The Allocation of Corporate News*

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Abstract

We study how media's reporting of corporate news affects firm life cycles. We document that corporate news reporting is highly concentrated among larger firms, and that this concentration is procyclical. Media coverage is associated with a greater probability of issuing equity, a higher rate of investment, and greater profitability over subsequent periods. In a quantitative model with a media sector that matches these facts, media reporting alleviates asymmetric information in financial markets for reported firms. However, media coverage concentrates on large firms who are not financially constrained. Therefore, reallocating media coverage would promote firm growth, since small and young firms who benefit the most from media's information revelation are currently under-reported.

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1. Introduction

Corporate news reported by the financial media disseminates firm information to investors. This information is an important determinant of investor behavior towards reported firms (Peress, 2014; Ahern and Peress, 2023), but only a small share of firms receive media coverage each quarter. Moreover, the allocation of coverage is not random, as it is chosen by newspaper editors (Gentzkow and Shapiro, 2008; Nimark and Pitschner, 2019). In this paper, we document the firm characteristics associated with newspaper coverage and study how this selective corporate news affects the macroeconomy.

Empirically, we document that the media's reporting of corporate news is highly concentrated on the largest firms, both within and across industries. We also find that media coverage has real effects on reported firms: media coverage is associated with a greater likelihood of obtaining financing, a higher rate of investment, and higher profitability. Quantitatively, we build a macro-finance model with heterogeneous firms and a media sector, where we match news reporting behavior to the data. Selective media reporting leads to greater flows of equity issuance and investment than would exist of there was no media at all, since it alleviates asymmetric information. However, since reporting is concentrated on large firms, who are mostly not financially constrained, this impact is substantially smaller than in a counterfactual with uniform (i.e. non-selective) media reporting.

We begin by constructing a firm-level measure of news coverage, which tracks the timing and frequency of coverage in major US newspapers for the universe of publicly traded firms over a 30-year period. To do this, we use a textual matching algorithm to identify publicly traded firms mentioned in news articles, and then link these articles to the balance sheets of the relevant firms. From this data, we document three stylized facts on corporate news in the United States. First, corporate news coverage is decreasing over time, driven by a declining number of publicly traded firms. Second, corporate news coverage is concentrated. Certain industries receive disproportionate coverage, and coverage is mostly reserved for the largest firms in each industry. Third, the distribution of news coverage varies with business cycles. During recessions, news coverage becomes more dispersed as more firms receive coverage.

The concentration of news coverage among large firms is particularly striking. Whether we look across all firms or within industries, the largest 10% of firms are mentioned in

newspapers an order of magnitude more often than any other firm decile. Moreover, this pattern is unique to firm size. Media coverage is substantially less concentrated by other firm characteristics.

We then study the effects of media coverage on firms' corporate finance. Media coverage is correlated with a higher likelihood of obtaining financing in the equity market, a higher rate of investment, and higher profitability, consistent with media reporting alleviating information asymmetry in financial markets. The effects are persistent for at least 10 quarters. The strength of these effects increases with the business focus of a newspaper. The information effects of media coverage are specific to curated news, and are not present when we use Twitter mentions to measure coverage instead.

Journalists are more likely to report on firms with upcoming equity issuance and investment, which raises a concern on the endogeneity of media coverage. To address this, we complement our US data with equivalent data from France, where media strikes create exogeneous variation in media coverage (as in Peress, 2014). When journalists strike because of labor disputes, they stop producing news content (including corporate news), which introduces variation in corporate news coverage for reasons unrelated to individual firms. We find that firms that issue equity during media strikes—when less firm information is revealed to investors—subsequently invest at a lower rate compared to their peers that issue equity in quarters immediately before or after the strikes. The more coverage a firm enjoys before the strike, the more severely it is affected. The findings are is consistent with media coverage providing firm-specific information which is otherwise unavailable to investors.

Motivated by these empirical results, we introduce a media sector to a macro-finance model with heterogeneous firms, and use the model to evaluate the macroeconomic consequences of selective corporate news. Firm managers maximize their value to existing shareholders. They have the option to invest by raising equity from retail investors, who face asymmetric information about firms' heterogeneous asset qualities. Without media reporting, a classic adverse selection problem emerges: firms with high asset qualities prefer to produce with existing capital rather than diluting the value of existing shareholders by issuing equity. Firms with low asset qualities, on the other hand, prefer to raise equity and invest, because the marginal benefits outweigh the marginal costs of diluting the low value of existing shares. This lowers the price investors are willing to pay for equity, driving even

more intermediate-quality firms from equity issuance.

Media outlets observe full information about firms, but are constrained to only report a subsection of them. Investors obtain full information on the firms that are reported, and remain uncertain about asset quality among non-reported firms. Reporting by media outlets, therefore, alleviates the asymmetric information in the equity market, but only for certain firms. Media outlets select which firms to report as a function of the firm characteristics they observe.

To quantify the effects of selective news reporting, we match the news-reporting function used by media outlets to our data. Under our calibration, media outlets are more likely to report on large firms, consistent with the empirical evidence. However, large firms are mostly not financially constrained, and so even when the media removes their information asymmetry, those firms mostly do not issue equity. The firms who would benefit most from reporting are those which are financially constrained. They would like to issue equity to invest and grow, but are unable to do so because of the adverse selection in equity markets. If they are reported by the media, the information asymmetry is removed, and they can expand. However, these firms are mostly smaller, and so are rarely reported by the media.

Media reporting is therefore misallocated. Reporting decisions are taken based on a firm's current size, and do not take account of the way smaller firms would grow if they were reported. This externality implies that media is substantially less effective at reducing financial frictions due to information asymmetries than it would be if reporting was distributed evenly across firms, or if it was targeted at smaller firms. Our results suggest that a counterfactual in which all firms are equally likely to be reported would increase the average firm size by 0.3%. This eliminates 12% of the total effects of asymmetric information, more than doubling the effect of media on firm size. This growth occurs even though media reports on just 11% of firms each quarter, in both our selective media baseline and the counterfactual. Counterfactuals involving selective reporting of small and constrained firms would imply even larger gains.

Literature Our paper contributes to three strands of the literature. First, we extend the literature on the macroeconomic consequences of news media.[1] Several papers have

[1]This literature on media and media outlets is distinct from the literature on news shocks, in which news typically refers to signals obtained by agents about future productivity, with the signals arriving from an

shown that when media reports on macroeconomic news, the choice of stories and the narratives used to communicate them have substantial consequences for macroeconomic outcomes (Nimark, 2014; Larsen, Thorsrud and Zhulanova, 2021; Macaulay and Song, 2022; Andre, Haaland, Roth and Wohlfart, 2022; Bui, Huo, Levchenko and Pandalai-Nayar, 2022). In addition, Bybee, Kelly, Manela and Xiu (2020) show that news media can be used to forecast a range of macroeconomic time series. Most related to us, Chahrour, Nimark and Pitschner (2021) study which production sectors receive news coverage, and find that changes in sectoral news reporting can drive business cycle fluctuations. Rather than macroeconomic or sectoral news, we expand this literature by studying news coverage at the firm level. Indeed, even within sectors, we show that news coverage is highly concentrated among a few firms. It is this selective concentration that drives the results for firm life-cycles in our model.

Second, a number of recent papers have analysed the extent of selectivity in media reporting in other types of news, and proposed explanations. In journalism, this selectivity is known as "gatekeeping", and is documented extensively in e.g. Shoemaker and Vos (2009). Within economics, selective reporting has been documented across political and other forms of news (Gentzkow and Shapiro, 2008; Nimark and Pitschner, 2019). We extend this by showing that a similar selectivity exists in firm-level corporate news reporting, and characterizing which firms are most likely to be selected. The selectivity we document is consistent with recent theoretical work on incentives in the news industry (Nimark and Pitschner, 2019; Chiang, 2022; Martineau and Mondria, 2022; Perego and Yuksel, 2022; Denti and Nimark, 2022).

Finally, we contribute to the broader literature on the effects of financial frictions on firm dynamics and investment, e.g., Cooley and Quadrini (2001), and see Brunnermeier, Eisenbach and Sannikov (2012) for a survey. Our work builds on this extensive literature and extends the scope to study the role of news media in shaping firm dynamics. By explicitly modeling the financial friction micro-founded by asymmetric information, we study how media reporting can facilitate firms' financing and investment by alleviating their financial friction and how the allocation of media reporting resources can play an active role in shaping the firm distribution and dynamics.

unspecified source (see Beaudry and Portier, 2014, for a review).

Road map The rest of the paper proceeds as follows: in Section 2, we describe our data and document stylized facts on the structure of corporate news; in Section 3, we provide empirical evidence on the effects of media coverage on firm financing and investment; in Section 4, we present a model of corporate news reporting; in Section 5, we use the model to quantify the effects of selective news reporting; Section 6 concludes.

2. The Structure of Corporate News

This section documents stylized facts on corporate news coverage in major US media outlets. The most salient fact is that corporate news coverage is concentrated: in certain industries, and among the largest firms within industries. Firms with higher media attention are more likely to issue equity, which leads to higher investment.

2.1. Data

2.1.1. Corporate news coverage

We collect the frequency of firm news coverage from Dow Jones Factiva, a news aggregator. We focus on three major US news outlets: *The Wall Street Journal*, *The New York Times*, and *USA Today*. The selection of news outlets follows Chahrour et al. (2021) and constitutes the three largest US newspapers by circulation.

What differentiates our data from previous studies is that we then use textual analysis to match the firms mentioned in each news article to their balance sheets. Factiva provides named entity tags identifying entities mentioned in each news article. These entities include not only firms, but also organizations such as the United Nations and Harvard University. Using a fuzzy matching algorithm based on the Levenshtein distance, we match firm names in Factiva with those of publicly traded US firms in Compustat. Factiva named entities often include slight variants of the same firm (e.g., "AT&T Inc" and "AT&T Inc."). Our algorithm is able to recognize that both names refer to the same firm. To ensure match quality, we perform manual checks on each of the matches. With this procedure, we construct a measure of firm-level media coverage for the universe of publicly traded firms in the US. Our sample consists of 375,627 articles on 18,809 unique firms from 1990 to 2021.

2.1.2. Social media coverage

Alongside curated news written by journalists, we also collect grass-roots news coverage on Twitter. We identify 3,111 publicly traded firms that have official Twitter accounts. We then collect the frequency that a firm is tagged (e.g., `@Microsoft`) each quarter from 2014 (when Twitter became a popular platform) to 2022 using Twitter's academic API.

2.1.3. Other firm variables

We connect media coverage to firm variables from Compustat, notably financial positions, investment decisions, and equity issuances. We obtain equity data from CRSP and issuance date from Securities Data Company.

2.1.4. International data

We complement the US analysis with data from France, where we focus on periods of media strikes that cause variation in media coverage. Our French sample is based on four major newspapers: *Les Echos*, *Le Monde*, *La Tribune*, and *Le Figaro*. We obtain firms mentioned in news outlets using the same Factiva search algorithm described above for the US, and we use firm names to fuzzy match media coverage to firm variables from Compustat Global. The merged sample for France is quarterly from 2005 (when Compustat Global becomes available) to 2021.

2.2. Stylized facts of corporate news reporting

2.2.1. Times series evolution

We first document how corporate news coverage in the US has changed over time. Panel (a) in Figure 1 reports the number of articles mentioning publicly-listed firms in our 3 major newspapers each quarter. Such corporate news coverage has declined since the late 1990s, despite an uptick in the 2001 recession. Panel (b) reveals that this decline is driven by the fall in the number of publicly traded firms in the US over this period. Average coverage per firm remains stable over our sample period, as shown in Panel (c).

Because the financial sector has undergone a large consolidation during our sample period, affecting the number of publicly traded financial firms, we report the times series with

Figure 1: Times series of corporate news coverage

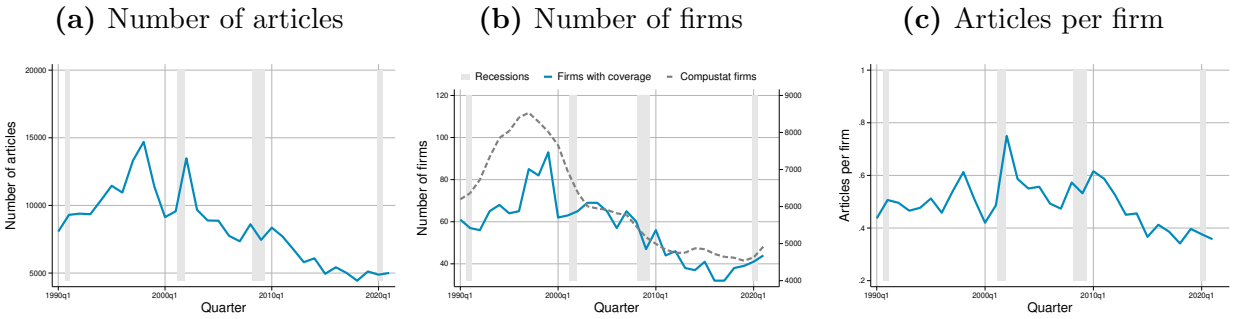
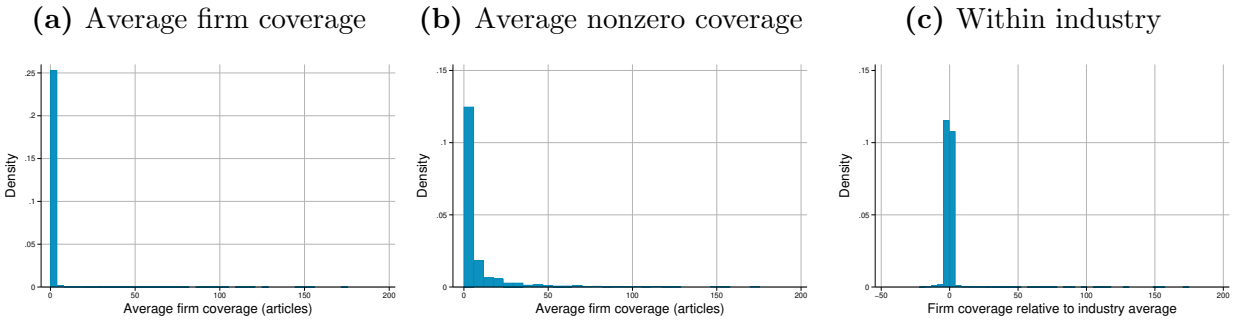


Figure 2: Distribution of corporate news coverage



financial firms separately in Appendix Figure A.1. The general patterns remain unchanged, with the exception of a spike in financial news intensity during the global financial crisis.

2.2.2. Cross-sectional concentration

Next, we turn to cross-sectional patterns of corporate news coverage. Panel (a) in Figure 2 reports the distribution of each firm's average quarterly article count over the sample period. The distribution is highly skewed. The vast majority of firms receive no coverage at all, while a small number of firms are mentioned very frequently. The skewness remains present when we zoom into firms with nonzero coverage in Panel (b).

