IPOS AND RIVALS' VOLUNTARY DISCLOSURES

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CERTIFICATE OF ORIGINALITY

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ABSTRACT

I examine the impact of completed initial public offerings (IPOs) on industry competitors' voluntary disclosures. Prior research finds completed IPOs to negatively affect rivals' performance and suggests that issuers gain competitive advantages as increased financing and risk tolerance allow them to engage in aggressive product market strategies. I expect industry rivals to respond by reducing voluntary disclosures in order to avoid revealing useful information that can be exploited by competitive issuers. Analyses indicate a significant decrease in the likelihood and frequency of public incumbents issuing management guidance after IPOs are completed in their industry. The decrease is more evident when IPOs are large, successful, when rivals are financially constrained, and when strategic actions of rivals and issuers are likely to be substitutes. Additional analyses find a decrease in the flow of industry-level information from public incumbents after the completion of IPOs in their industry. Consequently, valuation of peers becomes less useful when public incumbents make investment decisions post-IPO-completion. Overall, I provide new evidence on the disclosure response of public incumbents to completed IPOs and the resulting changes in the information environment.

This study contributes to the literature that documents significant adverse effects of completed IPOs on the performance of industry competitors by showing that rivals respond to the increased competitiveness of new issuers by reducing voluntary disclosures in order to maintain their own competitiveness. I also extend the research on product market competition and voluntary disclosures. With many

empirical studies on competition and voluntary disclosures, except for a few recent studies, being confounded by the endogeneity of measures of competition, additional evidence to demonstrate a causal relation is warranted. By using a difference-in-differences design that is robust to the use of the instrumental variables approach, I provide evidence supporting the theoretical prediction that competition from existing rivals reduces firms' incentive to provide voluntary disclosures.

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1. Introduction

Numerous studies on initial public offerings (IPOs) have focused on the operating performance and financial reporting of issuing firms (e.g., Ibbotson and Jaffe 1975; Ritter 1991; Jain and Kini 1994; Teoh et al. 1998; Boone et al. 2016; Sletten et al. 2018). While IPOs also have important implications for their rival firms, research on the impact of IPOs on the performance and reporting of the public incumbents is limited. An exception is Hsu et al. (2010), who report that companies exhibit negative stock price reactions to completed IPOs in their industry and positive stock price reactions to IPO withdrawals. They also find that industry competitors experience significant deterioration in operating performance after IPOs are completed in their industry. Evidence is lacking, however, on how public competitors respond strategically to mitigate the adverse effects of completed IPOs on their performance. I add to the literature by investigating the disclosure response of public incumbents to completed IPOs and the resulting changes in the industry information environment.

Issuing public equity can bring various benefits to the issuers, including improving liquidity (e.g., Amihud and Mendelson 1986), reducing valuation uncertainty (e.g., Benveniste and Spindt 1989; Dow and Gorton 1997), and increasing the dispersion of share ownership (e.g., Chemmanur and Fulghieri 1999). In particular, Hsu et al. (2010) argue that issuers gain competitive advantages through the loosening of financial constraints, financial intermediary certification, and the presence of knowledge capital. Issuers not only recapitalize through the offering but also gain future access to public equity, which is less costly than private equity (Brav 2009). Furthermore, Chod and Lyandres (2011) expect that, as owners of public firms hold

more diversified portfolios, public firms tend to be less concerned with idiosyncratic profit variability and pursue more aggressive product market strategies than otherwise similar private firms. They predict that IPOs increase issuers' market share, while having an adverse effect on the values of their product market rivals. Both studies point to the competitive aspects of IPOs, which result from greater access to capital and additional risk tolerance after going public and can have large, negative effects on the public rivals. Facing increased competition from completed IPOs, the public incumbents are likely to change their behavior in order to mitigate the adverse effects on their valuation and performance. In particular, I expect these firms to change voluntary disclosures for the purpose of maintaining competitiveness.

Theoretical studies suggest that the relation between product market competition and voluntary disclosure depends on the nature of the competition. Competition from potential entrants may motivate firms to disclose more in order to deter entry into the industry (Darrough and Stoughton 1990; Wagenhofer 1990), while competition from existing rivals can reduce voluntary disclosures as disclosures can assist active competitors (Verrecchia 1983, 1990; Clinch and Verrecchia 1997). Empirical evidence has been mixed (Beyer et al. 2010; Berger 2011). Association studies have used industry concentration to measure competition but the endogeneity issue makes it difficult to identify the causal relation between competition and disclosure (Ali et al. 2014; Lang and Sul 2014). Recent research using regulations as shocks to competition finds evidence consistent with theoretical predictions that different types of competition have different impact on voluntary disclosures (Burks et al. 2018; Huang et al. 2017). In the case of IPOs, issuing public equity allows issuers

to become more flexible and aggressive in investing and operating activities, thereby making them stronger competitors and intensifying competition in the industry. I thus predict that industry competitors are likely to respond by reducing voluntary disclosures in order to avoid revealing useful proprietary information to assist new issuers.

I test this prediction using the sample of IPOs between 1996 and 2014. An empirical challenge in analyzing the impact of IPOs is that the decision to go public is endogenous. Firms may choose to go public at a specific stage in their life cycle or when there is a shock to industry fundamentals (Jain and Kini 1994; Spiegel and Tookes 2020). To overcome this selection bias, I follow Bernstein (2015) and construct a sample of firms that file an initial registration statement with the Securities and Exchange Commission (SEC) in an attempt to go public; some of these firms successfully complete the IPOs, while the others fail and withdraw from IPO attempts. I then identify completed IPOs as IPO-completion events. Similar to Hsu et al. (2010), I examine changes in the behavior of existing firms in the same 3-digit SIC industry around the IPO-completion events. Public incumbents in industries where there are withdrawals but no completed IPOs serve as control firms, which allows us to test the impact of completed IPOs using a difference-in-differences approach.

Consistent with my prediction, analyses indicate that public incumbents are significantly less likely to issue management guidance after IPOs are completed in their industry. The frequency of management forecasts also exhibits a significant decrease. The inferences are robust to a battery of sensitivity tests. In particular, to address the concern that comparing the impact of completed and withdrawn IPO

filings introduces a bias associated with the decision of firms to withdraw the IPO filing, I employ an instrumental variables approach following Bernstein (2015). Bernstein (2015) uses NASDAQ fluctuations over the two months following the IPO filing date as the instrument and demonstrates that they are a strong predictor of IPO completion. Using this instrument, I continue to find a decrease in the likelihood and frequency of public incumbents issuing management forecasts after the completion of IPOs in their industry. I also conduct a robustness test following the research design of Hsu et al. (2010), who focus on large, completed IPOs and examine changes in public incumbents around these IPOs without control firms that witness only IPO withdrawals in their industry. Using this alternative design, I continue to find a significant decrease in voluntary disclosures of public incumbents after completion of large IPOs in their industry.

Next, I conduct a series of cross-sectional tests to better understand the impact of completed IPOs on rivals' voluntary disclosures. To start with, I expect the impact of completed IPOs on product market competition to increase with the size of the IPOs. When a larger issuer begins to implement more aggressive product market strategies after going public, it is more likely to cause an economically significant change in the market place. Competing firms in the same industry are likely to be more concerned about the proprietary cost of disclosures since a large issuer has greater capacity to exploit the useful information in their disclosures. I predict the decrease in rivals' voluntary disclosure to be more evident when completed IPOs are larger. As expected, I find a larger decrease in rivals' tendency to provide management guidance after the completion of IPOs with higher pre-IPO total assets.

Relatedly, the impact of IPOs on product market competition is also affected by the post-IPO performance of the issuers. A nontrivial number of IPOs fail during the first several years after going public (e.g., Demers and Joos 2007). The impact of failed IPOs on the product market is likely to be limited. Comparing IPO-completion events where one or more issuers fail shortly after public offering with those where all issuers survive can help attribute the change in rivals' disclosure practice more clearly to the impact of successful IPOs. As expected, I find that the impact of IPOs on rivals' voluntary disclosures is significantly larger when all IPOs survive three years after the initial offering.

Furthermore, I expect the increase in competitiveness of issuers through public offerings to have a greater impact on public incumbents that are financially constrained. Hsu et al. (2010) argue that public offerings recapitalize the issuing firms, giving them an advantage over their financially constrained competitors by allowing them more flexibility in their investments. In addition, once public, issuers also gain future access to public equity, facilitating the implementation of more aggressive strategies. Measuring financial constraints following Hadlock and Pierce (2010) and Whited and Wu (2006), I find that the decrease in the likelihood and frequency of issuing management guidance is concentrated in the subsample where public incumbents are likely to be financially constrained.

Last, the impact of increased competitiveness of issuers on rivals' disclosure policy can also be affected by the strategic interactions between issuers and industry competitors. Chod and Lyandres (2011) argue that issuers pose a significant competitive threat to public incumbents in industries where firms' strategic actions are

substitutes. In such cases, issuers' adoption of more aggressive strategies due to diversification reduces the equilibrium aggressiveness of their rivals, resulting in lower equilibrium output levels of the competitors and, thus, in higher residual demand for the issuers' own product. The competitive effects of issuers are less clear when firms' strategic actions are complements. Using post-IPO sales and stock returns correlation between issuers and their public rivals to capture the likelihood that their products are substitutes, I find that the decrease in rivals' voluntary disclosure is concentrated in subsamples where IPOs and competing firms exhibit negative correlations in performance. Additionally, I identify industries where competitors' actions are more likely to be substituted following Kedia (2006) and Bloomfield (2021), and find evidence supporting a stronger impact of completed IPOs on rivals' issuance of management guidance in industries where firms' strategic actions are more likely to be substitutes.

So far, I have focused on changes in the tendency of public incumbents to provide voluntary disclosures through one channel, issuing management guidance, in response to competitive threat from completed IPOs. It is not yet clear whether there is an overall reduction in the information supply of public incumbents following the completion of IPOs in their industry. To shed more light on this issue, I examine the extent to which firm-specific information, industry-level information from the public incumbents, and market-wide information are impounded into stock prices around IPO completion. If, overall, public incumbents supply less information in response to the competitive threat from completed IPOs, I expect their stock prices to incorporate less firm-specific information and industry-level information from other public

incumbents, relative to market-wide information. I find an increase in the comovement between returns of public incumbents and market-wide returns after IPOs are completed in their industry. Similar to Piotroski and Roulstone (2004), I capture the flow of industry-level information from public incumbents using the incremental ability of their aggregate returns over market returns to explain firm-specific return variations. I find evidence indicating that stock prices of public incumbents incorporate less industry-level information from other public incumbents after IPOs are completed in their industry, suggesting a decrease in the supply of industry-level information by the public incumbents.

Finally, I explore how changes in the industry information environment after IPO completion affect corporate decision making. Foucault and Fresard (2014) point out that the valuation of peers informs managers about growth opportunities, complementing other information available to managers. They find that peers' valuation is useful when a firm makes investment decisions. I posit that the decrease in the extent to which firms' stock prices reflect industry-level information after completion of new IPOs is likely to reduce the usefulness of peer valuation for making investment decisions. As expected, I find a significant decrease in the sensitivity of firms' investments to the mean Tobin's Q of industry peers, suggesting that peer valuation becomes less relevant for investment decisions after IPOs are completed in the industry.

This study makes two major contributions to the literature. First, I provide new evidence on the strategic response of public incumbents to completed IPOs in their industry. Extending prior research that documents significant adverse effects of

completed IPOs on the performance of industry competitors, I show that rivals respond to the increased competitiveness of new issuers by reducing voluntary disclosures in order to maintain their own competitiveness. Analyses indicate that the disclosure response of rivals to completed IPOs varies systematically with characteristics of IPOs and rivals and their strategic interactions.

Second, my study adds to the literature on product market competition and voluntary disclosures. With many empirical studies on competition and voluntary disclosures, except for a few recent studies, being confounded by the endogeneity of measures of competition, additional evidence to demonstrate a causal relation is warranted. Using a difference-in-differences design that is robust to the use of the instrumental variables approach, I provide evidence supporting the theoretical prediction that competition from existing rivals reduces firms' incentive to provide voluntary disclosures.

The rest of the paper is organized as follows. Section 2 discusses the literature and hypothesis development. Section 3 describes my sample and research design. Section 4 reports empirical results. Section 5 concludes.

