Analyst Workload and Information Production:

Evidence from IPO Assignments

Kevin Pisciotta
Pennsylvania State University

October 23, 2017

Abstract

Using IPO assignments as a shock to analyst workload, I provide evidence that workload increases have a sizeable impact on analyst information production. Analysts employed by the lead manager in an IPO are less accurate, produce fewer reports, and issue reports with greater delay on their non-IPO portfolio firms. The reduction in research quality from assigned analysts reduces the quality of the information environment of covered firms: earnings surprises, bid-ask spreads and volatility increase around earnings announcements. Overall, results suggest that time variation in analyst workload has multi-dimensional effects on how analysts produce information. In particular, analyst IPO participation crowds out attention spent on their secondary market research.

This project has greatly benefitted from the comments of my co-chairs, Laura Field and Matthew Gustafson, my remaining committee members, David Haushalter, Peter Iliev, and Karl Muller, participants at the 2016 FMA Doctoral Student Consortium, especially session chair Michelle Lowry, workshop participants at Baylor University, Penn State University, the University of Delaware, the University of Kansas, the University of Missouri, and the University of Southern Florida, and other individuals that lent their time: Bobby Carnes, Michael Dambra, Brian Gibbons, Dan Givoly, Jason Kotter, Giang Nguyen, Ali Wolff, and Fei Xie. I'd also like to thank the Smeal Research Grants Program for providing funding for data used in this project. All remaining errors are my own.

1. Introduction

In this paper, I examine how workload shocks affect the information production of financial analysts. Sell-side analysts serve an important role in financial markets in producing information that informs investor decisions (Womack, 1996, Jegadeesh et al., 2004, and Bradley et al., 2014). Additionally, analyst information production also has real implications for firms. Kelly and Ljungqvist (2012) offer causal evidence that termination of analyst information production generates large consequences for firm valuation and information asymmetry as a result of increased information gaps between retail and institutional investors.[1] Importantly, though, analyst information production can vary over time in degree not just in kind, due to changes in analyst workload.

Perhaps the largest shock to analyst workload is when her employer becomes the lead underwriter of an IPO deal in the industry the analyst specializes in. Anecdotal and empirical evidence lend support to the notion that IPOs represent a large and important shock to analyst workload. For instance, a *Wall Street Journal* article quoted one analyst in the lead-up to the Toys "R" Us IPO as saying, "My whole life is about posturing for [this] IPO" (Demos and Scaggs, 2014).[2] During the IPO process, analysts engage in due diligence, sales-force education, and valuation modeling of a firm that lacks a market price. At the same time, analysts also continue to supply analysis on a portfolio of public firms. Importantly, little evidence exists on how such workload changes affect the way analysts contemporaneously supply information for their portfolio firms. In this paper, I test how analyst workload increases affect information production

[1] Derrien and Kecskes (2013) and Balakrishnan et al. (2014) also provide evidence that termination of information production has real consequences for firms by showing changes in financing and investment policies, and firm disclosure. Additionally, Merkley, Michaely, and Pacelli (2017) find negative spillover effects across related firms following reductions in coverage.
[2] Additionally, Ljungqvist, Marston, and Wilhelm (2009) discuss the importance of IPO mandates to analyst employers, who expend considerable effort building relationship capital in pursuit of lead management positions.

by examining how analyst research quality for non-IPO portfolio firms responds to the arrival of IPO assignments.

Analysts typically specialize within industries and geographic regions. Such specialization can generate advantages for forecasting earnings of firms sharing a market or geographic area through information commonalities (Malloy, 2005, and Sonney, 2007). These rewards to specialization suggest that there may exist informational advantages to being involved in the underwriting process of a prospective issuer competing in the same market as other firms the analyst covers. Additionally, research on the determinants of analyst forecasting ability indicates that interactions with firm managers and investment bankers, which is particularly acute during the IPO process, represent an important information channel that enrich earnings forecasts (Jacob, Rock, and Weber, 2008, Green et al., 2014, Soltes, 2014, Brown et al., 2015). Specifically, Green et al. (2014) find that when analysts host conferences with corporate managers, analysts parlay private access into more accurate and informative research. Thus, because involvement in investment banking transactions may facilitate information spillover that lowers the cost of producing information on existing portfolio firms, IPO assignments may increase research quality.

However, the increase in workload accompanying IPO assignments is time consuming. Research on information processing constraints notes that attention to new tasks requires allocation of attention away from existing tasks.[3] The decision of how much attention to scale back from existing tasks depends on a cost-benefit analysis over the respective tasks (Gabaix et al., 2006). If incentives for investment banking research work exceed incentives for secondary market information production, analysts may shift attention away from secondary market research, and IPO assignments may reduce research quality for seasoned firms in their portfolio. Ultimately, the effect on analyst information production will depend on the degree of information

[3] See e.g., Kahneman (1973), Merton (1987), Peng (2005), Corwin and Coughenour (2008), and Hirshleifer, Lim, and Teoh (2009).

complementarities between IPO assignments and existing covered firms, and the relative importance of IPO assignments compared to existing secondary market research.

The advantages of using IPO assignments are that they are demanding, observable, are arguably beyond the control of analysts due to the structure of brokerage departments. Analysts typically specialize within an industry, and within each brokerage there is generally one "head" analyst for each industry. Thus, brokerages have limited ability to move analysts of varying workloads or hot streaks into the market for upcoming IPOs.[4] Additionally, Ljungqvist et al. (2006) find no evidence that analyst behavior influences banks' ability to win an IPO mandate. Assignment of an analyst to a given IPO is primarily driven by a) a bank's prior underwriting and lending relationship with the issuer, and b) an analyst's ex-ante decision to specialize in the industry.[5] After also including firm-forecast level consensus adjustments, industry-quarter joint fixed effects, and analyst fixed effects, I can thus estimate the workload effect by comparing the relative research quality for analysts during IPO assignment quarters, with the relative quality of analysts not assigned to an IPO, operating in the same industry and at the same time.

For illustration of the empirical design, I present an example of an analyst in my sample surrounding an IPO assignment. During the first quarter of 2010, the head automotive analyst for Goldman Sachs issued earnings forecasts for fourteen firms in the automotive industry, each of which were covered by roughly twelve additional analysts. In the second quarter of 2010, on June 29th, Goldman Sachs underwrote Tesla's IPO, with this automotive analyst initiating coverage of Tesla roughly forty days later. Importantly, this analyst also issued forecasts during the second quarter of 2010 for the same fourteen firms that were covered in the first quarter of 2010. My estimation approach compares the peer-adjusted research quality this analyst produces for the fourteen seasoned firms during this second quarter (and all other IPO assignment quarters) to

[4] Analyst innate ability per se is irrelevant given the design, which includes analyst fixed effects. Additionally, controls for experience limit any effect of time-varying ability.
[5] I thank Brian Gibbons, a former analyst at Credit Suisse, for clarifying some of these details.

quarters like the first and third quarters of 2010, in which the analyst was not assigned to an IPO. To isolate the effect the IPO workload shock has on firms concurrently competing for analysts' time, forecasts for firms that went public within the previous year are excluded from the sample.

I begin the analysis by examining changes in information quality, where the primary measure is demeaned forecast accuracy. I find that peer-adjusted accuracy declines significantly during quarters in which an analyst is assigned to an IPO. During IPO assignment quarters, relative to median forecast error of $0.11, analyst absolute forecast error increases by over 3.5%. This decline in forecast quality holds using several alternative measures of relative forecast accuracy; is pronounced in both forecast-level and quarter-level analysis; and is robust to using alternative proxies for the IPO workload shock, including using the IPO filing date instead of the offer date.

I find that the decline in accuracy among portfolio firms is similarly pronounced for firms that have been covered by the analyst for at least a year, suggesting the effect is not a learning curve phenomenon. I also show that the reduction in accuracy is equally as strong for larger and more institutionally held firms, indicating that analysts do not simply divert attention away from their least important firms. This evidence suggests that IPO assignments present a sizable workload shock that attracts analyst attention away from producing earnings forecasts and fails to provide a sufficient information advantage, resulting in lower quality forecasts. The decline in information quality also suggests that analysts and brokerages are willing to sacrifice reputation earned for forecast quality to build or maintain reputation capital in the investment banking market.

Next, I explore analyst productivity by examining whether analysts adjust the quantity of reports produced in response to workload shocks. I find that the number of reports issued per firm declines in quarters that analysts are assigned to IPOs. This decline in research output further suggests that analyst attention on secondary market research becomes more constrained during IPO quarters, and that IPO assignments fail to generate positive information spillovers in either quality or quantity of information produced. Further tests show that analysts delay the release of information during quarters in which they are working on IPO deals. The decline in quantity thus likely understates the loss in value for clients.

It is possible that analysts respond to IPO assignments by downsizing their portfolio. I find that analysts are no more likely to drop coverage of a firm in an IPO assignment quarter than in other quarters. Dropping coverage of a portfolio firm could help mitigate attention shortages, but could also damage relations with managers and investors. This result speaks to the relative costs analysts face in dropping coverage, as it appears brokerages value maintaining coverage relationships despite potential losses in reputation associated with supplying poorer information.

More generally, the results suggest few measures are taken to alleviate the effects of workload spikes. Brokerages arguably have the ability to shift resources through actions such as hiring additional analysts. But the results, nonetheless, show a decline in quality, quantity, and timeliness of information production, consistent with low perceived reputational costs to sacrificing research quality during high workload periods. This dynamic underscores an agency problem brokerage clients face. The bank and its analysts may be (privately) allocating attention to more profitable capital market business. And this business does not appear to confer advantages to clients in the form of better private information.

Lastly, I explore the implications of this reduction in research quality for the information environment at the firm level, for firms covered by analysts who experience a workload increase. Specifically, I test how having an analyst that is contemporaneously working on an IPO relates to measures of information asymmetry surrounding earnings announcements. I find that earnings surprises, liquidity and return volatility increase, and the probability of meeting-or-beating earnings declines. This evidence suggests that analyst IPO involvement increases the information asymmetry of firms they concurrently, but inattentively, cover. Similar to recent evidence showing that exogenous drops in coverage lead to increases in firm-level uncertainty, drops in coverage quality from inattentive analysts also has real implications for firm-level uncertainty.

This study relates to several strands of literature, the first of which is a body of research studying attention allocation of market participants. One of the earliest is Corwin and Coughenour (2008), who show that NYSE specialists divert liquidity provision from less profitable stocks to more profitable stocks during times of high activity.[6] My findings also relate to two working papers in this area. Harford et al. (2017) provide evidence that analysts allocate research effort according to career concern incentives, with accuracy increasing in the relative size and institutional ownership of portfolio firms, while Driskill et al. (2016) find that analysts suffer transient information delay and quality reductions in response to attention-absorbing earnings announcement clustering.