Panel (c) shows the distribution of firm average article counts within an industry. We demean firm coverage by granular 4-digit NAICS industries and plot the residuals. Even though industry explains a large share of cross-sectional variation in firm coverage, the skewed pattern of media coverage remains: for every industry, major newspapers concentrate reporting on a small number of firms.

Given the concentration of media coverage, we now study factors that correlate with media coverage. In particular, we document how media reporting varies with industry, firm

size, and over the business cycle.

Industry variation Business news departments of newspapers are often organized by industries. Large industries are assigned dedicated reporters, who specialize in the industry and establish contacts with public-relation departments in firms. In contrast, news about firms in smaller industries are assigned at ad hoc basis. Chahrour et al. (2021) document substantial variation in sectoral news coverage, and show that can amplify macroeconomic fluctuations. We confirm their finding in our extended sample: media coverage is concentrated in certain sectors. In Appendix Figure A.2, we aggregate firm-level news coverage to 2-digit NAICS sectors and normalize the resulting sectoral news coverage by the number of publicly traded firms in that industry.[2] Corporate news coverage is particularly concentrated in finance and insurance, information, retail trade, and transportation and warehousing. While manufacturing receives substantial coverage as a sector, it has many publicly-traded firms, and so little coverage per firm.

Firm size Panel (a) in Figure 3 reports the binned scatter plot of news coverage by firm size, measured with log real assets. We specify 10 bins, each representing a decile of firm size. Strikingly, only the largest 10% of firms receive substantial media coverage. The remaining 90% of firms almost never appear in the news. To check if this is driven by concentrations of coverage in certain industries, we repeat the exercise in Panel (b) after demeaning firm size by industry and quarter. Within an industry (4-digit NAICS), it is still the case that only the top decile of firms receive media coverage.

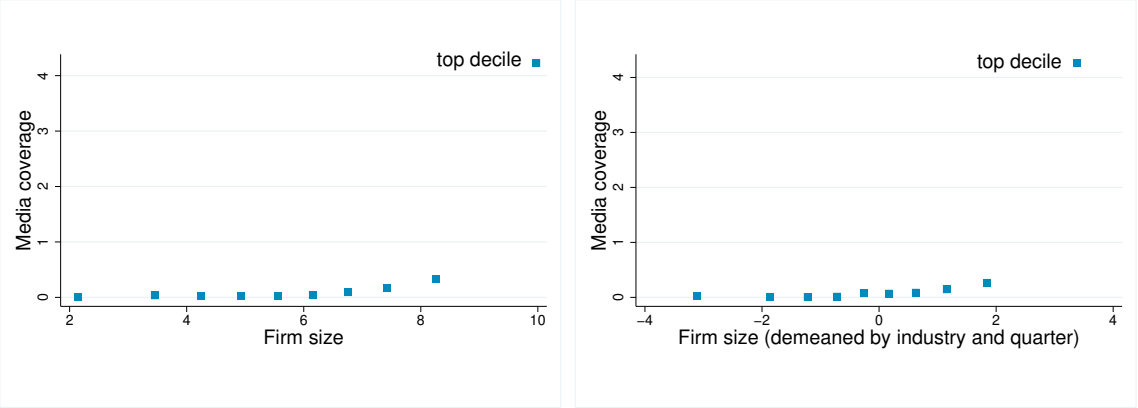
Market capitalization is closely related to firm size, and because of its prevalence in popular press likely receives more attention from business readers. In Appendix Figure A.3, we alternatively measure firm size with market capitalization and find a similar pattern. Media coverage is concentrated in the largest decile of firms by market capitalization.

Table A.1 in the Appendix lists the top 20 firms by total frequency of media coverage. The top firms are household names such as General Motors and Microsoft, whose brand recognition may attract attention from readers who do not necessarily have a specific interest in business news.

[2]Sectors have differential representation by publicly traded firms. For example, in 2022, only 14 agricultural firms are traded publicly versus more than 2,200 manufacturing firms.

Figure 3: Firm size and media coverage

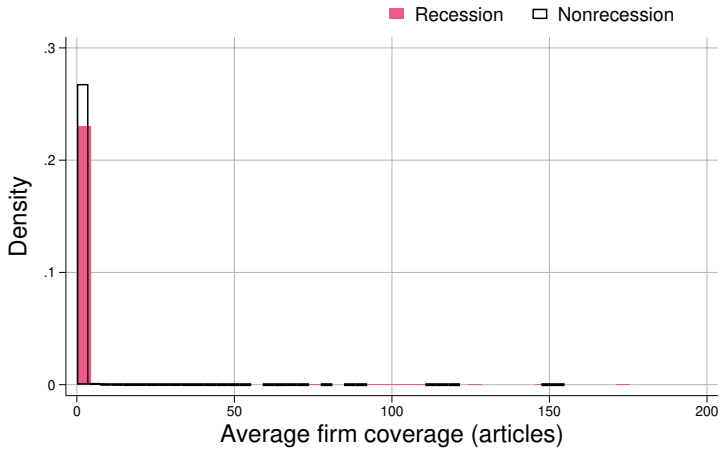
(a) Firm size **(b)** Within industry and quarter



This concentration of media coverage in the top decile is unique to firm size. In Appendix Figure A.4, we study the relationship between news coverage and other firm characteristics, including firm age (measured with years since IPO) and firm leverage (measured with market leverage). Unlike the pattern with firm size, media coverage increases smoothly over the life cycle of a firm. Young and medium-aged firms are also featured in the news, not just the oldest firms. Firm with low leverage rarely appears in the news, but otherwise, leverage does not seem to play an important role in driving media coverage.

Business cycles Lastly, macroeconomic condition affects the distribution of corporate news. In Figure (4), we compare the distribution of news coverage during recessions (measured with NBER recession dates) and nonrecessions. The black transparent bars represent the distribution of firm coverage in normal times, and the red bars represent the distribution of firm coverage during recessions. News coverage becomes more dispersed during recessions, with media outlets reporting on a larger share of firms. We conduct a formal Kolmogorov-Smirnov test for whether distributions are equal during recessions and normal times. The p-value of 0.032 rejects the null hypothesis of equal distributions at 5%. This is consistent with agents paying more attention to macroeconomic news during recessions (Song and Stern, 2020), as that introduces incentives for news organizations to cover a wider range of business and economic news.

Figure 4: Changing distribution over business cycles



Notes: Kolmogorov-Smirnov test for equality of distribution: p-value = 0.032

3. Real Effects of Media Coverage

In this section, we study the real effects of media coverage on firms. We document that higher media coverage is associated with increases in a firm's equity issuance probability, investment, and profitability. We further validate the effect using strikes in the media sector in France that cause disturbances in media coverage.

3.1. Empirical specifications

We use ν_{it} to denote the number of times major US newspapers mention firm i in quarter t. The measure is demeaned at the firm level and standardized, so that the unit can be interpreted as one standard-deviation within-firm change in media coverage. We study the relationship of this within-firm variation in media coverage with three firm outcome variables. The investment rate, $\Delta \log k_{it}$, is defined as the log change in the book value of the firm's tangible capital stock. The cumulative probability of equity issuance, $\mathcal{E}_{it}$, is an indicator variable that takes the value 1 if a firm issues new equity during quarter t. Firm profitability is measured with the return on equity (ROE_{it}), defined as income before extraordinary items over shareholders' equity.

We estimate the dynamic relationship between media coverage and these outcomes using

local projections

$$\Delta_h y_{it+h} = \alpha_{st} + \alpha_i + \beta_h \nu_{it} + \Gamma' Z_{it} + u_{ith}, \tag{1}$$

where the dependent variable $\Delta_h y_{it+h} \in \{\Delta_h \log k_{it+h}, \mathcal{E}_{it+h}, \Delta_h \text{ROE}_{\text{it+h}}\}$ for horizons $-4 \leq h \leq 12$. We control for a number of factors to compare the effects of media coverage on firms with otherwise similar characteristics. First, we include firm fixed effects, α_i, to control for time-invariant differences in firms' financing choices and business models. Second, sector-by-quarter fixed effects, α_{st}, absorb sector-specific patterns. Lastly, we control for sales growth, size (log real assets), and current assets as a share of total assets in the vector Z_{it}.

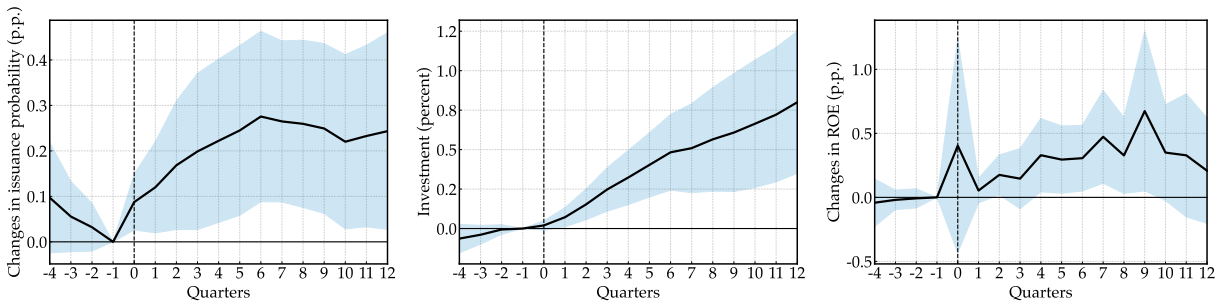
The coefficient of interest is β_h, which gives the relationship between a one standard-deviation increase in media coverage and the firms' equity issuance, investment, and profitability cumulated over h quarters since the coverage. The key source of variation is therefore within-firm variation over time in the media coverage of each firm.

3.2. Empirical results

Figure 5 reports our baseline findings. Panel (a) shows that an increase in a firm's media coverage is associated with a higher probability of raising financing from the equity market. On impact, one standard deviation higher media coverage is associated with 0.1% higher likelihood of issuing equity. The effect rises gradually to a peak effect of around 0.3% after 6 quarters. Panel (b) shows that when firms receive more coverage, the additional equity financing translates into higher investment, and the effects are persistent throughout the estimation horizon. Panel (c) shows that receiving more coverage is associated with small increases in profitability. The effects are most pronounced in the medium term, around 7 quarters after impact. For all outcome variables, the pretrends are statistically insignificant at the 10% confidence level. Our results suggest that media coverage has real effects on firms and influences their financing, investment, and profitability.

The three newspapers included in our sample all have large circulations, but specialize in different types of content and appeal to different audiences. *The Wall Street Journal* is the main financial newspaper in the US. It specializes in financial news and often breaks exclusive corporate news. *The New York Times* reports on a broader set of issues, but it maintains

Figure 5: Media coverage, corporate finance, and firm outcomes



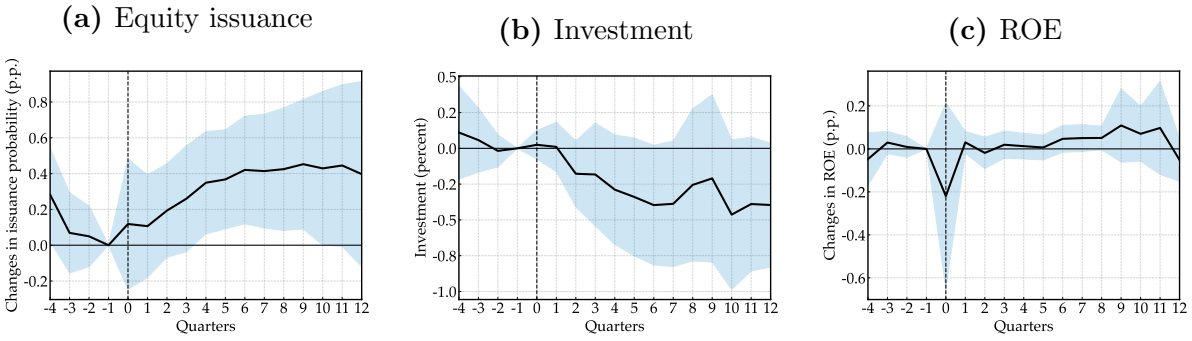
(a) Equity issuance **(b)** Investment **(c)** ROE

a dedicated section on business news. *USA Today* is the least finance-focused newspaper among the three. It appeals to a broad audience and does not have separate business-news section. In Appendix Figure A.5 we study whether the type of newspaper affects the effects of coverage, repeating regression (1) but replacing ν_{it} with the frequency of coverage in each newspaper individually. Coverage in *the Wall Street Journal* has the largest association with firm outcomes. The likelihood of equity issuance rises when firm coverage is high in the Journal. The equity issuance corresponds to higher future investment and higher future profitability, as in the baseline results. Coverage in *The New York Times* is associated with a higher probability of equity issuance and higher investment. However, it is uninformative of firm profitability. In contrast, *USA Today*'s coverage does not have a significant association with firm outcomes. Overall, the effects of newspaper coverage increase with the degree of specialization in financial news, consistent with specialized coverage receiving the most attention from financial market participants.

Finally, we conduct a placebo test with social media coverage. With the spread of information technology, social media platforms such as Twitter have become a major alternative to traditional news media. The content generation process differs markedly from traditional newspapers. Where newspaper articles are produced by trained journalists and curated by editors, tweets are produced by individual users and are largely unmoderated. Twitter coverage should therefore contain less firm information than coverage in a major financial newspaper.

We collect the frequency at which corporate Twitter display names are tagged by any user. These frequencies are demeaned at the firm level and standardized in the same way

Figure 6: Twitter coverage, corporate finance, and firm outcomes



as the measure of newspaper coverage. To study the dynamics of firm corporate finance responses to Twitter coverage, we use the same event-study specification (1), but replace ν_{it} from traditional media with the equivalent measure of Twitter coverage. Our results are reported in Figure 6.

As with the traditional press, Twitter coverage is associated with a higher likelihood of equity issuance. In Panel (a), firms with one-standard-deviation higher Twitter mentioning is associated with 0.35% higher likelihood of equity issuance in the following year. At peak, the coverage and is associated with a 0.45% higher equity issuance probability. If anything, the association between social media coverage and equity issuance is somewhat stronger than that of newspaper coverage (Figure 5a). However, unlike the traditional press, the extra equity issuance does not translate into fundamentals. Responses of investment and profitability are statistically insignificant at 10%. Indeed, point estimates of investment display a slight downward trend after the coverage. Our results indicate that major newspapers play a special role in disseminating information. Even though social-media coverage might be informative of investor sentiment and relate to higher equity issuance, newspaper coverage alone is associated with greater investment and profitability.