2. Literature review and hypothesis development

2.1. Research on IPOs and their rivals

A large literature in finance and accounting examines the short-run and long-run performance and financial reporting and disclosure of companies going public. Ibbotson and Jaffe (1975) document a positive initial return for newly issued companies, while Ritter (1991) analyzes the long-run stock price performance of IPOs and Jain and Kini (1994) consider firms' post-IPO operating performance. Several studies find that firms have incentives to engage in earnings management around IPOs. Teoh, Welch and Wong (1998) document high abnormal accruals in the year firms go public, suggesting that issuers manage earnings to inflate the issue price. More recently, Sletten et al. (2018) examine quarterly accruals and provide evidence that IPO firms manage earnings not before the IPO but before the lockup expiration to inflate the selling price for pre-IPO shareholders. In addition, research indicates that disclosure is an important consideration affecting the decision to go public and has significant consequences. For example, Dambra et al. (2015) find that the Jumpstart Our Business Startups Act (JOBS Act), by exempting emerging growth firms from certain accounting and disclosure requirements, significantly increases IPO volume, especially for firms with proprietary disclosure costs. Boone et al. (2016) report that redacting proprietary information at the IPO exacerbates underpricing but helps issuers to maintain competitive advantages and achieve better post-IPO profitability and sales growth.

IPOs not only affect issuers in many ways but also have significant implications for rival firms in the same industry. Research to understand the latter is

relatively limited. Hsu et al. (2010) find that industry competitors experience negative stock returns when an IPO is initially announced as well as when an IPO is completed, while the withdrawal of an IPO is associated with positive industry stock returns. They also report that public incumbents experience a 3.3% decline in sales growth and a 2.9% reduction in profitability during each of the 3 years following a completed large IPO in the industry, indicating that the competitive effects of IPOs can significantly impact industry rivals. More specifically focusing on product market interactions between issuers and their rivals, Chod and Lyandres (2011) predict that shareholder diversification as a result of going public leads to greater product market aggressiveness of issuers. This, in turn, reduces the equilibrium aggressiveness of competitors under Cournot competition, adversely affecting the market share and valuation of rivals while benefiting issuers. Extending this line of research, I explore how rivals, facing increased competition and aggressiveness of issuers, respond to maintain their own competitiveness.

2.2. Product market competition and voluntary disclosures

An extensive theoretical literature models the impact of product market competition on firms' disclosure strategy and the prediction depends on the sources of competition. Models of threat from potential entrants predict that firms facing a higher threat of entry will disclose more to deter entry into the industry (e.g., Darrough and Stoughton 1990; Wagenhofer 1990). In contrast, models of competition from existing rivals emphasize that disclosures of proprietary information can help a current competitor, and generally conclude that voluntary disclosure is decreasing in

competition from existing rivals (Verrecchia 1983, 1990; Clinch and Verrecchia 1997).[1]

Many empirical studies on product market competition and voluntary disclosure examine cross-sectional relations between industry concentration and the level of voluntary disclosure and find conflicting results (Berger 2011). Some studies find a negative relation between industry concentration-based measures and disclosure (Harris 1998; Botosan and Stanford 2005; Bamber and Cheon 1998; Li 2010), while others find a positive relation (Verrecchia and Weber 2006) or weak relations (Botosan and Harris 2000; Berger and Hann 2007; Bens et al. 2011). Ali et al. (2014) point out that industry concentration, even when measured accurately, is an indirect measure of competition and, more importantly, whether a higher level of industry concentration indicates more or less competition is unclear (Lang and Sul 2014). Further, the endogenous nature of competition makes it difficult to draw causal inferences in an association study.

More recently, a few studies exploit regulatory shocks to competition to examine the impact of competition on voluntary disclosure. Huang et al. (2017) study the effect of large reductions in U.S. import tariff rates to identify exogenous increases in competition for domestic firms in U.S. product markets. They show that tariff reductions are associated with a significant decrease in management forecasts by U.S. domestic firms, consistent with competition from existing rivals reducing voluntary

[1] Some theoretical studies expect the impact of competition on voluntary disclosures to be affected by the nature of information, that is, whether it is about unknown common demand or costs, and the nature of competition, that is, whether firms engage in Cournot or Bertrand competition (e.g., Gal-or 1986; Darrough 1993).

disclosure through increased proprietary costs. Using the relaxation of interstate branching restrictions under the Interstate Banking and Branching Efficiency Act, Burks et al. (2018) find evidence suggesting that firms increase disclosure to deter entry.

Management earnings forecast is one of the most important ways that the corporate discloses private and forward-looking financial information to the capital market (Hirst et al., 2008). Prior research finds that management forecasts are more informative than other types of disclosures, such as earnings announcements and analyst forecasts (Ball and Shivakumar 2008; Beyer et al. 2010)[2]. Moreover, previous literature documents that management forecast can cause a great impact on the stock market as well as the firm policy, e.g., stock price reaction (Pownall et al. 1993), cost of capital (Baginski and Rakow 2012; Cao et al., 2017), earnings management (Kasznik 1999), analyst forecasts (Waymire 1986), and CEO turnover (Lee et al. 2012). Thus, I use the management forecast as my proxy for voluntary disclosure in this study.

Given the discretionary nature of management forecasts, the determinates of issuing the forecasts also attract considerable attention from researchers. Previous studies find that forecasting firm's own characteristics and behavior, e.g., litigation risk (Skinner 1994), CEO compensation (Nagar et al. 2003), cross-listing (Chen et al. 2019), and institutional ownership (Ajinkya et al. 2005, Tsang et al, 2019), are strong motives for providing the earnings forecasts. Recent papers also document the peer effect as an important factor affecting corporate voluntary disclosure policies. Seo

[2] Both studies document that management forecast is associated with approximately 25% of quarterly return volatility.

(2021) finds that management forecasts made by industry peers induce the firm's own disclosure. Cao et al. (2018) find a negative relation between technological peer pressure and product disclosure because such disclosure reveals firms' strategies, allocations, and progress of technological investments in product development to competitors. Using annual Russell 1000/2000 index reconstitution as the identification strategy, Lin et al. (2018) document a causal relation between focal firm institutional ownership and the increase in industry peers' likelihood and frequency of issuing management forecast. They further find the increase in disclosure is resulting from the competition for capital. Park et al. (2019) report that common ownership encourages co-owned peer firms to disclose more due to the decreased proprietary cost.

2.3. Hypothesis development

Going public allows issuing companies to obtain immediate financing and gain subsequent access to public capital, and existing shareholders to diversify their portfolios, facilitating the adoption of more flexible and aggressive strategies in investment and operations (Hsu et al. 2010; Chod and Lyandres 2011). Issuers are therefore likely to become stronger competitors post-IPO and pose a greater competitive threat to their industry rivals. Following the theoretical prediction that competition from existing competitors leads to reductions in voluntary disclosures, I expect that industry competitors respond to the increased competitive threat by reducing voluntary disclosures in order to avoid revealing useful proprietary information to assist the issuers. My first hypothesis is thus the following:

H1: The public incumbents are less likely to issue management forecasts after new IPOs are completed in their industry.

I expect larger IPOs to have a greater impact on the industry product market and consequently rivals' disclosure incentives. Changes in the strategies of large issuers after going public are more likely to give rise to economically significant changes in the market place that adversely affect their competitors. They also have greater capacity to capitalize on any useful information disclosed by competitors. Competing firms are therefore likely to be more cautious and withhold proprietary information after the completion of large IPOs. My second hypothesis thus predicts:

H2: The decrease in the likelihood and frequency of public incumbents issuing management forecasts after new IPOs are completed in their industry is more evident when completed IPOs are large.

Prior research indicates that failures are common during the first several years after IPO (e.g., Demers and Joos 2007). Failed IPOs are likely to pose limited threat to the public incumbents. I therefore expect the impact of completed IPOs on product market competition to be affected by the post-IPO performance of the issuers and make the following prediction:

H3: The decrease in the likelihood and frequency of public incumbents issuing management forecasts after new IPOs are completed in their industry is more evident when all IPOs survive.

Furthermore, Brav (2009) finds public equity to be significantly less costly than private equity. Going public thus allows issuing firms to obtain immediate and long-run access to cheaper financing. Hsu et al. (2010) argue that loosening financial

constraints through IPO provides issuers an advantage over their financially constrained competitors by allowing them more flexibility in their investments. I expect the increase in competitiveness of issuers through public offerings to have a greater impact on public incumbents that are financially constrained.

H4: The decrease in the likelihood and frequency of public incumbents issuing management forecasts after new IPOs are completed in their industry is more evident when public incumbents are financially constrained.

Last, the impact of increased competitiveness of issuers on rivals' disclosure policy can also be affected by the strategic interactions between issuers and rivals in the industry. Chod and Lyandres (2011) argue that issuers pose a significant competitive threat to public incumbents when their strategic actions are substitutes, as issuers' adoption of more aggressive strategies benefits the issuers at the expense of competitors. The competitive effects of issuers are less clear when firms' strategic actions are complements. I therefore predict:

H5: The decrease in the likelihood and frequency of public incumbents issuing management forecasts after new IPOs are completed in their industry is more evident under competition in strategic substitutes.

3. Sample and research design

3.1. Sample selection

I extract the sample of IPOs that issued or withdrawn between 1996 and 2014 from Thomson Financial's Securities Data Company (SDC) database. After submitting the initial registration statement to the SEC, firms have the option to withdraw the IPO filing. Approximately 20% of all IPO filings are ultimately withdrawn (Bernstein 2015). Following the literature, I exclude unit investment trusts, American Depositary Receipts (ADRs), limited partnerships, closed-end fund, REIT, and completed IPOs with offer price less than $5. After further requiring that at least one peer in the same 3-digit SIC industry has data available for my analyses, I retain 5,996 IPO filings, including 4,323 completed IPOs and 1,673 withdrawals. I aggregate completed and withdrawn IPOs by 3-digit SIC industry every year. An industry-year is classified as having an IPO-completion event if there is at least one IPO completed in the industry-year. An industry-year is classified as having an IPO-withdrawal event if all IPOs in the industry-year were eventually withdrawn. I examine the impact of IPO completion on peers' voluntary disclosures relative to that of IPO withdrawals. This difference-in-differences design helps to control market-wide and industry-level economic conditions that motivate the decisions to file for IPO. In additional analyses, I also use industry-years without any IPO events as the non-event control sample to examine the incremental impact of IPO completion and find similar inferences.

After identifying the IPO-completion and withdrawal events, I select existing publicly traded firms in the same 3-digit SIC industry as the incumbent peer firms. I consider the three years before the IPO-completion or withdrawal event as the pre-

event period and the three years after as the post-event period. I further restrict incumbent firms to those with necessary data for at least one year in both the per- and the post-event periods. I identify 56,038 event-firms, of which 6,012 are IPO withdrawal event-firms. Table 1 reports the distribution of IPO-completion and withdrawal event-firms and event-firms by year. For each event-firm, I include all observations with necessary data in the (-3, 3) window around the IPO-completion or withdrawal event in the analyses, with the event year (year 0) dropped. The final sample used in the main analysis has 306,487 event-firm-year observations.