My findings are consistent with these studies in that my findings empirically support the importance of attention for performance among information intermediaries. One way this paper differs from Hartford et al. (2017) and Driskill et al. (2016), is that it explores the effect of a time varying but persistent shock to workload, and is able to provide evidence on brokerages and analysts incentives for mediating reductions in information quality. And more importantly, this paper a) explores the implications of attention allocation beyond currently covered firms, revealing a sustained distraction effect, and b) directly assesses the implications of time-varying demands in the IPO market for concurrent secondary market research quality, showing that an attention effect dominates an information spillover effect.

This paper also contributes to a long line of research exploring analysts' conflicts of interest between pursuing research quality versus currying favor through bias.[7] A subset of this literature emphasizes the intensity of this conflict in the case where analysts issue research for affiliated firms their bank has performed banking services for. This paper reveals another element of this

[6] Similarly, Masulis and Mobbs (2014) and Fich, Harford, and Tran (2015) show that board directors and institutional investors, respectively, disproportionately weight effort higher on firms they view as more important.
[7] See, e.g., Michaely and Womack (1999), Hong and Kubik (2003), Bradley, Jordan, and Ritter (2003), Ljungqvist et al. (2006), and Hong and Kasperczyk (2010).

conflict in that banking services can not only undermine the research quality of affiliated firms, but also the research quality of unaffiliated portfolio firms, as attention is diverted from portfolio firms to firms being serviced by the bank.

2. Workload Shocks and Analyst Research Quality

Analysts specialize in gathering and producing financial information. Their career prospects often hinge on establishing a reputation for producing quality information (Hong and Kubik, 2003, and Ljungqvist et al., 2006). Analysts build this reputation most noticeably through the accuracy of their research. Several factors, such as size of the analyst's brokerage, the amount of forecasting experience the analyst has (Clement, 1999), and the degree of prior work experience in the industry (Bradley et al., 2017), have been discussed in prior literature as contributing to analysts' ability to forecast accurately. There are also a number of studies identifying important channels through which analysts acquire superior information, including co-location with covered firms (Malloy, 2005), shared connections with corporate managers (Cohen et al., 2010), and private access to insiders (Soltes, 2014, and Green et al., 2014). I examine analysts' workload as a new, time-varying determinant of analyst research quality.

In equilibrium, analysts allocate attention across their research tasks until the marginal cost exceeds the marginal return. Tasks that provide a higher marginal return should garner more attention. Consistent with this, Harford et al. (2017) find that analysts are more accurate on larger and more active firms within their portfolio, as these firms potentially provide a larger marginal return in terms of interest among investors. But when workload changes, analysts are forced to design a new allocation of attention that is once again consistent with the costs and rewards to time. How the arrival of a workload shock affects analysts' quality of research is an empirical question, given the lack of evidence on how brokerage and analysts optimally allocate resources across competing assignments to achieve their various objectives, and analysts' ability to transfer knowledge across these assignments.

Arguably, the largest workload shock analysts experience is when their bank is awarded the mandate to underwrite an IPO in the industry the analyst specializes in. Analysts are asked to attend meetings with managers and lawyers, educate the sales force, and build a valuation model from scratch. To the extent that the marginal benefit to allocating time to the underwriting process is greater than that of the analyst's other tasks, the analyst will divert attention away from the existing tasks toward the IPO process.[8] Thus, an IPO workload shock will constrain the amount of attention analysts devote to producing information on firms they concurrently cover. Under the *Limited Attention Hypothesis*, this will reduce the quality of research they produce.

It's not obvious, though, that a shock to analyst workload will result in a decline in research quality on covered firms. One reason is that brokerage firms or analysts arguably possess the means to offset any decline in attention if the costs of a decline outweighs the benefits. These costs could come in the form of lost current or future trading revenue from clients, and/or lost private reputational capital for the analyst (Fang and Yasuda, 2009). The means by which the brokerage or analyst could possibly offset the demands of increased workload include shifting resources among analysts' team members or expanding the workforce.[9] The potential costs to lower quality research suggest a workload shock could have minimal consequences on information production.

Lastly, a final reason it is unclear how a workload increase will affect information production is that the arrival of a new assignment may lower the cost of producing information on existing assignments through information complementarities that make it easier to accurately forecast earnings, even if the analyst allocates less time. Assisting in the process of underwriting a firm's securities involves private access to managers, and at times, interactions with bankers and

[8] Under reasonable assumptions, some but not all of this diverted attention will come at the expense of reduced leisure.

[9] Several recent papers seem to suggest an additional potential reason a shock to workload may not result in a decline in research quality. Altinkilic and Hansen (2009) and Altinkilic, Balashov, and Hansen (2013) conclude that analysts fail to serve an information role, and merely repackage prior news in serving a visibility role, which suggests that marginal changes in attention may be largely irrelevant for analyst information production.

investors. Empirical evidence indicates that superior access to managers results in the production of higher quality information (Malloy, 2005, Cohen et al., 2010, Green et al., 2014, and Soltes, 2014). Additionally, Jacob et al. (2008) provide evidence consistent with investment banking departments conferring informational advantages to their analysts through wider, richer channels of private information. If analysts are able to acquire and transfer information from underwriting involvement in order to lower attention requirements for portfolio firm research, IPO assignments may result in an increase in research quality. This is termed the *Information Spillover Hypothesis*.

3. Identification Strategy

Studying the effect of analyst workload on information supply is empirically challenging. Static proxies for workload are endogenous to analyst and brokerage resources and ability. This issue is mitigated using within-analyst changes in workload, as long as those changes are not selected by analysts in a way that is dependent on the demands of their existing tasks. For instance, a new assignment could be chosen particularly when it becomes easier to forecast earnings of firms covered.[10] In an attempt to isolate changes in analyst workload, I use IPO assignments as a shock to workload. Ljungqvist et al. (2006) provide evidence that the choice of bank in an IPO deal is primarily driven by the issuer's prior banking relationships, and is relatively independent of analyst influence. Also, while it's possible that IPOs are timed by issuers during periods that coincide with variation in industry-wide analyst workload, it is less likely that issuance is timed based on an individual analyst's workload. And most fundamentally, analysts play no role in affecting which firms decide to go public, nor when these firms choose to go public.

One problem that may arise is if IPOs affect the information environment of competing public firms that IPO analysts cover. Hsu, Reed, and Rochell (2010) provide evidence of changes

[10]For instance, the decision to add a new firm could be preceded by a change in the analyst's connections to managers at the other firms.

in firm prospects among industry competitors following an IPO. If such a shock to the competitive landscape increases the costs of information acquisition, analyst forecast quality may decline among firms in the IPO issuer's peer group, separate from any attention effect. Importantly though, this should affect all analysts covering these peer-group firms during this period. To deal with this possibility, I use consensus adjustments for accuracy, output, and timeliness, which approximates using firm-quarter fixed effects, and controls for aggregate effects specific to each forecast period for each firm. I also include industry-quarter joint fixed effects (in addition to analyst fixed effects) to control for aggregate fluctuations affecting the research ability among analysts in the same industry and time. Thus, I identify the effect of workload shocks off of within-analyst differences in peer-adjusted information production, between analysts that issue reports in the same industry and calendar quarter but experience differing amounts of IPO assignments in that quarter.

This is virtually a difference-in-differences design under staggered and repeated treatment, which compares the research quality for analysts during quarters in which they experience an IPO assignment, with the research quality of analysts (including themselves) in quarters in which they do not experience an IPO assignment. I use the following regression equation to estimate this

$$Y_{ijt} = \alpha_i + \alpha_{xt} + \gamma X_{ijt} + \delta \mathbf{IPO\ Assignment}_{\mathbf{it}} + \varepsilon_{ijt}, \quad (1)$$

where *i* indexes analysts, *j* indexes firms, *t* indexes time, and *x* indexes two digit sic industries. Y_{ijt} is a generalization of the various measures of information production analyzed (e.g., accuracy); α_i and α_{xt} represent analyst and industry-quarter fixed effects; X_{ijt} represents a set of analyst (e.g., experience), brokerage (e.g., size), forecast (e.g., forecast horizon), and firm-specific (e.g., market cap) controls; and IPO Assignment represents an indicator variable for whether the analyst was assigned to at least one IPO that issued in quarter t. As discussed above, analyst fixed effects control for any fixed differences across analysts, and industry-quarter fixed effects control for aggregate shocks affecting all analysts within the same industry and quarter.[11] The effect of the workload shock is estimated through the coefficient on IPO Assignment, δ. This regression is implemented on the analyst-firm-quarter level, using the shortest horizon annual forecast for each seasoned firm within the analyst's portfolio.[12]

To provide detail into the economic magnitude of the effect, I also estimate regressions using unadjusted outcome variables. To do this, I use a model similar to equation (1), but control for firm-specific factors within a quarter using fixed effects rather than demeaning the outcome variable. This regression specification takes the following form:

$$\mathbf{Y_{ijt}} = \alpha_{\mathbf{i}} + \phi_{\mathbf{jt}} + \gamma\mathbf{X_{it}} + \delta\mathbf{IPO\ Assignment_{it}} + \varepsilon_{\mathbf{ijt}}, \quad (2)$$

where α_i again represents analyst fixed effects, but in this case, $\phi_{\mathbf{jt}}$ represents firm-quarter fixed effects, and $\mathbf{X_{it}}$ represents the same set of controls as equation (1), absent the firm-specific variables. Regressions estimated using equations (1) and (2) are estimated with standard errors clustered at the firm and quarter level.

To estimate the implications of any changes in analyst research quality arising from workload increases on firm-level information asymmetry, I estimate a similar model as in equation (1), but estimated on the firm-quarter level instead of the analyst-firm-quarter level. The dependent variables reflect measures of firm-level information asymmetry surrounding the closest earnings announcements following each quarter. The model continues to include industry-quarter joint

[11] This is similar to the methodology of, among others, Bertand and Mullainathan (2003) who use staggered passage of state-level anti-takeover laws, while including firm and time fixed effects. One difference is that, in the main specification, I estimate the regressions using only analysts who cover at least one IPO throughout the sample period, as other analysts may work for smaller brokerages and be less comparable. This should have little effect on the identification of the workload shock effect. Nevertheless, in Panel B of Table 2 and in Table A4 of the internet appendix (https://sites.psu.edu/kpisciotta/files/2014/12/Online-Appendix_3.0-2da6ob0.pdf), I estimate versions of the respective information quality and quantity regressions using *all* analysts, including those that were never involved in an IPO. Results are nearly identical.

[12] The advantage of this setup is that I can control for forecast-level and firm-level variables. An alternative approach is to average across all forecasts issued within a quarter and estimate the regression on an analyst-quarter level. This presents the advantage of weighting each quarter equally and limiting the sample to a single analyst research quality observation for each quarterly workload shock measure. The regressions for information quality and quantity estimated in this fashion show similar results, and are reported in internet appendix Tables A3 and A5.

fixed effects, so the workload implication effect is identified by comparing information asymmetry around earnings announcements for firms that had an analyst occupied with an IPO the previous quarter, compared with other firms in the same industry and quarter that didn't have an analyst occupied with an IPO the previous quarter.