3.3. Media strikes

The relationship documented above between media coverage and firm investment is consistent with the view that media outlets act as information intermediaries, which provide firm information to investors and ameliorate asymmetric information between firms and investors. However, a concern with this interpretation is that media coverage is endogenous to a firm's activities. Most notably, journalists may cover a firm because it is about to issue equity or

embark on an investment project, and this could equally explain the correlations observed in Figure 5 between media coverage and firm choices.

To address this reverse causality, we require variation in media coverage that is unrelated to firm choices. In this section, we use media strikes to introduce the exogenous variation. We find that firms who issue equity during media strikes invest less subsequently, and the decrease is more pronounced for firms that rely more on media coverage.

Since large-scale media strikes are rare in the US, we turn to international evidence from France. Appendix Figure A.6 reports the landscape of corporate news coverage in France, which displays both similarities and differences with the US. French corporate news coverage has been declining over time, as we documented for the US. The distribution of media coverage is also concentrated, but to a lesser degree than in the US.

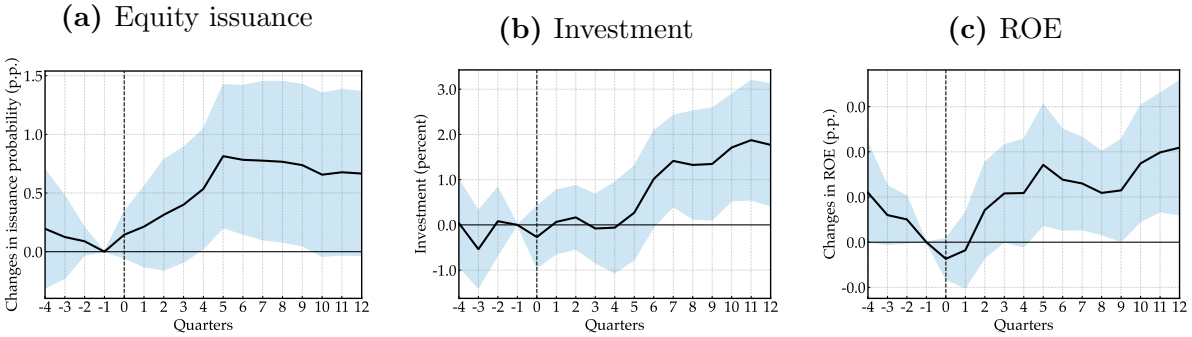
During strikes, journalists stop writing articles for their employers, which substantially reduces the amount of information provided by the striking newspaper or the entire media sector. We identify large-scale media strikes in France using the criteria developed by Peress (2014): we search Factiva for keywords containing (i) "strike" and "journalist", or (ii) "strike" and "broadcaster", as well as their French translation. Using Factiva's tagging, we restrict the region to be France, the industry to be Media/Entertainment, and the subject to be Labor Dispute. We focus on national strikes and exclude strikes in individual newspapers. The 6 strike episodes are reported in in Appendix Table A.2. They are concentrated in 5 quarters: 2005Q4, 2008Q1, 2008Q4, 2013Q1, and 2018Q2. These media strikes occur not because of individual firm factors, but rather as a response to government and policy changes, such as Nicolas Sarkozy broadcasting-advertising reform and Emmanuel Macron's pension reform.

First, to facilitate comparison with the US evidence, we estimate effects of media coverage using the same local projection as in (1). For horizons $-4 \leq h \leq 12$, we estimate

$$\Delta_h y_{it+h} = \alpha_{st} + \alpha_i + \beta_h \nu_{it} + \Gamma' Z_{it} + u_{ith}.$$

As with the US analysis, the dependent variables consist of cumulative changes in equity issuance probability, investment, and ROE; and the explanatory variable, ν_{it}, measures firm coverage in the 4 major French newspapers and is demeaned at the firm level and standardized. We include firm fixed effects α_i and sector-by-quarter fixed effects α_{st}. We classify

Figure 7: Media coverage and firm outcomes in France



sectors using 2-digit rather than 4-digit NAICS levels, because the French equity market is far smaller than the US market (959 unique publicly traded firms in our French sample compared to 13,207 firms in our US sample). The vector Z_{it} controls for firm sales growth, size (log real assets), current assets as a share of total assets.

Figure 7 reports the estimates. Consistent with the US evidence, greater media coverage is associated with more equity issuance, more investment, and higher profitability.

Next, we focus on the subset of firms that issue equity and study the timing of the issuance and firms' investment opportunities. If media coverage is helpful in alleviating asymmetric information in financial markets, firms who issue equity during media strikes should find it harder to raise financing, because the financial press disseminates less firm information. Because of the elevated financial frictions, those firms subsequently invest less than those who issue equity when media is functioning as normal.

We test for such differences in future investment using an event-time regression. For firm i that issue equity in quarter t, we estimate

$$\log k_{it+4} - \log k_{it} = \alpha_s + \beta S_t + \Gamma' Z_{it} + u_{it}, \tag{2}$$

where the dependent variable is the cumulative investment a year after equity issuance, α_s is a sector fixed effect, S_t is an indicator for media strikes, and Z_{it} is a vector of firm and macro controls. We control for firm sales growth, size, current assets as a share of total assets as before. We drop quarter fixed effects to estimate the effects of the strike indicator and instead control for macroeconomic conditions with real GDP growth and inflation and fiscal year end.[3] The coefficient of interest is β, which gives the difference in future investment

[3]We retrieve GDP (CLVMNACSCAB1GQFR) and inflation (CPHPTT01FRM659N) series from FRED.

Table 1: Firms that issue equity during media strikes invest less afterwards

	(1)	(2)	(3)	(4)
	Investment after issuance (1yr)			
Issuance during media strikes	-0.140*	-0.140*	-0.135*	-0.135*
	(0.078)	(0.074)	(0.074)	(0.075)
Observations	1072	1072	1055	1054
R^2	0.029	0.029	0.031	0.031
FE	naics2	naics2	naics2	naics2
Double-clustered SE	yes	yes	yes	yes
Macro controls	no	yes	yes	yes
Firm controls	no	no	yes	yes
Remove common ownership	no	no	no	yes

Notes: This table reports the coefficient β from estimating: $\log k_{it+4} - \log k_{it} = \alpha_j + \beta S_t + \Gamma' Z_{it} + u_{it}$, where t is the quarter in which a firm issues equity, the dependent variable $\log k_{it+4} - \log k_{it}$ is the cumulative investment 4 quarters after equity issuance, α_j is a sector fixed effect, S_t is an indicator for media strikes, and Z_{it} is a vector of controls containing sales growth, size, current assets as a share of total assets, real GDP growth, and inflation. * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$).

between firms that issue equity during media strikes and firms that issue when the media is functioning as normal. Standard errors are double clustered by firm and quarter.

Table 1 report the estimates. Column 1 reports the baseline estimates without any controls. Columns 2 and 3 adds macro and firm controls, iteratively. In Column 4, we exclude firms that share a common owner with a major newspaper, to exclude a possible direct effect of the labor disputes behind media strikes on the investment of firms in our sample. Specifically, *Les Echos* and *Le Figaro* are owned by LVMH and Dassault Group respectively. These groups are also the parent companies of some of the non-media firms in our sample.[4] Strikes in newspapers can arise from disputes with their owners, which potentially affects the investment decision of their non-media subsidiaries for reasons other than media coverage. We account for this possibility by removing these subsidiaries.

Across all specifications, firms that issue equity during media strikes invest 0.14% less over the following year, compared to firms that issue equity during periods with normal media coverage. This lower investment is consistent with the treatment effects of media coverage studied in the previous subsection: firms that receive media coverage develop more

[4]In our sample, subsidiaries of Dassault group (parent of *Le Figaro*) include Dassault Aviation and Dassault Systems; and the subsidiaries of LVMH (parent of *Les Echos*) include Bulgari, and Moet. *La Tribune* was owned by LVMH from 1993 to 2007 and is currently owned by individuals. *Le Monde* belongs to Groupe Le Monde, which does not have other subsidiaries in our sample.

Table 2: Equity issuance during media strikes and exposure to media coverage

	(1)	(2)	(3)	(4)
	Investment after issuance (1yr)			
Exposure	0.004	0.004	0.005	0.005
	(0.004)	(0.005)	(0.005)	(0.005)
Strike	-0.173	-0.132	-0.135	-0.170*
	(0.106)	(0.087)	(0.083)	(0.099)
Exposure × Strike	-0.042*	-0.043**	-0.045**	-0.044**
	(0.021)	(0.021)	(0.022)	(0.021)
Observations	1024	1024	1007	1006
R^2	0.039	0.041	0.043	0.042
FE	naics2	naics2	naics2	naics2
Double-clustered SE	yes	yes	yes	yes
Macro controls	no	yes	yes	yes
Firm controls	no	no	yes	yes
Remove common ownership	no	no	no	yes

Notes: This table reports the coefficient γ from estimating: $\log k_{it+4} - \log k_{it} = \alpha_j + \beta S_t + \delta\theta_{it} + \gamma\theta_{it}S_t + \Gamma' Z_{it} + u_{it}$, where t is the quarter in which a firm issues equity, the dependent variable $\log k_{it+4} - \log k_{it}$ is the cumulative investment 4 quarters after equity issuance, α_j is a sector fixed effect, S_t is an indicator for media strikes, θ_{it} is the average media coverage of firm i 4 quarters before the strike at time t, and Z_{it} is a vector of controls containing sales growth, size, current assets as a share of total assets, real GDP growth, and inflation. * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$).

investment opportunities. It may also partly reflect strategic timing of equity issuance, if firms with large investment opportunities time their issuance to avoid media blackouts, and thus obtain this beneficial effect of coverage.

Furthermore, if news media disseminates firm news to investors, firms who tend to receive more coverage should suffer a bigger impact during strikes compared to their peers with little coverage to begin with. In Table 2, we test for this differential impact of media strikes. We measure a firm's exposure to media strikes, θ_{it}, as its average news coverage in the year before the strike at time t. Our empirical specification takes the form

$$\log k_{it+4} - \log k_{it} = \alpha_j + \beta S_t + \delta\theta_{it} + \gamma\theta_{it}S_t + \Gamma' Z_{it} + u_{it}, \tag{3}$$

where the dependent variable is the cumulative investment a year after equity issuance, α_s is a sector fixed effect, S_t is an indicator for media strikes, θ_{it} is a firm's exposure to the strike at time t, and Z_{it} is a vector of controls including firm sales growth, size, current assets as a share of total assets, fiscal year end, real GDP growth, and inflation. The parameter of

interest is γ, which measures whether the lack of coverage from media strikes has differential effect depending on a firm's reliance on media coverage.

We focus our discussion on Column 4 in Table 2, which provides the most conservative estimates. Consistent with our previous findings, firms that issue equity during media strikes invest 17% less compared to firms that issue during nonstrikes. Firms with higher historical coverage suffer more from the sudden loss of coverage. Compared to other firms that issue equity during strikes, a firm with one-standard-deviation higher historical coverage invest another 4% less after the equity issuance. The economic magnitude is one-quarter of the average effects from the strike. The results suggest that firms with larger reduction in media coverage develop fewer investment opportunities, consistent with the interpretation that media reveals firm information to investors.

Finally, since large-scale strikes tend to occur in economic downturns, we further restrict our analysis to quarters with similar economic conditions. Appendix Figure A.7 plots the histogram of firms' cumulative investment one year after their equity issuance for two subsets of firms: those that issue equity during media strikes, and those that issue equity in quarters immediately after the strikes. Firms that raise equity during strikes have an investment rate that is 0.1 percentage point lower than their peers that raise equity just before or after strikes, despite similar macroeconomic conditions.

4. A Model of Corporate News Reporting

Motivated by the empirical effects of media coverage on firm corporate finance, we construct a model of corporate news reporting to study its importance for firm life cycles.

4.1. Environment

Time is discrete, and there is no aggregate uncertainty. The economy consists of four groups of agents: firms, investors, forecasters, and news outlets. Firms produce with capital as the only input. They finance investments by tapping internal cash flows or by issuing external equity from retail investors. After production and before the equity market opens, firm's existing capital receives a capital quality shock. This shock is private information to firm managers and unobserved by investors, which is the source of asymmetric information in the

equity market.

Media outlets can potentially alleviate the asymmetric information. Each outlet belongs to a forecaster, whose objective is to minimize forecast errors relative to other forecasters. Through investigative journalism, media uncovers the private capital quality of all firms but can only report on a subset of firms because of newspaper space constraints. Outlets make this editorial decision by maximizing the utility for its forecaster. The information structure is so that each forecaster only reads their own newspaper, but once a firm is reported by any news outlet, its capital quality becomes known to all investors.

Investors form posterior beliefs about firms' capital qualities after observing the reporting decisions of all outlets. At this point, equity market opens. For firms whose asset qualities are unreported, investors offer a single price based on publicly observable characteristics. Then firms make their equity issuance decisions, invest, and form the capital for the next period. At the end of each period, the firms' capital quality is fully revealed. Next, we describe each agent's problem in detail.

Firms There is a continuum of firms indexed by $j \in [0, 1]$, who are heterogeneous in capital quantity $k_{j,t}$, productivity $z_{j,t}$, and capital quality $a_{j,t}$. Capital quality and productivity are public information for agents in the economy, while asset quality is private information for individual firms.

At the beginning of each period, firm j inherits capital $k_{j,t}$ from the previous period. The firm also observes its idiosyncratic productivity $z_{j,t}$, which evolves according to

$$\ln z_{j,t} = \rho_z \cdot \ln z_{j,t-1} + \epsilon^z_{j,t}, \quad \text{where } \epsilon^z_{j,t} \overset{i.i.d}{\sim} \mathcal{N}(0, \sigma_z^2). \tag{4}$$

Then each firm receives an i.i.d. exit shock $\epsilon^{\texttt{exit}}_{j,t} \sim \texttt{Bernoulli}(\xi)$. Firms that exit liquidate their assets and are replaced by an equal mass of firms drawn from the distribution $\mathcal{F}^{\text{entrant}}(z, k)$. Firms that remain in operation produce using capital as the input with the technology

$$y_{j,t} = Z \cdot z_{j,t} \cdot k_{j,t}, \tag{5}$$

where Z denotes aggregate productivity.

After the production, a firm receives an i.i.d. quality shock to its assets in place and chooses its investment $x_{j,t}$. Its capital evolves according to

$$k_{j,t+1} = (1-\delta) \cdot a_{j,t} \cdot k_{j,t} + x^{\theta}_{j,t}, \quad \text{where } a_{j,t} \sim \mathcal{F}(a). \tag{6}$$

A firm has access to external funds through an equity market. It allocates the proceeds from production and equity issuance between investment and dividend payouts. A firm's budget constraint is specified by

$$\underbrace{div_{j,t}}_{\text{dividend payout}} + \underbrace{x_{j,t}}_{\text{investment expenditure}} = \underbrace{y_{j,t}}_{\text{operating cash flow}} + \underbrace{e_{j,t} - \phi^e \cdot \mathbf{1}_{e_{j,t}>0}}_{\text{funding from equity issuance}}, \tag{7}$$

where $e_{j,t}$ denotes the funding raised from issue new equity and ϕ^e denotes a fixed cost of issuing equity.