3.2. Research design

H1 predicts that the public incumbents are less likely to provide management guidance in response to the competitive pressure from completed IPOs. To test this prediction, I employ a difference-in-differences approach and examine the change in the likelihood and frequency of issuing management forecasts by public incumbents after the IPO-completion events relative to that after the IPO-withdrawal events. I estimate the following regression using the sample of event-firm-year observations described in Section 3.1:

$$ISSUE_{ijt}/\log(1+FREQ_{ijt}) = \alpha_k + \lambda_t + \beta_1 IPO_{ijt} \times POST_{ijt} + \beta_2 POST_{ijt} + X'\Gamma + \varepsilon_{ijt} \quad (1)$$

The dependent variable is either the indicator variable for whether firm *j* issues a forecast in year *t* around event *i*, or the logarithm of 1 plus the number of management

earnings forecasts, $log\ (1+FREQ_{ijt})$, issued by firm *j* over year *t* around event *i*. $POST_{ijt}$ is an indicator variable equal to one if year *t* is in the post-event period of IPO-completion or IPO-withdrawal event *i* for firm *j*, and zero otherwise. IPO_{ijt} is an indicator equal to one if event *i* is an IPO-completion event and zero if event *i* is an IPO-withdrawal event. α_k represents event-firm fixed effects and λ_t stands for year fixed effects. Event-firm fixed effects control for time-invariant firm-specific factors during the event window, and year fixed effects control for year specific factors. Eq. (1) is a difference-in-differences specification and the coefficient on $IPO_{ijt}*POST_{ijt}$ captures the incremental change in the likelihood or frequency of management forecasts issued by public incumbents after IPOs are completed in their industry relative to those of firms in industries where all IPO filings are withdrawn. H1 predicts that the coefficient on $IPO_{ijt}*POST_{ijt}$ is negative.[3]

X' represents a vector of control variables capturing various factors that may influence firms' issuance of management forecasts. I draw these factors from the prior research (e.g., Baginski and Hassell 1997; Baginski et al. 2002; Miller 2002; Ajinkya et al. 2005; Lennox and Park 2006; Li 2010; Huang et al. 2017). First, I include the logarithm of market value of equity (*SIZE*), book-to-market ratio (*BTM*), leverage ratio (*LEV*), institutional holdings (*INSTITUTION*), and analyst following (*FOLLOW*) to control for the demand for information. Second, I include stock returns (*RETURN*), return on assets (*ROA*), an indicator variable for loss firms (*LOSS*), and an indicator variable for earnings increases (*EARN_INCREASE*) to control for stock and financial

[3] The indicator *IPO* is not included as an explanatory variable since it is subsumed by event-firm fixed effects.

performance. Third, I control for the volatility of firm operations and inherent risk using sales growth (*GROWTH*) and earnings volatility (*EARN_VOL*). Last, I control for the auditor effect by including an indicator variable for large auditors (*BIGAUDITOR*). Standard errors are clustered at the event-firm level.

To test H2, which predicts that the impact of completed IPOs is more pronounced when IPOs are larger, I partition the sample based on the size of IPOs. IPO size is measured by pre-IPO total assets divided by the total assets of all industry peers. When there is more than one IPO completed, I add up the total assets of all completed IPOs. An IPO-completion event is classified into the large (small) IPO group if the size of completed IPOs is above (below) the sample median. I estimate eq. (1) separately for each group plus the control sample of firms seeing only IPO withdrawals. Subsample regressions allow the coefficients on all explanatory variables to vary across subsamples. H2 predicts that the coefficient on $IPO_{ijt}*POST_{ijt}$, β_1, is more negative in the large IPO group than in the small IPO group.

H3 predicts that the competitive effects of completed IPOs are more evident when all IPOs survive, compared to cases where some issuers fail shortly after going public. An IPO is considered a failure if it delists within three years of initial offering and its CRSP delisting code is in the 400 range ("liquidations") or the 500 range ("dropped"), with the exceptions of firms with delisting codes of 501–503 ("stopped trading on current exchange to move to NYSE, AMEX, or NASDAQ") and 573 ("delisted by company request—gone private"). I partition firms experiencing IPO-completion events into two groups based on whether at least one IPO fails within three years after the initial offering. I then estimate eq. (1) separately for each group plus

the control sample of firms seeing only IPO withdrawals. H3 predicts that the coefficient on IPO_{ijt}*$POST_{ijt}$ is more negative in the subsample when all IPOs survive.

To test the prediction that completed IPOs have a greater impact on industry competitors that are financially constrained (H4), I partition public incumbents into two groups based on the risk of financial constraints. I employ two measures of financial constraints. The first one is the size-age index (*SA index*) from Hadlock and Pierce (2010). The index is calculated as (-0.737*$Size$) + (0.043*$Size^2$) – (0.040*Age), where *Size* equals the logarithm of inflation-adjusted book assets and *Age* is the number of years the firm is listed with a nonmissing stock price on Compustat. Following Hadlock and Pierce (2010), *Size* is winsorized at (the logarithm of) $4.5 billion and *Age* is winsorized at 37 years. The second is the financial constraints index constructed by Whited and Wu (2006). Whited and Wu (2006) compute the index as $-0.091CF - 0.062\ DIV\ POS + 0.021\ TLTD - 0.044\ LNTA + 0.102\ ISG - 0.035\ SG$, where *CF* is the ratio of cash flow to total assets, *DIV POS* is an indicator that takes the value of one if a firm pays cash dividends, *TLTD* is the ratio of the long term debt to total assets, *LNTA* is the natural logarithm of total assets, *ISG* is the firm's 3-digit industry sales growth, and *SG* is the firm's sales growth. I then estimate eq. (1) separately for each group plus the control sample of firms seeing only IPO withdrawals.[4] H4 predicts that the coefficient on $Post_{ijt}$*IPO_{ijt} is more negative in the subsample of financially constrained firms.

[4] As an alternative design, I also compute the financial constraints indices for control firms and partition the sample of controls firms into high and low financial constraints groups. Running the test for high financial constraints treatment and control firms vs. low constraints treatment and control firms produces the same inferences.

Finally, I examine whether the impact of completed IPOs on voluntary disclosures of the public incumbents is more evident when issuers and public incumbents are strategic substitutes (H5). I capture the strategic interactions of issuers and public incumbents at two levels. First, I measure the extent of strategic interaction at the firm level. For each public incumbent *j* experiencing an IPO-completion event *i*, I compute the correlation of daily stock returns between firm *j* and each IPO during the three-year window after the year of IPO. I then take the average correlation across all completed IPOs in event *i* as my measure of correlation between firm *j* and completed IPOs for event *i* firm *j*. Using the same approach, I also compute the correlation of sales between firm *j* and completed IPOs for event *i* firm *j*. A public incumbent is classified as a strategic substitute of completed IPOs if the correlation is negative. Second, I measure the extent of strategic interaction at the industry level following Bloomfield (2021) and Kedia (2006). As Bloomfield (2021), I consider below-the-median R&D intensity, computed as the industry average ratio of R&D expenditures over total assets, to be an indicator of competition in strategic substitutes. The second variable is constructed following the regression approach of Bloomfield (2021) and Kedia (2006). Specifically, for each firm-year, I estimate the following equation:

$$\Delta \frac{\Delta \pi_{i,t}}{\Delta x_{i,t}} = \beta_1 x_{i,t} \Delta x_{i,t} + \beta_2 \Delta x_{i,t} + \beta_3 x_{i,t} \Delta x_{j,t} + \beta_4 \Delta x_{j,t}$$

where $\pi_{i,t}$ is the quarterly profits of firm *i*, $x_{i,t}$ is the quarterly sales of firm *i*, and $x_{j,t}$ is the average contemporaneous quarterly revenue of all of firm *i*'s rivals in the same industry. As Bloomfield (2021), the sign of $\beta_3 x_{i,t} + \beta_4$ is used as the indicator of the

strategic interaction. Strategic interactions in a 3-digit SIC industry is classified as substitute if the median sign of $\beta_3 x_{i,t} + \beta_4$ is negative in a given year. Similar to the design of the previous cross-sectional tests, I estimate eq. (1) for treatment firms classified as under competition in strategic substitutes and other firms plus all control firms separately. H5 predicts that the coefficient on $Post_{ijt}*IPO_{ijt}$ is more negative in the subsample of treatment firms under competition in strategic substitutes.

4. Empirical results

4.1. Descriptive statistics

I obtain management earnings forecast data from I/B/E/S Guidance database, financial data from Compustat, stock return information from CRSP, and analyst following data from I/B/E/S. My sample period starts in 1993 because the management earnings forecast data from I/B/E/S Guidance are available since 1993. Table 2 reports the descriptive statistics of variables used in my main regressions. About 16.4% of the observations issue management forecasts and the average frequency is 0.59, comparable to statistics reported in Huang et al. (2017). About 89.1% of the events are IPO-competition events. By construction, the number of observations in the post-event period is equal to that in the pre-event period.

4.2. Main results

Table 3 reports the results of estimating eq. (1). The dependent variable is *ISSUE*, the indicator for issuing management forecasts, in column (1) and *log(1+FREQ)*, the logarithm of one plus the number of forecasts issued in a year, in column (2). Consistent with H1, in both columns, the coefficient on *IPO*POST* is significantly negative, indicating that, relative to control firms in industries with only IPO withdrawals, public incumbents in industries with completed IPOs are less likely to issue and issue fewer management forecasts after the IPOs are completed. The results are consistent with the prediction of H1. The coefficient on *POST* is insignificant, providing no evidence that there is a significant change in the likelihood

and frequency of management forecasts issued by public incumbents in industries with only IPO withdrawals.

The coefficients on control variables are largely consistent with prior research. The likelihood and frequency of issuing management guidance are positively correlated with *ROA* and negatively correlated with *Loss*. As expected, larger firms and firms with more analysts following are more likely to provide management guidance. Firms with greater institutional holdings are also more likely to issue management forecasts.

4.3. Robustness tests

4.3.1 Endogeneity of IPO withdrawals

My difference-in-differences design compares the impact of completed and withdrawn IPO filings, which helps to control market-wide and industry-level economic conditions that motivate the decisions to file for IPO. However, one may argue that the decision of firms to withdraw the IPO filing can be related to economic factors that affect industry competition and corporate disclosures. In that case, my estimation of the impact of completed IPOs can be biased. To address this concern, I employ an instrumental variables approach following Bernstein (2015). Bernstein (2015) uses NASDAQ fluctuations over the two months following the IPO filing date as the instrument and finds that they are a strong predictor of IPO completion.

As Bernstein (2015), I estimate the following first-stage regression for the sample of 56,038 event-firms:

$$IPO_i = \mu_k + \lambda_t + \beta_1 NSDQ_i + \beta_2 PRIOR\_NSDQ_i + \beta_3 PIONEER_i$$
$$+ \beta_4 EARLY\_FOLLOWER_i + \varepsilon_i$$

The dependent variable IPO_i is equal to one if event i is an IPO-completion event, that is, at least one IPO is completed in the year. $NSDQ_i$ is the mean of two-month NASDAQ returns after the filing date of all IPOs in event i, including the withdrawn filings.[5] Control variables are included following Bernstein (2015). $PRIOR\_NSDQ_i$ is the mean of three-month NASDAQ returns prior to the filing date of all IPOs in event i. $PIONEER_i$ is set equal to the mean of an indicator for pioneer IPOs in event i. An IPO is considered a pioneer if its filing is not preceded by any IPO filing in the same Fama-French 48 industry in the previous 180 days (Benveniste et al. 2003; Bernstein 2015). $EARLY\_FOLLOWER_i$ is set equal to the mean of indicator for early follower IPOs in event i. An IPO is considered an early follower if it files within 180 days of a pioneer in the same Fama-French 48 industry (Benveniste et al. 2003; Bernstein 2015). μ_k and λ_t represent industry and year fixed effects. I then use the predicted value of *IPO* from this regression, $\widehat{IPO}$, in eq. (1).

$$ISSUE_{ijt}/\log(1 + FREQ_{ijt}) = \alpha_k + \lambda_t + \beta_1 \widehat{IPO}_{ijt} \times POST_{ijt} + \beta_2 POST_{ijt} +$$
$$X'\Gamma + \varepsilon_{ijt} \qquad (1')$$

Table 4 Panel A reports the 2SLS estimation results. In column (1), the results of estimating the first-stage regression indicate that two-month NASDAQ returns after the filing date are a significant predictor of IPO completion. In columns (2) and (3),

[5] As explained by Bernstein (2015), the decision to use a two-month window is somewhat arbitrary. One could use the NASDAQ returns over the entire filing period. However, since the length of the filing period is often correlated with the likelihood of withdrawing, it is reasonable to choose a fixed window that is sufficiently shorter than the average length of the filing period.

the coefficient on $\widehat{IPO}$*POST* is significantly negative, consistent with the results in Table 3. Thus, using the instrumental variables approach, I continue to find a decrease in the likelihood and frequency of public incumbents issuing management forecasts after IPO completion.

4.3.2 Change analyses using large IPOs only

Hsu et al. (2010) examine the impact of completed IPOs on the performance of public incumbents by comparing their performance before and after large IPOs are completed in the industry. I test H1 using the pre-post analysis of Hsu et al. (2010) as an alternative design. Following Hsu et al. (2010), I identify IPO events by choosing only those IPOs that are not preceded or followed by a larger IPO in terms of proceeds in the same 2-digit SIC industry in the surrounding 6 years during 1996-2014. This procedure yields 324 IPOs. As Hsu et al. (2010), I further restrict incumbent firms in the same industry to those that were publicly listed at least 3 years before the IPO event year. I also require the incumbents to have at least one observation before and one observation after the IPO over the six-year window around the IPO. My final sample for this test includes 89,069 firm-year observations. The following variation of eq. (1) is estimated to test H1:[6]

$$ISSUE_{jt}/\log(1+FREQ_{jt}) = \alpha_k + \lambda_t + \beta_1 POST_{jt} + X'\Gamma + \varepsilon_{jt} \quad (1")$$

[6] Since the sample in this test includes only public incumbents witnessing a large IPO completed in their industry, the indicator for IPO-completion events in eq. (1) is dropped.