4. Sample Description

The sample of IPOs begins with 3,936 U.S. firm-commitment IPO deals completed over the period 1995 to June of 2014, collected from Thomson One's SDC New Issues Database. This excludes unit offerings, foreign issues, REITs, follow-on offerings, and all deals suspected of being a fund or trust (i.e., issuers with the following sic codes: 6091, 6371, 6722, 6726, 6732, 6733, and 6799). After collecting issuer pre-IPO accounting information from COMPUSTAT and prospectuses, and post-IPO return information from CRSP, the sample is reduced to 3,627 deals. From this sample, 2,964 deals are retained in which an analyst employed by one of the lead managers in the deal could be identified from I/B/E/S as having issued a forecast within the first 90 days. This produces 1,979 unique analysts, with 92,458 analyst-quarter observations in which these analysts issued forecasts from 1994 to 2015.[13]

From this sample, I restrict each analyst's time series of forecasts to begin with the quarter in which they issue their first annual forecast for a firm with at least three peer analysts covering it, exclude all quarters in which the analyst produces zero annual forecasts for three straight quarters or more, and exclude firms that have less than three peer analysts covering the firm in the quarter. This reduces the number of analyst-quarters with non-missing control variables to 69,272, and produces a sample of 759,319 analyst-firm-quarter observations. It is important to note, this sample of firm forecasts is entirely composed of firms that have been public for at least one year. This isolates changes in information production for firms in the analyst's portfolio not directly involved in any recent IPO workload shock event.

[13] 1994 is the first year a comprehensive sample of recommendations is available from I/B/E/S.

Table 1 presents descriptive statistics of the sample. Panel A shows that, on average, analysts in the sample cover around 4.5 IPOs and have been covering the typical portfolio firm for a little over four years. The number of unique firms covered in a quarter is roughly 15, with coverage typically spanning three separate two-digit industries.

The average IPO in the sample raises $165M in proceeds (in 2004 dollars) – similar to the $180.7M reported by Celikyurt, Sevilir, and Shivdasani (2010) for the period 1985-2004. Average underpricing (i.e., IPO first day return) is 25.90%. This is comparable to a monthly average of 25.80% reported by Lowry, Officer, and Schwert (2010) for the sample period 1991-2005, and a 25.29% issuer average reported by Celikyurt, Sevilir, and Shivdasani (2010).

The primary measure I use for workload shocks is an indicator variable signifying whether an analyst is assigned to at least one IPO that is completed within the calendar quarter, where assignment is determined by whether an analyst is employed by a lead manager of the IPO and issues a forecast within the first 90 days after the IPO. This workload measure acts as a simple, discrete proxy for workload demands, and eliminates assumptions over the point during the IPO process in which workload demands peak or the functional form of the relation between IPO size and workload. This measure identifies solely off of the event of IPO completion. However, it is robust to using a count variable of the number of IPOs completed, a continuous measure of IPO proceeds for all IPOs an analyst is assigned to within a quarter; and using the filing date instead of the offer date, including an indicator for filings in the *previous* quarter, which is observable to investors.

To measure information quality, I rely on analyst EPS forecast accuracy. I follow Malloy (2005) and Clement (1999) by computing proportional mean-adjusted absolute forecast error (PMAFE), which benchmarks analyst forecast performance to peer consensus and adjusts for heteroscedasticity (Clement, 1999).[14] PMAFE is computed as the absolute EPS forecast error for analyst *i* (AFE_i), minus the average absolute EPS forecast error for all other analysts covering the firm and earnings date in that quarter ($\overline{AFE_{-i}}$), all scaled by $\overline{AFE_{-i}}$. Using the shortest-horizon annual forecast issued by analyst *i* in the quarter, I construct the consensus by selecting the closest forecast issued by each peer analyst in the quarter covering the same firm and earnings date.

I also use two additional measures of relative forecast accuracy for robustness. The first, SDAFE, is created in the same way as PMAFE described above but is scaled by the standard deviation of peer errors, rather than the average of peer errors: $\frac{AFE_i - \overline{AFE}_{-i}}{\sigma(AFE_{-i})}$. And the second, derived from Clement and Tse (2005), is calculated as $\frac{\text{MAX}(AFE) - AFE_i}{\text{MAX}(AFE) - \text{MIN}(AFE)}$. This measure is increasing in accuracy, while the prior two are decreasing in accuracy. I winsorize the measures of accuracy at the extreme 2.5% of observations. The means of these three variables, -.021, -.029, and 0.58, shown in Panel C of Table 1, suggest that the sample of IPO analysts are slightly more accurate than their peers, with the average forecast error two percent and about one-twentieth of a standard deviation below peer forecast error.[15]

To measure information quantity, I rely on the number of reports and forecasts issued per portfolio firm.[16] Looking at Panel C of Table 1, analysts in the sample produce about two reports per portfolio firm in a given quarter, and the demeaned averages suggest reports and forecasts are roughly similar to peer analysts. Panel D shows that the average portfolio firm has 14 analysts covering it, has a market capitalization of about $10B, and institutional ownership of 66%.

To measure timeliness, I follow Driskill et al. (2016) and evaluate the number of days (both raw and peer-adjusted) it takes analysts to issue an EPS forecast following the announcement of

[14] Recent papers also relying on this measure include Sonney (2007), Jacob et al. (2008), Bradley et al. (2017), and Harford et al. (2017).
[15] As mentioned above, only analysts who are involved with at least one IPO are included in the sample, which explains why the means of PMAFE and SDAFE are not zero.
[16] Reports are measured by grouping all forecasts announced on the same day into a single figure.

quarter's *t's* earnings results in quarter *t+1*. This measure is set to the number days remaining in the quarter if the analyst fails to issue a forecast following the announcement. Additionally, I compute an indicator variable labeled *Timely*, which signifies whether the analyst issues a forecast the day of, or the immediate trading day following, an EPS announcement (Driskill et al., 2016). Panel C of Table 1 shows that the unconditional probability of issuing a timely forecast is 66%, similar to the 65.3% reported by Driskill et al. (2016).

To assess the consequences of analyst workload shocks on firm-level information asymmetry, I rely on measures that have been used in prior literature to capture uncertainty around earnings news. I do this is two ways. First, I measure the information content of earnings news using three measures: a) the absolute value of the earnings surprise, computed as |Actual – Consensus Forecast|/Price, b) an indicator for whether the firm meet-or-beat the consensus forecast, and c) the absolute value of the three-day CAR beginning the day of the earnings announcement (Kelly and Ljungqvist, 2012, and Merkley et al., 2017).[17] Second, I estimate the cost of trading around earnings news using average daily bid-ask spread, the measure of illiquidity from Amihud (2002), and average daily return volatility (Kelly and Ljungqvist, 2012, and Bradley et al., 2017). As Panel D of Table 1 shows, the sample average absolute earnings surprise and three-day CAR are 2.86% of price and 6.24%, with an unconditional probability of meeting-or-beatings analysts' forecasts of 52%. The average daily bid-ask spreads, illiquidity, and annualized return volatility are 1.25%, 0.17, and 60%. These numbers are similar to estimates from recent research. Bradley et al. (2017) find an average absolute earnings surprise of 4.0%. Kelly and Ljungqvist (2012) find an average bid-ask spread and Amihud illiquidity measure of around 1.2% and 0.13 over three-month windows surrounding coverage termination. Merkley et al. (2017) find a slightly higher absolute three-day CAR of around 9.5%.

[17] Specifically, these measures correspond to earnings announced in quarter *t+1* that were forecasted in quarter *t*.

5. Results

5.1 Accuracy

5.1.1 Quarterly Variation in Attention and Accuracy

Table 2 presents the main results for forecast accuracy. Columns 1, 2, 4, and 5 of Panels A and B regress firm forecast error using Equation (1) above on several controls and the primary measure of workload demands, IPO Assignment. Column 3 is estimated using equation (2). Panel A is estimated using only analysts that are assigned to at least one IPO, while Panel B, used for comparing estimates to prior studies, is estimated using the full sample of analysts from I/B/E/S. The accuracy dependent variables across the first four columns are PMAFE, SDAFE, unadjusted absolute forecast error (AFE), and the accuracy measure from Clement and Tse (2005) which is increasing in accuracy. Across these four columns, the results show that workload shocks are associated with a reduction in information quality. During quarters in which analysts are involved in an IPO deal, they exhibit a significant decline in relative forecast accuracy on seasoned portfolio firms, compared to the relative forecast accuracy of other analysts in the industry not involved in an IPO.[18] To get an idea of the economic magnitude, Column 3 of Panel B shows that, relative to the median absolute forecast error of $0.11, analysts are 3.5% less accurate during IPO quarters.[19] This result is similar to the 3.25% reduction in accuracy Harford et al. (2017) find associated with a drop in firm importance.[20] Putting the magnitude of the effect in context in similar fashion as Harford et al. (2017) by comparing to the effect of other determinants in the model, the incremental

[18] Table 1A in internet appendix examines whether the effect is increasing in the size of the workload shock by separately estimating the effect using count variables for the number of IPOs within a quarter less than $100M in proceeds, and with those above; the results show that the effect is increasing in IPO size. Table A2 examines whether observable measures of analyst IPO workload can be used to identify declines in research quality using an indicator for whether an IPO was *filed* in the previous calendar quarter. Conclusions are the same.

[19] Given the results on the coefficient of interest are nearly identical across panels, I proceed by reporting only the results using the IPO-analyst sample in subsequent tests.

[20] Harford et al. (2017) do not estimate this model with analyst fixed effects, so comparison is only approximate. Additionally, Malloy (2005) interprets his effect on PMAFE using the average mean-adjusted error in his sample, suggesting a change in accuracy of $0.025. The equivalent math here estimates the effect an IPO assignment to be an increase of between $0.01 and $0.02, depending on the specification.

effect of being assigned to an IPO on PMAFE is roughly equivalent to the effect of increasing the forecast horizon by 130 days.[21]

The reduction in accuracy provides evidence that brokerages place significantly greater importance on analysts' role in banking services than secondary market research. Additionally, the evidence is consistent with the availability of analyst attention, which is diverted to the IPO process during assignment quarters, mattering considerably for forecasting quality, despite recent evidence in the literature discounting analysts' role as information providers (Altinkilic and Hansen, 2009, Altinikilic et al., 2013). To the extent that analysts gain access to better channels of private information during IPO assignments, it does not appear that they incorporate it into their forecasts.

Looking at Panel B, results for control variables are largely consistent with prior literature. For instance, as Ivkovic and Jegadeesh (2004) and Malloy (2005) discuss the rate at which relative forecast errors increase with the age of the forecast, I find that forecast horizon significantly increases forecast error. Additionally, consistent with Harford et al (2017), I find that demeaned forecast errors are decreasing in firm size, brokerage size, and number of analysts covering the firm. I also find that firm-specific experience improves accuracy, though this is not significant across all columns.

To alleviate concerns that analysts initiate coverage of firms with large information acquisition costs concurrently with IPO assignments, Column 5 re-estimates Column 1 restricting the sample to firms that have been in the portfolio for longer than one year. The results are similar, supporting the notion that the effect results from a change in attention, not a change in the difficulty of the task.