Investors There is a continuum of risk-neutral investors. They purchase firm equity to maximize their expected return.

When making investment decisions to maximize expected returns, investors can observe capital k and productivity z of each firm. They cannot observe the quality of assets-in-place a, and must make inference about it based on media reports.[5] When a firm is reported by the media outlets, its asset quality is fully revealed. When a firm is not reported by the media, investors form a posterior belief, μ_t, on a firm's asset quality following Bayes rule

$$\mu_t(a|k,z) = \frac{\mathcal{F}(a)(1-\mathcal{R}_t(k,z,a))}{\int \mathcal{F}(a)(1-\mathcal{R}_t(k,z,a))da}, \tag{8}$$

where $\mathcal{R}_t(k,z,a)$ is the probability that a firm with fundamentals (k,z,a) would be reported in period t.

Media and forecasters There is a continuum of media outlets, indexed by $i \in [0,1]$, who have full information on all firm fundamentals including asset qualities a_j. Each outlet is owned by a corresponding forecaster, who reads the news in their outlet and does not read

[5] Under the set up of classical asymmetric information problems, investors can learn a firm's asset quality through the size of its equity issuance. We focus on the role of the media and assume news reporting is the only source of information for investors.

other outlets. Each media outlet i make their decisions of reporting each firm j $\hat{m}_{i,j} \in \{0, 1\}$. If $\hat{m}_{i,j} = 1$, media i reports the exact a_j to its associated forecaster. The stock market value of a firm j is denoted as $MV(k_j, z_j, a_j, m_j)$, which depends on a firm's idiosyncratic states $\{k_j, z_j, a_j\}$, and whether the firm is in the news. If any outlet reports on a firm, investors observe its capital quality, so the reporting outcome of a firm aggregates the reporting decision of individual media outlets and is given by $m_j \equiv \max_i \hat{m}_{i,j}$.

If an outlet reports on a firm j, they perfectly reveal that firm's fundamentals to their forecaster. However, outlets are constrained (by physical newspaper space or by forecaster attention capacity), so they can only report on a fraction $r \in (0, 1)$ of firms each period.

We define $\hat{m}_{i,j,t} \in \{0, 1\}$ as an indicator variable equal to 1 if outlet i reports on firm j in period t, and equal to 0 otherwise. The outlet space constraint is therefore

$$\int_0^1 \hat{m}_{i,j,t} dj = r. \tag{9}$$

The information communicated by outlet i is:

$$\mathcal{I}_{i,t}^{\text{news}} = \{a_{j,t} : \hat{m}_{i,j,t} = 1\} \tag{10}$$

Using their information set, forecasters then form a prediction of the market value of each firm j. We denote this prediction $\mathcal{P}(k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}})$. Since each forecaster i reads only their own media outlet, they have no information on the reporting decisions of other outlets. That is, they do not observe $\hat{m}_{i',j,t}$ for any $i' \neq i$. Similarly, they do not observe $a_{j,t}$ unless their own outlet reports it ($\hat{m}_{i,j,t} = 1$), regardless of whether that information appears in other media outlets.

Unlike forecasters, investors are not constrained to read a single news outlet. They are able to observe any information reported in any outlet.[6] The investor information set therefore consists of observables $k_{j,t}, z_{j,t}$ for all firms j, and the total information reported in

[6]This assumption can be microfounded as follows. Since there is no noise in market prices in this model (unlike e.g. Grossman and Stiglitz, 1980), market prices perfectly aggregate information. If even one investor reads the news published by outlet i, they therefore use that information to trade, and market prices adjust to communicate that information to all other investors.

the media $\mathcal{I}_t^{\text{news}}$, which is defined as

$$\mathcal{I}_t^{\text{news}} = \{a_{j,t} : m_{j,t} = 1\}, \tag{11}$$

where the aggregate news reporting indicator $m_{j,t}$ is defined as

$$m_{j,t} = \begin{cases} 0 & \text{if } \hat{m}_{i,j,t} = 0 \text{ for all } i \\ 1 & \text{otherwise.} \end{cases} \tag{12}$$

That is, if at least 1 outlet reports on firm j, then investors observe that report, and observe $a_{j,t}$. Investors are only unable to observe $a_{j,t}$ for firms that are not reported by any outlet.

Stock market value, denoted MV, is priced by investors once the equity market opens. In section 4.3 below, we show that market value is a function of firm fundamentals $(k_{j,t}, z_{j,t}, a_{j,t})$, and the aggregate news reporting indicator $m_{j,t}$. As a result, the realized forecast errors of forecaster i are a function of both their own information set, and the aggregate information set observed by investors.

$$FE(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}_{i,t}^{\text{news}}) \equiv \left[\mathcal{P}\left(k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}}\right) - MV(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t})\right]^2 \tag{13}$$

Following the literature on forecaster incentives (see review in Marinovic, Ottaviani and Sorensen, 2013), each forecaster derives utility from making more accurate forecasts than their peers. Specifically, forecaster i experiences utility $U_{i,t}$, which is given by

$$U_{i,t} \equiv -\int_0^1 \left[FE(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}_{i,t}^{\text{news}}) - \bar{FE}_{-i}(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}_{i',t}^{\text{news}})\right] dj, \tag{14}$$

where $\bar{FE}_{-i}(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}_{-i,t}^{\text{news}})$ is the realized average forecast error about firm j from forecasters reading news outlets other than i

$$\bar{FE}_{-i}(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}_{-i,t}^{\text{news}}) \equiv \int_{i' \neq i} \left[\mathcal{P}\left(k_{j,t}, z_{j,t}, \mathcal{I}_{i',t}^{\text{news}}\right) - MV(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t})\right]^2 di'. \tag{15}$$

This formulation implies that a forecaster gains utility from having low average ex-post

forecast errors, relative to the forecast errors made by other forecasters using news from other outlets. Although we abstract from outlet demand for simplicity, this is consistent with a model in which potential readers compare the quality of news outlets as information sources by comparing their previous forecast performance, as in e.g. the contest model of Ottaviani and Sørensen (2006).

Optimal forecasts When forecasters choose $\mathcal{P}\left(k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}}\right)$, the only information they have observed is $k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}}$. They choose their forecasts to maximize their expected utility, where the expectation is formed conditional on this restricted information set only.

$$\mathcal{P}(k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}}) = \arg\max \mathbb{E}(U_{i,t} | k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}}) \tag{16}$$

where $U_{i,t}$ is defined in equation 14.

The forecaster's choice has no effect on realized market values, or on the forecasts of others. $\bar{FE}_{-i}(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}_{-i,t}^{\text{news}})$ is therefore unaffected by the choice of forecaster i. The optimal forecast is characterized by the first order condition

$$\frac{d\,\mathbb{E}\left(FE(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}_{i,t}^{\text{news}}) | k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}}\right)}{d\mathcal{P}(k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}})} = 0, \tag{17}$$

$$\iff \mathcal{P}(k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}}) = \mathbb{E}(MV(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}) | k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}}). \tag{18}$$

That is, the forecaster simply sets their forecasts equal to the rational expectation of each firm's market value, where the expectation is formed using the restricted information set available to the forecaster.

For any firm that is reported by outlet i, this optimal forecast is trivial to find. For such a firm, $\mathcal{I}_{i,t}^{\text{news}}$ contains $a_{j,t}$. Moreover, $\mathcal{I}_{i,t}^{\text{news}}$ also contains the observation that $\hat{m}_{i,j,t} = 1$, which from equation 12 implies that $m_{j,t} = 1$. Intuitively, the forecaster observes that their media outlet has reported on firm j, and so they know for certain that investors are aware of at least one report on firm j. As a result, forecaster i observes all of the inputs to firm

j's market value, and so can forecast it precisely

$$\begin{aligned}\mathcal{P}(k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}} | \hat{m}_{i,j,t} = 1) &= \mathbb{E}(MV(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t} = 1) | k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t} = 1) \\ &= MV(k_{j,t}, z_{j,t}, a_{j,t}, 1). \end{aligned} \tag{19}$$

Substituting this into equation 13 reveals that when $\hat{m}_{i,j,t} = 1$, forecaster i makes no forecast errors: $FE(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t} = 1, \mathcal{I}_{i,t}^{\text{news}}) = 0$.

For any firm that is not reported by outlet i, the optimal forecast is more complicated, for two reasons. First, the forecaster is uncertain about $a_{j,t}$; and second, they are uncertain about the realization of $m_{j,t}$. This second source of uncertainty arises as a direct consequence of the assumption that forecasters do not observe the reporting decisions of outlets other than their own. Even though they observe that their own outlet has not reported the firm ($\hat{m}_{i,j,t} = 0$), they do not know whether any other outlet has reported it, and consequently do not know $m_{j,t}$.

It will be useful below to develop some further results for this case. Applying the law of iterated expectations to equation 18, we obtain

$$\begin{aligned}\mathcal{P}(k_{j,t}, z_{j,t}, \mathcal{I}_{i,t}^{\text{news}} | \hat{m}_{i,j,t} = 0) &= \mathbb{E}(MV(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}) | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0) \\ &= \Pr(m_{j,t} = 1 | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0) \hat{\mathcal{P}}_{i,j,1} \\ &\quad + (1 - \Pr(m_{j,t} = 1 | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0)) \hat{\mathcal{P}}_{i,j,0}, \end{aligned} \tag{20}$$

where $\Pr(m_{j,t} = 1 | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0)$ is forecaster i's posterior probability that $m_{j,t} = 1$. $\hat{\mathcal{P}}_{i,j,1}, \hat{\mathcal{P}}_{i,j,0}$ are, respectively, the forecasts that forecaster i would form if they knew $m_{j,t} = 1$ and $m_{j,t} = 0$ for certain

$$\hat{\mathcal{P}}_{i,j,1} \equiv \mathbb{E}(MV(k_{j,t}, z_{j,t}, a_{j,t}, 1) | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0), \tag{21}$$

$$\hat{\mathcal{P}}_{i,j,0} \equiv \mathbb{E}(MV(k_{j,t}, z_{j,t}, a_{j,t}, 0) | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0). \tag{22}$$

In each of these, notice that the only source of uncertainty is $a_{j,t}$. The second source of uncertainty, over $m_{j,t}$, only affects forecasts through $\Pr(m_{j,t} = 1 | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0)$.

Finally, we show in section 4.3 that the market value of a firm with $m_{j,t} = 0$ is indepen-

dent of the realization of $a_{j,t}$. This means that we can write equation 22 as

$$\hat{\mathcal{P}}_{i,j,0} = MV(k_{j,t}, z_{j,t}, a_{j,t}, 0). \tag{23}$$

There is no uncertainty here because the expectation is conditioned on every firm state variable that affects market value in the case where $m_{j,t} = 0$. Intuitively, market value will be priced by investors, and the information set used to form forecast $\hat{\mathcal{P}}_{i,j,0}$ contains every piece of information available to investors for an unreported firm.

4.2. Markets and decision problems

Equity market Firms issue their equity at a constant price that depends on investors' belief about their asset quality. Since the only information source for investors is media reports, the stock issuance price of a firm will depend on whether it is reported by any media outlets, as summarized in the aggregate reporting indicator defined in equation 12. Normalizing the quantity of existing shares to 1 and denoting the evaluation of a firm's existing shares as $P(k, z, a, m)$, a firm has to issue a further $\frac{e}{P(k,z,a,m)}$ shares to external investors to raise funding e. For the firms which are not reported in the media, their stock issuance price is only conditional on their publicly observable characteristics, so $P(k, z, a, 0) = P(k, z, a', 0) \equiv \bar{P}(k, z)$ $\forall a \neq a'$.

Firm decisions Managers maximize the net present value of the dividend payments to their existing shareholders. Under this objective, a firm's problem is given by

$$V_t(k, z, a, m) = \max_{e \geq 0} \frac{P_t(k, z, a, m)}{P_t(k, z, a, m) + e} \cdot W_t(ak,\ y + e - \mathbf{1}_{e>0}\phi^e,\ z) \tag{24}$$

$$\text{s.t.} \qquad y = Z \cdot z \cdot k. \tag{25}$$

$W_t(\cdot)$ characterizes a firm's value after equity issuance and is specified by

$$W_t(\hat{k}, n, a) = \max_{div \geq 0, x \geq 0} div + \mathbb{E}_t \left[\Lambda \cdot \bar{U}_{t+1}(k', z') | z \right] \tag{26}$$

$$\text{s.t.} \qquad n = div + x \tag{27}$$

$$k' = (1 - \delta) \cdot \hat{k} + x^{\theta} \tag{28}$$

$$\bar{U}_t(k, z) \equiv \xi \cdot \hat{V}_t(k) + (1 - \xi) \cdot \bar{V}_t(k, z) \tag{29}$$

$$\bar{V}_t(k, z) \equiv \mathbb{E}_t \left[m_t(k, z, a) \cdot V_t(k, z, a, 1) + (1 - m_t(k, z, a)) \cdot V_t(k, z, a, 0) \right] \tag{30}$$

where $\hat{V}_t(k) \equiv k$ denotes the capital's liquidation value.

Media outlet decisions Outlet i chooses which firms to report in order to maximize the utility of their forecaster, subject to the space constraint. Their problem is given by

$$U_{i,t} = \max_{\hat{m}_{i,j,t}} - \int_0^1 \Big[FE(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}^{\text{news}}_{i,t}) - \bar{FE}_{-i}(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}^{\text{news}}_{-i,t}) \Big] dj \tag{31}$$

$$\text{s.t.} \qquad \mathcal{I}^{\text{news}}_{i,t} = \{ a_{j,t} : \hat{m}_{i,j,t} = 1 \} \tag{32}$$

$$r = \int_0^1 \hat{m}_{i,j,t} dj \tag{33}$$

$$FE(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}^{\text{news}}_{i,t}) = \left[\mathcal{P}\left(k_{j,t}, z_{j,t}, \mathcal{I}^{\text{news}}_{i,t}\right) - MV(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}) \right]^2 \tag{34}$$

$$\bar{FE}_{-i}(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}^{\text{news}}_{-i,t}) = \int_{i' \neq i} \left[\mathcal{P}\left(k_{j,t}, z_{j,t}, \mathcal{I}^{\text{news}}_{i',t}\right) - MV(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}) \right]^2 di' \tag{35}$$

There are two details worth noting at this point. First, outlet i's objective function depends on the reporting behavior of other outlets, both through $\bar{FE}_{-i}(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}^{\text{news}}_{-i,t})$ and realized market values. When choosing reporting $\hat{m}_{i,j,t}$, outlet i takes the reporting decisions of other outlets, $\hat{m}_{-i,j,t}$, as given.