Table 4 Panel B reports the results of estimating eq. (1"). The coefficient on *Post* is significantly negative in both column (1) when *ISSUE* is the dependent variable and column (2) when *log(1+FREQ)* is the dependent variable. Consistent with the results reported in Table 3 based on the difference-in-differences approach, the results using this alternative design also provide support for H1.

4.3.3 Other sensitivity tests

I perform several additional analyses in Table 4 Panel C. First, I replace the control sample in the main analyses, that is, firms in industries with only withdrawn IPOs, with firms in industries without any IPO completes or withdraws in a year. The results of estimating eq. (1) using treatment firms with completed IPOs in their industries and this control sample are reported in columns (1) and (2). The coefficient on *IPO*POST* is significantly negative in both columns, suggesting that public firms in industries with completed IPOs are less likely to issue and issue fewer management forecasts after the IPOs are completed.

Second, I include both control groups, firms in industries with only IPO withdrawals and firms in industries with no IPO events, as the control sample and estimate eq. (1). The results are reported in columns (3) and (4). The coefficient on *IPO*POST* is significant in both columns. Again, the results are consistent with those in Table 3, supporting H1.

Last, I test H1 using firms in industries with only one IPO in the event year, either completed or withdrawn. The results are reported in columns (5) and (6). Again, the inferences are consistent with those from Table 3.

In summary, various specifications in Tables 3 and 4 provide consistent evidence supporting H1, that is, completed IPOs cause public incumbents in the same industry to significantly reduce the likelihood and the frequency of issuing management forecasts, while public incumbents in industries where all IPOs filings are withdrawn do not show the same changes.

4.4. Cross-sectional analyses

4.4.1 IPO size

H2 predicts that the competitive effects of completed IPOs on voluntary disclosures of the public incumbents increase with the size of IPOs. I estimate eq. (1) for firms in industries where the asset ratio of completed IPOs is above the sample median and control firms in industries with only withdrawn IPOs in Table 5 Panel A columns (1) and (2). Consistent with the main results reported in Table 3, the coefficient on *IPO*POST* is significantly negative in both columns, indicating that public firms in industries with larger completed IPOs are less likely to provide management guidance and issue fewer forecasts.

In columns (3) and (4), I estimate eq. (1) using the subsample of firms in industries where the asset ratio of completed IPOs is below the median and control firms in industries with only withdrawn IPOs. While the coefficient on *IPO*POST* is negative in both columns, it is insignificant. The magnitude of the coefficients is significantly smaller than that of the coefficients in columns (1) and (2). Chi-Squared tests indicate that the coefficient on *IPO*POST* in column (1) is significantly different from that in column (3) and the coefficient in column (2) is significantly different from

that in column (4). Thus, public firms in industries with larger completed IPOs are significantly more likely to reduce the likelihood and frequency of providing management guidance than those in industries with smaller completed IPOs, consistent with the prediction of H2. Panel B uses the ratio of completed IPOs to the number of firms in the industry instead of IPO size to measure the competitive effect from new issuers and find similar inferences.

4.4.2 IPO failures

Table 6 reports the results of testing H3, which predicts that the competitive effects of completed IPOs on rival's voluntary disclosures are stronger when all IPOs survive. On average, ten IPOs completes during each event year. In columns (1) and (2), I estimate eq. (1) for the subsample of public firms in industries where all completed IPOs survive during the three years subsequent to the IPO year and control firms in industries with only withdrawn IPOs. The coefficient on *IPO*POST* is significantly negative, suggesting that public incumbents are less likely to issue and issue fewer management forecasts after IPOs are completed in their industries. In contrast, when I estimate eq. (1) for the subsample of firms in industries where some completed IPOs fail within three years after IPO completion and control firms in columns (3) and (4), the coefficient on *IPO*POST* is insignificant. The difference in the coefficient on *IPO*POST* between column (1) and column (3) and that between column (2) and column (4) are significant. These results are consistent with prediction of H3, suggesting that the competitive effects of completed IPOs on the voluntary

disclosures of public incumbents are concentrated in industries where completed IPOs survive after the initial offering.

4.4.3 Financial constraints

H4 predicts that the competitive effects of completed IPOs on competitors' voluntary disclosures are stronger when industry peers are financially constrained. Table 7 reports the results of testing this prediction. In Panel A, I use the S-A index developed by Hadlock and Pierce (2010) to measure financial constraints. Eq. (1) is estimated for public firms with above-the-median financial constraints in industries where there are completed IPOs and control firms in industries with only withdrawn IPOs in columns (1) and (2), and for those with below-the-median financial constrains in industries where there are completed IPOs and control firms in columns (3) and (4). The coefficient on *IPO*POST* is significantly negative in both column (1) and column (2), indicating that financial constrained public firms in industries with completed IPOs reduce the issuance of management forecasts post -IPO. In contrast, the coefficient on *IPO*POST* is insignificant in columns (3) and (4). Thus, the competitive effects of completed IPOs on incumbents' voluntary disclosures are concentrated in the subsample of public firms that are more likely to be financially constrained. The difference in the coefficient on *Post*IPO* between the two groups is significant, providing evidence consistent with H4. Panel B reports the results with the WW index and gets similar inferences

4.4.4 Strategic interactions

Table 8 reports the results of testing H5, which predicts that the impact of completed IPOs on rivals' voluntary disclosures is stronger when they compete in strategic substitutes. In Panel A, I employ two measures of firm-level strategic interactions, stock return correlation in columns (1) – (4) and sales correlation in columns (5) – (8). Using either measure, the coefficient on *Post*IPO* is significantly more negative when the correlation between the public incumbent and completed IPOs is negative than when it is positive, suggesting that the impact of completed IPOs on the voluntary disclosures of public incumbents is more pronounced when they compete in strategic substitutes. In Panel B, I employ two measures of industry-level strategic interactions, R&D spending in columns (1) – (4) and the regression-based measure in columns (5) – (8). Again, the results indicate that completed IPOs have a stronger effect on voluntary disclosures of incumbents when competition is in strategic substitutes, supporting H5.

4.5. Additional analyses

4.5.1 Completed IPOs and information environment

The above analyses suggest that public incumbents respond to the competitive threat from completed IPOs by reducing voluntary disclosures via management guidance. It is not yet clear whether there is an overall reduction in the information supply of public incumbents following the completion of IPOs in their industry. To shed more light on this issue, I examine the extent to which firm-specific information, industry-level information from the public incumbents, and market-wide information

are impounded into stock prices around IPO completion. If, overall, public incumbents supply less information in response to the competitive threat from completed IPOs, I expect their stock prices to incorporate less firm-specific and industry-level information from other public incumbents, relative to market-wide information.

Following prior research (e.g., Durnev et al. 2003; Piotroski and Roulstone 2004), I examine the information flow using stock return synchronicity, defined as the extent to which market and industry returns explain variation in firm-level stock returns. In this framework, firms displaying low (high) stock return synchronicity, ceteris paribus, have a relatively greater amount of firm-specific (market-level and industry-level) information impounded into their stock prices. As Piotroski and Roulstone (2004), I measure the extent to which industry-level information is impounded into stock prices using the incremental ability of industry returns over market returns to explain firm specific return variations.

I start by measuring the extent to which market returns explain variations in firm-level stock returns. Specifically, for each firm-year observation, I regress weekly returns on the current and prior week's value-weighted market return ($MRET_{it}$):

$$RET_{it} = \alpha + \beta_1 MRET_{it} + \beta_2 MRET_{it-1} + \varepsilon_i \quad (2)$$

I estimate this regression for each firm-year with a minimum of 45 weekly observations, where a weekly return is defined as the compounded return over five consecutive trading days. Following prior research, synchronicity is computed as:

$$SYNCH1 = \log\left(\frac{R_1^2}{1-R_1^2}\right)$$

where R_1^2 is the coefficient of determination from the estimation of eq. (2). By construction, high values of *SYNCH1* indicate firms whose stock returns are closely

tied to market returns and reflect relatively less firm-specific and industry-level information.

Next, I add the current and prior week's value-weighted 3-digit SIC industry return to eq. (1) and estimate the following regression:

$$RET_{it} = \alpha + \beta_1 MARET_{it} + \beta_2 MARET_{it-1} + \beta_3 INDRET_{it} + \beta_4 INDRET_{it-1} + \varepsilon \quad (3)$$

The industry return ($INDRET_{i,t}$) for a specific week t is created using all public incumbents with the same 3-digit SIC code, with firm i's weekly return omitted. $INDRET_{i,t}$ is the value-weighted average of incumbents' week t returns. Lagged returns are included since the presence of informed parties can impact the timing of the market and industry information's incorporation into prices.

I then compute *SYNCH2* as follows:

$$SYNCH2 = \log\left(\frac{R_2^2}{1-R_2^2}\right)$$

where R_2^2 is the coefficient of determination from the estimation of eq. (3). High values of *SYNCH2* indicate firms whose stock returns are closely tied to market and industry-level returns and reflect relatively less firm-specific information. Similar to Piotroski and Roulstone (2004), I interpret the difference between *SYNCH1* and *SYNCH2*, *DIFF_SYNCH*, as capturing the flow of industry-level information, that is, the ability of industry-level information from incumbents to explain firm-specific return variations.

I replace the dependent variable in eq. (1) by *SYNCH1*, *SYNCH2*, and *DIFF_SYNCH* and report the estimation results in Table 9. When *SYNCH1* is the dependent variable in column (1), the coefficient on *IPO*POST* is significantly

positive, suggesting that there is a larger degree of comovement between firm returns and market-wide returns after IPOs are completed in the industry. The coefficient on *IPO*POST* in column (2) is insignificant when *SYNCH2* is the dependent variable, while that in column (3) is significantly negative when *DIFF_SYNCH* is the dependent variable. These results suggest that there is no significant change in the degree to which stock returns incorporate firm-specific information. However, there is a significant decrease in the incremental ability of returns of the incumbents to explain firm-specific return variations following completed IPOs, suggesting that less industry-level information from incumbents is incorporated into stock prices. This is consistent with an overall decrease in the supply of industry-level information from public incumbents after IPOs are completed in their industry.

4.5.2 Investment decisions and peer valuation

Does the change in voluntary disclosures of public incumbents and the information environment affect any real corporate decisions? Foucault and Fresard (2014) point out that the valuation of peers informs managers about growth opportunities, complementing other information available to managers. They find that peers' valuation is useful when a firm makes investment decisions. I posit that the post-IPO decrease in the extent to which firms' stock prices reflect industry-level information is likely to reduce the usefulness of peer valuation when managers make investment decisions. As Foucault and Fresard (2014), I use the sensitivity of investment to peers' value-weighted average Tobin's Q to capture the informativeness

of peers' valuation. I estimate the following regression to examine whether there is a decrease in the informativeness of peers' Tobin's Q for making investment decisions:

$$INVESTMENT_{ijt}$$
$$= \alpha_k + \lambda_t + \beta_1 IPO_{ijt} \times POST_{ijt} \times Q_{ijt} + \beta_2 IPO_{ijt} \times POST_{ijt} \times Q_{i(-j)t}$$
$$+ \beta_3 Q_{ijt} + \beta_4 Q_{i(-j)t} + \beta_5 IPO_{ijt} \times Q_{ijt} + \beta_6 IPO_{ijt} \times Q_{i(-j)t} + \beta_7 POST_{ijt} \times Q_{ijt}$$
$$+ \beta_8 POST_{ijt} \times Q_{i(-j)t} + \beta_9 IPO_{ijt} \times POST_{ijt} + \beta_{10} POST_{ijt} + X'\Gamma + \varepsilon_{ijt} \quad (4)$$

The dependent variable, *INVESTMENT*, is the sum of capital expenditure and R&D scaled by total assets.[7] The two new variables Q_{ijt} and $Q_{i(-j)t}$ are Tobin's Q of firm *j* and the value-weighted average Tobin's Q of public incumbents other than firm *j*. A negative coefficient on $IPO_{ijt} \times POST_{ijt} \times Q_{i(-j)t}$ will indicate a decrease in the sensitivity of investment to incumbents' valuation. The results of estimating eq. (4) are reported in Table 10. As expected, I find a significant post-IPO decrease in the sensitivity of firms' investments to the mean Tobin's Q of industry peers, suggesting that peer valuation is less relevant for investment decision-making.