The results across Table 2 are consistent with a decline in attention significantly reducing the quality of information produced by analysts, suggesting that the marginal costs associated with

[21] Model 1 of Panel A and B include the log of scaled horizon. The unreported coefficient on the unlogged, unadjusted version is .0001113.

a reduction in accuracy are greatly exceeded by the marginal rewards associated with IPO deal involvement. I next investigate whether these marginal costs vary across firms in the portfolio.

5.1.2 Cross-Sectional Variation in Accuracy within Portfolio

This section explores whether the reduction in forecast accuracy in IPO quarters is concentrated among firms that are potentially less important to the analyst, i.e., have a lower marginal return to analysts' time (Harford et al., 2017). Analysts presumably have more (and more active) clients interested in larger and more institutionally held firms. I examine whether analysts avoid reductions in performance among these presumably more important firms in their portfolio. The regression models in Columns 1-3 of Table 3 are similar to Column 1 of Table 2 Panel A, but in Table 3, I rank each analyst's portfolio firms each quarter according to their size, institutional ownership and analyst following and interact the workload shock variable with indicators for above-median size, institutional investment, and following. If analysts' attention response during periods of increased workload diverts less effort away from more visible firms, the effect of the shock should be muted for these firms. This is not what I find. The results in the first three columns of Table 3 suggest that analysts do not shift disproportionately, with the drop in information quality being largely independent of firm importance. Additionally, Columns 4-6 restrict the sample to only above-median firms in terms of importance. The results remain nearly identical to those reported for the full sample in Panel A of Table 2.

The results thus far suggest that when experiencing an increase in workload demands, analysts sacrifice information production quality on existing firms in their portfolio. This drop in production quality seems to affect all firms in the portfolio. There is a large gap in what we know about the complex incentives analyst balance between satisfying the demands of their employers and clients, and maintaining their private reputational capital. It appears that at times, forecast accuracy for portfolio firms can be secondary to investment banking involvement. But it's unclear whether clients continue to demand reports during these times, either because they are unaware of the expected change in information quality or because they are interested in more qualitative input to inform their own analysis. The next section explores how analyst firm-level forecast quantity varies during IPO quarters.

5.2 Productivity

5.2.1 Quarterly Variation in Attention and Productivity

This section explores how changes in workload demands affect analysts' quantity of information production. If reputational costs associated with issuing fewer reports are high, analysts may preserve report quantity levels during high demand periods at the expense of diminished quality. Table 4 presents the main regressions exploring quarterly research output.

Columns 1 and 2 estimate equation (2) using unadjusted reports per firm as the dependent variables, while Columns 3 and 4 use the peer-adjusted versions as the dependent variables. Columns 2 and 4 restrict the dependent variable to reports with annual forecasts, consistent with Harford et al. (2017). Column 5 uses peer-adjusted forecasts per firm, irrespective of the number of unique announcements. Similar to Column 3 of Table 2, Columns 1-2 of Table 4 present regressions with firm-quarter fixed effects since the outcome variable is not benchmarked to peers. The results across the five columns provide a consistent story: analysts cut information quantity during increased workload periods. Looking at Column 1, the effect of an IPO assignment lowers the quantity of reports produced per firm by 1.1%.[22] Comparing to other determinants in the model, the effect is roughly equivalent to the expected decline in report production when reducing analysts' firm-specific experience by 9.3 years.[23]

Table 5 explores whether the reduction during research output in IPO quarters varies according to the relative importance of the firm within the analyst's portfolio. The regressions replicate the specification of Column 3 in Table 4, but also include interactions with measures of

[22] I find an equivalent result with similar magnitudes using recommendations instead of forecasts, presented in Table A6 of the internet appendix.
[23] The (unreported) coefficient on unlogged firm-specific experience measured in months is .0000983

within-portfolio firm importance as in Table 3. Columns 1 and 3 provide some evidence that more visible firms suffer less of a reduction in information produced. Columns 4-6 show, nonetheless, that firms in the top half in an analyst's portfolio in importance continue to experience an overall reduction in information production. Client demands appear to play a larger role in determining quantity of reports than report accuracy during high workload periods, but even firms presumably more important to analysts experience a statistically significant reduction in information quantity.

The information quantity result reveals the importance of analyst attention for not only delivering quality content, but also overall content as well. The incentives for content delivery do not appear sufficiently salient to prevent a reduction when workload increases. In sum, evidence thus far indicates that analysts respond to workload increases by drawing attention away from their remaining firms, both in forecast development and report production. And neither comparative informational advantages nor reputational costs prevent a decline in research quality.

5.3 Timing

This section examines whether IPO assignments create delays in analyst information production. As the last two sections show, analysts produce less information when workload demands increase and the information they produce is of lower quality. This section tests whether that information is also late getting to investors. Driskill et al. (2016) argue that there is sharply decreasing demand for research as time elapses following quarterly earnings announcements. Delays following earnings announcements have been shown to negatively affect investors' ability to accuracy price earnings news (Zhang, 2008). To test whether analysts preserve timeliness despite quality reductions, I investigate whether they are slower to issue their first forecast following the announcement of earnings, using both unadjusted and peer-adjusted measures.

Table 6 provides evidence suggesting investor demands for immediacy are not sufficient to prevent analysts from delaying when involved in an IPO deal. Being involved in an IPO increases the amount of time it takes to issue a post-announcement forecast update by 2.2%, and significantly decreases the likelihood of issuing a forecast immediately following an earnings announcement, both in absolute terms and relative to peers. These results complement the evidence of Driskill et al. (2016) showing a decline in timeliness on days with multiple earnings announcements. This evidence also extends their results, revealing that even with an ability to allocate attention throughout a quarter during a lengthy underwriting process as opposed to a short-term bottleneck, analysts still concede turnaround speed in responding to earnings news events.

5.4 Changes in Coverage

This section explores whether IPO workload shocks increase the likelihood that an analyst drops coverage of a covered firm. An IPO assignment may increase the incentive to drop coverage because doing so may free up resources to allocate among remaining firms, and minimize declines in research quality. At some point, although it is unclear when, it becomes advantageous to cease coverage, as a decline in research quality becomes more costly than withholding research. This section tests whether analysts take steps to mitigate the impact of workload shocks through coverage reductions.

Table 7 estimates the effect of IPO assignments on the likelihood of discontinuing coverage. The dependent variable in Column 1 is an indicator for whether analysts refrain from issuing a forecast in quarter *t* for a firm that was forecasted by the analyst in quarter *t-1*. And the dependent variable in Column 2 is the total number of firms for which analysts refrain from issuing a forecast in quarter *t* that were forecasted in quarter *t-1*. The regressions are estimated on an analyst-quarter level, using analyst and industry-quarter fixed effects. The results in Columns 1 and 2 of Table 7 show that analysts are no more likely to drop coverage of a portfolio firm in quarters with an IPO assignment than quarters without.

These results provide evidence of the implicit costs analysts face in dropping coverage. The disincentives are intuitive. In dropping coverage, analysts potentially damage relations with firm managers and lose a portion of client trading. But these disincentives are typically difficult to show empirically, given the relation between firm prospects and continuation decisions. During periods in which workload demands increase, analysts cut forecast quantity, forecast less accurately, and delay their forecast updates. Yet, they avoid a tactic in dropping coverage that could potentially mediate all these effects. This is consistent with analysts facing pressures from clients and corporate managers that greatly steepens the cost curve when approaching the boundary of zero reports.

6. Implications to Changes in Research Quality

When analysts are managing the demands of their role in IPO underwriting processes alongside those of their seasoned firm research portfolio, the latter suffers in quality, quantity, and timeliness. But what are the implications for investors at the firm-level? The average firm is covered by about fifteen analysts, so what impact does a single inattentive analyst's research quality have on the information environment of firms the analyst covers?

A natural place to look for the impact of changes in research quality is around subsequent earnings announcements. Kelly and Ljungqvist (2012) and Merkley et al. (2017) find that following exogenous drops in coverage, firms experience increased earnings surprises, return volatility, and abnormal returns at subsequent earnings releases, consistent with the interpretation that information asymmetry increases following declines in coverage. To test whether a decline in an analyst's research quality produces similar effects, I compare the information asymmetry surrounding earnings announcements of firms covered by an analyst who was involved in an IPO the previous quarter, to that of firms in same industry who were not covered by an analyst that was involved in an IPO the previous quarter. I study differences in information asymmetry using absolute earnings surprise, defined as |Actual – Consensus Forecast|/Price;[24] the probability of

[24] Consensus is constructed using the shortest horizon forecast issued on or before the end of the earnings period by each analyst covering the firm in the quarter. Price is the closing price at the end of the previous quarter.

missing the consensus forecast; the absolute CAR; average daily bid-ask spread; the Amihud (2002) illiquidity measure; and annualized return volatility in days around earnings.

Panels A of Table 8 report changes in the first three measures, which capture the information content of the earnings news, and Panel B reports change in the second three measures, which capture the costs of trading. All measures are increasing in information asymmetry. Panel A shows that absolute earnings surprise, absolute market reactions, and the probability of missing earnings increase for firms that had an analyst involved in an IPO the previous quarter. The coefficient in Column 1 of .17 suggests a 6% increase in earnings surprises, which compares favorably to evidence in Merkley et al. (2017) showing an aggregate forecast error increase of around 3% following a loss of coverage within the industry. Additionally, the .12 increase in market reactions in Column 3 indicates a 2% increase in the information content of earnings, which is comparable to the 3.3% found by Merkley et al. (2017). This evidence is consistent with earnings news having greater information content, resulting from a decline in the information content of analysts' forecasts.

Panel B of Table 8 confirms that trading costs increase as: bid-ask spreads, illiquidity, and return volatility significantly increase in the days surrounding earnings announcements for firms that had at least one analyst splitting time between forecast production and underwriting services. The coefficients in Columns 1 and 2 suggest a 2.5% increase in spreads and a 20% increase in illiquidity following earnings announcements, similar to the 2.0% and 16% increase found by Kelly and Ljugqvist (2012). These results provide evidence that reductions in an analyst's research quality arising from shocks to workload increase information asymmetry at the firm-level among covered firms. The gap between informed and uninformed investors rises as the average level of research quality is pulled down by an individual analyst's private workload. In sum, despite firms often having a multitude of analysts covering them, when one is serving his/her investment bank at the expense of portfolio-firm research, it has implications not only for consumers of the research, but all investors in the firms' stock, as prices become less informative.

7. Conclusion

Analyst information production is important for reconciling information gaps among investors, and impounding information into prices (Kelly and Ljungqvist, 2012). However, the importance of analyst information production *to analysts* can vary over time as they become more or less occupied with other responsibilities that compete for their attention. I provide evidence that during periods when analyst workload increases resulting from concurrent involvement in an IPO deal pursued by their bank, attention to information production for non-IPO portfolio firms decreases. During the IPO assignment quarter, accuracy, report frequency, and timeliness for non-IPO firms decline, relative to other analysts in the same industry not assigned to IPOs. This reduction in research quality persists among firms covered for at least a year, and firms typically viewed as more important. Additionally, attention shifts have negative implications for the information environment at the firm-level of covered firms. For firms covered by an analyst that is involved in an IPO deal, the market is more surprised by subsequent earnings announcements, and trading is more volatile and expensive following these announcements. The evidence is consistent with investment banking workload shocks significantly lowering the quality of analyst research, and consequently, reducing the aggregate value of analyst research at the firm-level for uninformed investors. Information asymmetry rises, and price becomes less informative.