Second, the media outlet maximizes $U_{i,t}$ directly, not an expectation of $U_{i,t}$. This is because, unlike the forecaster, the outlet observes $a_{j,t}$ for all firms, and observes the reporting decisions of all outlets $\hat{m}_{i',j,t}$. As a result, the outlet has no uncertainty over the forecast errors of their own forecaster or any others, so has no uncertainty over the realization of $U_{i,t}$ that will be experienced by their forecaster at the end of the period.

4.3. Equilibrium

The equilibrium consists of the paths for firm distribution $\mathcal{F}_t(k,z,a)$, aggregate media reporting $m_t(k,z,a)$, firms' value functions $V_t(k,z,a,m)$, policy functions $\mathbf{e}_t(k,z,a,m)$, $\mathbf{n}_t(k,z,a,m)$, $\mathbf{div}_t(k,z,a,m)$, and $\mathbf{x}_t(k,z,a,m)$, equity issuance prices $P_t(k,z,a,m)$, and firms' stock market value $MV_t(k,z,a,m)$ that satisfy:

1. given the firm distribution $\mathcal{F}_t(k,z,a)$, firms' value functions, and equilibrium prices, media outlets determine reporting choices $\hat{m}_{i,j,t}$, which in turn determines aggregate media reporting $m_{j,t}$;

2. given the equity prices $P(k,z,a,m)$, firms make their optimal choices of equity issuance $\mathbf{e}_t(k,z,a,m)$, investment $\mathbf{x}_t(k,z,a,m)$ and dividend payout $\mathbf{div}_t(k,z,a,m)$;

3. given the updated belief and firms' financing and investment policies, the equity prices have to satisfy the break-even conditions in the equity markets:

$$\begin{aligned}
&\int \frac{\mathbf{e}_t(k,z,a,0)}{\mathbf{e}_t(k,z,a,0)+\bar{P}_t(k,z)} \cdot W_t\left(\hat{k}(k,a),\mathbf{n}_t(k,z,a,0),z\right)\mu_t(a|k,z)da \\
=&\int \mathbf{e}_t(k,z,a,0)\cdot\mu_t(a|k,z)da, \quad \forall(k,z) \qquad (36)\\
&\frac{\mathbf{e}_t(k,z,a,1)}{\mathbf{e}_t(k,z,a,1)+P_t(k,z,a,1)} \cdot W_t\left(\hat{k}(k,a),\mathbf{n}_t(k,z,a,1),z\right) \\
=&\mathbf{e}_t(k,z,a,1), \quad \forall(k,z,a). \qquad (37)
\end{aligned}$$

4. firms' stock market value is determined by:

$$MV_t(k,z,a,1)=\begin{cases} P_t(k,z,a,1) & \text{if } \mathbf{e}_t(k,z,a,1)>0 \\ V_t(k,z,a,1) & \text{otherwise} \end{cases} \qquad (38)$$

$$MV_t(k,z,a,0)=\begin{cases} \bar{P}_t(k,z) & \text{if } \int \mathbf{e}_t(k,z,a,0)\mu_t(a|k,z)da>0 \\ \int V_t(k,z,a,0)\mu_t(a|k,z)da & \text{otherwise} \end{cases} \qquad (39)$$

4.4. Equilibrium reporting

So far, the reporting decisions of media have only been defined implicitly, as the solution to the maximization problem in equations 31-35. We now characterize which firms get reported in equilibrium. We focus our analysis on symmetric equilibria in pure strategies for outlets.[7] That is, we consider equilibria in which all outlets make the same reporting decisions, and so $\hat{m}_{i,j,t} = \hat{m}_{i',j,t} = m_{j,t}$ for all outlets i, i' and all firms j. Moreover, by considering only pure strategy equilibria, we assume that $\hat{m}_{i,j,t}$ is entirely determined by firm j's state variables: there is no randomness in outlet reporting decisions.

We now proceed to show that there is a unique reporting policy that can be sustained as such an equilibrium. To find this, we begin by considering an arbitrary candidate reporting policy. We then show that there is a unique candidate reporting policy from which no outlet would find it optimal to deviate.

The candidate reporting policy is characterized by a vector of reporting choices $\boldsymbol{m}_t = \{m_{j,t}\}_{j=0}^{1}$, which satisfies the space constraint 9. Without loss of generality, assume that $\boldsymbol{m}_t$ involves all outlets reporting on firm j, and not reporting on firm j'.

Forecaster utility at equilibrium. Since this is a symmetric reporting policy, all outlets make the same reporting decisions. This means all forecasters have the same information set, and make the same forecast errors. As a result

$$FE(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}_{i,t}^{\text{news}}) = \bar{FE}_{-i}(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}_{-i,t}^{\text{news}}), \tag{40}$$

and thus $U_{i,t} = 0$.

Outlet deviations. A minimal deviation from $\boldsymbol{m}_t$ consists of an outlet i ceasing to report on firm j, and instead reporting on firm j'. $\boldsymbol{m}_t$ can only be sustained in equilibrium if no outlet finds it optimal to deviate in this way. Since in the absence of any deviation we have obtained that $U_{i,t} = 0$, a sufficient condition for $\boldsymbol{m}_t$ to be an equilibrium is that

$$\hat{U}_{i,t}(j, j') \leq 0, \tag{41}$$

[7] Importantly, since all forecasters are identical ex-ante, the motives for media specialization studied in Nimark and Pitschner (2019) and Perego and Yuksel (2022) (among others) are absent in our setting.

where $\hat{U}_{i,t}(j, j')$ is the utility of forecaster i if outlet i deviates. If this condition holds for all pairs of reported and unreported firms j, j', outlets never deviate, and $\boldsymbol{m}_t$ is an equilibrium.

We now proceed to find an expression for $\hat{U}_{i,t}(j, j')$. First, notice that the deviation would have no effect on firms other than j and j'. From the definition of forecaster utility (equation 14), we therefore have

$$\begin{aligned}\hat{U}_{i,t}(j, j') = &- \left[FE(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}^{\text{news}}_{i,t}) - \bar{FE}_{-i}(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}^{\text{news}}_{-i,t})\right] \\ &- \left[FE(k_{j',t}, z_{j',t}, a_{j',t}, m_{j',t}, \mathcal{I}^{\text{news}}_{i,t}) - \bar{FE}_{-i}(k_{j',t}, z_{j',t}, a_{j',t}, m_{j',t}, \mathcal{I}^{\text{news}}_{-i,t})\right] \quad (42)\end{aligned}$$

The first two terms give the utility change due to no longer reporting on firm j. Other forecasters are still reporting on j, and so it remains the case that $m_{j,t} = 1$, and the realized market value of firm j is unchanged. The average forecast error of other forecasters $\bar{FE}_{-i}(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}^{\text{news}}_{-i,t})$ therefore remains unchanged at zero. However, the forecast of forecaster i does change, as their information set no longer contains $a_{j,t}$. Specifically,

$$FE(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}^{\text{news}}_{i,t}) = \left[\mathcal{P}(k_{j,t}, z_{j,t}, \mathcal{I}^{\text{news}}_{i,t} | \hat{m}_{i,j,t} = 0) - MV(k_{j,t}, z_{j,t}, a_{j,t}, 1)\right]^2. \quad (43)$$

Substituting out for the optimal forecast using equation 20, this becomes

$$\begin{aligned}FE(k_{j,t}, z_{j,t}, a_{j,t}, m_{j,t}, \mathcal{I}^{\text{news}}_{i,t}) = &\big[\Pr(m_{j,t} = 1 | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0)\hat{\mathcal{P}}_{i,j,1} \\ &+ (1 - \Pr(m_{j,t} = 1 | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0))\hat{\mathcal{P}}_{i,j,0} - MV(k_{j,t}, z_{j,t}, a_{j,t}, 1)\big]^2. \quad (44)\end{aligned}$$

The second two terms of equation 42 give the utility change due to reporting firm j'. Recall that investors observe a firm's asset quality if at least one outlet reports it (equation 12). Since outlet i has reported on firm j', that firm's asset quality $a_{j',t}$ is transmitted to investors, and so $m_{j,t} = 1$. As a result,

$$\begin{aligned}FE(k_{j',t}, z_{j',t}, a_{j',t}, m_{j',t}, \mathcal{I}^{\text{news}}_{i,t}) &= \left[\mathcal{P}(k_{j',t}, z_{j',t}, \mathcal{I}^{\text{news}}_{i,t} | \hat{m}_{i,j,t} = 1) - MV(k_{j,t}, z_{j,t}, a_{j,t}, 1)\right]^2 \quad (45) \\ &= \left[MV(k_{j',t}, z_{j',t}, a_{j',t}, 1) - MV(k_{j',t}, z_{j',t}, a_{j',t}, 1)\right]^2 = 0. \quad (46)\end{aligned}$$

where the second equality uses equation 19. Forecaster i therefore makes a zero forecast error about firm j'.

However, although forecaster i makes no forecast error about j' under this deviation, the same is not true of other forecasters. They continue to observe that their outlet has not reported on j' ($\hat{m}_{i',j',t} = 0$), and so do not have sufficient information to infer the market value of j' precisely. This generates a forecast error, given by

$$\bar{FE}_{-i}(k_{j',t}, z_{j',t}) = \int_{i' \neq i} \left[\mathcal{P}(k_{j',t}, z_{j',t}, \mathcal{I}^{\text{news}}_{i',t} | \hat{m}_{i',j,t} = 0) - MV(k_{j',t}, z_{j',t}, a_{j',t}, 1)\right]^2 di' \quad (47)$$

All outlets i' are identical, so using equation 20 this average forecast error becomes:

$$\begin{aligned}\bar{FE}_{-i}(k_{j',t}, z_{j',t}) = \big[&\Pr(m_{j',t} = 1 | k_{j',t}, z_{j',t}, \hat{m}_{i',j',t} = 0)\hat{\mathcal{P}}_{i',j',1} \\ &+ (1 - \Pr(m_{j',t} = 1 | k_{j',t}, z_{j',t}, \hat{m}_{i',j',t} = 0))\hat{\mathcal{P}}_{i',j',0} - MV(k_{j',t}, z_{j',t}, a_{j',t}, 1)\big]^2. \quad (48)\end{aligned}$$

Substituting these results into equation 42, the utility of deviating in this way is

$$\begin{aligned}\hat{U}_{i,t}(j, j') = \big[&\Pr(m_{j',t} = 1 | k_{j',t}, z_{j',t}, \hat{m}_{i',j',t} = 0)\hat{\mathcal{P}}_{i',j',1} \\ &+ (1 - \Pr(m_{j',t} = 1 | k_{j',t}, z_{j',t}, \hat{m}_{i',j',t} = 0))\hat{\mathcal{P}}_{i',j',0} - MV(k_{j',t}, z_{j',t}, a_{j',t}, 1)\big]^2 \\ &- \big[\Pr(m_{j,t} = 1 | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0)\hat{\mathcal{P}}_{i,j,1} + (1 - \Pr(m_{j,t} = 1 | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0))\hat{\mathcal{P}}_{i,j,0} \\ &- MV(k_{j,t}, z_{j,t}, a_{j,t}, 1)\big]^2. \quad (49)\end{aligned}$$

To make further progress, we now turn to the posterior probability terms in equation 49, $\Pr(m_{j',t} = 1 | k_{j',t}, z_{j',t}, \hat{m}_{i',j',t} = 0)$ and $\Pr(m_{j,t} = 1 | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0)$.

Each of these objects denote: from the point of view of a forecaster observing that their outlet did not report on a firm, what is the probability that some other outlet *did* report on that firm this period? The forecasters have rational expectations, so this probability is formed using their restricted information set, and a full knowledge of the equilibrium data generating process behind $m_{j,t}$. That is, although forecaster i does not observe the reporting decisions of the outlet belonging to forecaster i' (and vice versa), they are able to understand the policy function driving that other outlet's decisions, and thus the process for determining $m_{j,t}$.

At this point, the fact we focus on symmetric equilibria becomes critical. Under ratio-

nal expectations, forecasters understand that they are in a symmetric media equilibrium. Therefore, when they observe that their own outlet has not reported on a particular firm, they infer that no outlet has done so. Formally, we have

$$\Pr(m_{j,t} = 1 | k_{j,t}, z_{j,t}, \hat{m}_{i,j,t} = 0) = 0 \tag{50}$$

$$\Pr(m_{j',t} = 1 | k_{j',t}, z_{j',t}, \hat{m}_{i',j',t} = 0) = 0 \tag{51}$$

There is one nuance here that is worth noting. Forecasters infer that $m_{j,t} = \hat{m}_{i,j,t}$ because they have rational expectations, so they have full knowledge of the equilibrium. In equilibrium, their inference on $m_{j,t}$ is therefore correct. However, in equation 49 we are considering a deviation from that equilibrium. The implicit assumption here is that if such a deviation were to happen, forecasters would not be able to identify that it had happened. In other words, they continue to forecast $m_{j,t} = \hat{m}_{i,j,t}$ with certainty, even though this will be incorrect under the deviation. This is in line with rational expectations: in any equilibrium, such a deviation is a probability-zero event, and so it is rational to attach no weight to it. All the forecaster observes is $k_{j,t}, z_{j,t}$, and $\hat{m}_{i,j,t}$, and none of this reveals that a deviation is occurring. This is one key reason why deviations create forecast errors, as they lead forecasters to make errors about $m_{j,t}$.