[7] Capital expenditure and R&D are set to zero if they are missing.

5. Conclusion

This paper examines the impact of completed IPOs on industry competitors' voluntary disclosures. While a large literature studies the behavior of the issuers, research of the impact of IPOs on the public incumbents is limited. A few studies find evidence that completed IPOs gain competitive advantages and have a significantly negative effect on rivals' operating performance. I extend the literature by documenting the disclosure response of industry rivals to avoid revealing useful information that can be exploited by competitive issuers.

Using the sample of completed and withdrawn IPO filings, I employ a difference-in-differences approach to examine the impact of completed IPOs on the likelihood and the frequency of public incumbents issuing management guidance. Analyses indicate that public incumbents are significantly less likely to issue management guidance after IPOs are completed in their industry. The inference is robust to the use of an instrumental variables approach and a battery of sensitivity tests. The decrease is more evident when completed IPOs are large, successful, when rivals are financially constrained, and when strategic actions of rivals and issuers are likely to be substitutes. Additional analyses find a decrease in the flow of industry-level information from public incumbents after completion of IPOs in their industry. Consequently, valuation of peers becomes less useful when public incumbents make investment decisions post-IPO-completion.

Overall, I provide new evidence on how completed IPOs affect the public incumbents and the resulting changes in the industry information environment. My findings also add to the literature of competition and disclosure, providing support for

the theoretical prediction that competitive threat from existing players in the industry motivates a reduction in voluntary disclosure.

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Table 1: Sample distribution

Panel A

	Frequency	Percent
IPO-withdrawal event-firm	6012	10.68
IPO-completion event-firm	50296	89.32

Panel B

Year	Frequency	Percent
1996	3690	6.55
1997	4057	7.21
1998	3591	6.38
1999	3582	6.36
2000	3276	5.82
2001	2991	5.31
2002	2820	5.01
2003	2780	4.94
2004	3201	5.68
2005	3093	5.49
2006	3002	5.33
2007	2740	4.87
2008	2170	3.85
2009	2327	4.13
2010	2763	4.91
2011	2569	4.56
2012	2525	4.48
2013	2680	4.76
2014	2451	4.35

This table reports the sample distribution of event-firms. The IPO sample includes 5,996 filings (both completed and withdrawn IPOs) from Thomson Financial's Securities Data Company (SDC) database between 1996 and 2014. I aggregate completed and withdrawn IPOs by 3-digit SIC industry every year. An industry-year is classified as having an IPO-completion event if there is at least one IPO completed in the industry-year. An industry-year is classified as having an IPO-withdrawal event if all IPO filings in the industry-year were eventually withdrawn. The IPO-completion event-firm (IPO-withdrawal event-firm) refers to the publicly traded firms in 3-digit SIC industry with the IPO-completion (withdrawn) event. Panel A shows the distribution of IPO completion and withdrawal event-firms. Panel B shows the distribution of event-firms by year.

Table 2: Descriptive Statistics

Variable	MEAN	SD	P10	P25	P50	P75	P90
ISSUE	0.164	0.370	0.000	0.000	0.000	0.000	1.000
FREQ	0.592	1.642	0.000	0.000	0.000	0.000	3.000
IPO	0.891	0.311	0.000	1.000	1.000	1.000	1.000
POST	0.500	0.500	0.000	0.000	1.000	1.000	1.000
SIZE	5.868	2.196	3.081	4.244	5.751	7.341	8.873
BTM	0.625	0.549	0.131	0.277	0.502	0.816	1.241
LEV	0.204	0.211	0.000	0.020	0.145	0.324	0.506
INSTITUTION	0.416	0.324	0.015	0.110	0.371	0.694	0.885
FOLLOW	7.621	9.293	0.000	1.000	4.000	11.000	21.000
RETURN	0.158	0.665	-0.500	-0.219	0.060	0.359	0.809
ROA	-0.016	0.210	-0.222	-0.021	0.018	0.071	0.138
LOSS	0.305	0.460	0.000	0.000	0.000	1.000	1.000
EARN_INCREASE	0.547	0.498	0.000	0.000	1.000	1.000	1.000
GROWTH	0.155	0.478	-0.188	-0.034	0.077	0.224	0.489
EARN_VOL	0.122	0.251	0.003	0.015	0.045	0.120	0.268
BIGAUDITOR	0.737	0.441	0.000	0.000	1.000	1.000	1.000

This table shows the descriptive statistics. For each event-firm with IPO completion or withdrawn events in the 3-digit SIC industry during the year, I include all observations with necessary data in the (-3, 3) window around the event, with the event year (year 0) dropped. The final sample includes 306,487 event-firm-year observations from 1993-2017. *ISSUE* is an indicator variable equal to one if the firm issues at least one annual management forecast during the year, and zero otherwise. *FREQ* is the number of annual management forecasts issued during the year. *POST* is an indicator variable equal to one if the year is in the post-event period of IPO-completion or IPO-withdrawal event for the firm, and zero otherwise. *IPO* is an indicator variable equal to one if the event is an IPO-completion event and zero if the event is an IPO-withdrawal event. *SIZE* is the nature logarithm of market value of equity at the beginning of the year. *BTM* is the ratio of the book value of equity to the market value of equity at the beginning of the year. *LEV* is the ratio of total debt to total assets at the beginning of the year. *INSTITUTION* is the percentage of institutional holdings at the beginning of the year. *FOLLOW* is the number of analysts following during the year. *RETURN* is the annual return during the year. *ROA* is the earnings before extraordinary items during the year divided by total assets at the beginning of the year. *LOSS* is an indicator variable equal to one if the firm reports loss (the earnings before extraordinary items is negative) during the year, and zero otherwise. *EARN_INCREASE* is the standard deviation of the annual earnings before extraordinary items scaled by total assets over the five years ending at the current year. *BIGAUDITOR* is an indicator variable equal to one if the firm is audited by the big eight auditor, and zero otherwise.

Table 3: Baseline results

VARIABLES	*ISSUE*	log(1+*FREQ*)
	(1)	(2)
*IPO*POST*	-0.008**	-0.014**
	(-2.04)	(-2.29)
POST	0.005	0.009
	(1.21)	(1.54)
SIZE	0.034***	0.049***
	(25.48)	(26.20)
BTM	0.007***	0.012***
	(4.17)	(5.57)
LEV	0.019***	0.036***
	(3.27)	(4.55)
INSTITUTION	0.060***	0.094***
	(11.53)	(12.62)
FOLLOW	0.003***	0.004***
	(12.47)	(11.44)
RETURN	0.005***	0.009***
	(5.93)	(8.73)
ROA	0.036***	0.044***
	(8.56)	(8.01)
LOSS	-0.023***	-0.039***
	(-12.75)	(-15.95)
EARN_INCREASE	-0.008***	-0.008***
	(-7.64)	(-5.96)
GROWTH	0.005***	0.007***
	(5.63)	(6.13)
EARN_VOL	-0.024***	-0.035***
	(-6.52)	(-6.64)
BIGAUDITOR	-0.000	0.003
	(-0.12)	(0.88)
Firm Window FEs	Yes	
Year FEs	Yes	
Cluster	Firm Window	
Observations	306,487	306,487
Adjusted R-squared	0.590	0.679

This table shows the impact of completed IPOs on industry competitors' voluntary disclosures. The sample includes 306,487 event-firm-year observations from 1993-2017. *ISSUE* is an indicator variable equal to one if the firm issues at least one annual management forecast during the year, and zero otherwise. *FREQ* is the number of annual management forecasts issued during the year. *POST* is an indicator variable equal to one if the year is in the post-event period of IPO-completion or IPO-withdrawal event for the firm, and zero otherwise. *IPO* is an indicator variable equal to one if the event

is an IPO-completion event and zero if the event is an IPO-withdrawal event. Please refer to Appendix A for variable definitions for other controls. All regressions include event-firm and year fixed effects. T-statistics (in parentheses below the coefficient estimates) are based on standard errors adjusted for clustering at the event-firm level. ***, **, * represent two-tailed statistical significance at the 1%, 5% and 10% levels, respectively.

Table 4: Robustness tests

Panel A: Instrumental variables approach

	First Stage	Second Stage	
VARIABLES	*IPO*	*ISSUE*	log(1+*FREQ*)
	(1)	(2)	(2)
NSDQ	0.289***		
	(15.169)		
PRIOR_NSDQ	-0.125***		
	(-7.325)		
PIONEER	0.069***		
	(11.158)		
EARLY_FOLLOWER	0.067***		
	(13.467)		
$\widehat{IPO}$**POST*		-0.036***	-0.070***
		(-4.64)	(-6.13)
POST		0.030***	0.059***
		(4.07)	(5.55)
SIZE		0.034***	0.049***
		(25.53)	(26.26)
BTM		0.007***	0.012***
		(4.17)	(5.57)
LEV		0.019***	0.037***
		(3.33)	(4.63)
INSTITUTION		0.060***	0.094***
		(11.51)	(12.59)
FOLLOW		0.003***	0.004***
		(12.48)	(11.45)
RETURN		0.005***	0.009***
		(5.98)	(8.79)
ROA		0.036***	0.044***
		(8.58)	(8.04)
LOSS		-0.023***	-0.039***
		(-12.76)	(-15.97)
EARN_INCREASE		-0.008***	-0.008***
		(-7.65)	(-5.97)
GROWTH		0.005***	0.007***
		(5.67)	(6.19)
EARN_VOL		-0.024***	-0.036***
		(-6.65)	(-6.83)
BIGAUDITOR		-0.000	0.003
		(-0.08)	(0.94)

Industry FEs	Yes		
Event-Firm FEs		Yes	
Year FEs	Yes	Yes	
Cluster		Event-Firm	
Observations	56,308	306,487	306,487
Adjusted R-squared	0.261	0.590	0.679

Panel B: Change analyses using large IPOs only

VARIABLES	*ISSUE*	log(1+*FREQ*)
	(1)	(2)
POST	-0.008**	-0.017***
	(-2.16)	(-3.30)
SIZE	0.042***	0.062***
	(16.66)	(17.26)
BTM	0.004	0.006
	(1.26)	(1.63)
LEV	0.010	0.020
	(0.92)	(1.26)
INSTITUTION	0.055***	0.087***
	(5.93)	(6.40)
FOLLOW	0.004***	0.004***
	(8.14)	(6.98)
RETURN	0.010***	0.017***
	(6.29)	(8.01)
ROA	0.024**	0.032***
	(2.54)	(2.59)
LOSS	-0.016***	-0.025***
	(-5.08)	(-5.89)
EARN_INCREASE	-0.004**	-0.003
	(-2.19)	(-1.12)
GROWTH	0.006***	0.007***
	(3.14)	(2.95)
EARN_VOL	-0.028***	-0.049***
	(-3.44)	(-3.91)
BIGAUDITOR	-0.000	0.004
	(-0.02)	(0.58)
Event-Firm FEs	Yes	
Year FEs	Yes	
Cluster	Event-Firm	
Observations	89,069	89,069
Adjusted R-squared	0.622	0.695