Although the effects of a decline in attention could potentially be mitigated by reducing the number of firms covered, or shifting resources, the evidence suggests neither steps are taken. A reluctance to forestall a deterioration in research quality sheds light on the incentive structure analysts and their employers face across the services they provide; it highlights the reward imbalance between investment banking business and sell-side research. Previous research suggests banking services create a conflict of interest for analysts when issuing forecasts for firms their bank has a banking relationship with. The evidence presented here suggests banking services also create a conflict for the research of non-affiliated firms, in that attention is drawn away from these firms toward banking services. This shift is presumably consistent with incentives: banks likely recoup any cost from supplying noisier and less frequent information through revenue and reputation their analyst helps generate as result of the role played in initial offering transactions.

These results are important for investors who face their own attention limits. The evidence in this paper suggests analyst workload demands are important to consider when selecting which information to consume. With recent trends across the sell-side analyst industry towards consolidation of brokerages and services, this problem of analyst investment banking assignments cannibalizing research time and quality could grow in severity.

Appendix A – Data Descriptions

Variable Name	Variable Definition (source in parentheses)
Control Variables	
Analyst Characteristics	
Firm-Specific Experience	Log of one plus the number of months the analyst has been issuing forecasts for the covered firm (I/B/E/S).
(Consensus Adjusted) Portfolio Size	Log of one plus the number of firms the analyst issues at least forecast for during the quarter. Consensus adjusted version represents the log of the one plus number for firms covered, scaled by the average number of firms covered by all peer analysts issuing forecasts for the same firm during the quarter (I/B/E/S).
Number of Industries Covered	The number of distinct industries that the analyst's portfolio of firms' spans, using two-digit sic codes (I/B/E/S).
Historical Accuracy	The average absolute forecast error, measured as |Forecast – Actual| for all forecasts issued prior to the start of the quarter (I/B/E/S).
Broker Characteristics	
Brokerage Size	Log of one plus the number of distinct analysts issuing forecasts for the brokerage throughout the year (I/B/E/S).
Forecast Characteristics	
(Consensus Adjusted) Forecast Horizon	Log of one plus the number of days between the forecast and the earnings end date. Consensus adjusted version represents the log of one plus the analyst's forecast horizon, scaled by the average forecast horizon of all peer analyst forecasts issued for the same firm during the quarter (I/B/E/S).
Volatility of Peer Accuracy	Standard deviation of consensus absolute EPS forecast errors, measured as |Actual – Forecast|, where consensus is measured using the closest annual forecast issued by each peer analyst covering the firm during the quarter (I/B/E/S).
Actual Earnings	Actual EPS announced by the firm (I/B/E/S).
Firm Characteristics	
Firm Analyst Following	Log of one plus the number of distinct analysts issuing forecasts for the firm during the quarter (I/B/E/S).
Firm Size	Price times shares outstanding for all securities issued by the firm, measured as the quarter start date (CRSP)
Institutional Ownership	The percent of shares held by 13F filers, measured as of the end of the previous quarter (Thomson Reuters).
IO Breadth	The number of unique 13F filers holding the firm's shares, measured as of the end of the previous quarter (Thomson Reuters).

Appendix A (continued)

Variable Name	Variable Definition (source in parentheses)
Outcome Variables	
Accuracy	
AFE	Absolute EPS forecast error, measured as |Forecast – Actual| (I/B/E/S).
PMAFE	Proportional mean-adjusted absolute EPS forecast error, measured as $(AFE_I - \overline{AFE})/\overline{AFE}$, where $\overline{AFE}$ represents the consensus mean absolute EPS forecast error. Consensus is formed using the closest annual forecast issued by each analyst issuing a forecast for the same firm during the quarter, for the same earnings date (I/B/E/S).
SDAFE	Scaled demeaned absolute EPS forecast error, measured as $(AFE_i - \overline{AFE})/\sigma(\overline{AFE})$, where $\sigma(\overline{AFE})$ represents the standard deviation of absolute EPS forecast error among all peer analysts issuing a forecast for the same firm during the quarter, for the same earnings date (I/B/E/S)
Clement & Tse (2005)	Measure of accuracy published in Clement and Tse (2005). Computed as $\frac{\text{MAX}(AFE)-AFE_i}{\text{MAX}(AFE)-\text{MIN}(AFE)}$, where AFE_i represents the analysts absolute EPS forecast error, and Max(AFE) and Min(AFE) represent the maximum and minimum absolute forecast error among all analysts issuing forecasts for the same firm and earnings date within the quarter (I/B/E/S).
Reports	
Reports	Log of one plus the number of unique EPS forecast announcements recorded by an analyst for a firm during a quarter (I/B/E/S).
Annual Reports	Log of one plus the number of unique EPS forecast announcements (that have at least one annual EPS forecast) recorded by an analyst for a firm during a quarter (I/B/E/S).
Demeaned Reports	Log of one plus the number of unique EPS forecast announcements recorded by an analyst for a firm during a quarter, scaled by the average number of unique EPS forecast announcements recorded by all peer analysts covering the same firm during the quarter (I/B/E/S).
Demeaned Annual Reports	Log of one plus the number of unique EPS forecast announcements (that have at least one annual EPS forecast) recorded by an analyst for a firm during a quarter, scaled by the average number of unique EPS forecast announcements (that have at least one annual EPS forecast) recorded by all peer analysts covering the same firm during the quarter (I/B/E/S).
Demeaned Forecasts	Log of one plus the number of unique EPS forecasts issued by analyst for a firm during a quarter, scaled by the average number of unique EPS forecasts issued by peer analysts covering the same firm during the quarter (I/B/E/S).
Timing	
Delay	Log of one plus the number of trading days between the day the firm announces earnings during the quarter and the day the analyst issues the first post-announcement EPS forecast. This measure is set to the amount of days remaining in the quarter following the announcement if the analyst fails to issue a forecast update (I/B/E/S).
Demeaned Delay	Log of one plus the number of trading days between the day the firm announces earnings during the quarter and the day the analyst issues the first post-announcement EPS forecast, scaled by the average number of trading days between these two dates for all peer analysts covering the firm during the quarter. This number of days is set to the amount of days remaining in the quarter following the announcement if the analyst fails to issue a forecast update (I/B/E/S).
Timely	An indicator variable equaling one if the analyst issues a forecast the day of, or the trading day immediately following, the announcement of earnings by the firm during the quarter (I/B/E/S).
Timely	An indicator variable equaling one if the analyst issues a forecast the day of, or the trading day immediately following, the announcement of earnings by the firm during the quarter, minus the proportion of peer analysts covering the firm during the quarter that issue a forecast update within this window (I/B/E/S).
Information Environment	
Earnings Surprise	Absolute value of Actual EPS minus the consensus forecast estimate, scaled by the stock price from the end of the previous quarter, all multiplied by 100. Consensus forecast estimate is

	constructed using the shortest horizon forecast of all analysts covering the firm that are issued on or before the earnings end date (I/B/E/S).
Probability of Missing Earnings	Indicator variable equaling one if the Actual EPS is less than the consensus forecast estimate. Consensus forecast estimate is constructed using the shortest horizon forecast of all analysts covering the firm that are issued on or before the earnings end date (I/B/E/S).
Absolute CAR	Absolute value of the cumulative abnormal returns over the (0,+2) trading day window relative to the earnings announcement date, where abnormal returns are computed as firm returns minus the CRSP value-weighted market index return (CRSP, I/B/E/S).
Amihud (2002) Illiquidity Measure	Log of one plus the ratio of the absolute stock return to the dollar trading volume, all multiplied by 1,000,000 (CRSP).
Bid-Ask Spread	Average daily quoted bid-ask price spread over the (0,+2) trading day window relative to the earnings announcement date, where spread is computed as 100 times the closing ask quote minus the closing bid quote, divided by one half of the sum of the bid and ask quotes (CRSP, I/B/E/S).
Standard Deviation Returns	Log of one plus the annualized standard deviation of returns over the (0,+2) trading day window relative to the earnings announcement date, computed as the daily standard deviation multiplied by $\sqrt{252}$ (CRSP, I/B/E/S).

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Table 1 – Descriptive Statistics

This table presents the means, medians, and standard deviations for the main dependent, independent, and control variables used throughout the study. Firm-specific experience represents the number of months the analyst has been issuing forecasts for a given firm. Quarterly portfolio size represents the number of unique firms forecasted by the analyst in the quarter. Brokerage size is the number of unique analysts issuing forecasts for the brokerage in a given year. Horizon is measured as the number of days between the forecast announcement and the earnings date. Number of industries is the number of unique two-digit industries that the analyst forecasts in a given quarter. Underpricing is measured as the return on the first day of the IPO minus the return on the CRSP value-weighted index. PMAFE is measured as $\frac{\left(\text{AFE - }\overline{\text{AFE}}\right)}{\overline{\text{AFE}}}$, where SDAFE is measured as $\frac{\left(\text{AFE - }\overline{\text{AFE}}\right)}{\sigma(\text{AFE})}$, and Clement & Tse (2005) is measured as $\frac{\text{MAX}(AFE)-AFE_i}{\text{MAX}(AFE)-\text{MIN}(AFE)}$. Quarterly reports per Ticker represents the number of unique announcements issued by the analyst for a given firm in their portfolio. Demeaned Reports per firm represents the difference in number of reports produced by analyst *i* for a given firm, minus the number of reports produced by peer analysts for that firm during that quarter. Forecasts per firm is measured in the same way, except forecasts signifies number of forecasts rather than reports. Time after Announcement represents the number of days following the announcement of earnings in quarter *t* that the analyst issues a forecast update, and Timely is an indicator variable for whether this forecast update occurs within a trading day of the earnings announcement. All remaining variables are defined in Appendix A.