This result greatly simplifies equation 49, to

$$\hat{U}_{i,t}(j, j') = \left[\hat{\mathcal{P}}_{i',j',0} - MV(k_{j',t}, z_{j',t}, a_{j',t}, 1)\right]^2 - \left[\hat{\mathcal{P}}_{i,j,0} - MV(k_{j,t}, z_{j,t}, a_{j,t}, 1)\right]^2. \tag{52}$$

Finally, note that in equation 23 we showed that $\hat{\mathcal{P}}_{i,j,0} = MV(k_{j,t}, z_{j,t}, a_{j,t}, 0)$. Applying the same logic to $\hat{\mathcal{P}}_{i',j',0}$, the utility from deviating becomes

$$\begin{aligned}\hat{U}_{i,t}(j, j') = &\left[MV(k_{j',t}, z_{j',t}, a_{j',t}, 0) - MV(k_{j',t}, z_{j',t}, a_{j',t}, 1)\right]^2 \\ &- \left[MV(k_{j,t}, z_{j,t}, a_{j,t}, 0) - MV(k_{j,t}, z_{j,t}, a_{j,t}, 1)\right]^2.\end{aligned} \tag{53}$$

Condition 41 is therefore satisfied, and the candidate $\boldsymbol{m}_t$ can be sustained as a symmetric

equilibrium, if and only if

$$\left[MV(k_{j',t}, z_{j',t}, a_{j',t}, 0) - MV(k_{j',t}, z_{j',t}, a_{j',t}, 1)\right]^2 \leq \left[MV(k_{j,t}, z_{j,t}, a_{j,t}, 0) - MV(k_{j,t}, z_{j,t}, a_{j,t}, 1)\right]^2 \tag{54}$$

Equilibrium media policy function The symmetric equilibrium reporting decision therefore takes the following form. Firms are ranked according to a measure of their newsworthiness $\mathcal{N}(k_{j,t}, z_{j,t}, a_{j,t})$, which is defined as the squared difference between the market values that firm would achieve with and without news coverage:

$$\mathcal{N}(k_{j,t}, z_{j,t}, a_{j,t}) \equiv \left[MV(k_{j,t}, z_{j,t}, a_{j,t}, 0) - MV(k_{j,t}, z_{j,t}, a_{j,t}, 1)\right]^2 \tag{55}$$

The fraction r of firms with the highest newsworthiness in period t are reported. The remaining firms, with lower newsworthiness, are not. This is the only reporting decision that ensures condition 54 is satisfied for all pairs of reported firm j and unreported firm j', and so the resulting media decisions constitute the unique symmetric equilibrium in pure strategies. Formally, the policy function of news outlets in this equilibrium is given by:

$$m_{j,t} = \mathbb{1}(\mathcal{N}(k_{j,t}, z_{j,t}, a_{j,t}) \geq \mathcal{N}_t^*) \tag{56}$$

where the threshold $\mathcal{N}_t^*$ is defined such that the space constraint (9) is satisfied:

$$\Pr(\mathcal{N}(k_{j,t}, z_{j,t}, a_{j,t}) \geq \mathcal{N}_t^*) = r \tag{57}$$

This equilibrium news reporting is intuitive. A firm is more newsworthy if news coverage would substantially alter the beliefs of forecasters and investors, and so would lead to a large change in market values. Outlets want to report newsworthy firms, because if they don't report them and others do, their readers would make large forecast errors. At the same time, if an outlet does report on a newsworthy firm and others do not, that outlet's readers will forecast substantially more accurately than readers of other outlets.

5. Quantitative Analysis

In this section, we first present our calibration of the parameters, paying particular attention to how we use our data on corporate news reporting to discipline the media reporting behavior in the model. Then we discuss how media reporting affects firms' investment and financing, and how media's reporting policy could reshape the firm dynamics.

5.1. Calibration

We calibrate the model quarterly and set the discount rate to be $\beta = 0.99$, which corresponds to a 4% annual real interest rate. Then, we calibrate parameters listed in Table 3a to target empirical moments in Table 3b. The calibrated parameters are divided into five groups. The first three groups are standard parameters on firm dynamics (cash flow, investment technology, and life-cycle dynamics), which we calibrate following existing approaches. The last two groups of parameters govern financial and information frictions in the economy. Given their importance for gauging the role of media, we discuss their calibration in greater detail.

5.1.1. Firm Dynamics

Cash Flow Level and Dynamics The steady-state operating cash flow rate, Z, determines the average level of internal financing a firm can produce. We calibrate it to match the average operating cash flow rate in the data. The idiosyncratic productivity shock, z, is the source of cash flow risk faced by the firms, which shapes firms' ex-post heterogeneity and precautionary motives in investment decisions. We calibrate its persistence and volatility to match the empirical persistence and volatility of the log revenue rate, which is measured by firms' revenue normalized by their capital.

Investment Technology and Capital Accumulation We calibrate the depreciation rate, δ, to match the average investment rate at which firms replenish their depreciated capital and grow. The return-to-scale of investment technology, θ, governs the sensitivity of firms' investment to variations in their capital profitability. We target the cross-sectional standard deviation of the investment rate in the data, and set $\theta = 0.82$. In this model,

Table 3: Model calibration

(a) Calibrated Parameters

Parameter		Value
Cash Flow		
Z	Level of aggregate productivity	2.28%
ρ_z	Idiosyncratic productivity, persistence	0.92
σ_z	—, innovation standard deviation	0.23
Investment Technology		
δ	Depreciation rate	4.23%
θ	Return-to-scale of investment technology	0.82
Life-cycle Dynamics		
ξ	Exit probability	2.03%
$\mu_{\ln z}^{entrant}$	Entrants, average productivity	0.3514
$\mu_{\ln k}^{entrant}$	—, average size	-1.8181
Information and Financial Friction		
σ_a	Dispersion of capital quality shock	0.25
ϕ^e	Fixed cost to issuing equity	0.12%
Selective Media Reporting		
λ_ξ	Curvature of reporting probability	11
$(\lambda_\alpha, \lambda_p)$	Location of reporting probability function	(0.8, 0.2)

(b) Targeted Moments

Moment	Data	Model
Cash Flow (annual, %)		
Operating cash flow rate, mean	10.77	10.50
Log revenue rate, persistence	0.75	0.76
–, std	0.63	0.62
Investment and growth (annual, %)		
Investment rate, mean	6.30	5.35
–, std	9.80	9.89
Growth rate, std	40.23	38.74
Equity financing (annual, %)		
Fraction of firms issuing equity	17.10	17.30
Issuance fee ratio, mean	1.96	1.54
Difference between matured (age$\geq$ 15) and young firms (age$\leq$5)		
Size	0.994	0.996
Log revenue rate	0.173	0.173
News Reports		
$p_{\geq 90\%}/p_{[40\%,60\%]}$	69	71

Notes: ϕ^e has been normalized by the average annual profit of the firm population. Operating cash flow rate, revenue rate, and investment rate refer to firms' operating cash flow, revenue, and investment normalized by their capital. The issuance fee ratio is measured as the fixed cost paid by the issuing firms normalized by their issuance proceeds. $p_{\geq 90\%}$ and $p_{[40\%,60\%]}$ denote the average reporting probability of the firms in the top 10% of market capitalization and those with market capitalization between 40% and 60% percentile. When constructing the annual rate in the model, we first simulate a panel of the firms at a quarterly frequency, and then we aggregate the quarterly data into annual data so our model-implied moments are directly comparable to our empirical moments. All the empirical moments are based on Compustat firms between 1990 and 2016.

capital accumulation is driven by two factors: firms' investment and the quality shock to their existing capital. With θ calibrated to match the dispersion of investment rate, we calibrate the dispersion of capital quality shocks to match the standard deviation of the growth rate of total assets in data.

Life-cycle Dynamics The ex-post heterogeneity across firms is shaped by both the dynamics of their idiosyncratic productivity and their life-cycle evolution. There are three parameters that govern firms' life-cycle in this model: the exit rate ξ, which determines the firms' age distribution, and the two parameters of the entrant distribution $\{\mu_{\ln z}^{entrant}, \mu_{\log(k)}^{entrant}\}$, which shape the differences between firms across different age groups[8]. We set the exit rate to $\xi = 8.1\%$ to match the average annual exit rate in the data. We calibrate the average size and idiosyncratic productivity of the entrants to match the difference between young

[8]We parameterize the entrant distribution $\mathcal{F}^{entrant}(z,k)$ as a mixture of two independent normal distribution of firms' log productivity and log size: $\ln z \sim \mathcal{N}(\mu_{\ln z}^{entrant}, 0.01)$ and $\ln k \sim \mathcal{N}(\mu_{\ln k}^{entrant}, 0.01)$. Here, we set the standard deviation at 0.01, which is small enough to have negligible effects on the results but make the distribution smooth.

(age$\leq$ 5) and matured (age$>$ 5) firms in their size and revenue rate.

5.1.2. Financial and Information Frictions

Firms' equity financing is subject to two frictions in this model: the explicit fixed cost of issuing equity and the implicit cost arising from asymmetric information that is not perfectly resolved by the media. We first calibrate the equity issuance cost to match the average level of management and underwriting fee as reported in Lee and Masulis (2009). Then, we calibrate the media reporting function to match the cross-sectional pattern of media reporting and the firms' average probability of issuing equity.

Parameterization of the Media Reporting Policy To translate the optimal reporting policy defined in Section 4.2 to a quantitative setting, we parametrize the media reporting policy as a generalized hazard function

$$\mathcal{R}_t(k,z,a) = \frac{\lambda_p}{\lambda_p + (1-\lambda_p)(\frac{\lambda_\alpha}{\mathcal{Q}_t(k,z,a)})^{\lambda_\xi}}, \tag{58}$$

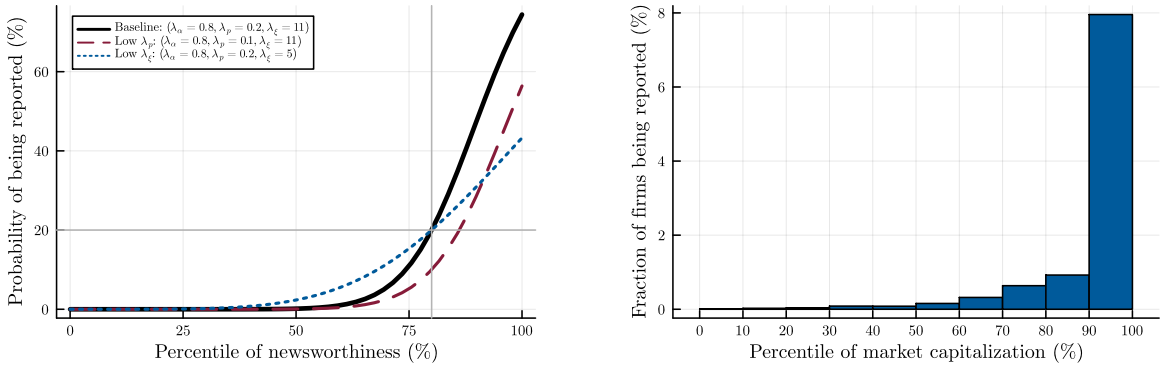
where $\mathcal{Q}_t(k,z,a)$ denotes the percentile location of the newsworthiness of a firm with idiosyncratic state (k,z,a), $\lambda_\xi > 1$, $\lambda_\alpha \in (0,1)$, and $\lambda_p \in (0,1)$. Under this parameterization, the probability of being reported is monotonically increasing with firms' newsworthiness and lies between 0 and 1.

In the limit as $\lambda_\xi \to \infty$, this exactly matches the optimal reporting function from Section 4.2. For finite λ_ξ, however, the probability of being reported becomes a smooth function of $\mathcal{Q}(k,z,a)$. Economically, this can be viewed as assuming that media outlets make errors in reporting decisions with a small probability. This assumption helps us to match the news reporting function to our media coverage data. In particular, each parameter captures a specific feature of the dependency of reporting probability on the firms' newsworthiness ranking, which provides clear intuition behind their calibration. As illustrated in Figure 8a, $\{\lambda_\alpha,\ \lambda_p\}$ are the location parameters: a firm with newsworthiness percentile of λ_α has a probability of λ_p to be reported by media. When the newsworthiness percentile increases passing λ_α, the corresponding probability of being reported quickly increases. The steepness of this increase is governed by parameter λ_ξ: higher λ_ξ implies a steeper increase in the

reporting probability.

Figure 8: Calibration of Media Reporting Policy

(a) Parameterization **(b)** Data Moment



Notes: Figure 8b is based on the same sample as the empirical facts as presented in Section 2. We first divide the firms into ten quintile groups based on their market capitalization in each quarter. Then we compute the share of firms being reported by the media in each quintile group and report the cross-time average of these shares for each quintile group.

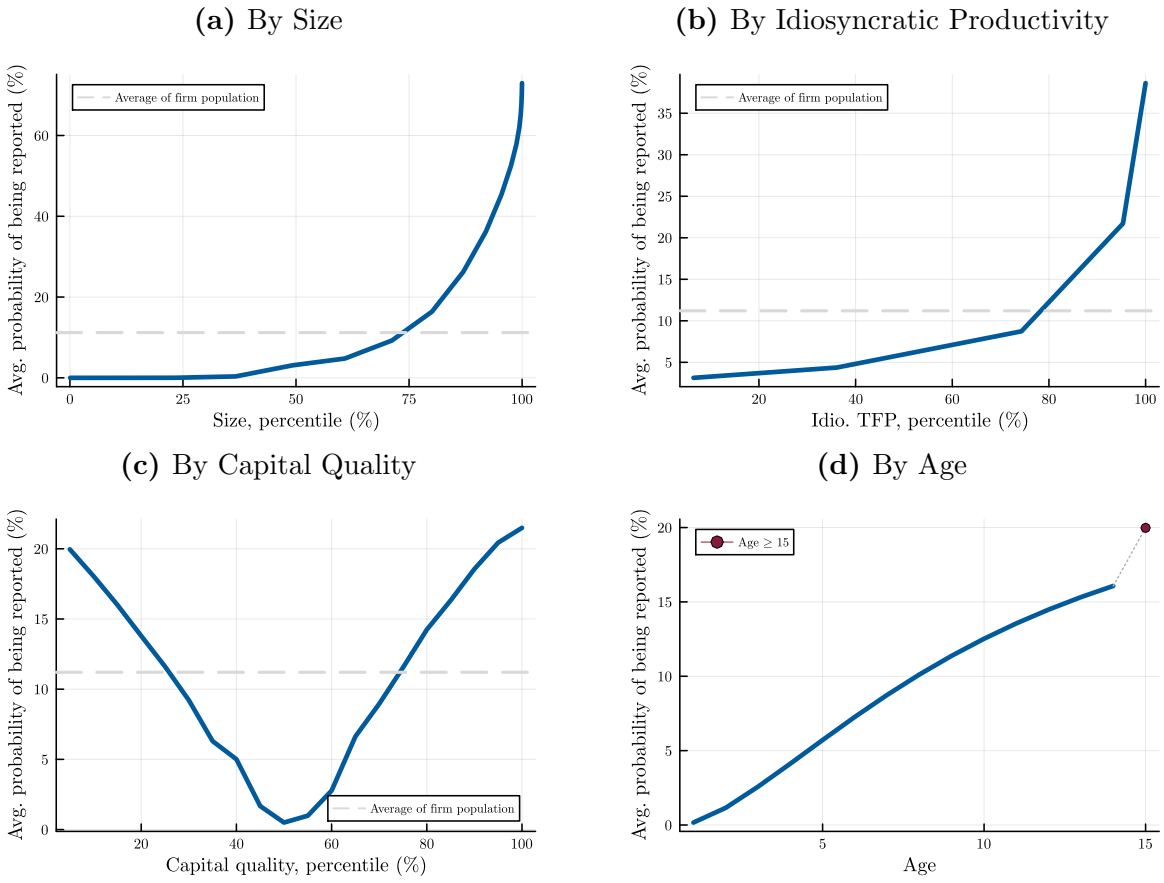
Calibration of the Media Reporting Policy The ideal empirical moments for disciplining media-reporting parameters are the relationship between the probability of media coverage and a firm's newsworthiness. However, these moments are not directly measurable for two reasons. First, we do not observe a firm's newsworthiness, because it depends on its potential stock market value both with and without reporting, and only one of these is ever realized. Nor do we observe a firm's probability of being reported because we only observe the realization in the data (either reported or unreported). Second, our newspaper sample does not necessarily represent the entire media sector's coverage of a firm, as we only have data for three newspapers. Our data is therefore a lower bound on how many firms are reported each quarter. Given these challenges, we instead infer the media-reporting function by targeting two groups of moments. The advantage of this calibration strategy is that it is unaffected by these measurement challenges.