Panel C: Other sensitivity tests

	No event		No event + Withdrawal		One IPO	
VARIABLES	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)
	(1)	(2)	(3)	(4)	(5)	(6)
*IPO*POST*	-0.008***	-0.018***	-0.008***	-0.018***	-0.020***	-0.029***
	(-3.44)	(-5.41)	(-3.93)	(-5.80)	(-3.64)	(-3.55)
POST	0.001	0.005*	0.002	0.005*	0.007	0.013
	(0.60)	(1.74)	(0.82)	(1.80)	(1.21)	(1.58)
SIZE	0.039***	0.059***	0.040***	0.059***	0.048***	0.073***
	(32.24)	(34.14)	(33.80)	(35.80)	(18.02)	(18.61)
BTM	0.007***	0.013***	0.006***	0.012***	0.007**	0.014***
	(4.99)	(6.57)	(4.80)	(6.47)	(2.38)	(3.37)
LEV	0.013**	0.026***	0.013**	0.026***	0.022*	0.048***
	(2.54)	(3.49)	(2.53)	(3.53)	(1.81)	(2.73)
INSTITUTION	0.059***	0.097***	0.060***	0.098***	0.062***	0.102***
	(13.16)	(14.80)	(13.99)	(15.64)	(6.40)	(7.09)
FOLLOW	0.003***	0.004***	0.003***	0.004***	0.002***	0.002***
	(14.72)	(12.08)	(15.04)	(12.44)	(3.37)	(3.25)
RETURN	0.005***	0.010***	0.005***	0.010***	0.003	0.008***
	(6.27)	(9.28)	(6.40)	(9.63)	(1.37)	(3.21)
ROA	0.048***	0.059***	0.049***	0.061***	0.051***	0.082***
	(11.13)	(10.34)	(11.55)	(10.91)	(4.05)	(5.02)
LOSS	-0.026***	-0.044***	-0.026***	-0.044***	-0.021***	-0.034***
	(-16.47)	(-20.32)	(-17.20)	(-21.12)	(-6.24)	(-7.45)
EARN_INCREASE	-0.010***	-0.010***	-0.010***	-0.010***	-0.009***	-0.008***
	(-11.10)	(-8.17)	(-11.52)	(-8.52)	(-4.34)	(-2.80)
GROWTH	0.008***	0.010***	0.008***	0.011***	0.011***	0.015***
	(7.74)	(8.14)	(8.25)	(8.80)	(3.77)	(3.79)
EARN_VOL	-0.036***	-0.055***	-0.035***	-0.053***	-0.069***	-0.087***

	(-8.79)	(-8.97)	(-8.79)	(-9.11)	(-5.29)	(-4.79)
BIGAUDITOR	0.006**	0.012***	0.006**	0.013***	0.002	0.007
	(2.40)	(3.64)	(2.51)	(4.05)	(0.35)	(1.07)
Event-Firm FEs				Yes		
Year FEs				Yes		
Cluster				Event-Firm		
Observations	436,702	436,702	469,948	469,948	91,602	91,602
Adjusted R-squared	0.614	0.698	0.616	0.700	0.616	0.701

This table shows three sets of robustness tests. Panel A reports the results with the instrumental variables approach following Bernstein (2015). Column (1) shows the first stage regression for the sample of 56,038 event-firms. *IPO* is an indicator equal to one if the event-firm is an IPO completion event, that is, at least one IPO is completed in the year. *NSDQ* is the mean of the two-month NASDAQ returns after the filing date of all IPOs in the event. $\widehat{IPO}$ is the predicted value from the first stage. Industry and year fixed effects are included. Robust standard errors are presented in parentheses. Columns (2) and (3) report the second stage results. *ISSUE* is an indicator variable equal to one if the firm issues at least one annual management forecast during the year, and zero otherwise. *FREQ* is the number of annual management forecasts issued during the year. *POST* is an indicator variable equal to one if the year is in the post-event period of IPO-completion or IPO-withdrawal event for the firm, and zero otherwise. Columns (2) and (3) include event-firm and year fixed effects. T-statistics (in parentheses below the coefficient estimates) are based on standard errors adjusted for clustering at the event-firm level. Please refer to Appendix A for variable definitions of other controls. ***, **, * represent two-tailed statistical significance at the 1%, 5% and 10% levels, respectively

Panel B shows results on change analyses using large IPOs only. Following Hsu et al. (2010), IPO events only include completed IPOs that are not preceded or followed by a larger IPO in terms of proceeds in the same 2-digit SIC industry in the surrounding 6 years during 1996-2014. The sample includes firm-year observations of industry competitors during the six-year window around the IPO. All regressions include event-firm and year fixed effects. T-statistics (in parentheses below the coefficient estimates) are based on standard errors adjusted for clustering at the event-firm level. ***, **, * represent two-tailed statistical significance at the 1%, 5% and 10% levels, respectively.

Panel C shows the third set of robustness tests. Columns (1) and (2) replace the control sample with firms in industries without any IPO completes or withdraws in a year. Columns (3) and (4) include both control groups, i.e., firms in industries with only IPO withdrawals and firms in industries with no IPO events. Columns (5) and (6) use firms in industries with only one IPO event in the event year, either completed or withdrawn. All regressions include event-firm and year fixed effects. T-statistics (in parentheses below the coefficient estimates) are based on standard errors adjusted for clustering at the event-firm level. ***, **, * represent two-tailed statistical significance at the 1%, 5% and 10% levels, respectively.

Table 5: IPO size

Panel A: Pre IPO assets ratio

	Large		Small	
VARIABLES	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)
	(1)	(2)	(3)	(4)
*IPO*POST*	-0.012***	-0.021***	-0.006	-0.009
	(-2.71)	(-3.20)	(-1.33)	(-1.37)
POST	0.005	0.012*	0.007	0.009
	(1.08)	(1.84)	(1.57)	(1.35)
SIZE	0.032***	0.044***	0.038***	0.057***
	(18.74)	(18.78)	(19.45)	(20.61)
BTM	0.003	0.005	0.009***	0.018***
	(1.32)	(1.60)	(3.96)	(5.74)
LEV	0.011	0.024**	0.025***	0.047***
	(1.55)	(2.43)	(2.96)	(3.91)
INSTITUTION	0.072***	0.111***	0.049***	0.080***
	(10.61)	(11.59)	(6.87)	(7.55)
FOLLOW	0.003***	0.004***	0.003***	0.004***
	(8.42)	(7.91)	(9.58)	(8.69)
RETURN	0.006***	0.010***	0.004***	0.008***
	(5.64)	(7.80)	(2.83)	(4.97)
ROA	0.034***	0.039***	0.039***	0.053***
	(6.65)	(5.85)	(6.07)	(6.20)
LOSS	-0.021***	-0.035***	-0.027***	-0.045***
	(-9.03)	(-11.16)	(-10.37)	(-12.95)
EARN_INCREASE	-0.008***	-0.007***	-0.009***	-0.010***
	(-5.70)	(-4.22)	(-5.79)	(-4.86)
GROWTH	0.006***	0.007***	0.005***	0.007***
	(4.96)	(5.21)	(3.50)	(4.12)
EARN_VOL	-0.021***	-0.033***	-0.024***	-0.034***
	(-4.38)	(-4.81)	(-4.72)	(-4.65)
BIGAUDITOR	-0.002	0.003	0.003	0.009*
	(-0.62)	(0.58)	(0.89)	(1.72)
Chi Square Test	4.23**	7.65***		
Event-Firm FEs		Yes		
Year FEs		Yes		
Cluster		Event-Firm		
Observations	176,305	176,305	157,498	157,498
Adjusted R-squared	0.586	0.678	0.606	0.691

Panel B: Number of IPOs

	Large		Small	
VARIABLES	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)
	(1)	(2)	(3)	(4)
*IPO*POST*	-0.011***	-0.018***	-0.005	-0.009
	(-2.59)	(-2.86)	(-1.26)	(-1.46)
POST	0.006	0.011*	0.005	0.007
	(1.30)	(1.80)	(1.02)	(1.17)
SIZE	0.031***	0.044***	0.040***	0.059***
	(18.57)	(18.92)	(20.30)	(21.14)
BTM	0.004**	0.007**	0.008***	0.016***
	(2.15)	(2.48)	(3.42)	(5.16)
LEV	0.014**	0.027***	0.021**	0.042***
	(2.01)	(2.86)	(2.41)	(3.36)
INSTITUTION	0.060***	0.089***	0.062***	0.104***
	(9.30)	(9.64)	(8.38)	(9.63)
FOLLOW	0.003***	0.004***	0.004***	0.005***
	(8.24)	(8.02)	(9.81)	(8.57)
RETURN	0.004***	0.009***	0.006***	0.010***
	(4.19)	(6.67)	(4.51)	(6.28)
ROA	0.035***	0.039***	0.039***	0.052***
	(6.79)	(5.99)	(6.04)	(6.21)
LOSS	-0.020***	-0.033***	-0.027***	-0.046***
	(-8.96)	(-10.93)	(-10.41)	(-13.10)
EARN_INCREASE	-0.008***	-0.007***	-0.008***	-0.009***
	(-5.93)	(-4.28)	(-5.49)	(-4.57)
GROWTH	0.005***	0.008***	0.005***	0.008***
	(4.79)	(5.42)	(4.02)	(4.36)
EARN_VOL	-0.015***	-0.025***	-0.029***	-0.041***
	(-3.26)	(-4.00)	(-5.66)	(-5.38)
BIGAUDITOR	-0.001	0.004	0.002	0.006
	(-0.39)	(0.92)	(0.50)	(1.11)
Chi-Squared Test	3.88**	4.47**		
Event-Firm FEs		Yes		
Year FEs		Yes		
Cluster		Event-Firm		
Observations	181,081	181,081	158,652	158,652
Adjusted R-squared	0.602	0.695	0.590	0.673

This table shows the cross-sectional tests on IPO size. In panel A, IPO size is measured by the pre-IPO assets ratio (sum of pre-IPO total assets of all completed IPOs divided by the total assets of all

industry peers). An IPO-completion event is classified into the large (small) IPO group if the ratio is above (below) the sample median. Columns (1) and (2) include IPO completion event-firm-year sample with large IPOs plus the control sample. Columns (3) and (4) include IPO completion event-firm-year sample with small IPOs plus the control sample. Chi-Squared Test shows the Chi-Squared statistics for testing the difference of coefficients on *IPO*POST* between large and small IPOs sample. Panel B shows the results with IPO number (total number of completed IPOs divided by the number of incumbents in the industry). *ISSUE* is an indicator variable equal to one if the firm issues at least one annual management forecast during the year, and zero otherwise. *FREQ* is the number of annual management forecasts issued during the year. *POST* is an indicator variable equal to one if the year is in the post-event period of IPO-completion or IPO-withdrawal event for the firm, and zero otherwise. *IPO* is an indicator variable equal to one if the event is an IPO-completion event and zero if the event is an IPO-withdrawal event. Please refer to Appendix A for variable definitions for other controls. T-statistics (in parentheses below the coefficient estimates) are based on standard errors adjusted for clustering at the event-firm level. ***, **, * represent two-tailed statistical significance at the 1%, 5% and 10% levels, respectively.

Table 6: IPO failures

	Non-Failure		Failure	
VARIABLES	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)
	(1)	(2)	(3)	(4)
*IPO*POST*	-0.010**	-0.019***	-0.000	0.005
	(-2.51)	(-3.13)	(-0.02)	(0.63)
POST	0.007*	0.013**	-0.003	-0.006
	(1.71)	(2.21)	(-0.52)	(-0.86)
SIZE	0.036***	0.052***	0.033***	0.047***
	(22.74)	(23.53)	(14.89)	(15.38)
BTM	0.008***	0.015***	-0.000	0.002
	(4.59)	(5.83)	(-0.16)	(0.55)
LEV	0.021***	0.039***	0.008	0.021
	(3.13)	(4.16)	(0.82)	(1.58)
INSTITUTION	0.060***	0.094***	0.064***	0.100***
	(10.28)	(11.08)	(7.14)	(7.95)
FOLLOW	0.002***	0.003***	0.004***	0.006***
	(8.25)	(7.47)	(10.24)	(9.56)
RETURN	0.005***	0.009***	0.005***	0.010***
	(4.61)	(7.01)	(3.97)	(5.91)
ROA	0.035***	0.048***	0.037***	0.039***
	(6.67)	(6.92)	(5.78)	(4.77)
LOSS	-0.020***	-0.034***	-0.032***	-0.050***
	(-9.92)	(-12.64)	(-9.91)	(-11.76)
EARN_INCREASE	-0.006***	-0.006***	-0.012***	-0.013***
	(-5.58)	(-4.17)	(-6.18)	(-5.10)
GROWTH	0.005***	0.008***	0.006***	0.007***
	(4.53)	(5.35)	(4.26)	(4.30)
EARN_VOL	-0.024***	-0.036***	-0.019***	-0.026***
	(-5.19)	(-5.32)	(-3.51)	(-3.55)
BIGAUDITOR	-0.000	0.003	0.003	0.011*
	(-0.09)	(0.80)	(0.57)	(1.71)
Chi-Squared Test	7.81***	19.87***		
Event-Firm FEs		Yes		
Year FEs		Yes		
Cluster		Event-Firm		
Observations	236,358	236,358	103,375	103,375
Adjusted R-squared	0.600	0.687	0.588	0.679

This table shows the cross-sectional tests on IPO failures. An IPO is considered a failure if it delists within three years of initial offering and its CRSP delisting code is in the 400 range ("liquidations")

or the 500 range ("dropped"), with the exceptions of firms with delisting codes of 501–503 ("stopped trading on current exchange to move to NYSE, AMEX, or NASDAQ") and 573 ("delisted by company request—gone private"). Columns (1) and (2) include IPO completion event-firm-year sample without any IPO failure plus the control sample. Columns (3) and (4) include IPO completion event-firm-year sample with at least one IPO failure plus the control sample. Chi-Squared Test shows the Chi-Squared statistics for testing the difference of coefficients on *IPO*POST* between IPO failure and non-IPO failure samples. *ISSUE* is an indicator variable equal to one if the firm issues at least one annual management forecast during the year, and zero otherwise. *FREQ* is the number of annual management forecasts issued during the year. *POST* is an indicator variable equal to one if the year is in the post-event period of IPO-completion or IPO-withdrawal event for the firm, and zero otherwise. *IPO* is an indicator variable equal to one if the event is an IPO-completion event and zero if the event is an IPO-withdrawal event. Please refer to Appendix A for variable definitions for other controls. T-statistics (in parentheses below the coefficient estimates) are based on standard errors adjusted for clustering at the event-firm level. ***, **, * represent two-tailed statistical significance at the 1%, 5% and 10% levels, respectively.