Panel A: Analyst Characteristics

	Mean	Median	Std.
Number of Unique Analyst	1974.00	N.A	N.A
Number of IPOs per Analyst	4.49	3.00	3.65
Firm-specific experience (months)	51.27	33.00	53.61
Quarterly Portfolio Size	15.17	14.00	6.51
Brokerage Size (Number of Analysts)	96.69	89.00	69.39
Forecast Horizon (Days)	238.54	209.00	145.15
Number of Industries Covered	3.33	3.00	2.10
Actual EPS	1.55	1.18	2.18

Panel B: IPO Characteristics

	Mean	Median	Std.
Number of IPOs	2964.00	N.A	N.A
Number of IPOs (>$100M)	978.00	N.A	N.A
IPO Proceeds ($M)	165.23	70.17	549.79
Issuer Assets (pre-IPO) ($M)	1028.82	50.03	9435.23
Underpricing (%)	25.90	11.64	49.27
Number of Analysts per IPO	5.42	4.00	4.41
Number of Syndicate Analysts per IPO	4.38	4.00	2.80
Number of Lead Analysts per IPO	2.36	2.00	1.93

Panel C: Accuracy, Productivity, and Timing Outcomes

	Mean	Median	Std.
PMAFE	-0.021	-0.06	0.623
SDAFE	-0.029	-0.185	1.169
AFE	0.286	0.110	0.415
Clement & Tse (2005)	0.579	0.663	0.460
Quarterly Reports per Ticker	1.82	2.00	1.03
Quarterly (Annual) Reports per Ticker	1.58	1.00	0.98
Demeaned Reports per Ticker	0.01	-0.17	0.94
Demeaned Forecasts per Ticker	-0.07	-0.75	5.04
Time after Announcement of Earnings (Days)	6.91	1.00	14.06
Timely	0.66	1.00	0.47

Panel D: Earnings Announcement and Information Asymmetry Outcomes

	Mean	Median	Std.
Absolute Earnings Surprise	2.85	0.27	9.41
Missing Earnings	0.48	0.00	0.500
Absolute CAR (0,+2)	6.25	3.98	7.49
Standard Deviation Returns (0,+2)	59.53	43.18	51.83
Bid-Ask Spread (0,+2)	1.25	0.48	1.76
Amihud Illiquidity Measure (0,+2)	0.17	0.01	0.54

Panel E: Other Regression Controls highlight the

	Mean	Median	Std.
Firm Following	13.81	12.00	7.70
Firm Market Capitalization ($B)	10.47	2.72	21.04
Institutional Ownership (%)	66.48	72.79	26.79
Historical Accuracy (Absolute Error Over Actual)	0.89	0.77	0.55
Volatility of Peer Accuracy	0.13	0.05	0.25
Volatility of Peer Output	65.43	54.65	43.68
Demeaned Number of Firms Covered	2.61	1.90	7.86

Table 2 (Panel A) - Relative Accuracy as a Function of IPO Assignments: IPO Analyst Sample

This table presents analyst-firm-quarter level accuracy regressions using various measures of unadjusted and demeaned absolute EPS forecast error as a function of whether an analyst is assigned to an IPO that issues in a quarter. PMAFE is measured as ($AFE - \overline{AFE}$)/ $\overline{AFE}$ where AFE represents absolute EPS forecast error (|forecast – actual|), and SDAFE is measured in the same way but scaled by the standard deviation of peer errors instead of the mean. *AFE* represents unadjusted absolute EPS forecasts. Clement & Tse (2005) is computed as $\frac{\text{MAX}(AFE)-AFE_i}{\text{MAX}(AFE)-\text{MIN}(AFE)}$. The sample is constructed using the shortest horizon annual forecast issued within a quarter by each analyst that covers at least one IPO over the sample, and all closest matching peer forecasts within the quarter are used to estimate a consensus for each forecast. An analyst is classified as assigned to an IPO if an IPO offer date occurs during the quarter, the analyst is employed by a lead manager in the deal, and the analyst issues a forecast within the first 90 days following the IPO. Column 3 is estimated using firm-quarter fixed effects instead of industry-quarter fixed effects since the outcome variable is not demeaned at the forecast level. Accordingly, the controls for number of firms covered and forecast horizon are unadjusted in Column 3. All remaining variables are defined in Appendix A. All firm-commitment, U.S. equity IPO deals completed between 1995 and 2014 are included. Standard errors are clustered at the firm and quarterly level. ***, **, * reflect significance at the 1%, 5%, and 10% levels.

	(1) PMAFE	(2) SDAFE	(3) AFE	(4) Clement & Tse	(5) PMAFE
IPO Assignment	**0.013*** **	**0.019*** **	**0.002* **	**-0.007*** **	**0.014*** **
	(4.03)	**(3.28)**	**(1.80)**	**(-3.16)**	**(3.91)**
Ln(Firm Specific Experience)	0.001	-0.000	-0.001*	-0.000	0.002
	(1.36)	(-0.25)	(-1.93)	(-0.02)	(1.29)
Ln(Brokerage Size)	-0.002	-0.011**	-0.001*	0.003*	-0.003
	(-0.87)	(-2.57)	(-1.79)	(1.91)	(-1.04)
Ln(Consensus Adjusted Portfolio Size)	-0.008**	-0.008	-0.001	0.007***	-0.010**
	(-2.45)	(-1.17)	(-0.56)	(2.67)	(-2.43)
Ln(Number of Industries)	0.007	0.016*	-0.001	-0.008**	0.007
	(1.49)	(1.86)	(-0.41)	(-2.46)	(1.40)
Ln(Consensus Adjusted Horizon)	0.015**	0.064***	0.102***	-0.026***	0.012
	(2.14)	(4.91)	(13.46)	(-5.62)	(1.52)
Historical Accuracy	0.017***	0.020**	0.005***	-0.008***	0.022***
	(3.95)	(2.51)	(3.13)	(-2.82)	(3.88)
Ln(Firm Analyst Following)	-0.052***	-0.063***		0.072***	-0.054***
	(-17.36)	(-12.69)		(27.20)	(-15.26)
Ln(Firm Mcap)	-0.007***	-0.005***		0.004***	-0.007***
	(-5.51)	(-2.85)		(3.53)	(-4.81)
Institutional Ownership	-0.000	0.000		-0.000	-0.000
	(-0.53)	(0.25)		(-0.42)	(-0.35)
Volatility of Peer Accuracy	-0.252***	-0.267***		0.179***	-0.258***
	(-16.78)	(-20.37)		(15.83)	(-16.52)
Earnings Actual	0.004***	0.006***		-0.003***	0.004***
	(4.52)	(4.79)		(-4.26)	(4.40)
Analyst Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry-Quarter Fixed Effects	Yes	Yes	No	Yes	Yes
Firm-Quarter Fixed Effects	No	No	Yes	No	No
Adj. R-squared	0.027	0.019	0.825	0.034	0.030
Observations	712,216	709,697	686,837	709,697	525,830

Table 2 (Panel B) - Relative Accuracy as a Function of IPO Assignments: Full IBES Sample

This table presents analyst-firm-quarter level accuracy regressions using measures of unadjusted and demeaned absolute EPS forecast error as a function of whether an analyst is assigned to an IPO that issues within a quarter. The dependent variable in Columns 1 and 5 is PMAFE and is measured as ($AFE - \overline{AFE}$)/ $\overline{AFE}$ where AFE represents absolute EPS forecast error (|forecast – actual|). The dependent variable in Column 2 is SDAFE and is measured in the same way but scaled by the standard deviation of peer errors instead of the mean. The dependent variable in Column 3 is AFE and represents unadjusted absolute EPS forecast error. And the dependent variable in Column 4 is measure of accuracy from Clement & Tse (2005), computed as $\frac{\text{MAX}(AFE)-AFE_i}{\text{MAX}(AFE)-\text{MIN}(AFE)}$. The sample of forecasts is constructed using the shortest horizon annual forecast issued within a quarter by each analyst issuing forecasts in I/B/E/S over this period. All closest matching peer forecasts within the quarter are used to estimate a consensus for each forecast. An analyst is classified as assigned to an IPO if an IPO offer date occurs during the quarter, the analyst is employed by a lead manager in the deal, and the analyst issues a forecast within the first 90 days following the IPO. Column 3 is estimated using firm-quarter fixed effects instead of industry-quarter fixed effects since the outcome variable is not demeaned at the forecast level. Accordingly, the controls for number of firms covered and forecast horizon are unadjusted in Column 3. All remaining variables are defined in Appendix A. All firm-commitment, U.S. equity IPO deals completed between 1995 and 2014 are included. Standard errors are clustered at the firm and quarterly level. ***, **, * reflect significance at the 1%, 5%, and 10% levels.

	(1) PMAFE	(2) SDAFE	(3) AFE	(4) Accuracy	(5) PMAFE
IPO Assignment	**0.014*****	**0.023*****	**0.004****	**-0.009*****	**0.016*****
	(4.33)	**(3.93)**	**(2.51)**	**(-3.79)**	**(4.32)**
Ln(Firm Specific Experience)	-0.000	-0.003***	0.000	0.001*	0.000
	(-0.73)	(-2.89)	(1.64)	(1.78)	(0.40)
Ln(Brokerage Size)	-0.001	-0.008**	-0.000	0.002*	-0.003
	(-0.64)	(-2.44)	(-0.43)	(1.88)	(-1.34)
Ln(Firms Covered/Mean Firms Covered)	-0.009***	-0.014***	-0.005***	0.008***	-0.011***
	(-4.15)	(-3.60)	(-4.74)	(4.67)	(-4.27)
Ln(Number of Industries)	0.011***	0.021***	0.003***	-0.009***	0.008**
	(3.64)	(3.94)	(2.71)	(-4.26)	(2.52)
Ln(Horizon/Peer-Horizon)	0.024***	0.081***	0.035***	-0.032***	0.023***
	(4.56)	(7.45)	(14.80)	(-7.69)	(3.98)
Historical Accuracy	0.009***	0.010**	0.002**	-0.005**	0.012***
	(3.46)	(1.99)	(2.44)	(-2.36)	(3.41)
Ln(Firm Analyst Following)	-0.056***	-0.072***		0.083***	-0.058***
	(-27.31)	(-26.51)		(39.43)	(-23.38)
Ln(Firm Mcap)	-0.005***	-0.003**		0.003***	-0.005***
	(-5.70)	(-2.33)		(3.20)	(-5.30)
Institutional Ownership	-0.000	0.000		-0.000	-0.000
	(-1.17)	(0.41)		(-0.42)	(-0.24)
Volatility of Peer Accuracy	-0.257***	-0.282***		0.183***	-0.263***
	(-18.20)	(-26.29)		(17.47)	(-17.62)
Earnings Actual	0.004***	0.005***		-0.003***	0.004***
	(5.97)	(7.13)		(-4.99)	(5.84)
Analyst Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry-Quarter Fixed Effects	Yes	Yes	No	Yes	Yes
Firm-Quarter Fixed Effects	No	No	Yes	No	No
Adj. R-squared	0.035	0.026	0.814	0.040	0.035
Observations	1,824,009	1,818,102	1,893,833	1,818,102	1,295,956

Table 3 - Relative Accuracy as a Function of IPO Assignments: Effect of Firm Importance

This table presents analyst-firm-quarter level accuracy regressions of firm demeaned absolute EPS forecast error as a function of whether an analyst is assigned to an IPO in a quarter. The dependent variable in each Columns 1-6 is PMAFE, and is measured as ($AFE - \overline{AFE}$)/ $\overline{AFE}$ where AFE represents the unadjusted absolute EPS forecast error (|forecast – actual|). The sample is constructed using the shortest horizon annual forecast issued by each analyst within a quarter, and all closest matching peer forecasts within the quarter are used to estimate a consensus for each forecast. "Large Firm" is computed by ranking all firms' beginning-of-quarter market capitalization into quartiles. High IO Breadth and High Analyst Following are computed in the same manner using breadth of institutional ownership and analyst following. Columns 1-3 use all firms in the sample, while columns 4-6 are restricted to firms in the top 50% percentile according to the firm size ranking, breadth ranking, or analyst following ranking. An analyst is classified as assigned to an IPO if an IPO offer date occurs during the quarter, the analyst is employed by a lead manager in the deal, and the analyst issues a forecast within the first 90 days following the IPO. All remaining variables are defined in Appendix A. All firm-commitment, U.S. equity IPO deals completed between 1995 and 2014 are included. Standard errors are clustered at the analyst and quarterly level. ***, **, * reflect significance at the 1%, 5%, and 10% levels.

