓	✓		✓	✓		✓	✓
Firm controls			✓			✓			✓			✓			✓
Treasury yield	1-Year	1-Year	1-Year	1-Year	1-Year	1-Year	1-Year	1-Year	1-Year	1-Year	1-Year	1-Year	1-Year	1-Year	1-Year

	Year 1			Year 2			Year 3			Year 4			Year 5		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Δy	0.711*	0.133	0.213	-0.206	-0.676*	-0.637*	-0.156	-0.323	-0.483	-0.530	-1.060**	-1.169**	-0.406	-0.792**	-0.766*
	(0.369)	(0.400)	(0.425)	(0.391)	(0.350)	(0.372)	(0.360)	(0.422)	(0.425)	(0.433)	(0.407)	(0.446)	(0.421)	(0.336)	(0.397)
Observations	21,347	21,339	19,614	7,563	7,545	6,799	2,669	2,665	2,209	1,346	1,342	1,200	977	973	868
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Macro controls		✓	✓		✓	✓		✓	✓		✓	✓		✓	✓
Firm controls			✓			✓			✓			✓			✓
Treasury yield	2-Year	2-Year	2-Year	2-Year	2-Year	2-Year	2-Year	2-Year	2-Year	2-Year	2-Year	2-Year	2-Year	2-Year	2-Year

	Year 1			Year 2			Year 3			Year 4			Year 5		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Δy	0.490**	0.072	0.123	-0.339	-0.802**	-0.920**	-0.237	-0.486	-0.605**	-0.535	-0.969***	-1.213***	-0.423	-0.593**	-0.725***
	(0.232)	(0.180)	(0.199)	(0.467)	(0.349)	(0.400)	(0.349)	(0.342)	(0.303)	(0.330)	(0.237)	(0.257)	(0.276)	(0.251)	(0.246)
Observations	21,347	21,339	19,614	7,563	7,545	6,799	2,669	2,665	2,209	1,346	1,342	1,200	977	973	868
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Macro controls		✓	✓		✓	✓		✓	✓		✓	✓		✓	✓
Firm controls			✓			✓			✓			✓			✓
Treasury yield	10-Year	10-Year	10-Year	10-Year	10-Year	10-Year	10-Year	10-Year	10-Year	10-Year	10-Year	10-Year	10-Year	10-Year	10-Year

Note: This table reports the results for the following regression specification:

$$\text{Planned Investment}_{i,q,h} = \beta_h \widehat{\Delta y}_q + \gamma X_{i,q-1} + \alpha_i + \varepsilon_{i,q,h}$$

Planned Investment$_{i,q,h}$ is planned real investment for firm i in projection year y relative to the rolling sum of the real investment over the prior 4 quarters ($q-4$ to $q-1$), divided by quarter $q-1$ assets. h denotes the years from today that the plan is for. Here, $h = 1$ if the difference between the projection date and the end of the projection horizon is between 9-12 months, $h = 2$ if the difference is between 13-24 months, $h = 3$ if the difference is between 25-36 months, $h = 4$ if the difference is between 37-48 months, and $h = 5$ if the difference is between 49-71 months. $\widehat{\Delta y}_q$ is the three month change in the Treasury yield, instrumented using the maturity-matched monetary policy shock that occur during quarter q, during which the investment plan is made and at the end of which the plan is announced. The 1-year UST yield is instrumented with the Bauer and Swanson [2023] unorthogonalized shock. The 2-year UST yield is instrumented with the high frequency change in the 2-year UST yield. The 5-year UST yield is instrumented with the high frequency change in the 5-year UST yield. The 10-year UST yield is instrumented with the 10-year UST yield. The regression controls $X_{i,q-1}$ include firm controls (cash-to-assets, leverage, log assets, return on assets, tangibility, and Tobin's Q) and macro controls (the quarter change in the CFNAI index, the level of the CFNAI index, the 2-, 5-, and 10-year U.S. Treasury yields, all as of quarter $q-1$, as well as four lags of GDP growth, the inflation rate and the unemployment rate). The outcome variable is trimmed at the 2nd and 98th percentiles. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level.