Table 7: Financial constraints

Panel A: Hadlock and Pierce (2010)

	High Risk		Low Risk	
VARIABLES	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)
	(1)	(2)	(3)	(4)
*IPO*POST*	-0.021***	-0.038***	0.002	0.006
	(-4.96)	(-6.24)	(0.48)	(0.91)
POST	0.017***	0.031***	-0.004	-0.008
	(3.92)	(5.23)	(-0.86)	(-1.28)
SIZE	0.027***	0.037***	0.041***	0.062***
	(17.05)	(17.36)	(18.70)	(20.10)
BTM	0.006***	0.009***	0.003	0.011***
	(3.20)	(3.55)	(1.08)	(2.80)
LEV	0.007	0.015*	0.026***	0.053***
	(1.07)	(1.79)	(2.77)	(3.94)
INSTITUTION	0.073***	0.109***	0.046***	0.072***
	(10.67)	(11.27)	(6.38)	(6.80)
FOLLOW	0.003***	0.004***	0.003***	0.004***
	(7.86)	(7.35)	(9.42)	(8.12)
RETURN	0.005***	0.008***	0.004***	0.010***
	(4.84)	(6.18)	(2.62)	(5.71)
ROA	0.034***	0.039***	0.037***	0.056***
	(7.86)	(7.10)	(4.26)	(4.83)
LOSS	-0.025***	-0.036***	-0.021***	-0.041***
	(-11.80)	(-12.84)	(-7.55)	(-10.75)
EARN_INCREASE	-0.006***	-0.006***	-0.009***	-0.011***
	(-4.71)	(-3.34)	(-6.21)	(-5.41)
GROWTH	0.005***	0.006***	0.008***	0.013***
	(5.39)	(5.32)	(4.53)	(5.59)
EARN_VOL	-0.019***	-0.031***	-0.045***	-0.062***
	(-5.14)	(-5.93)	(-5.37)	(-4.86)
BIGAUDITOR	0.009***	0.015***	-0.019***	-0.024***
	(3.11)	(4.02)	(-3.82)	(-3.57)
Chi Squared Test	60.66***	109.32***		
Event-Firm FEs			Yes	
Year FEs			Yes	
Cluster			Event-Firm	
Observations	162,901	162,901	166,711	166,711
Adjusted R-squared	0.572	0.661	0.604	0.694

Panel B: Whited and Wu (2006)

	High Risk		Low Risk	
VARIABLES	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)
	(5)	(6)	(7)	(8)
*IPO*POST*	-0.018***	-0.035***	0.003	0.010
	(-4.23)	(-5.73)	(0.78)	(1.55)
POST	0.013***	0.027***	-0.007	-0.015**
	(3.01)	(4.56)	(-1.56)	(-2.27)
SIZE	0.025***	0.036***	0.040***	0.062***
	(16.03)	(16.68)	(17.68)	(18.93)
BTM	0.007***	0.012***	0.005*	0.010**
	(3.74)	(4.79)	(1.69)	(2.44)
LEV	0.014**	0.026***	0.011	0.035**
	(2.09)	(2.90)	(1.12)	(2.46)
INSTITUTION	0.057***	0.093***	0.047***	0.064***
	(8.09)	(9.30)	(6.38)	(5.99)
FOLLOW	0.004***	0.005***	0.002***	0.003***
	(9.92)	(8.67)	(7.34)	(6.64)
RETURN	0.005***	0.008***	0.002	0.008***
	(5.23)	(6.45)	(1.33)	(4.27)
ROA	0.037***	0.048***	0.039***	0.045***
	(8.37)	(8.48)	(4.56)	(3.99)
LOSS	-0.022***	-0.033***	-0.024***	-0.046***
	(-10.27)	(-11.86)	(-8.22)	(-11.41)
EARN_INCREASE	-0.007***	-0.008***	-0.008***	-0.008***
	(-5.68)	(-4.94)	(-5.31)	(-3.92)
GROWTH	0.005***	0.006***	0.009***	0.015***
	(5.54)	(5.08)	(5.17)	(6.25)
EARN_VOL	-0.018***	-0.025***	-0.035***	-0.045***
	(-4.52)	(-4.61)	(-4.91)	(-4.36)
BIGAUDITOR	0.010***	0.019***	-0.021***	-0.032***
	(3.47)	(4.82)	(-4.05)	(-4.60)
Chi-Squared Test	49.23***	105.58***		
Event-Firm FEs			Yes	
Year FEs			Yes	
Cluster			Event-Firm	
Observations	153,663	153,663	153,671	153,671
Adjusted R-squared	0.572	0.662	0.619	0.707

This table shows the cross-sectional tests on whether the industry competitors are financially constrained. In panel A, financial constraint is measured with *SA index* from Hadlock and Pierce (2010). *SA index*=(-0.737**Size*) + (0.043**Size*^{2}) – (0.040**Age*). In panel B, financial constraint is measured with the *WW index* from Whited and Wu (2006). *WW index*=−0.091*CF* − 0.062 *DIV POS* + 0.021 *TLTD* − 0.044 *LNTA* + 0.102 *ISG* − 0.035 *SG*. A competitor is regarded as having high (low) risk of financial constraints if its *SA index* (*WW index*) is above (below) the median. Columns (1) and (2) include IPO completion event-firm-year sample with high risk of financial constraints plus the control sample. Columns (3) and (4) include IPO completion event-firm-year sample with low risk of financial constraints plus the control sample. Chi-Squared Test shows the Chi-Squared statistics for testing the difference of coefficients on *IPO*POST* between high and low risk sample. *ISSUE* is an indicator variable equal to one if the firm issues at least one annual management forecast during the year, and zero otherwise. *FREQ* is the number of annual management forecasts issued during the year. *POST* is an indicator variable equal to one if the year is in the post-event period of IPO-completion or IPO-withdrawal event for the firm, and zero otherwise. *IPO* is an indicator variable equal to one if the event is an IPO-completion event and zero if the event is an IPO-withdrawal event. Please refer to Appendix A for variable definitions for other controls. T-statistics (in parentheses below the coefficient estimates) are based on standard errors adjusted for clustering at the event-firm level. ***, **, * represent two-tailed statistical significance at the 1%, 5% and 10% levels, respectively.

Table 8: Strategic interaction

Panel A: Firm level

	Return				Sales			
	Substitutes (Corr<0)		Complements (Corr>=0)		Substitutes (Corr<0)		Complements (Corr>=0)	
VARIABLES	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
*IPO*POST*	-0.037***	-0.062***	-0.006	-0.011*	-0.016***	-0.029***	-0.003	-0.004
	(-6.42)	(-8.03)	(-1.60)	(-1.80)	(-3.61)	(-4.30)	(-0.67)	(-0.70)
POST	0.009	0.015**	0.004	0.008	0.007	0.013**	0.001	0.001
	(1.52)	(1.98)	(0.96)	(1.26)	(1.40)	(1.98)	(0.34)	(0.21)
SIZE	0.036***	0.052***	0.035***	0.050***	0.035***	0.050***	0.034***	0.050***
	(10.78)	(11.16)	(24.34)	(25.11)	(16.29)	(16.98)	(19.25)	(19.98)
BTM	0.005	0.011**	0.006***	0.012***	0.006**	0.012***	0.004*	0.009***
	(1.31)	(2.24)	(3.71)	(4.88)	(2.49)	(3.34)	(1.93)	(3.05)
LEV	0.001	0.008	0.019***	0.037***	0.021**	0.037***	0.016**	0.034***
	(0.04)	(0.42)	(3.13)	(4.32)	(2.29)	(2.86)	(2.01)	(3.18)
INSTITUTION	0.083***	0.124***	0.059***	0.092***	0.057***	0.077***	0.057***	0.095***
	(6.28)	(6.62)	(10.88)	(11.90)	(6.75)	(6.38)	(8.56)	(9.95)
FOLLOW	0.003***	0.004***	0.003***	0.004***	0.004***	0.005***	0.003***	0.004***
	(4.12)	(3.94)	(11.91)	(10.85)	(8.45)	(7.75)	(9.25)	(8.81)
RETURN	0.003	0.006**	0.005***	0.010***	0.004***	0.008***	0.006***	0.011***
	(1.38)	(2.06)	(5.91)	(8.91)	(3.01)	(4.72)	(5.19)	(7.56)
ROA	0.035***	0.051***	0.037***	0.044***	0.027***	0.036***	0.047***	0.056***
	(2.99)	(3.48)	(8.46)	(7.69)	(4.26)	(4.42)	(8.36)	(7.64)
LOSS	-0.024***	-0.037***	-0.024***	-0.040***	-0.025***	-0.040***	-0.025***	-0.042***
	(-5.71)	(-6.81)	(-12.38)	(-15.44)	(-8.43)	(-10.24)	(-10.47)	(-12.91)
EARN_INCREASE	-0.007***	-0.007**	-0.009***	-0.009***	-0.010***	-0.010***	-0.009***	-0.009***
	(-2.85)	(-1.97)	(-7.90)	(-6.31)	(-5.77)	(-4.47)	(-6.21)	(-5.07)
GROWTH	0.007***	0.011***	0.005***	0.007***	0.004***	0.006***	0.007***	0.009***

	(3.26)	(3.68)	(5.61)	(6.12)	(3.06)	(3.66)	(5.30)	(5.73)
EARN_VOL	-0.009	-0.017	-0.024***	-0.035***	-0.017***	-0.029***	-0.023***	-0.033***
	(-1.13)	(-1.47)	(-6.29)	(-6.43)	(-3.05)	(-3.59)	(-5.00)	(-4.83)
BIGAUDITOR	0.013**	0.028***	-0.003	0.001	-0.000	0.008	0.001	0.005
	(1.98)	(3.09)	(-0.87)	(0.18)	(-0.03)	(1.46)	(0.32)	(1.08)
Chi-Squared Test	44.11***	70.33***			17.84***	27.69***		
Event-Firm FEs	Yes							
Year FEs	Yes							
Cluster	Event-Firm							
Observations	47,677	47,677	284,554	284,554	106,443	106,443	189,721	189,721
Adjusted R-squared	0.624	0.711	0.592	0.680	0.596	0.685	0.604	0.691