	(1) PMAFE	(2) PMAFE	(3) PMAFE	(4) PMAFE (Large)	(5) PMAFE (High IO)	(6) PMAFE (High Coverage)
IPO Assignment	**0.013*****	**0.009****	**0.013****	**0.012*****	**0.016*****	**0.011****
	(2.65)	**(2.02)**	**(2.51)**	**(2.73)**	**(3.84)**	**(2.63)**
IPO Assignment*Large Firm	**0.000**					
	(0.03)					
IPO Assignment*High IO Breadth		**0.007**				
		(1.14)				
IPO Assignment*High Analyst Following			**-0.000**			
			(-0.03)			
Large	-0.004					
	(-1.40)					
High IO Breadth		0.001				
		(0.26)				
High Analyst Following			0.004			
			(1.30)			
Ln(Firm-Specific Experience)	0.001	0.001	0.001	-0.000	0.000	-0.001
	(1.37)	(1.33)	(1.34)	(-0.03)	(0.13)	(-0.73)
Ln(Brokerage Size)	-0.002	-0.002	-0.002	-0.001	-0.002	0.000
	(-0.89)	(-0.87)	(-0.88)	(-0.17)	(-0.71)	(0.07)
Ln(Firms Covered/Mean Firms Covered)	-0.008**	-0.008**	-0.008**	-0.005	-0.001	-0.010**
	(-2.48)	(-2.44)	(-2.45)	(-1.12)	(-0.15)	(-2.25)
Ln(Number of Industries)	0.007	0.007	0.007	0.011*	0.009	0.013**
	(1.53)	(1.48)	(1.49)	(1.74)	(1.54)	(2.04)
Ln(Horizon/Peer-Horizon)	0.015**	0.015**	0.015**	0.010	0.012	0.010
	(2.14)	(2.14)	(2.14)	(1.17)	(1.35)	(1.18)
Historical Accuracy	0.017***	0.017***	0.017***	0.020***	0.017***	0.021***
	(3.99)	(3.94)	(3.96)	(3.35)	(2.70)	(3.16)
Ln(Firm Analyst Following)	-0.052***	-0.053***	-0.056***	-0.053***	-0.054***	-0.037***
	(-17.40)	(-17.51)	(-13.66)	(-12.30)	(-12.48)	(-6.06)
Ln(Firm Mcap)	-0.006***	-0.007***	-0.007***	-0.006***	-0.006***	-0.009***
	(-3.96)	(-5.10)	(-5.50)	(-3.09)	(-3.05)	(-5.62)
Institutional Ownership	-0.000	-0.000	-0.000	0.000	-0.000	-0.000
	(-0.52)	(-0.58)	(-0.55)	(0.32)	(-0.35)	(-0.65)
Volatility of Peer Accuracy	-0.252***	-0.252***	-0.252***	-0.284***	-0.264***	-0.239***
	(-16.79)	(-16.78)	(-16.77)	(-14.70)	(-13.56)	(-13.24)
Earnings Actual	0.004***	0.004***	0.004***	0.008***	0.007***	0.005***
	(4.53)	(4.52)	(4.53)	(7.00)	(6.44)	(5.23)
Analyst Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.027	0.027	0.027	0.030	0.031	0.026
Observations	712,216	712,216	712,216	372,532	356,492	387,877

Table 4 – Research Productivity as a Function of IPO Assignments: IPO Analyst Sample

This table presents analyst-firm-quarter level regressions of the unadjusted and demeaned number of reports issued per firm, as a function of whether an analyst is assigned to an IPO that issues in a quarter. The sample is constructed by computing the number of announcements or forecasts per firm each quarter, by each analyst covering at least one IPO throughout the sample. The analyst's peer group average is formed by averaging over all analysts issuing a forecast for the same firm and earnings date within the quarter. The dependent variables in Columns 1-4 use distinct announcement dates to classify reports, while the dependent variable in Column 5 counts all forecasts, regardless of how many reports they are grouped into. The dependent variable in Columns 1 and 3 is the log of the total number of reports per firm-quarter, but Column 3 takes the log of analyst reports per firm scaled by the average number of reports per firm by peer analysts. The dependent variable in Columns 2 and 4 restrict the count to reports containing at least one annual forecast, with Column 4 demeaning in the same was as Column 3. The dependent variable in Column 5 is the log of total number of EPS forecasts issued scaled by the consensus average number of forecasts issued by peer analysts per firm during the quarter. An analyst is classified as assigned to an IPO if an IPO offer date occurs during the quarter, the analyst is employed by a lead manager in the deal, and the analyst issues a forecast within the first 90 days following the IPO. Columns 1-2 are estimated using firm-quarter fixed effects instead of industry-quarter fixed effects since the outcome variables are not demeaned at the forecast level. Accordingly, the control variable for portfolio size is unadjusted in Columns 1-2. All remaining variables are defined in Appendix A. The sample of completed IPO deals spans 1995 to 2014. Standard errors are clustered at the firm and quarterly level. ***, **, * reflect significance at the 1%, 5%, and 10% levels.

	(1) Reports	(2) Annual Reports	(3) Demeaned Reports	(4) Demeaned Annual Reports	(5) Demeaned Forecasts
IPO Assignment	**-0.011*****	**-0.008*****	**-0.009*****	**-0.006*****	**-0.008****
	(-3.86)	**(-3.48)**	**(-4.05)**	**(-3.33)**	**(-2.03)**
Ln(Firm-Specific Experience)	0.008***	0.003***	0.006***	0.002***	-0.010***
	(11.57)	(5.01)	(11.71)	(4.04)	(-11.02)
Ln(Brokerage Size)	0.008***	0.007***	0.008***	0.008***	0.006
	(3.69)	(3.29)	(4.77)	(4.72)	(1.51)
Ln(Consensus Adjusted	0.045***	0.040***	0.028***	0.015***	0.037***
Portfolio Size)	(12.37)	(11.77)	(12.66)	(5.55)	(6.08)
Ln(Number of Industries)	-0.019***	-0.014***	-0.006**	0.003	-0.019***
	(-5.87)	(-4.35)	(-2.54)	(1.21)	(-3.16)
Historical Accuracy	-0.006	0.003	-0.008**	0.001	0.007
	(-1.35)	(0.61)	(-2.33)	(0.42)	(1.09)
Ln(Firm Analyst Following)			0.016***	0.050***	0.059***
			(11.31)	(17.63)	(14.83)
Ln(Firm Mcap)			-0.007***	-0.015***	-0.009***
			(-13.22)	(-18.89)	(-7.07)
Institutional Ownership			-0.000***	-0.000***	-0.000***
			(-4.55)	(-6.45)	(-6.20)
Analyst Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry-Quarter Fixed Effects	No	No	Yes	Yes	Yes
Firm-Quarter Fixed Effects	Yes	Yes	No	No	No
Adj. R-squared	0.338	0.385	0.095	0.085	0.180
Observations	732,813	732,813	759,319	759,319	759,319

Table 5 - Relative Productivity as a Function of IPO Assignments: Effect of Firm Importance

This table presents analyst-firm-quarter level regressions of the unadjusted and demeaned number of reports issued per firm, as a function of whether an analyst is assigned to an IPO in a quarter. The sample is constructed by computing the number of announcements or forecasts each quarter by each analyst covering at least one IPO throughout the sample. The analyst's peer group average is formed by averaging over all analysts issuing a forecast for the same firm and earnings date within the quarter. "Large Firm" is computed by ranking all firms' beginning-of-quarter market capitalization into quartiles. And High IO Breadth and High Analyst Following are computed in the same manner using breadth of institutional ownership and analyst following. Columns 1-3 use all firms in the sample, while columns 4-6 are restrict to firms in the top 50% percentile according to firm size, IO breadth, or analyst following with each analyst's portfolio. The dependent variable in Columns 1-6 is the log of analyst reports per firm during the quarter, minus the log of the average number of reports per firm for peer analysts during the same quarter. An analyst is classified as assigned to an IPO if an IPO offer date occurs during the quarter, the analyst is employed by a lead manager in the deal, and the analyst issues a forecast within the first 90 days following the IPO. All remaining variables are defined in Appendix A. The sample of completed IPO deals spans 1995 to 2014. Standard errors are clustered at the firm and quarterly level. ***, **, * reflect significance at the 1%, 5%, and 10% levels.

	(1) Demeaned Reports	(2) Demeaned Reports	(3) Demeaned Reports	(4) Demeaned Reports	(5) Demeaned Reports	(6) Demeaned Reports
IPO Assignment	**-0.012***** **(-4.91)**	**-0.011***** **(-4.82)**	**-0.012***** **(-5.40)**	**-0.010***** **(-3.46)**	**-0.010***** **(-3.27)**	**-0.009***** **(-3.07)**
IPO Assignment*Large Firm	**0.004*** **(1.70)**					
IPO Assignment*High Breadth of Ownership		**0.003** **(1.12)**				
IPO Assignment*High Analyst Following			**0.006**** **(2.10)**			
Large Firm	0.001 (0.57)					
High IO Breadth		0.001 (1.20)				
High Analyst Following			-0.003* (-1.86)			
Ln(Firm Specific Experience)	0.006*** (11.71)	0.006*** (11.66)	0.006*** (11.73)	0.007*** (11.05)	0.008*** (12.42)	0.008*** (12.70)
Ln(Brokerage Size)	0.008*** (4.77)	0.008*** (4.78)	0.008*** (4.76)	0.012*** (5.73)	0.011*** (5.56)	0.012*** (5.17)
Ln(Firms Covered/Mean Firms Covered)	0.028*** (12.67)	0.028*** (12.69)	0.028*** (12.68)	0.030*** (11.32)	0.031*** (11.06)	0.040*** (11.52)
Ln(Number of Industries)	-0.007** (-2.56)	-0.007** (-2.58)	-0.006** (-2.54)	-0.006* (-1.98)	-0.006 (-1.63)	-0.006 (-1.46)
Historical Accuracy	-0.008** (-2.35)	-0.008** (-2.36)	-0.008** (-2.34)	-0.007* (-1.98)	-0.009** (-2.40)	-0.009* (-1.97)
Ln(Firm Analyst Following)	0.016*** (11.25)	0.016*** (11.09)	0.018*** (10.55)	0.027*** (12.32)	0.027*** (12.00)	0.034*** (11.32)
Ln(Firm Mcap)	-0.007*** (-11.80)	-0.008*** (-13.00)	-0.007*** (-13.26)	-0.010*** (-11.06)	-0.009*** (-11.43)	-0.005*** (-7.37)
Institutional Ownership	-0.000*** (-4.55)	-0.000*** (-4.73)	-0.000*** (-4.55)	-0.000** (-2.09)	-0.000 (-1.18)	-0.000 (-0.16)
Analyst Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.095	0.095	0.095	0.111	0.110	0.128
Observations	759,319	759,319	759,319	396,235	378,515	405,447