Table H.11: Naive OLS: Response of Investment Plans to Changes in Treasury Yields

	LHS: Normalized Planned Capex			
	(1) RHS:$\Delta UST2y$	(2) RHS:$\Delta UST5y$	(3) RHS:$\Delta UST10y$	(4) RHS:$\Delta UST2-10y$
Δ UST	0.212***	0.143*	0.0959	-0.150
	(0.0683)	(0.0743)	(0.0863)	(0.147)
Over 2yr plan×Δ UST	-0.363	-0.415**	-0.413**	-0.208
	(0.227)	(0.194)	(0.185)	(0.281)
Firm Controls	Yes	Yes	Yes	Yes
Macro Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Projection horizon FE	Yes	Yes	Yes	Yes
Observations	32490	32490	32490	32490
R-squared	0.286	0.286	0.286	0.286

Note: This table reports OLS regressions of real planned capital expenditure growth on changes in U.S. Treasury yields over the prior fiscal quarter. We include dummy variables for investment plans that extend more than 24 months ahead; the excluded category consists of plans for the subsequent fiscal year, conditional on the projected year ending at least 9 months after the plan announcement. Planned capital expenditure growth is computed relative to the realized capital expenditure of four quarters ending one (two) fiscal quarter before the announcement, normalized for inflation. The regressions also control for quarterly firm-level characteristics, including lagged size (ln(Assets)), leverage (Total Debt/Assets), return on assets (NI/Assets), tangibility (PPE/Assets), cash-to-assets, and Tobin's Q. Macro controls include the prior-quarter change in the CFNAI index, the prior-quarter level of the CFNAI index, as well as the prior-quarter-end two-year yield level $2y_{q-1}$ and the prior-quarter-end yield curve slope $2-10y_{q-1}$, both measured on the day of the announcement. Four lags of GDP growth, the inflation rate, and the unemployment rate are also included. Firm fixed effects are included, and standard errors are clustered at the firm and calendar quarter level. The outcome variable is trimmed at the 2nd and 98th percentiles.

Table H.12: First Stage: Changes in Treasury Yields on Monetary Policy Shocks

	(1) Δ UST 1y	(2) Δ UST 2y	(3) Δ UST 5y	(4) Δ UST 10y	(5) Δ UST 10-2y
ST Shock	2.259***				
	(0.377)				
2y Shock		1.942***			
		(0.423)			
5y Shock			1.600***		
			(0.436)		
10y Shock				1.805***	
				(0.523)	
10-2y Shock					1.804***
					(0.421)
Observations	313	313	313	313	313
R-squared	0.326	0.246	0.168	0.170	0.282
F-statistic	35.9	21.1	13.5	11.9	18.4
Macro controls	✓	✓	✓	✓	✓

Note: This table reports the first-stage results from IV regressions of planned capital expenditure growth on changes in U.S. Treasury yields over the prior fiscal quarter. In the first stage, we instrument the changes in yields using high-frequency monetary policy-driven shocks to a duration-matched U.S. Treasury future. Macro controls include the prior-quarter change in the CFNAI index, the prior-quarter level of the CFNAI index, as well as the prior-quarter-end two-year yield level $2y_{q-1}$ and the prior-quarter-end yield curve slope $2-10y_{q-1}$, both measured on the day of the announcement. Four lags of GDP growth, the inflation rate, and the unemployment rate are also included.

Table H.13: Persistence of Planned Investment to Realized Investment

	Short-Term ($h = 1$)			Long-Term ($h \geq 2$)		
	(1) OLS	(2) First Stage	(3) IV	(4) OLS	(5) First Stage	(6) IV
Planned Capex	0.762***		0.0943	0.715***		0.955***
	(0.0140)		(7.089)	(0.0288)		(0.280)
5Y MPS (BS)		0.104			-2.075***	
		(0.712)			(0.557)	
Firm Controls	✓	✓	✓	✓	✓	✓
Macro Controls	✓	✓	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓	✓	✓
Horizon FE				✓	✓	✓
Dep. Variable	Realized	Planned	Realized	Realized	Planned	Realized
Observations	19,425	20,275	19,425	11,175	12,604	11,175
R^2	0.594	0.295	0.204	0.555	0.363	0.378
First-stage F			0.0			21.7