Panel B: Industry level

	R&D				Regression			
	Substitutes		Complements		Substitutes		Complements	
VARIABLES	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)	*ISSUE*	log(1+*FREQ*)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
*IPO*POST*	-0.014***	-0.027***	-0.004	-0.006	-0.011**	-0.018***	-0.005	-0.009
	(-3.32)	(-4.09)	(-1.03)	(-1.01)	(-2.51)	(-2.83)	(-1.21)	(-1.44)
POST	0.008*	0.018***	0.002	0.002	0.007	0.011*	0.002	0.005
	(1.79)	(2.92)	(0.47)	(0.26)	(1.43)	(1.69)	(0.54)	(0.83)
SIZE	0.038***	0.053***	0.033***	0.048***	0.032***	0.047***	0.037***	0.053***
	(16.42)	(16.07)	(21.49)	(22.62)	(17.90)	(18.66)	(20.33)	(20.77)
BTM	0.008***	0.014***	0.004**	0.010***	0.004**	0.009***	0.007***	0.013***
	(3.42)	(3.99)	(2.16)	(3.61)	(2.00)	(2.99)	(3.47)	(4.55)
LEV	0.022**	0.024	0.014**	0.035***	0.013*	0.029***	0.022***	0.039***
	(2.06)	(1.62)	(2.16)	(3.83)	(1.74)	(2.73)	(2.71)	(3.52)
INSTITUTION	0.049***	0.086***	0.067***	0.102***	0.062***	0.093***	0.062***	0.101***
	(6.07)	(7.50)	(10.96)	(11.50)	(8.81)	(9.15)	(8.98)	(10.28)
FOLLOW	0.001***	0.001**	0.004***	0.005***	0.004***	0.005***	0.003***	0.003***
	(3.23)	(2.39)	(13.10)	(12.48)	(10.84)	(9.65)	(7.35)	(7.10)
RETURN	-0.001	-0.000	0.007***	0.012***	0.005***	0.009***	0.005***	0.010***
	(-0.72)	(-0.24)	(7.09)	(10.22)	(4.37)	(6.27)	(4.06)	(6.41)
ROA	0.032***	0.050***	0.035***	0.040***	0.038***	0.047***	0.035***	0.044***
	(3.35)	(4.13)	(7.79)	(6.91)	(6.63)	(6.30)	(6.18)	(5.90)
LOSS	-0.017***	-0.027***	-0.027***	-0.046***	-0.025***	-0.040***	-0.023***	-0.039***
	(-6.15)	(-7.11)	(-12.55)	(-15.78)	(-10.14)	(-12.21)	(-9.46)	(-12.09)
EARN_INCREASE	-0.002	0.001	-0.012***	-0.013***	-0.011***	-0.012***	-0.005***	-0.005***
	(-1.08)	(0.37)	(-8.97)	(-7.69)	(-7.82)	(-6.17)	(-3.82)	(-2.92)
GROWTH	0.004**	0.006**	0.006***	0.008***	0.004***	0.007***	0.007***	0.008***
	(2.38)	(2.53)	(6.00)	(6.65)	(3.61)	(4.40)	(5.12)	(5.17)
EARN_VOL	-0.020***	-0.030***	-0.019***	-0.028***	-0.025***	-0.037***	-0.021***	-0.031***

	(-2.58)	(-2.87)	(-5.02)	(-5.13)	(-5.42)	(-5.69)	(-3.98)	(-4.01)
BIGAUDITOR	-0.022***	-0.026***	0.019***	0.032***	0.007*	0.014***	-0.006*	-0.004
	(-4.84)	(-4.34)	(5.87)	(7.33)	(1.93)	(2.85)	(-1.67)	(-0.75)
Chi-Squared Test	11.99***	22.24***			3.95**	4.57**		
Event-Firm FEs	Yes							
Year FEs	Yes							
Cluster	Event-Firm							
Observations	121,631	121,631	218,102	218,102	165,570	165,570	174,157	174,157
Adjusted R-squared	0.610	0.697	0.589	0.678	0.592	0.681	0.601	0.688

This table shows the cross-sectional tests on the strategic interactions. Panel A measures the extent of strategic interaction at the firm level. Columns (1) to (4) ((5) to (8)) use the average daily return (quarterly sales) correlations between all completed IPOs in the event and the industry public incumbent during three years post IPO issuance. A public incumbent is classified as a strategic substitute of completed IPOs if the correlation is negative. Columns (1) and (2) ((5) and (6)) include IPO completion event-firm-year sample from strategic substitute incumbents with return (sales) correlations plus the control sample. Columns (3) and (4) ((7) and (8)) include IPO completion event-firm-year sample from strategic complements incumbents with return (sales) correlations plus the control sample. Panel B measures the extent of strategic interaction at the industry level. In Columns (1) to (4), an industry is considered as strategic substitutes if its mean R&D intensity, computed as the industry average ratio of R&D expenditures over the total asset, is below the median of all industries. Columns (5) to (8) use the regression approach of Bloomfield (2021) and Kedia (2006) to identify strategic interaction. Columns (1) and (2) ((5) and (6)) include IPO completion event-firm-year sample from strategic substitute incumbents using R&D (regression) methods plus the control sample. Columns (3) and (4) ((7) and (8)) include IPO completion event-firm-year sample from strategic complement incumbents using R&D (regression) methods plus the control sample. Chi-Squared Test shows the Chi-Squared statistics for testing the difference of coefficients on *IPO*POST* between different strategic interaction samples. *ISSUE* is an indicator variable equal to one if the firm issues at least one annual management forecast during the year, and zero otherwise. *FREQ* is the number of annual management forecasts issued during the year. *POST* is an indicator variable equal to one if the year is in the post-event period of IPO-completion or IPO-withdrawal event for the firm, and zero otherwise. *IPO* is an indicator variable equal to one if the event is an IPO-completion event and zero if the event is an IPO-withdrawal event. Please refer to Appendix A for variable definitions for other controls. T-statistics (in parentheses below the coefficient estimates) are based on standard errors adjusted for clustering at the event-firm level. ***, **, * represent two-tailed statistical significance at the 1%, 5% and 10% levels, respectively.

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Table 9: Information flow

VARIABLES	*SYNCH1*	*SYNCH2*	*R2DIFF*
	(1)	(2)	(3)
*IPO *Post*	0.043***	-0.005	-0.004***
	(3.00)	(-0.48)	(-3.17)
POST	-0.030*	0.010	0.004***
	(-1.85)	(0.87)	(3.13)
SIZE	0.347***	0.287***	0.007***
	(57.14)	(63.89)	(16.33)
BTM	-0.037***	-0.032***	-0.001
	(-4.50)	(-5.47)	(-1.24)
LEV	-0.084***	-0.042**	0.002
	(-3.33)	(-2.28)	(1.39)
INSTITUTION	0.166***	0.164***	0.008***
	(8.61)	(11.03)	(5.77)
FOLLOW	-0.004***	0.004***	0.001***
	(-5.26)	(5.85)	(17.23)
RETURN	0.029***	0.023***	0.000**
	(6.81)	(7.49)	(1.98)
ROA	0.022	-0.018	0.001
	(0.99)	(-1.11)	(1.00)
LOSS	-0.034***	-0.038***	-0.003***
	(-4.29)	(-6.62)	(-5.69)
EARN_INCREASE	0.002	0.010***	0.000
	(0.51)	(2.94)	(0.68)
GROWTH	0.012**	0.015***	0.001*
	(2.20)	(3.95)	(1.88)
EARN_VOL	0.061***	0.043***	-0.000
	(3.23)	(3.15)	(-0.04)
BIGAUDITOR	0.091***	0.095***	0.003***
	(7.34)	(10.35)	(4.48)
Event-Firm FEs		Yes	
Year FEs		Yes	
Cluster		Event-Firm	
Observations	291,233	291,233	291,233
Adjusted R-squared	0.492	0.625	0.566

This table shows the results of the impact of completed IPOs on the industry information environment. *SYNCH1* is the stock return synchronicity by regressing firm weekly stock return on current and lagged market weekly returns. *SYNCH2* is the stock return synchronicity by regressing firm weekly stock return on current and lagged market weekly returns as well as the current and

lagged industry weekly returns. *DIFF_SYNCH* is the difference between *SYNCH2* and *SYNCH1*. *POST* is an indicator variable equal to one if the year is in the post-event period of IPO-completion or IPO-withdrawal event for the firm, and zero otherwise. *IPO* is an indicator variable equal to one if the event is an IPO-completion event and zero if the event is an IPO-withdrawal event. Please refer to Appendix A for variable definitions for other controls. T-statistics (in parentheses below the coefficient estimates) are based on standard errors adjusted for clustering at the event-firm level. ***, **, * represent two-tailed statistical significance at the 1%, 5% and 10% levels, respectively.

Table 10: Investment

VARIABLES	*INVESTMENT*
IPO POST *Q*	-0.074
	(-0.629)
IPO POST *Q-j*	-0.308***
	(-2.905)
*IPO * POST*	0.959***
	(3.780)
*POST*Q*	-0.026
	(-0.227)
*IPO*Q*	0.173
	(1.611)
Q	1.868***
	(17.983)
Post Q-j*	0.055
	(0.533)
IPO Q-j*	-0.162*
	(-1.700)
Q-j	0.193**
	(2.098)
POST	-0.078
	(-0.311)
SIZE	-1.679***
	(-28.323)
BTM	-2.996***
	(-46.307)
LEV	-8.575***
	(-34.951)
INSTITUTION	-0.287*
	(-1.926)
FOLLOW	0.053***
	(7.894)
RETURN	1.437***
	(39.874)
ROA	-12.297***
	(-40.354)
LOSS	-1.320***
	(-23.268)
EARN_INCREASE	-0.408***
	(-14.942)
GROWTH	2.125***

	(36.783)
EARN_VOL	-0.697***
	(-3.234)
BIGAUDITOR	0.364***
	(4.219)
Event-Firm FEs	Yes
Year FEs	Yes
Cluster	Event-Firm
Observations	286,089
Adjusted R-squared	0.799

This table shows the impact of completed IPOs on the usefulness of industry information in firm investment decisions. *INVESTMENT* is the sum of capital expenditure and R&D scaled by total assets. *Q and Q(-j)* are Tobin's Q of firm *j* and the value-weighted average Tobin's Q of public incumbents other than firm *j*. *Q* equals the book value of assets minus the book value of equity plus the market value of equity divided by the book value of assets. *POST* is an indicator variable equal to one if the year is in the post-event period of IPO-completion or IPO-withdrawal event for the firm, and zero otherwise. *IPO* is an indicator variable equal to one if the event is an IPO-completion event and zero if the event is an IPO-withdrawal event. Please refer to Appendix A for variable definitions for other controls. T-statistics (in parentheses below the coefficient estimates) are based on standard errors adjusted for clustering at the event-firm level. ***, **, * represent two-tailed statistical significance at the 1%, 5% and 10% levels, respectively.

Appendix A: Variable definitions

Variable	Definition
ISSUE	An indicator variable equal to one if the firm issues at least one annual management forecast during the year, and zero otherwise.
FREQ	The number of annual management forecasts issued during the year
POST	An indicator variable equal to one if the year is in the post-event period of IPO-completion or IPO-withdrawal event for the firm, and zero otherwise.
IPO	An indicator variable equal to one if the event is an IPO-completion event and zero if the event is an IPO-withdrawal event.
SIZE	The nature logarithm of market value of equity at the beginning of the year.
BTM	The ratio of the book value of equity to the market value of equity at the beginning of the year.
LEV	The ratio of total debt to total assets at the beginning of the year.
INSTITUTION	The percentage of institutional holdings at the beginning of the year
FOLLOW	The number of analysts following during the year
RETURN	Annual return during the year.
ROA	Earnings before extraordinary items during the year divided by total assets at the beginning of the year.

LOSS	An indicator variable equal to one if the firm reports loss (the earnings before extraordinary items is negative) during the year, and zero otherwise.
EARN_INCREASE	An indicator variable equal to one if the EPS in the current year is greater than that of the previous year, and zero otherwise.
GROWTH	The sales growth rate from year t-1 to year t.
EARN_VOL	The standard deviation of the annual earnings before extraordinary items scaled by total assets over the five years ending at the current year.
BIGAUDITOR	An indicator variable equal to one if the firm is audited by the big eight auditor, and zero otherwise.
SYNCH1	$SYNCH1 = \log\left(\frac{R_1^2}{1-R_1^2}\right)$ where R_1^2 is the coefficient of determination estimated using the following equation for each firm-year: $RET_{it} = \alpha + \beta_1 MRET_{it} + \beta_2 MRET_{it-1} + \varepsilon_i$ where *RET* is the firm weekly return and *MRET* is the value-weighted market return.
SYNCH2	$SYNCH2 = \log\left(\frac{R_2^2}{1-R_2^2}\right)$ where R_1^2 is the coefficient of determination estimated using the following equation for each firm-year:

	$RET_{it} = \alpha + \beta_1 MARET_{it} + \beta_2 MARET_{it-1} + \beta_3 INDRET_{it} + \beta_4 INDRET_{it-1} + \varepsilon$ where RET_{it} is the firm weekly return, *MRET* is the value-weighted market return and *INDRET* is the value-weighted average of incumbents' week t returns.
DIFF_SYNCH	*SYNCH1- SYNCH2.*
INVESTMENT	Sum of capital expenditure and R&D scaled by total assets
Q	Book value of assets minus book value of equity plus the market value of equity divided by the book value of assets.