Table 6 - Relative Timing as a Function of IPO Assignments

This table presents analyst-quarter-firm level regressions of timing delays in report release, as a function of whether an analyst is assigned to an IPO that issues in a quarter. The sample of forecasts is constructed using analysts that cover at least one IPO throughout the sample. The dependent variable in Column 1 is the log of number of days following the announcement of earnings in quarter *t* that each analyst's first EPS forecast update is issued, while the dependent variable in Column 2 is this same timing measure, minus the log of the average delay for all peer analysts covering the firm in the quarter. The dependent variable in Column 3 is an indicator variable equaling one if the analyst issues an EPS forecast update the day of, or the day immediately following, the announcement of earnings in quarter *t*, and zero otherwise. The dependent variable in Column 4 is this same measure minus the percentage of all peer analysts covering the firm in that quarter that issue a forecast update the day, or the day immediately following, this earnings announcement. An analyst is classified as assigned to an IPO if an IPO offer date occurs during the quarter, the analyst is employed by a lead manager in the deal, and the analyst issues a forecast within the first 90 days following the IPO. Columns 1 and 3 are estimated using firm-quarter fixed effects instead of industry-quarter fixed effects since the outcome variables are not demeaned at the forecast level. Accordingly, the control for number of firms covered is unadjusted in Columns 1 and 3. All remaining variables are defined in Appendix A. The sample of completed IPO deals spans 1995 to 2014. Standard errors are clustered at the firm and quarterly level. ***, **, * reflect significance at the 1%, 5%, and 10% levels.

	(1) Ln(Delay)	(2) Ln(Demeaned Delay)	(3) Timely	(4) Demeaned Timely
IPO Assignment	**0.022****	**0.021***	**-0.008****	**-0.007****
	(2.00)	**(1.97)**	**(-2.23)**	**(-2.14)**
Ln(Firm-Specific Experience)	-0.130***	-0.101***	0.039***	0.030***
	(-29.34)	(-26.89)	(27.91)	(25.94)
Ln(Brokerage Size)	-0.121***	-0.115***	0.042***	0.040***
	(-14.66)	(-16.05)	(15.54)	(17.07)
Ln(Firms Covered/Mean Firms Covered)	-0.215***	-0.225***	0.062***	0.049***
	(-14.78)	(-15.96)	(11.78)	(12.75)
Ln(Number of Industries)	0.027*	0.036***	-0.011**	-0.006
	(1.83)	(2.75)	(-2.15)	(-1.54)
Historical Accuracy	0.026*	0.017	-0.001	-0.002
	(1.93)	(1.45)	(-0.12)	(-0.37)
Ln(Firm Analyst Following)		-0.192***		0.006***
		(-25.35)		(2.77)
Ln(Firm Mcap)		-0.015***		0.003***
		(-4.01)		(3.66)
Institutional Ownership		0.001***		-0.000***
		(7.10)		(-8.09)
Analyst Fixed Effects	Yes	Yes	Yes	Yes
Industry-Quarter Fixed Effects	No	Yes	No	Yes
Firm-Quarter Fixed Effects	Yes	No	Yes	No
Adj. R-squared	0.348	0.112	0.374	0.114
Observations	727,818	754,589	732,813	759,319

Table 7– Coverage Deletions

This table presents analyst-quarter level OLS regressions estimating the probability of dropping coverage of a portfolio firm during quarters in which an analyst is assigned to an IPO. An analyst is classified as assigned to an IPO if an IPO offer date occurs during the quarter, the analyst is employed by a lead manager in the deal, and the analyst issues a forecast within the first 90 days following the IPO. The dependent variable in Column 1 is an indicator variable equaling one if the analyst issues zero forecasts for a firm in quarter *t* that the analyst issued at least one forecast for in the previous quarter. The dependent variable in Column 2 is the sum of the number of firms for which the analyst issues zero forecasts for in quarter *t* that were forecasted for by that analyst in the previous quarter. All remaining variables are defined in Appendix A. The sample of completed IPO deals spans 1995 to 2014. Standard errors are clustered at the two-digit sic code and quarterly level. ***, **, * reflect significance at the 1%, 5%, and 10% levels.

	(1) Deletion Indicator	(2) Ln(Deletions)
IPO Assignment	**-0.000**	**-0.011**
	(-0.05)	**(-1.25)**
Ln(Experience)	0.042***	0.064***
	(4.79)	(5.19)
Ln(Brokerage Size)	-0.015***	-0.027***
	(-3.40)	(-4.04)
Ln(Lagged Firms Covered)	0.234***	0.337***
	(42.26)	(29.30)
Analyst Fixed Effects	Yes	Yes
Industry-Quarter Joint Fixed Effects	Yes	Yes
Year-Quarter Fixed Effects	Yes	Yes
Adj. R-Square	0.235	0.315
Number of Observations	69,272	69,272

Table 8 (Panel A) – Implications to Workload Constraints: Information Content of Earnings

This table presents firm-quarter level regressions of the information content of earnings announcements as function of whether the firm was covered by an analyst that was assigned to an IPO during quarter preceding the earnings announcement. The main independent variable is an indicator variable equaling one if the firm was covered by an analyst that was assigned to an IPO during the previous quarter. A firm is classified as having an analyst assigned to an IPO if at least one analyst issuing a forecast for the respective earnings period was employed by a lead manager in an IPO that was completed in the quarter and the analyst issues a forecast for the IPO firm within the first 90 days following the IPO. The dependent variable in Column 1 is computed as the absolute value of actual earnings minus the consensus earnings estimate, scaled by previous quarter's closing price, where consensus is formed by averaging the shortest horizon forecast issued on or earlier than the earnings end date for all analysts covering the firm in the quarter. The dependent variable in Column 2 is an indicator variable equaling one if actual earnings is less than the consensus earnings estimate. The dependent variable in Columns 3 is the cumulative abnormal return over the (0,+2) trading day relative to the earnings announcement, where daily abnormal returns are computed as the firm's stock return minus the return of the CRSP value-weighted market index. Absolute earnings surprise is winsorized at the top and bottom 2 percentiles. All remaining variables are defined in Appendix A. The sample of completed IPO deals spans 1995 to 2014. Standard errors are clustered at the two-digit sic code and quarterly level. ***, **, * reflect significance at the 1%, 5%, and 10% levels.

	(1) Absolute Earnings Surprise	(2) Probability of Meet-or-Beat	(4) Abs(CAR) (0,+2)
Analyst Assigned to an IPO	**0.169*** **	**0.012*** **	**0.116** **
	(3.18)	**(2.82)**	**(2.37)**
Forecast Horizon	-0.005***	-0.001***	-0.001**
	(-4.49)	(-6.34)	(-2.08)
Forecast Horizon^2	0.000***	0.000	0.000
	(9.16)	(1.28)	(0.93)
Firm-Specific Experience	0.337***	-0.010***	-0.013
	(3.66)	(-3.70)	(-0.24)
Brokerage Size	0.192***	0.007***	0.054*
	(3.30)	(2.69)	(1.71)
Portfolio Size	0.059	0.009**	-0.037
	(0.65)	(2.29)	(-0.64)
Ln(Firm Size)	-2.300***	0.006	-0.401***
	(-12.63)	(1.34)	(-4.54)
Ln(Firm Analyst Following)	0.415***	-0.034***	0.288***
	(3.82)	(-5.52)	(7.55)
Abs(Earnings Surprise)			6.852***
			(5.67)
Firm Fixed Effects	Yes	Yes	Yes
Industry-Earnings Date Fixed Effects	Yes	Yes	Yes
Adj. R-squared	0.584	0.148	0.196
Observations	439,581	439,581	435,881

Table 8 (Panel B) – Implications to Workload Constraints: Volatility and Liquidity

This table presents firm-quarter level regressions of the information asymmetry surrounding earnings announcements as function of whether the firm was covered by an analyst that was assigned to an IPO during quarter preceding the earnings announcement. The main independent variable is an indicator variable equaling one if the firm was covered by an analyst that was assigned to an IPO during the previous quarter. A firm is classified as having an analyst assigned to an IPO if at least one analyst issuing a forecast for the respective earnings period was employed by a lead manager in an IPO that was completed in the quarter and the analyst issues a forecast for the IPO firm within the first 90 days following the IPO. The dependent variable in Columns 1 is the average daily bid ask spreads over the trading day window (0,+2) relative to the earnings announcement, where bid ask spread is calculated as the closing ask quote minus the closing bid quote, scaled by sum of these two quotes divided by 2, all multiplied by 100. The dependent variable in Colum 2 is the measure of illiquidity from Amihud (2002) calculated as the log of one plus the ratio of the absolute stock return to the dollar trading volume, all multiplied by 1,000,000. The dependent variable in Column 3 is the log of one plus the annualized standard deviation of daily returns over the (0,+2) trading days relative to the earnings announcement. All dependent variables are winsorized at the top and bottom 2 percentiles. All remaining variables are defined in Appendix A. The sample of completed IPO deals spans 1995 to 2014. Standard errors are clustered at the two-digit sic code and quarterly level. ***, **, * reflect significance at the 1%, 5%, and 10% levels.

	(1) Bid-Ask (0,+2)	(2) Amihud Illiquidity (0,+2)	(3) SD Rets (0,+2)
Analyst Assigned to an IPO	**0.032****	**0.034*****	**0.005****
	(2.18)	**(6.34)**	**(1.99)**
Average Forecast Horizon	0.000**	0.000	-0.000***
	(2.28)	(1.07)	(-3.22)
Average Forecast Horizon^2	0.000**	0.000**	0.000***
	(2.03)	(2.42)	(3.57)
Average Analyst Experience	0.039***	0.004	-0.001
	(3.21)	(0.54)	(-0.55)
Average Brokerage Size	0.027**	-0.006	0.004***
	(2.15)	(-0.98)	(3.12)
Average Number of Firms	0.009	0.007	-0.000
	(0.49)	(1.21)	(-0.13)
Firm Size	-0.349***	-0.103***	-0.027***
	(-21.43)	(-14.53)	(-6.35)
Firm Analyst Following	-0.120***	-0.039***	0.013***
	(-8.09)	(-8.85)	(5.98)
Firm Fixed Effects	Yes	Yes	Yes
Industry-Earnings Date Fixed Effects	Yes	Yes	Yes
Adj. R-squared	0.692	0.467	0.290
Observations	435,870	435,810	435,810