Note: This table examines whether monetary policy-driven changes in planned investment persist into realized investment. We regress realized real capital expenditure growth on planned real capital expenditure growth, both normalized by lagged assets, and instrument planned investment using the 5-year high-frequency monetary policy shock from Bauer and Swanson [2023]. Columns (1)–(3) report results for short-term plans ($h = 1$, projection horizons ending 9–12 months after announcement) and columns (4)–(6) for long-term plans ($h \geq 2$, projection horizons ending 13–71 months after announcement). For each horizon group, we report the OLS relationship (columns 1, 4), the first stage of planned investment on the monetary policy shock (columns 2, 5), and the IV second stage of realized investment on instrumented planned investment (columns 3, 6). The sample is restricted to annual (12-month) projection periods ending at least 9 months after the announcement date. The regression controls include firm-level characteristics (cash-to-assets, leverage, log assets, return on assets, tangibility, and Tobin's Q) and macro controls (the lagged 2-year U.S. Treasury yield, the 2–10 year yield curve slope, the lagged quarter change and level of the CFNAI index, and four lags of GDP growth, the inflation rate, and the unemployment rate). Planned (realized) real capital expenditure growth is trimmed at the 2nd and 98th (1st and 99th) percentiles. Firm fixed effects are included throughout; horizon fixed effects are additionally included for the long-term specifications. Standard errors are clustered at the firm and calendar quarter level.

Table H.14: Examples of Firms Revising Capital Expenditure Plans During the 2022-23 Tightening Cycle

Firm	Date	Prior Plan ($B)	Revised Plan ($B)	Change (%)	Earnings Call Excerpt
NiSource	2022Q2	2.6	2.0	−22	"Weighted average **interest rate** of approximately 3.7% . . . we maintained net available liquidity of about $1.9 billion . . . we also continue our commitment to retaining our current **investment-grade credit ratings**. And I would note that Fitch has completed their 2022 annual credit review with no change to our rating or outlook."
Norwegian Cruise	2022Q3	2.1	1.1	−48	"Given the volatility in the **capital markets** in recent months, we felt extending the facility was the prudent choice to enhance our financial flexibility . . . [we undertook] measures . . . to optimize our **debt maturity** profile. We resumed **debt amortization** payments in April, which were previously deferred during the pandemic."
Ring Energy	2022Q4	0.13	0.04	−66	"We anticipate fourth quarter **capital expenditures** of $42 million to $46 million, which is approximately **15% lower than our prior estimate** . . . **Interest expense** was $7 million versus $3.3 million for the second quarter . . . contributing to the increase were **higher interest rates** and the write-off of the unamortized deferred financing costs."
Transocean	2023Q1	0.3	0.0	−94	"A $525 million secured financing of the Deepwater Titan and a $1.175 billion refinancing of our . . . senior notes . . . In the context of today's **interest rate** and broader **capital market environment**, these two transactions materially improved our medium-term liquidity."
Primoris Services	2023Q4	0.05	0.02	−70	"There's been a great deal of industry discussion and some concern regarding how **higher interest rates** may affect the financing of solar projects . . . **higher rates** and lower access to capital has the potential to negatively impact developer returns or lead to projects being delayed or canceled due to these **higher costs** or challenges."
Darling Ingredients	2023Q4	0.33	0.18	−44	"Some of [these new plants] get delayed for a myriad of reasons. One of the other thing we really haven't talked about lately is . . . this **increase in interest rates** that we've seen, **CapEx** and the money it takes to build and operate . . . has gone up. So that—I mean that's just the reality of the business."

Note: This table presents examples of firms in our sample that revised their capital expenditure plans downward during the 2022-2023 monetary tightening cycle and discussed interest rates, borrowing costs, or capital market conditions in contemporaneous earnings calls. Plan revisions are computed as the change in projected annual capital expenditure for the same projection year relative to the prior quarter's announcement. Earnings call transcripts are sourced from S&P Capital IQ. Boldface indicates interest rate or financing cost language.