First, we calibrate λ_α and λ_ξ to match how the share of firms with newspaper coverage varies across different market-capitalization percentiles. Figure 8b shows that the share of firms with newspaper coverage monotonically increases with the percentile of market capitalization. The average share of firms with news coverage stays low for firms whose market capitalization is below the 80% percentile; at the 80% threshold, the share rises rapidly. Therefore, we fix λ_α at 0.8 to match the shape of the curve, and calibrate λ_ξ to match

the ratio between the fraction of being reported for the firms in the top-10% and that for the firms between the 40% to 60% percentile. In this way we use the cross-sectional patterns from our data, but do not target the overall level of coverage, as our data is necessarily a lower bound on the proportion of firms who are reported.

Second, we calibrate λ_p to target the average share of firms with equity issuance. λ_p controls the average probability of firms being reported. Given a certain fixed cost of equity issuance, the more likely firms are reported by the media, the less severe asymmetric information frictions are, and the more likely firms choose to issue equity. Guided by this mechanism, we use the average fraction of firms issuing equity as our target moment to calibrate the parameter λ_p. Under our calibrated λ_p, the average probability of being reported of the firm population is 11.2%.

Figure 9: Cross-sectional Pattern of Media Reporting



5.2. Patterns of Corporate News Reporting

Equation 55 specifies that firms whose market value responds more to a news report are more likely to be reported by the media. Figure 9 reports the cross-sectional variation in the probability of media coverage under our calibration. We plot the cross-section of firms' coverage probability along four dimensions: their size, age, idiosyncratic productivity level, and asset quality. Consistent with the stylized facts documented in Figure 3 and A.4, larger and older firms are more likely to be reported by the media, and the concentration is more pronounced in size. Along the dimensions of firm-level heterogeneity that cannot be directly observed in the data, our model predicts that the firms with higher idiosyncratic productivity and more extreme levels of capital quality have a higher probability of being reported by the media. This is consistent with patterns observed in sectoral news focus (Chahrour et al., 2021).

Market values respond to media coverage because, under asymmetric information, the media reveals the asset quality of a firm and causes investors to update their beliefs. Reporting on firms with extreme capital quality, either low or high, triggers the largest updates of investor beliefs and, consequently, the largest change in firm market values. Thus, the firms with extreme capital quality realizations get more media coverage.

The relationship between news reporting and firm size, age, and productivity directly follows from the equation 55. Newsworthiness scales with firm size and productivity because size and productivity affect market values both with and without coverage. Because firm size and productivity grow over time on average, the positive correlation of firm size and productivity with the probability of media coverage extends to firm age.

5.3. The Effects of Media Reporting on Firm Investment and Financing

Through the lens of our calibrated model, we quantify the effects of media coverage on firms with different asset qualities. We first compute the difference in equity issuance, investment, and stock market value for each firm between two scenarios: when it is reported and when it is not reported. We then compute average differences in these firm outcomes conditional on each level of capital quality. Figure 10 reports the results. To highlight the role of media reporting in shaping firm investment and financing, we divide firms into two groups, constrained and unconstrained firms, based on their publicly observable idiosyncratic state

k and z. Precisely, a firm with size k and idiosyncratic productivity z is categorized as a constrained firm if there exists some a such that $\mathbf{e}(k, z, a, 1) > 0$ or $\mathbf{e}(k, z, a, 0) > 0$.

Constrained Firms vs. Unconstrained Firms Figure 10a depicts the effects of media coverage on market values. Media reports separate high-capital-quality firms from being pooled with low-quality firms, which boosts firm valuation by investors. In contrast, media reports reveal low-capital-quality firms as lemons, which reduce their valuations. Figure 10b and 10c show that although media reporting leads to responses in market values for all firms, it only leads to responses in equity issuance and investment for constrained firms. For the high-quality constrained firms, the higher market evaluation triggered by the media reporting allows the high-quality firms to issue equity at a lower cost, which stimulates their equity issuance and investment. In contrast, the lower market evaluation of the low-quality constrained firms triggered by the media reporting leads to the dampening effects on these firms' equity issuance and investment.

Figure 10: Treatment Effects of Being Reported

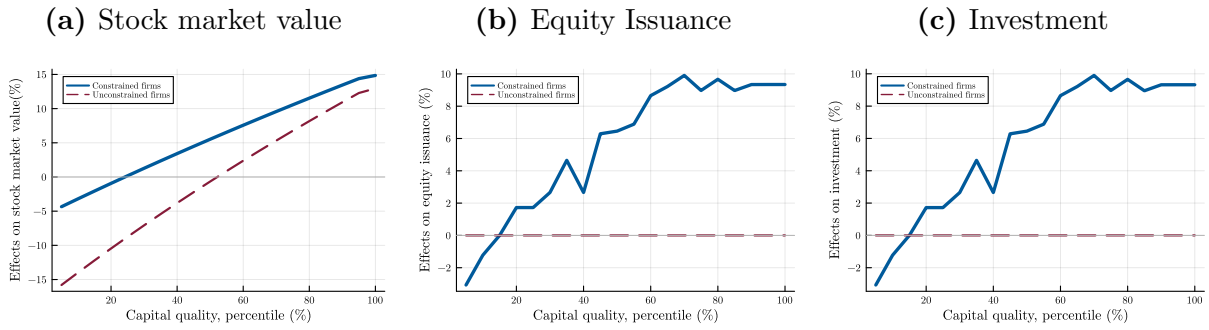


Figure 10 highlights the discrepancy between the media's incentives of corporate news reporting and firms' benefits from being reported on. The media's news-reporting function only depends on the effects of their reports on firm market values. Under this incentive, they allocate a significant fraction of their limited space to report on unconstrained firms whose stock market value responses do not pass through to their financing and investment. If the media reallocates their reporting on unconstrained firms to constrained firms, news reporting will generate a bigger real effect on the economy. In the next subsection, we quantify how a reallocation of media reporting can affect aggregate financing and investment.

5.4. The Role of Media Reporting in Shaping Firm Dynamics

In this section, we study the effects of reallocating media coverage. We compare the firm distribution and life-cycle dynamics under two media-reporting functions: the baseline "selective reporting" and a counterfactual "uniform reporting", under which the media allocates reporting resources equally across firms. The key takeaway from this analysis is that reallocating media resources to firms that actually benefit from the coverage alleviates information frictions, reduces financial frictions, and promotes firm growth.

To interpret the magnitude of the difference between selective reporting and uniform reporting, we first solve two counterfactual cases that share the same structure as our baseline model except for the information friction. The first case features symmetric information between firms and investors, and the second case features the same asymmetric information as in the baseline but is without a media sector. Table 4 reports the difference between the two cases. Compared with the symmetric-information scenario, the no-media case features a smaller flow of equity issuance and investment, which naturally leads to smaller average firm sizes. These differences between these two cases allow us to measure the overall effects of asymmetric information. Next, we discuss how media reporting alleviates the effects of asymmetric information and how different types of media reporting differ on this front.

Firm Distribution Table 4 reports equity issuance, investment, and size for each case. Firms in our baseline model have greater equity issuance, investment, and average firm size compared with the no-media case, which implies that media reporting can alleviate the negative impacts of information asymmetry at the aggregate level. However, the economic magnitude is limited: media reporting in our baseline only alleviates 8% of the asymmetric information's negative impact on the average firm size. This small magnitude can be partially explained by the low average probability of being reported: only 11.2% of the firms are reported by the media in our baseline model. Another important reason for this small magnitude is that the selective-reporting media allocates most of their reporting resources to large firms that have little demand for external financing and thus derive no benefit from the reduction in asymmetric information in the equity market provided by media coverage.

Our counterfactual exercise addresses this second feature of news reporting. If we allocate the limited reporting resources of media evenly across firms, the average firm size will

be increased by 0.31% relative to the selective media baseline. This is equivalent to 12.3% of the overall effects of information asymmetry, so this change in reporting function more than doubles the ability of media to remove the effects of information frictions on firm size. The comparison between selection reporting and uniform reporting reveals that the way media resources are allocated plays an important role in determining how much it alleviates the negative impacts of asymmetric information.

Table 4: Role of Media Reporting in Shaping the Firms' Distribution

	Symmetric information	No media	Selective reporting	Uniform reporting
	Level	Difference w/ sym-info (%)		
Equity issuance rate (%)				
Average	0.36	-0.082	-0.072	-0.066
Fraction of positive flow	15.43	-6.85	-6.48	-6.09
Investment rate (%)				
Average	5.28	-0.048	-0.042	-0.038
Fraction of large flow ($\geq 20\%$)	8.28	-1.28	-1.09	-1.04
Firm size				
Mean	1.00	-2.52	-2.32	-2.01
Median	0.41	-4.12	-3.85	-3.33

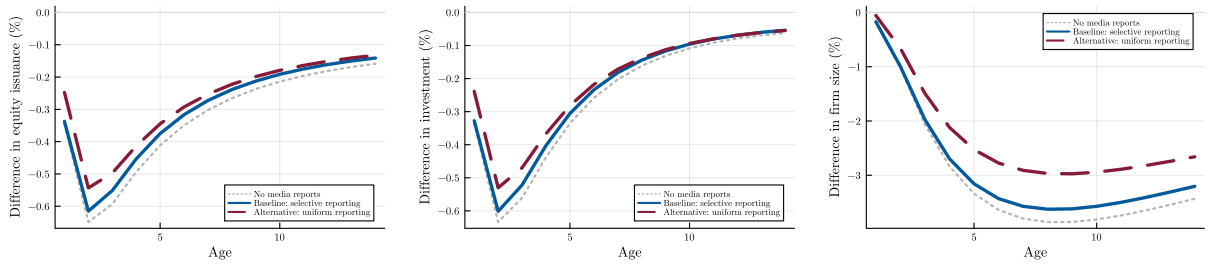
Notes: The equity issuance rate and investment rate are measured as firms' quarterly equity issuance flow and investment normalized by their capital. The population-level average equity issuance and investment are reported in annual rate and weighted by firms' capital. Firms' size is measured by their capital. We normalize the mean and media firm size of different models by the average firm size of the symmetric information model. All models share the same setup and calibration except for the media reporting. Media reports all firms with a probability of 1 in the "*symmetric information*" model and reports all firms with a probability of 0 in the "*no-media*" model. Our baseline model is referred as "*selective reporting*". The "*uniform reporting*" model features the same probability of being reported across all firms that is equal to the firm-population average probability of being reported in our baseline model.

Life-cycle Dynamics To further understand the role of media resource allocation in shaping the firm dynamics, we summarize the age profile of firms' average equity issuance, investment, and size under both the selective reporting and the counterfactual uniform reporting in Figure 11. We plot the difference from the symmetric information scenario along age profiles. As a reference, we also plot the age profiles under the no-media case. The baseline selective media reporting alleviates the negative impacts of information asymmetry on firms' financing and investment, but these effects only become pronounced after firms become 2

years old. This is a direct result of the selectivity of media's reporting: young firms are much smaller than older firms, so the media devotes limited resources to disseminating their news. In contrast, when news reporting is evenly allocated across firms, these young and small firms substantially increase equity issuance and investment, even though they are still only reported 11.2% of the time. Since alleviating information friction in the early stage of a firm's life helps firms accumulate more capital, which is important for them to finance their future investment and growth opportunities, reallocating the reporting resources to these young and small firms can generate long-lasting effects. Figure 11c illustrates that around the age of 8, firms in the counterfactual uniform reporting environment are 0.8% larger on average than those in the baseline selective reporting case.

Figure 11: The Role of Media Reporting in Shaping Firms' Life-cycle Dynamics

(a) Equity Issuance **(b)** Investment **(c)** Firm size



Notes: The average equity issuance rate, investment rate, and size (log of capital) are all reported as the difference from their counterpart moments from the symmetric information model. All models share the same setup and calibration except for the media reporting. Media reports all firms with a probability of 1 in the "*symmetric information*" model and reports all firms with a probability of 0 in the "*no-media*" model. Our baseline model is referred as "*selective reporting*". The "*uniform reporting*" model features the same probability of being reported across all firms that is equal to the firm-population average probability of being reported in our baseline model.

6. Conclusion

News outlets provide valuable information to their readers, but constraints on space and journalistic resources mean they have to make judgements of which events are most newsworthy. We have shown that these judgements overwhelmingly favor reporting on the largest firms in the economy, and found that this selectivity has important effects on firm life-cycles and investment.

When a firm is reported in the media, their probability of issuing new equity in the subsequent quarters rises. They also see a rise in investment and profitability. Evidence

from media strikes in France suggests that this is partly due to news coverage alleviating information asymmetries in financial markets. The fact that this coverage is systematically concentrated amongst the very largest firms therefore distorts firm life cycles and affects aggregate investment.

In a quantitative model with heterogeneous firms, asymmetric information, and a media sector calibrated to our data, we find that selective media coverage increases average firm size and investment relative to a world with no media. However, since the coverage is concentrated among large firms who are mostly not financially constrained, the impact of media coverage is substantially smaller than it would be if coverage was spread evenly across firms.

This can be interpreted as a misallocation of media resources. Media coverage of small and constrained firms allows them to raise equity and expand, but media outlets do not take this externality into account in their reporting decisions. By focusing on firms which are already large, they fail to internalise the effects of their reporting on subsequent firm growth. Our results suggest that this over-reporting of large firms has substantial effects on average firm size, investment, and equity issuance.

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Appendices

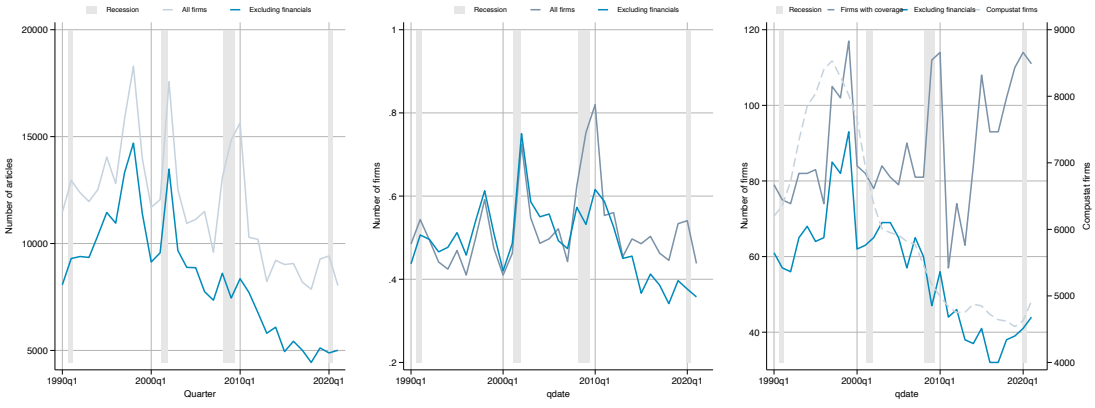
A. Additional Tables and Figures

Table A.1: Top 20 firms with media coverage

Rank	Firm	Articles	Rank	Firm	Articles
1	General Motors	18,380	11	Amazon	6,615
2	Microsoft	15,314	12	Bank of America	6,432
3	Apple	13,995	13	Merrill Lynch	6,169
4	Alphabet	10,402	14	Goldman Sachs	6,121
5	Citigroup	9,844	15	American Airlines	5,506
6	Boeing	8,965	16	HP	5,180
7	Time Warner	7,398	17	Delta Airlines	4,574
8	AT&T	7,244	18	US Airways	4,551
9	Walmart	6,887	19	Procter & Gamble	4,309
10	JPMorgan Chase	6,795	20	Altria Group	4,094
Total articles on top 20 firms					158,775
Total articles on remaining firms					216,852

Notes: This table lists the top 20 firms by total number of news articles from 1990 to 2021.

Figure A.1: Times series of corporate news with financial firms



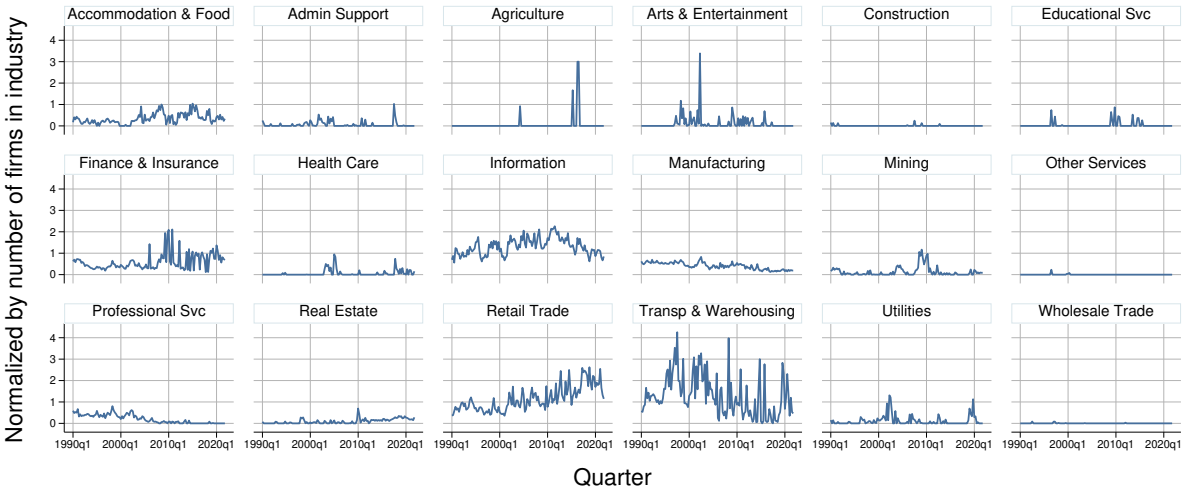
Notes: This figure reports the times series of corporate news including the financial sector.

Table A.2: National media strikes in France

Quarter	Date	Description
2005Q4	October 4, 2005	Unions of journalists and technicians in public broadcasting striked as part of the national day of action.
	October 20, 2005	The Agence France-Presse journalists' unions striked to oppose the announced closure of a regional office.
2008Q1	February 13, 2008	Public broadcaster workers striked to protest President Nicolas Sarkozy's media reform.
2008Q4	November 25, 2008	Public broadcaster workers striked to protest bill passed reforming public broadcasting by President Sarkozy.
2013Q1	February 1, 2013	The Agence France Presse journalists' unions striked to call for the withdrawal of the "France Region" project.
2018Q2	April 1, 2018	National strikes, including by broadcasters, against President Emmanuel Macron's reforms to the public sector.

Notes: National media strikes in France from 2005 to 2021 through searching for "((strike or grève) and (journalist or journaliste)) or ((strike or grève) and (broadcaster or diffuseur))" in Factiva, restricting the region to France, industry to Media/Entertainment, subject to Labor Dispute, and excluding strikes in individual newspapers

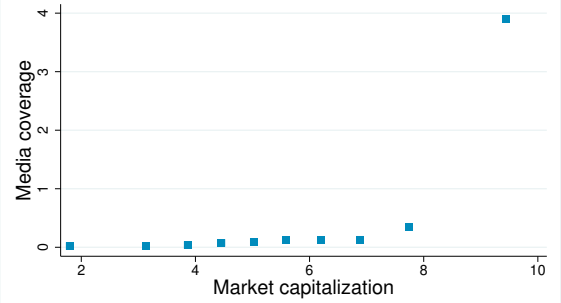
Figure A.2: News coverage by industry



Notes: This figure reports the average number of news articles for each 2-digit NAICS industry normalized by the number of firms in the industry.

Figure A.3: Market capitalization and media coverage

(a) Market valuation



(b) Within industry and quarter

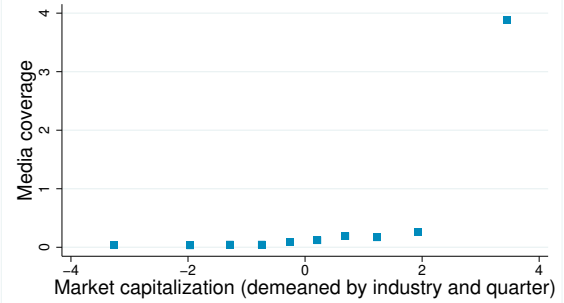
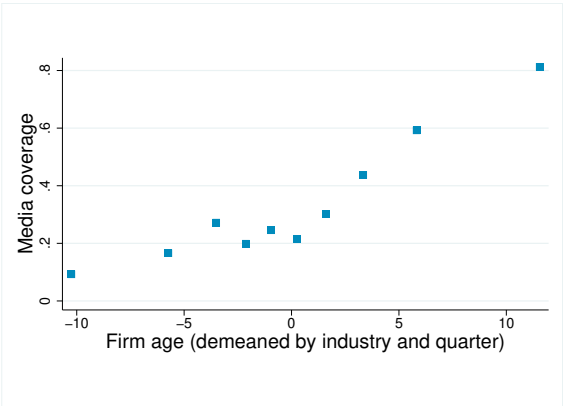


Figure A.4: Other firm characteristics and media coverage

(a) Firm age



(b) Firm leverage

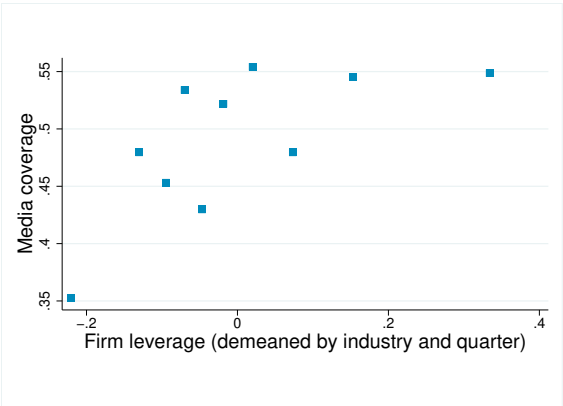
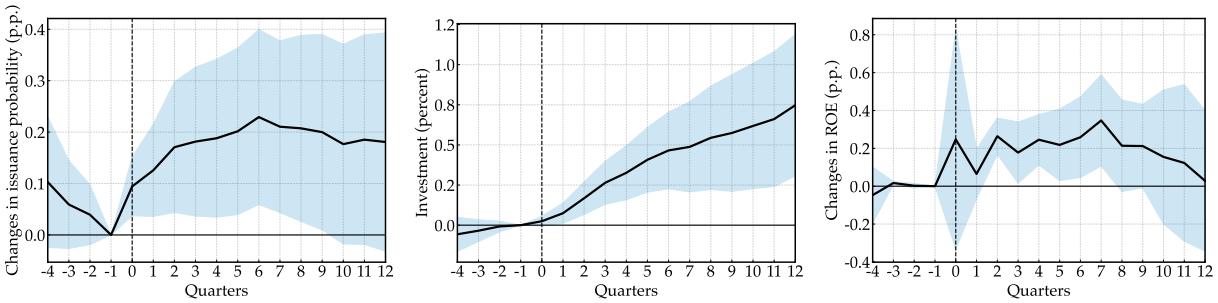
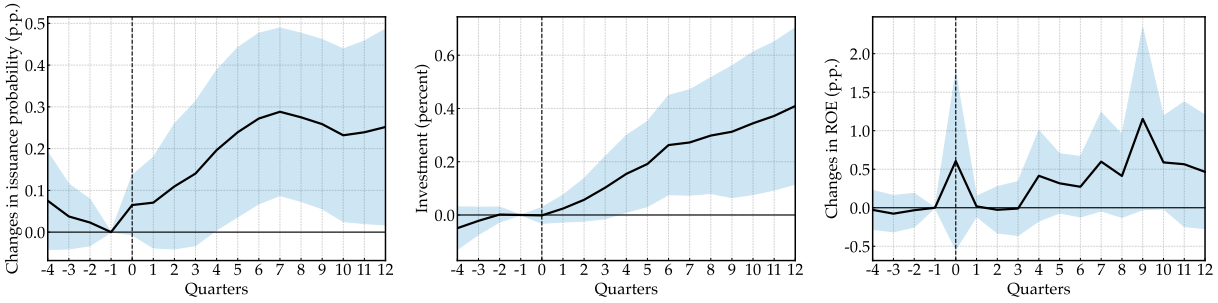


Figure A.5: Effects of coverage by newspaper

(a) Wall Street Journal



(b) New York Times



(c) USA Today

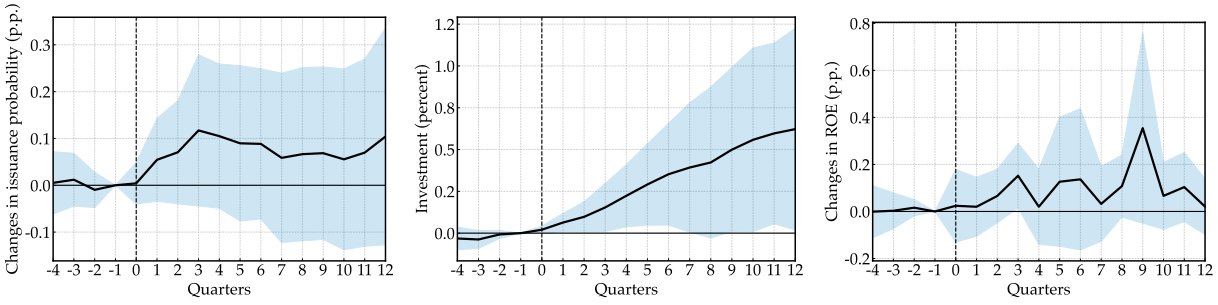
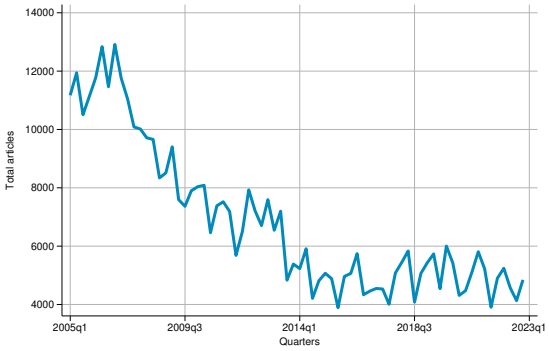
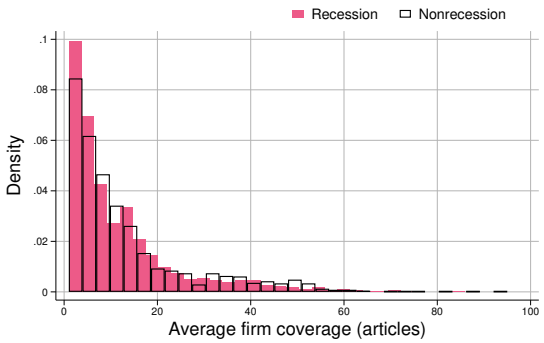


Figure A.6: Corporate news coverage in major French newspapers

(a) Times series

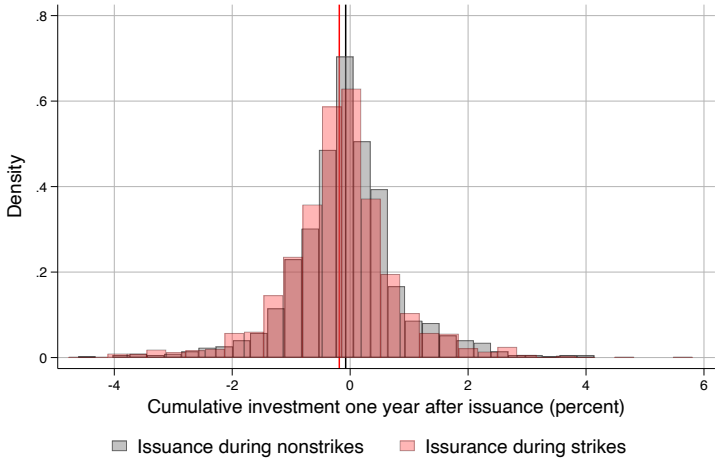


(b) Cross-sectional distribution



Notes: Corporate news coverage in major French newspapers from 2005 to 2022, including Les Echos, Le Monde, La Tribune, and Figaro.

Figure A.7: Investment after equity issuance: strikes vs. nonstrikes



Notes: Distribution of cumulative investment 4 quarters after equity issuance depending on whether the equity issuance happened during media strikes or nonstrikes. Media strikes correspond the quarters in Table A.2. In this table, nonstrikes correspond to the quarter after a given strike.

B. Proofs

Invariance of reporting probability ratios For any given firm j, suppose the probability of this firm being reported by a newspaper is $\bar{p}_j$, then the probability of this firm being reported by n newspaper will be:

$$p_{j,n} = 1 - (1 - \bar{p}_j)^n,$$

which implies that

$$\frac{\ln(1 - \bar{p}_j)}{\ln(1 - \bar{p}_{j'})} = \frac{\ln(1 - p_{j,n})}{\ln(1 - p_{j',n})} \approx \frac{p_{j,n}}{p_{j',n}}, \quad \forall n.$$

Since $\frac{p_{j,n}}{p_{j',n}}$ is independent of the number of newspaper n, we use the ratio of different firm groups' average reporting probability observed in our data sample as the target moment for model calibration.